

PROSPECTUS SUPPLEMENT
(To Prospectus, dated February 16, 2021)



Up to \$2,750,000 of Shares of Common Stock
200,000 Shares of Common Stock

This prospectus supplement relates to the issuance and sale of up to \$2,750,000 of shares of our common stock that we may sell to Keystone Capital Partners, LLC (“Keystone”) from time to time, in one or more transactions, pursuant to a common stock purchase agreement dated as of April 26, 2023 (the “Purchase Agreement”), between us and Keystone, whereby Keystone has committed to purchase up to \$2,750,000 of our common stock, and the issuance of an additional 200,000 shares of our common stock to Keystone as commitment shares under the Purchase Agreement.

This prospectus supplement and the accompanying prospectus also cover the resale of these shares by Keystone to the public. See “Keystone Transaction” for a description of the Purchase Agreement and additional information regarding Keystone. Keystone is an “underwriter” within the meaning of Section 2(a)(11) of the Securities Act of 1933, as amended, or the Securities Act.

The purchase price for the Common stock will be based upon formulas set forth in the Purchase Agreement depending on the type of purchase notice we submit to Keystone from time to time. We will pay the expenses incurred in connection with the issuance of the shares of our common stock. See “Plan of Distribution.”

On April 26, 2023, the last reported sale price of our common stock as reported on the NYSE American was \$0.24 per share.

The aggregate market value of our outstanding Common Stock held by non-affiliates was \$8,362,242 based on 32,853,474 shares of outstanding common stock as of April 26, 2023, of which approximately 24,594,830 shares were held by non-affiliates, and based on the closing sale price of our common stock of \$0.34 on March 21, 2023. Pursuant to General Instruction I.B.6 of Form S-3, in no event will we sell securities pursuant to this prospectus supplement with a value of more than one-third of the aggregate market value of our common stock held by non-affiliates in any 12-month period, so long as the aggregate market value of our common stock held by non-affiliates is less than \$75,000,000. During the prior 12 calendar months prior to, and including, the date of this prospectus supplement, we have had no sales of shares of our common stock pursuant to General Instruction I.B.6 of Form S-3.

Investing in our securities involves a high degree of risk. You should review carefully the risks and uncertainties described under the heading “Risk Factors” beginning on page S-13 of this prospectus supplement and under similar headings in the other documents that are incorporated by reference in this prospectus supplement and the accompanying prospectus before purchasing any of the securities offered by this prospectus.

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

The date of this prospectus supplement is April 27, 2023.

TABLE OF CONTENTS

PROSPECTUS SUPPLEMENT

ABOUT THIS PROSPECTUS SUPPLEMENT	S-1
PROSPECTUS SUPPLEMENT SUMMARY	S-3
THE OFFERING	S-11
RISK FACTORS	S-13
SPECIAL NOTE REGARDING FORWARD-LOOKING STATEMENTS	S-14
USE OF PROCEEDS	S-15
KEYSTONE TRANSACTION	S-16
DESCRIPTION OF SECURITIES	S-22
DIVIDEND POLICY	S-30
PLAN OF DISTRIBUTION	S-31
LEGAL MATTERS	S-33
EXPERTS	S-33
WHERE YOU CAN FIND MORE INFORMATION	S-33
INCORPORATION OF CERTAIN INFORMATION BY REFERENCE	S-33

PROSPECTUS

ABOUT THIS PROSPECTUS	2
WHERE YOU CAN FIND MORE INFORMATION	3
INCORPORATION BY REFERENCE	4
CAUTIONARY NOTE REGARDING FORWARD-LOOKING STATEMENTS	5
ABOUT NAVIDEA BIOPHARMACEUTICALS, INC.	6
RISK FACTORS	7
USE OF PROCEEDS	8
DESCRIPTION OF CAPITAL STOCK	9
DESCRIPTION OF DEBT SECURITIES	12
DESCRIPTION OF WARRANTS	20
DESCRIPTION OF PURCHASE CONTRACTS	21
DESCRIPTION OF RIGHTS	22
DESCRIPTION OF UNITS	23
TRANSFER AGENT AND REGISTRAR	24
ANTI-TAKEOVER CHARTER PROVISIONS AND LAWS	24
PLAN OF DISTRIBUTION	26
LEGAL MATTERS	28
EXPERTS	28
EXPENSES	

ABOUT THIS PROSPECTUS SUPPLEMENT

This prospectus supplement and the accompanying prospectus are part of a “shelf” registration statement (File No. 333-252847) that we initially filed with U.S. Securities and Exchange Commission, or the Commission, on February 8, 2021, and that was declared effective by the Commission on February 16, 2021.

This document consists of two parts. The first part is this prospectus supplement, which describes the specific terms of this offering and also adds to and updates information contained in the accompanying prospectus and the documents incorporated by reference herein. The second part, the accompanying prospectus, provides more general information, some of which may not apply to this offering. Generally, when we refer to this prospectus, we are referring to both parts of this document combined. To the extent there is a conflict between the information contained in this prospectus supplement, on the one hand, and the information contained in the accompanying prospectus or in any document incorporated by reference therein filed prior to the date of this prospectus supplement, you should rely on the information in this prospectus supplement, on the other hand. If any statement in one of these documents is inconsistent with a statement in another document having a later date—for example, a document incorporated by reference in the accompanying prospectus—the statement in the document having the later date modifies or supersedes the earlier statement.

You should read this prospectus supplement, the accompanying prospectus and the documents incorporated by reference herein and therein, before making your investment decision. You should also read and consider the information in the documents to which we have referred you in the sections of this prospectus supplement entitled “Where You Can Find More Information” and “Incorporation of Certain Information by Reference.”

We further note that the representations, warranties and covenants made by us in any agreement that is filed as an exhibit to any document that is incorporated by reference in this prospectus supplement or the accompanying prospectus were made solely for the benefit of the parties to such agreement, including, in some cases, for the purpose of allocating risk among the parties to such agreements, and should not be deemed to be a representation, warranty or covenant to you. Moreover, such representations, warranties or covenants were accurate only as of the date when made. Accordingly, such representations, warranties and covenants should not be relied on as accurately representing the current state of our affairs.

We are offering to sell, and seeking offers to buy, the securities offered by this prospectus supplement only in jurisdictions where offers and sales are permitted. The distribution of this prospectus supplement and the accompanying prospectus and the offering of the securities offered by this prospectus supplement in certain jurisdictions may be restricted by law. Persons outside the United States who come into possession of this prospectus supplement and the accompanying prospectus must inform themselves about, and observe any restrictions relating to, the offering of the common stock and the distribution of this prospectus supplement and the accompanying prospectus outside the United States. This prospectus supplement and the accompanying prospectus do not constitute, and may not be used in connection with, an offer to sell, or a solicitation of an offer to buy, any securities offered by this prospectus supplement and the accompanying prospectus by any person in any jurisdiction in which it is unlawful for such person to make such an offer or solicitation.

You should rely only on the information contained in this prospectus supplement or the accompanying prospectus, or incorporated by reference herein. We have not, and the placement agent has not, authorized anyone to provide you with information that is different. The information contained in this prospectus supplement or the accompanying prospectus, or incorporated by reference herein or therein is accurate only as of the respective dates thereof, regardless of the time of delivery of this prospectus supplement and the accompanying prospectus or of any sale of our securities.

References in this prospectus supplement to “Navidea,” the “Company,” “we,” “us,” “our,” or similar references refer to Navidea Biopharmaceuticals, Inc., a Delaware corporation, and its subsidiaries taken as a whole, except where the context otherwise requires or as otherwise indicated.

PROSPECTUS SUPPLEMENT SUMMARY

This summary highlights selected information about us, this offering and information appearing elsewhere in this prospectus supplement, in the accompanying prospectus and in the documents incorporated by reference herein and therein. This summary is not complete and does not contain all the information you should consider before investing in our securities pursuant to this prospectus supplement and the accompanying prospectus. Before making an investment decision, to fully understand this offering and its consequences to you, you should carefully read this entire prospectus supplement and the accompanying prospectus, including "Risk Factors," the financial statements, and related notes, and the other information incorporated by reference herein and therein.

Overview

The Company

Navidea Biopharmaceuticals, Inc., a Delaware corporation (NYSE American: NAVB), is a biopharmaceutical company focused on the development and commercialization of precision immunodiagnostic agents and immunotherapeutics. Navidea is developing multiple precision-targeted products based on our Manocept platform to enhance patient care by identifying the sites and pathways of undetected disease and enable better diagnostic accuracy, clinical decision-making and targeted treatment.

Navidea's Manocept platform is predicated on the ability to specifically target the CD206 mannose receptor expressed on activated macrophages. The Manocept platform serves as the molecular backbone of Tc99m tilmanocept, the first product developed and commercialized by Navidea based on the platform. Other than Tc99m tilmanocept, which the Company has a license to distribute outside of Canada, Mexico and the United States, none of the Company's drug product candidates have been approved for sale in any market.

Our business is focused on two primary types of drug products: (i) diagnostic substances, including Tc99m tilmanocept and other diagnostic applications of our Manocept platform, and (ii) therapeutic development programs, including therapeutic applications of our Manocept platform.

Technology and Product Candidates

Our primary development efforts over the last several years were focused on diagnostic products, including Tc99m tilmanocept, which the Company has a license to distribute outside of Canada, Mexico and the United States. Our more recent initiatives have been focused on diagnostic and therapeutic line extensions based on our Manocept platform.

During the ongoing COVID-19 global pandemic, the Company's primary concern is the safety of its employees, the employees of its clinical trial sites, and the patients enrolled in its clinical trials. The Company is working hard to mitigate any safety risk along with any long-term impact on its clinical development programs. We do not believe there has been a significant impact to the Company's clinical development and regulatory timelines resulting from the ongoing COVID-19 global pandemic. However, the COVID-19 outbreak delayed enrollment in our NAV3-32 clinical study in the United Kingdom due to national COVID-19-related shutdowns. In addition, the regulatory approval process in India was delayed by the impact of COVID-19 in that country.

As a brief overview of recent developments in the Company's diagnostics area (additional details in following sections), Navidea has completed the Phase 2b clinical trial (NAV3-31) evaluating imaging repeatability, reproducibility, and stability, as well as the capacity of Tc99m tilmanocept imaging to serve as an early predictor of treatment efficacy of anti-tumor necrosis factor alpha ("TNF α ") therapy in patients with moderate to severe Rheumatoid Arthritis ("RA"). In addition, the Company has completed enrollment into a Phase 2b clinical trial (NAV3-35) designed to accrue hand and wrist planar and single photon emission computed tomography/computed tomography ("SPECT/CT") images from healthy subjects (with SPECT/CT imaging also done on a small group of RA patients) so that Navidea can complete a normative database in support of its RA imaging commercial product development. The Company's currently enrolling pivotal Phase 3 trial for RA (NAV3-33) is the next step in the development plan for indications in RA. The additional Phase 2b trial (NAV3-32) correlating Tc99m tilmanocept uptake in RA-involved joints with CD206 immunohistochemistry findings from synovial biopsies is actively recruiting. In addition, the investigator-initiated Phase 2 cardiovascular ("CV") study was completed at Massachusetts General Hospital and a manuscript has been published by the investigators. Results of this study provided to date have paralleled data in our earlier published article, and these data are supportive of Navidea's hypothesis that tilmanocept can provide marked signal to background in a host of CV disease applications.

Manocept Platform - Diagnostics and Therapeutics Background

Navidea's Manocept platform is predicated on the ability to specifically target the mannose receptor (CD206) expressed primarily on activated macrophages. This flexible and versatile platform serves as a molecular backbone for purpose-built targeted imaging molecules that may significantly impact patient care by providing enhanced diagnostic accuracy, clinical decision-making, and target-specific treatment. This CD206-targeted drug platform is applicable to a range of diagnostic modalities, including SPECT, positron emission tomography ("PET"), gamma-scanning and intra-operative and/or optical-fluorescence detection, as well as delivery of therapeutic compounds that target macrophages and their role in a variety of immune- and inflammation-involved diseases. The United States Food and Drug Administration ("FDA")-approved sentinel node/lymphatic mapping agent, Tc99m tilmanocept, is representative of the ability to successfully exploit this mechanism to develop powerful new products and to expand this technology into additional diagnostic and therapeutic applications.

Activated macrophages play important roles in many disease states and are an emerging target in many diseases where diagnostic uncertainty exists. Impairment of the macrophage-driven disease mechanisms is an area of increasing and proven focus in medicine. The number of people affected by all the inflammatory diseases combined is estimated at more than 40 million in the United States and up to 700 million worldwide, making macrophage-mediated diseases an area of remarkable clinical importance. There are many recognized disorders having macrophage involvement, including RA, atherosclerosis/vulnerable plaque/cardiovascular disease, nonalcoholic steatohepatitis ("NASH"), inflammatory bowel disease ("IBD"), systemic lupus erythematosus, cancer generally including Kaposi's sarcoma ("KS"), leishmaniasis, and others that span general clinical areas in cancer immunology, autoimmunity, infectious diseases, cardiology, central nervous system diseases, and inflammation. For the near term, we have selected target diseases that may, if successfully developed, benefit from this technology.

The Company has developed processes for producing the first four therapeutic Manocept immuno-construct series, the Manocept doxorubicin ("MAN-DOX") series, which is designed to specifically target and kill or modify activated CD206+ macrophages by delivering doxorubicin, a Manocept paclitaxel series ("MAN-PAC"), and a Manocept Bisphosphonate series ("MAN-BIS"). The MAN-PAC and MAD-BIS series are designed to modify CD206+ macrophages to make them more proinflammatory. The Company has also created a Manocept dexamethasone ("MAN-DEX") series, which is designed to inhibit the inflammatory activity of activated CD206+ macrophages by delivering a potent anti-inflammatory agent, dexamethasone. We have expended significant efforts in recent years to improve chemical syntheses and to produce sufficient quantities of Manocept constructs representing all 4 series agents, along with the concomitant analytical standards, to provide material for current and planned preclinical animal studies and future clinical trials. Evaluation of representative examples of constructs from all four series have been successfully performed in human macrophage cell culture assays with MAN-DOX and MAN-PAC advancing to evaluations in various syngeneic mouse models of cancer.

Rheumatoid Arthritis

Two Tc99m tilmanocept dose escalation studies in RA have been completed. The first study was completed and included 18 subjects (nine with active disease and nine healthy subjects) dosed subcutaneously (“SC”) with 50 and 200 µg/2mCi Tc99m tilmanocept (ClinicalTrials.gov NCT02683421). The results of this study were presented at five international meetings, including Biotechnology Innovation Organization, Society of Nuclear Medicine and Molecular Imaging (“SNMMI”), and The American College of Rheumatology (“ACR”). In addition, based on completion of extensive preclinical dosing studies pursuant to our dialog with the FDA, we have completed a Phase 1/2 study involving intravenous (“IV”) dosing of 39 subjects with IV-administered Tc99m tilmanocept (ClinicalTrials.gov NCT02865434). In conjunction with this study, we completed pharmacokinetic, pharmacodynamics and radiation dosimetry phases in human subjects as well. The majority of the costs of these studies were supported through a Small Business Innovation Research (“SBIR”) grant (NIH/NIAMSD Grant 1 R44 AR067583-01A1). Results of the Phase 1/2 study were presented at the June 2018 and June 2019 SNMMI meetings, the 2018 European League Against Rheumatism (“EULAR”) meeting and the 2018 ACR meeting. A manuscript intended for peer reviewed publication is in preparation.

The Phase 1/2 study enrolled subjects with active, moderate-to-severe RA, and healthy controls. Results from the completed trial demonstrated that Tc99m tilmanocept is well-tolerated with no serious adverse events, adverse drug reactions, or drug-related adverse events observed. Additionally, static planar images revealed joint-specific Tc99m tilmanocept localization in RA subjects to disease-involved joints of the shoulders, knees, hands, and feet, but no joint-specific localization in healthy control subjects, revealing potentially significant immunodiagnostic information about CD206-expressing synovial macrophage involvement in RA. An optimal imaging time window post-Tc99m tilmanocept IV administration, as well as optimal dosing, were also determined.

In April 2019, the Company received feedback from the FDA regarding the Company’s planned clinical studies to evaluate joint disease in patients with RA and monitor patient response to therapy. The Company’s proposed RA studies were discussed with the FDA during an in-person meeting and through follow-up collaborative efforts. The FDA communicated that the first study, a Phase 2b trial, was aligned with expectations for the studies and that they would continue to work with Navidea as the Company progressed into the second Phase 2b trial correlating Tc99m tilmanocept uptake in RA-involved joints with CD206 immunohistochemistry findings from synovial biopsies and into the planned Phase 3 clinical trial.

In May 2019, we began enrolling patients into the first Phase 2b study, (NAV3-31), entitled “Evaluation of the Precision and Sensitivity of Tilmanocept Uptake Value (“TUV”) on Tc99m Tilmanocept Planar Imaging” (ClinicalTrials.gov NCT03938636). This study, since completed, provided confirmatory support necessary to initiate Navidea’s Phase 3 study program. In October 2019, the Company performed its first interim analysis of this trial, covering subjects enrolling into Arms 1 and 2. The results of this interim analysis were in line with the Company’s hypotheses that Tc99m tilmanocept can provide robust, stable imaging in healthy subjects as well as in patients with active RA, and provide the fundamental information needed to keep moving forward into the Phase 3. A summary of these results was presented at the 2020 EULAR meeting. In May 2020, the Company announced the results of its second interim analysis, covering Arm 3 of the trial. This Arm mirrored the Phase 3 in design and provided information relevant for sample size calculation for the Phase 3 as well as support for the hypothesis that Tc99m tilmanocept imaging can provide an early indicator of treatment efficacy of anti-TNFα therapeutics. These interim results were presented at the 2020 ACR meeting. In June 2020, the Company announced full enrollment into this trial, with imaging events completed in each patient enrolled in Arm 3. A poster presentation based on the completed NAV3-31 study was presented at the 2022 ACR meeting. The Company also presented interim results of its NAV3-32 study at the 2022 ACR meeting.

In February 2021, the Company submitted its formal briefing book to the FDA, containing detailed analysis and discussion of the Company's then-ongoing Phase 2b study (NAV3-31) and prior studies in RA as well as the design and statistical analysis plan for the proposed Phase 3 for FDA comment. Following the feedback received from the FDA at the end of March 2021, the Company continued to work toward completing the analysis of the full NAV3-31 trial dataset and submitted the resultant briefing book containing the results of this analysis in preparation for the standard End-of-Phase 2 Type B meeting, which took place on September 1, 2021. The Company had a constructive meeting with the FDA and, based on the discussion in this meeting and follow-up communication, made agreed-upon modifications to the trial design for the Phase 3 study (NAV3-33). The Company submitted the modified protocol back to the FDA and initiated the study in December 2021. Following additional feedback from the FDA, the Company made modifications to several of the objectives. Enrollment into the Phase 3 study is ongoing. The pivotal Phase 3 study program will determine Tc99m tilmanocept's capability to serve as an early predictor of treatment response to anti-TNF α therapy in patients with RA. The current aim is for enrollment completion of the Phase 3 by end of 2023 with NDA submission targeted for late 2024 or early 2025.

Cardiovascular Disease

In collaboration with researchers at Massachusetts General Hospital, Navidea has completed two investigator-initiated clinical studies evaluating Tc99m tilmanocept's ability to enable imaging of atherosclerotic plaques. Results of these studies provide strong preliminary evidence of the potential of Tc99m tilmanocept to accumulate specifically in and enable imaging of non-calcified atherosclerotic plaques. Non-calcified atherosclerotic plaques include plaques with morphologies indicating a high risk of rupture. Rupture of such plaques causes myocardial infarctions (heart attacks) and a significant portion of ischemic strokes. The studies compared aortic Tc99m tilmanocept uptake imaged by SPECT/CT in clinically asymptomatic subjects with intermediate Framingham Risk Scores ("FRS") who were infected with Human Immunodeficiency Virus ("HIV") as compared to healthy, uninfected, FRS and age-matched subjects. Tc99m tilmanocept SPECT/CT images were compared to aortic images of the same subjects obtained by contrast enhanced coronary computed tomography angiography and/or [18F]NaF PET/CT.

A nine-subject study to evaluate diagnostic imaging of emerging atherosclerosis plaque with the Tc99m tilmanocept product dosed SC was performed (ClinicalTrials.gov NCT02542371). The results of this study were presented at two major international meetings (Conference on Retroviruses and Opportunistic Infections and SNMMI, 2017) and published in early release in the *Journal of Infectious Diseases* in January 2017 (published in the circulated version, *Journal of Infectious Diseases* (2017) 215 (8): 1264-1269), confirming that the Tc99m tilmanocept product can both quantitatively and qualitatively target non-calcified plaque in the aortic arch of Acquired Immunodeficiency Syndrome ("AIDS") patients (supported by NIH/NHLBI Grant 1 R43 HL127846-01). This study was later expanded to include up to 31 participants, achieved full enrollment, and a publication has resulted in the *Journal of Infectious Diseases* (2022) Nov 11; 226(10):1823-1833.

A second Phase 1/2 investigator-initiated study in cooperation with Massachusetts General Hospital in subjects with HIV was initiated that expanded the original study in both the scope of the drug administration as well as the diagnostic assessment of the subjects. This study enrolled both AIDS subjects and healthy controls in imaging non-calcified plaque using IV and SC-administered Tc99m tilmanocept and will expand the initial investigation to the assessment of aortic plaque as well as carotid and coronary arteries. Initial analysis suggested that the SC route of administration led to superior signal-to-background in areas of non-calcified plaque. These results are being further assessed.

Navidea was also awarded a \$225,000 phase 1 Small Business Technology Transfer grant (1R41HL147640-01A1) entitled *Gallium 68 Tilmanocept for PET Imaging of Atherosclerosis Plaques*. This grant supported a research collaboration between Navidea and Dr. Suzanne Lapi of the University of Alabama Birmingham evaluating a mouse model of atherosclerosis. This work had as its aim the evaluation of [68]gallium tilmanocept and various next generation imaging agents for visualizing plaques. Activities began in the fourth quarter of 2019. All images have been acquired with efforts now focused on final data analysis.

Kaposi's Sarcoma

We initiated and completed a study of KS in 2015 (ClinicalTrials.gov NCT022201420) and received additional funding from the National Institutes of Health ("NIH") in 2016 to continue diagnostic studies in this disease. The new support not only continues the imaging of the cutaneous form of this disease but expands this to imaging of visceral disease via IV administration of Tc99m tilmanocept (NIH/NCI 1 R44 CA192859-01A1; ClinicalTrials.gov NCT03157167). This now-escalated study includes a pathology/biopsy component as well as an imaging component to determine pathology concordance with image assessment. We received Institutional Review Board approval of the clinical protocol and initiated a Phase 1/2 clinical study in KS in 2017. This trial has completed enrollment and imaging, with final data analysis and clinical study report preparation well underway.

Tuberculosis ("TB")

In April 2019, the Company announced that Professor Mike Sathekge, MBChB, M. Med (Nuclear Medicine), PhD, Professor and Head of the Department of Nuclear Medicine in the Faculty of Health Sciences at the University of Pretoria/Steve Biko Academic Hospital, planned to initiate a comparative study evaluating the use of tilmanocept in patients with TB. The purpose of this ongoing study is to explore using 68Ga tilmanocept as an aid in TB patient management while contributing to the better understanding of the biology of TB granulomas. CD206+ macrophages constitute one of the most abundant cell types in TB granulomas. Therefore, a molecular probe such as 68Ga-labeled tilmanocept targeting mannose receptor CD206 expressed on macrophages holds great promise not only in understanding the biology of TB granulomas, but may also support future development of a tilmanocept-like drug delivery vehicle for delivering therapeutic interventions to TB granulomas. Navidea has provided tilmanocept for use in this study, and several subjects have been injected and imaged to date. Successful completion of this study could support an extended claim of 68Ga-tilmanocept.

Biomarker Application and Qualification

In November 2017, the Company commenced the qualification of the biomarker CD206 with the FDA Biomarker Section of The Center for Drug Evaluation and Research ("CDER"). As per FDA protocol, Navidea submitted a draft letter of intent ("LOI") to CDER prior to the November 2017 meeting. According to the CDER directive, "the Biomarker Qualification Program was established to support the CDER's work with external stakeholders to develop biomarkers that aid in the drug development process. Through the FDA's Biomarker Qualification Program, an entity may request regulatory qualification of a biomarker for a particular context of use ("COU") in drug development." Following the meeting with the FDA, and because of Navidea's data sets and the general external publication database, Navidea, in conjunction with FDA, is now reviewing the LOI with the FDA's recommended consultants. Navidea has revised the LOI draft strategy in order to expedite the application process. In March 2018, Navidea had a follow-up meeting with the FDA's assigned strategist, during which the potential to further narrow the LOI elements was reviewed. Navidea is continuing the process of finalizing the COU LOI and will be providing the background data sets for qualification review with the FDA/CDER. Additional meetings have taken place and the pursuit of this qualification is ongoing. A pivotal element of this will be the data obtained from the NAV3-32 clinical trial.

Manocept Platform – In-Vitro and Pre-Clinical Immunotherapeutics Data

The Company has been developing Manocept platform drug delivery constructs that carry various payloads. Chemical synthesis techniques have advanced considerably, resulting in more robust and reproducible synthesis protocols that provide products with chemical attributes indicative of enhanced in vivo activity. Particularly significant results included improved processes for adding mannose moieties to the amine-terminated linkers on the dextran backbone and significant advances in the design and functionality of the degradable linkers to which drug payloads are attached. These advances in chemical methods are the subject matter of several patent applications currently under review by the USPTO. Experiments utilizing human macrophage assays show that at treatment doses of MAN-DOX, MAN-PAC, and MAN-BIS below what is required to kill macrophages, all three construct series dramatically alter the immunological behavior of macrophages, making them more proinflammatory. Results indicate that MAN-BIS and MAN-PAC constructs are more active at altering macrophage behavior towards a proinflammatory status than MAN-DOX. In syngeneic mouse tumor experiments, the MAN-DOX and MAN-PAC constructs significantly synergized the activity of another anticancer therapy producing anti-tumor activity that was greater than either treatment alone. Consistent with the macrophage cell assay results, MAN-PAC was more active than MAN-DOX in synergizing the activity of the other anti-cancer therapy. Similar studies evaluating the MAD-BIS constructs in syngeneic mouse tumor models are pending. Results from the completed studies have been presented at the New York Academy of Sciences Frontiers in Cancer Immunotherapy 2021 (MAN-DOX, May 14, 2021), at the Tumor Myeloid-Directed Therapies Summit (MAN-BIS, June 2022), and at the Society for Immunotherapy of Cancer (SITC) (MAN-PAC, Nov. 10, 2022). Work involving a second generation Manocept dexamethasone-carrying construct (MAN-DEX) has progressed to evaluations in human macrophage culture assays, showing that the MAN-DEX suppressed the proinflammatory behavior of human macrophages as expected.

Kaposi's Sarcoma

The novel MAN-DOX class constructs are designed to specifically deliver doxorubicin, a chemotoxin, which can kill KS tumor cells and their tumor-associated macrophages, potentially altering the course of cancer. We received additional funding to continue therapeutic studies in this disease with the goal of completing an investigational new drug ("IND") submission for a Manocept construct (MAN-DOX class of compounds) consisting of tilmanocept linked to doxorubicin for the treatment of KS. Efforts supported by this grant (NIH/NCI 1 R44 CA206788-01) are now complete. The results greatly advanced our knowhow for robustly and reproducibly synthesizing MAN-DOX and related constructs carrying other payloads. The grant-supported efforts were presented at the New York Academy of Sciences Frontiers in Cancer Immunotherapy 2021.

Other Immunotherapeutic Applications

The Company continues to evaluate emerging data in other disease states to define areas of focus, development pathways and partnering options to capitalize on the Manocept platform, including ongoing studies in KS, RA and infectious diseases such as leishmaniasis. The immuno-inflammatory process is remarkably complex and tightly regulated with indicators that initiate, maintain and shut down the process. Macrophages are immune cells that play a critical role in the initiation, maintenance, and resolution of inflammation. They are activated and deactivated in the inflammatory process. Because macrophages may promote dysregulation that accelerates or enhances disease progression, diagnostic and therapeutic interventions that target macrophages may open new avenues for controlling inflammatory diseases. There can be no assurance that further evaluation or development will be successful, that any Manocept platform product candidate will ultimately achieve regulatory approval, or if approved, the extent to which it will achieve market acceptance.

Risks Associated with Our Business

Our business and our ability to implement our business strategy are subject to numerous risks, as more fully described in the section of this prospectus supplement entitled “Risk Factors” and under similarly titled headings of the documents incorporated herein by reference. You should read these risks before you invest in our securities. We may be unable, for many reasons, including those that are beyond our control, to implement our business strategy. In particular, risks associated with our business include:

- The global COVID-19 pandemic may continue to impact our business, financial condition or prospects, including a decline in the volume of procedures using our products, potential delays and disruptions to clinical trials, global supply chains, manufacturing activities, logistics, operations, employees and contractors, the business activities of our suppliers, distributors, customers and other business partners, as well as the effects on worldwide economies, financial markets, social institutions, labor markets and healthcare systems.
- The current conflict between Ukraine and Russia may impact our business, financial condition or prospects, including extreme volatility in the global capital markets making debt or equity financing more difficult to obtain, more costly or more dilutive, delays and disruptions of the global supply chains and the business activities of our suppliers, distributors, customers and other business partners.
- There is substantial doubt about our ability to continue as a going concern, which may affect our ability to obtain future financing and may require us to curtail our operations. We will need to raise additional capital to support our operations.
- We have incurred losses since our inception and anticipate that we will continue to incur significant losses for the foreseeable future, and our future profitability is uncertain.
- Our product candidates must undergo rigorous clinical testing, such clinical testing may fail to demonstrate safety and efficacy and any of our product candidates could cause undesirable side effects, which would substantially delay or prevent regulatory approval or commercialization.
- We are dependent on patents and proprietary technology. If we fail to adequately protect this intellectual property or if we otherwise do not have exclusivity for the marketing of our products, our ability to commercialize products could suffer.
- If our competitors are able to develop and market products that are more effective, safer or more affordable than ours, or obtain marketing approval before we do, our commercial opportunities may be limited.

Corporate Information

Our corporate headquarters are located at 4995 Bradenton Avenue, Suite 240, Dublin, Ohio 43017-3552 and our telephone number is (614) 793-7500. We maintain a website at www.navidea.com, to which we regularly post copies of our press releases as well as additional information about us. The information contained on, or that can be accessed through, our website is not a part of this prospectus. We have included our website address in this prospectus solely as an inactive textual reference.

Our annual reports on Form 10-K, quarterly reports on Form 10-Q, current reports on Form 8-K and all amendments to those reports filed or furnished pursuant to Section 13(a) or 15(d) of the Securities Exchange Act of 1934, as amended (the "Exchange Act"), are available free of charge through the investor relations page of our internet website as soon as reasonably practicable after we electronically file such material with, or furnish it to, the SEC.

THE OFFERING

Issuer	Navidea Biopharmaceuticals, Inc.
Common stock offered by us	Up to \$2,750,000 of our common stock that we may sell to Keystone under the Purchase Agreement, from time to time at our sole discretion; and 200,000 shares of our common stock, which are being issued to Keystone for no cash consideration as a fee for Keystone's execution of the Purchase Agreement (the "Commitment Shares"). We will not receive any cash proceeds from the issuance of the Commitment Shares.
Common stock to be outstanding immediately after this offering	44,509,585 shares, assuming the sale of 11,458,333 shares (which would be the full amount offered under this prospectus supplement at a price of \$0.24 per share, which was the closing price of our common stock on the NYSE American on April 26, 2023) and the issuance of 200,000 Commitment Shares. The actual number of shares issued will vary depending on the sales prices in this offering, but will not, unless prior stockholder approval is obtained, be greater than 6,567,409 shares of common stock, which number of shares is equal to 19.99% of the shares of the common stock outstanding immediately prior to the execution of the Purchase Agreement (the "Exchange Cap"), unless (i) the Company obtains stockholder approval to issue shares of common stock in excess of the Exchange Cap in accordance with applicable NYSE rules, or (ii) the price per share paid by Keystone for all of the shares of common stock purchased pursuant to the Purchase Agreement, if any, equals or exceeds the lower of (A) the official closing price of our common stock immediately preceding delivery of the purchase notice to Keystone and (B) the average of the closing sale prices of our common stock for the five (5) business days immediately preceding the delivery of the purchase notice.
Use of proceeds	We plan to use the net proceeds of this offering for working capital and general corporate purposes. See "Use of Proceeds."
Dividend policy	We have not declared or paid any cash or other dividends on our common stock, and we do not expect to declare or pay any cash or other dividends in the foreseeable future. See "Dividend Policy."
Risk factors	Investing in our securities stock involves a high degree of risk. See the section of this prospectus supplement and the accompanying prospectus entitled "Risk Factors" and the documents incorporated by reference in this prospectus supplement and the accompanying prospectus before making a decision to invest in our securities.
Listing	Our common stock is listed on the NYSE American under the symbol "NAV.B."

The number of shares of Common Stock to be outstanding immediately after this offering is based on 32,851,252 shares outstanding as of March 17, 2023 (unless otherwise indicated), and excludes, as of such date:

- 23,363,966 shares of our Common Stock issuable upon the exercise of outstanding common stock purchase warrants, having a weighted-average exercise price of \$0.54 per share.
- 1,998,705 shares of our Common Stock issuable upon the exercise of outstanding stock options, having a weighted average exercise price of \$ 0.58 per share;
- 5,124,680 shares of our Common Stock available for future grants under our 2014 Stock Incentive Plan; and
- 21,064,560 shares of our Common Stock issuable upon conversion of 9,480 shares of Series I Preferred Stock.

RISK FACTORS

Investing in our securities involves a high degree of risk. Before investing in our securities, you should carefully consider the risks described below, together with all of the other information contained in this prospectus supplement and the accompanying prospectus and incorporated by reference herein and therein, including from our most recent Annual Report on Form 10-K and other reports filed with the Commission. The risks described below are not the only ones facing our company. Additional risks and uncertainties not presently known to us or that we currently deem immaterial may also materially and adversely affect our business and operations. Any of the following risks could materially adversely affect our business, financial condition, results of operations, cash flows or prospects. In such case, you may lose all or part of your investment.

Risks Related to this Offering

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

We currently intend to use the net proceeds of this offering for working capital and general corporate purposes, including continuing to advance Phase 2b and Phase 3 clinical trials of Tc99m tilmanocept in patients with rheumatoid arthritis. We have not allocated specific amounts of the net proceeds from this offering for any specific purposes. Accordingly, our management will have broad discretion in the application of the net proceeds from this offering and could spend the proceeds in ways that do not improve our results of operations or enhance the value of our common stock. You will be relying on the judgment of our management with regard to the use of these net proceeds, and you will not have the opportunity, as part of your investment decision, to assess whether the net proceeds are being used appropriately. It is possible that the net proceeds will be invested in a way that does not yield a favorable, or any, return for us. Our failure to apply these funds effectively could have a material adverse effect on our business and cause the price of our common stock to decline.

If we sell shares of our Common Stock under the Purchase Agreement, our existing stockholders will experience immediate dilution and, as a result, our stock price may go down.

Pursuant to the Purchase Agreement, we may sell up to \$2.75 million of shares of our common stock over the term of the equity line facility at our option and subject to certain limitations and satisfaction of certain conditions. The sale of shares of our common stock pursuant to the Purchase Agreement will have a dilutive impact on our existing stockholders. Keystone may resell some or all of the shares we issue to it under the Purchase Agreement and such sales could cause the market price of our common stock to decline, which decline could be significant.

The terms of the Purchase Agreement limit the amount of shares of common stock we may issue to Keystone, which may limit our ability to utilize the arrangement to enhance our cash resources.

The Purchase Agreement includes restrictions on our ability to sell shares of our common stock to Keystone, including, subject to specified limitations, (x) if a sale would cause us to issue, in the aggregate, a number of shares greater 19.99% of our outstanding common stock immediately prior to the execution of the Purchase Agreement, or the Exchange Cap, or (y) if a sale would cause Keystone and its affiliates to beneficially own more than 4.99% of our issued and outstanding common stock, or the Beneficial Ownership Cap. Accordingly, we cannot guarantee that we will be able to sell all \$2.75 million of shares of common stock in this offering. If we cannot sell the full amount of the shares that Keystone has committed to purchase because of these limitations, we may be required to utilize more costly and time-consuming means of accessing the capital markets, which could materially adversely affect our liquidity and cash position.

You may experience future dilution as a result of future equity offerings.

In order to raise additional capital, we expect to in the future offer additional shares of our common stock or other securities convertible into or exchangeable for our common stock. We cannot assure you that we will be able to sell shares or other securities in any other offering at a price per share that is equal to or greater than the price per share paid by investors in this offering, and investors purchasing shares or other securities in the future could have rights superior to existing stockholders. The price per share at which we sell additional shares of our common stock or other securities convertible into or exchangeable for our common stock in future transactions may be higher or lower than the price per share in this offering.

SPECIAL NOTE REGARDING FORWARD-LOOKING STATEMENTS

The Private Securities Litigation Reform Act of 1995 (the “PSLRA”) provides a safe harbor for forward-looking statements made by or on behalf of the Company. Statements in this document which relate to other than strictly historical facts, such as statements about the Company’s plans and strategies, expectations for future financial performance, new and existing products and technologies, anticipated clinical and regulatory pathways, the ability to obtain, and timing of, regulatory approvals of the Company’s products, the timing and anticipated results of commercialization efforts, and anticipated markets for the Company’s products, are forward-looking statements within the meaning of the PSLRA. The words “anticipate,” “believe,” “estimate,” “expect,” “future,” “intend,” “plan,” “project,” and similar expressions identify forward-looking statements that speak only as of the date hereof. Investors are cautioned that such statements involve risks and uncertainties that could cause actual results to differ materially from historical or anticipated results due to many factors including, but not limited to, our history of operating losses and uncertainty of future profitability, accumulated deficit, future capital needs, the outcome of any pending litigation, uncertainty of capital funding, dependence on royalties and grant revenue, limited product line and distribution channels, competition, risks of development of new products, our ability to maintain effective control over financial reporting, our ability to comply with NYSE American continued listing standards, and other risks set forth in our Form 10-K under Item 1A, “Risk Factors” and beginning on page S-13 of this prospectus supplement. Navidea undertakes no obligation to publicly update or revise any forward-looking statements. Forward-looking statements include, but are not limited to, statements about:

- the impact of the global COVID-19 pandemic on our business, financial condition or prospects, including a decline in the volume of procedures using our products, potential delays and disruptions to global supply chains, manufacturing activities, logistics, operations, employees and contractors, the business activities of our suppliers, distributors, customers and other business partners, as well as the effects on worldwide economies, financial markets, social institutions, labor markets and healthcare systems;
- the impact of the current conflict between Ukraine and Russia on our business, financial condition or prospects, including extreme volatility in the global capital markets making debt or equity financing more difficult to obtain, more costly or more dilutive, delays and disruptions of the global supply chains and the business activities of our suppliers, distributors, customers and other business partners;
- our history of operating losses and uncertainty of future profitability;
- our ability to successfully complete research and further development of our drug candidates;

- the timing, cost and uncertainty of obtaining regulatory approvals of our drug candidates, including delays and additional costs related to the ongoing COVID-19 pandemic and/or the current Russia-Ukraine conflict;
- our ability to successfully commercialize our drug candidates, including delays or disruptions related to the ongoing COVID-19 pandemic and/or the current Russia-Ukraine conflict;
- our ability to raise capital sufficient to fund our development programs, including unavailability of funds or delays in receiving funds as a result of the ongoing COVID-19 pandemic and/or the current Russia-Ukraine conflict;
- delays in receipt of anticipated proceeds from our capital funding transactions and other receivables;
- our dependence on royalties and grant revenue;
- our limited product line and distribution channels;
- advances in technologies and development of new competitive products;
- our ability to maintain effective control over financial reporting;
- the outcome of any pending litigation;
- our ability to comply or regain compliance with NYSE American continued listing standards; and
- other risk factors set forth in this report and detailed in our most recent Annual Report on Form 10-K and other Securities and Exchange Commission (“SEC”) filings.

You should carefully read this prospectus, the documents that we incorporate by reference into this prospectus and the documents we reference in this prospectus and have filed as exhibits to the registration statement, of which this prospectus is a part, completely and with the understanding that our actual future results may be materially different from what we expect. We qualify all of the forward-looking statements in this prospectus by these cautionary statements.

Except as required by law, we assume no obligation to update these forward-looking statements publicly, or to update the reasons actual results could differ materially from those anticipated in any forward-looking statements, whether as a result of new information, future events or otherwise.

USE OF PROCEEDS

The proceeds, if any, from this offering will vary depending on the number of shares we offer and the offering price per share. We may receive gross proceeds of up to \$2,750,000 over the term of the Purchase Agreement. We may sell fewer than all of the shares offered by this prospectus supplement, in which case our net offering proceeds will be less, and we may raise less than the maximum \$2,750,000 in gross offering proceeds permitted by this prospectus supplement.

We currently intend to use the net proceeds from the sale of any securities offered under this prospectus supplement for working and general corporate purposes, including the costs of our Phase 2b and Phase 3 clinical trials of Tc99m tilmanocept in patients with rheumatoid arthritis.

However, we have not allocated specific amounts of the net proceeds from this offering for any specific purposes and our management will have broad discretion in the application of the net proceeds from this offering and could spend the proceeds in ways that do not improve our results of operations or enhance the value of our common stock. The amounts and timing of our actual expenditures will depend upon numerous factors, including the progress in and costs of our ongoing clinical trials and our ability to obtain additional funding. We may find it necessary or advisable to use portions of the proceeds from this offering for other purposes. Until we use the net proceeds of this offering, we intend to hold such funds in cash or invest the funds in short-term investment grade, marketable securities.

KEYSTONE TRANSACTION

General

On April 26, 2023, we entered into the Purchase Agreement with Keystone, pursuant to which Keystone has agreed to purchase from us, at our discretion from time to time, up to \$2,750,000 of shares of our common stock, upon the terms and subject to the conditions and limitations contained in the Purchase Agreement. Terms not defined in this section have the meanings given to them in the Purchase Agreement.

Concurrently with entering into the Purchase Agreement, we also entered into a registration rights agreement with Keystone, pursuant to which we agreed to provide Keystone with certain registration rights related to the shares issued under the Purchase Agreement (the "Registration Rights Agreement").

Under the Purchase Agreement, we have agreed to issue to Keystone 400,000 shares of common stock as commitment shares (the "Commitment Shares") for its commitment to purchase our shares of common stock under the Purchase Agreement. We are issuing 200,000 Commitment Shares on the date of this prospectus supplement and the remaining 200,000 Commitment Shares at the time we raise a minimum of \$2,750,000 under the Purchase Agreement or any other financing source.

We may, from time to time and at our sole discretion, direct Keystone to purchase shares of our common stock upon the satisfaction of certain conditions set forth in the Purchase Agreement at a purchase price per share based on the market price of our common stock at the time of sale as computed under the Purchase Agreement. We will control the timing and amount of any sales of our common stock to Keystone, and Keystone has no right to require us to sell any shares to it under the Purchase Agreement. Keystone may not assign or transfer its rights and obligations under the Purchase Agreement.

Under applicable NYSE American rules, in no event may we issue to Keystone under the Purchase Agreement more than 6,567,409 shares of our common stock, which represents 19.99% of the shares of our common stock outstanding immediately prior to the execution of the Purchase Agreement (the "Exchange Cap"), unless (i) we obtain stockholder approval to issue shares of our common stock in excess of the Exchange Cap in accordance with applicable NYSE American rules, or (ii) the price per share paid by Keystone for all of the shares of our common stock purchased from us pursuant to the Purchase Agreement, if any, equals or exceeds the lower of (A) the official closing price of our common stock immediately preceding delivery of the purchase notice to Keystone and (B) the average of the closing sale prices of our common stock for the five (5) business days immediately preceding the delivery of the purchase notice.

The Purchase Agreement prohibits us from issuing or selling any shares of our common stock to Keystone if those shares, when aggregated with all other shares of our common stock then beneficially owned by Keystone and its affiliates (as calculated pursuant to Section 13(d) of the Securities Exchange Act of 1934, as amended, and Rule 13d-3 promulgated thereunder), would result in Keystone beneficially owning more than 4.99% of the outstanding shares of our common stock ("Beneficial Ownership Limitation").

Purchase of Shares

Under the Purchase Agreement, we may, at our discretion, from time to time from and after the Commencement Date, direct Keystone to purchase (a "Fixed Purchase") up to \$50,000 on any trading day on which the closing sale price of our common stock is equal to or greater than \$0.20 per share on the NYSE American.

In addition to Fixed Purchases, and provided that we have directed Keystone to purchase the maximum allowable amount of shares of our common stock in a Fixed Purchase, we also may, at our discretion, from time to time from and after the Commencement Date, direct Keystone to purchase additional shares of our common stock on the trading day immediately following the purchase date for such Fixed Purchase (each, a "VWAP Purchase") and, under certain circumstances set forth in the Purchase Agreement, direct Keystone to purchase additional shares of our common stock on the same trading day as such VWAP Purchase (each, an "Additional VWAP Purchase"), in each case upon the terms and subject to the conditions set forth in the Purchase Agreement. We refer to the Fixed Purchase, the VWAP Purchase and the Additional VWAP Purchase, collectively as a "Purchase".

There is no upper limit on the price per share that Keystone may be obligated to pay for our common stock in any of the Purchases. The purchase price per share for each Purchase is as follows:

- Fixed Purchase - the lesser of 90% (i) of the daily volume weighted average price of our common stock on the NYSE American, as reported by Bloomberg Financial LP using the AQR function for the five trading days immediately preceding the applicable date for such Fixed Purchase and (ii) of the closing sale price of a share of our common stock on the applicable date for such Fixed Purchase during the full trading day on the NYSE American on such applicable purchase date.
- VWAP Purchase - the lesser of 90% (i) of the closing sale price of our common stock on the date of the applicable VWAP Purchase and (ii) the VWAP during the applicable VWAP Purchase Period as defined under the Purchase Agreement.
- Additional VWAP Purchase - 90% of the lower of (i) the VWAP for the applicable Additional VWAP Purchase Period as defined under the Purchase Agreement during the applicable Additional VWAP purchase date for such Additional VWAP Purchase, and (ii) the closing sale price of our common stock on such applicable date of Additional VWAP Purchase for such Additional VWAP Purchase.

Each Purchase has a maximum number of shares that may be purchased for each applicable purchase period:

- Fixed Purchase - may not exceed \$50,000.
- All Purchases combined - Keystone's maximum purchase commitment in any single VWAP Purchase, together with all Additional VWAP Purchases that are effected on the same trading day as such VWAP Purchase, may not exceed \$1,000,000 in the aggregate for such VWAP Purchase and Additional VWAP Purchases.
- VWAP Purchase - lesser of (i) 300% of the number of shares directed by us to be purchased Keystone pursuant to the corresponding Fixed Purchase and (ii) 30% of the trading volume in our common stock on the NYSE American during the applicable VWAP Purchase Period.
- Additional VWAP Purchase - lesser of (i) 300% of the number of shares directed by us to be purchased by Keystone pursuant to the corresponding Fixed Purchase and (ii) a number of shares equal to (A) 30% multiplied by (B) the trading volume of shares of our common stock during the applicable Additional VWAP Purchase Period.

Conditions to Commencement and for Delivery of Fixed Purchase Notices

Our ability to deliver Purchase notices to Keystone under the Purchase Agreement is subject to the satisfaction, both at the time of Commencement and at the time of delivery by the Company of the applicable Purchase notice to Keystone, of certain conditions, including the following:

- the accuracy in all material respects of our representations and warranties included in the Purchase Agreement;
- the Company having performed, satisfied and complied in all material respects with all covenants, agreements and conditions required by the Purchase Agreement to be performed, satisfied or complied with by the Company;
- the registration statement to which this prospectus supplement relates remains effective under the Securities Act;
- the Commission shall not have issued any stop order suspending the effectiveness of the registration statement to which this prospectus supplement relates or prohibiting or suspending the use of this prospectus supplement;
- there shall not have occurred any event and there shall not exist any condition or state of facts, which makes any statement of a material fact made in this prospectus supplement untrue or which requires the making of any additions to or changes to the statements contained herein in order to state a material fact required by the Securities Act to be stated therein or necessary in order to make the statements then made herein not misleading;
- this prospectus supplement, in final form, shall have been filed with the SEC under the Securities Act in accordance with Rule 424(b) under the Securities Act, and all reports, schedules, registrations, forms, statements, information and other documents required to have been filed by the Company with the Commission pursuant to the reporting requirements of the Securities Exchange Act of 1934, as amended (the "Exchange Act"), shall have been filed with the Commission;
- trading in our common stock shall not have been suspended by the Commission or the NYSE American, the Company shall not have received any final and non-appealable notice that the listing or quotation of its common stock on the NYSE American shall be terminated on a date certain (unless, prior to such date, the common stock is listed or quoted on any other Eligible Market, as such term is defined in the Purchase Agreement), and there shall be no suspension of, or restriction on, accepting additional deposits of the common stock, electronic trading or book-entry services by DTC with respect to the common stock;
- the Company shall have complied in all material respects with all applicable federal, state and local governmental laws, rules, regulations and ordinances in connection with the execution, delivery and performance of the Purchase Agreement and the Registration Rights Agreement;
- the absence of any statute, regulation, order, decree, writ, ruling or injunction by any court or governmental authority of competent jurisdiction which prohibits the consummation of or that would materially modify or delay any of the transactions contemplated by the Purchase Agreement or the Registration Rights Agreement;
- the absence of any action, suit or proceeding before any arbitrator or any court or governmental authority seeking to restrain, prevent or change the transactions contemplated by the Purchase Agreement or the Registration Rights Agreement, or seeking material damages in connection with such transactions;

- all of the shares of our common stock that may be issued pursuant to the Purchase Agreement shall have been approved for listing or quotation on the NYSE American (or any Eligible Market as defined in the Purchase Agreement), subject only to notice of issuance;
- no condition, occurrence, state of facts or event constituting a Material Adverse Effect (as defined in the Purchase Agreement) shall have occurred and be continuing;
- the absence of any bankruptcy proceeding against the Company commenced by a third party, and the Company shall not have commenced a voluntary bankruptcy proceeding, consented to the entry of an order for relief against it in an involuntary bankruptcy case, consented to the appointment of a custodian of the Company or for all or substantially all of its property in any bankruptcy proceeding, or made a general assignment for the benefit of its creditors; and
- the receipt by Keystone of the opinions, bring-down opinions and negative assurances from outside counsel to the Company in the forms mutually agreed to by the Company and Keystone prior to the date of the Purchase Agreement.

Termination of the Purchase Agreement

Unless earlier terminated as provided in the Purchase Agreement, the Purchase Agreement will terminate automatically on the earliest to occur of:

- the expiration of the registration statement pursuant to Rule 415(a)(5) of the Securities Act;
- the date on which Keystone shall have purchased an aggregate of 6,567,409 shares of our common stock pursuant to the Purchase Agreement;
- the date on which Keystone shall have purchased an aggregate of \$2,750,000 of shares of our common stock;
- the date on which our common stock shall have failed to be listed or quoted on the NYSE American or any other Eligible Market;
- the 30th trading next following the date on which the Company commences a voluntary bankruptcy case or any third party commences a bankruptcy proceeding against the Company; and
- the date on which a custodian is appointed for the Company in a bankruptcy proceeding for all or substantially all of its property, or the Company makes a general assignment for the benefit of its creditors.

We have the right to terminate the Purchase Agreement at any time after Commencement, at no cost or penalty (subject to the issuance of the applicable Commitment Shares and payment of all required fees to Keystone's counsel), upon one trading day's prior written notice to Keystone.

Keystone may terminate the Purchase Agreement effective upon ten trading days' prior written notice to us if:

- any condition, occurrence, state of facts or event constituting a Material Adverse Effect (as defined in the Purchase Agreement) has occurred and is continuing;
- a Fundamental Transaction (as defined in the Purchase Agreement) shall have occurred;

- the effectiveness of the registration statement to which this prospectus supplement relates, or any post-effective amendment thereto, lapses for any reason (including, without limitation, the issuance of a stop order by the SEC) or the registration statement or any post-effective amendment thereto, or any prospectus supplement otherwise becomes unavailable to Keystone for the sale of all of the securities included therein, and such lapse or unavailability continues for a period of 20 consecutive trading days, other than due to acts of Keystone;
- trading in our common stock on The NYSE American (or if our common stock is then listed on an Eligible Market, trading in our common stock on such Eligible Market) shall have been suspended and such suspension continues for a period of three consecutive trading days; or
- we are in material breach or default of the Purchase Agreement, and, if such breach or default is capable of being cured, such breach or default is not cured within 10 trading days after notice of such breach or default is delivered to us.

No Short-Selling or Hedging by Keystone

Keystone has agreed that neither it nor any of its affiliates shall engage in any direct or indirect short-selling or hedging of our common stock during any time prior to the termination of the Purchase Agreement.

Effect of Performance of the Purchase Agreement on our Stockholders

All shares registered in this offering that may be issued and sold by us to Keystone under the Purchase Agreement are expected to be freely tradable. Unless the Purchase Agreement is earlier terminated, shares registered in this offering may be sold over a period until the expiration of the registration statement of which this prospectus supplement and accompanying prospectus forms a part. The sale by Keystone of a significant amount of shares registered in this offering at any given time could cause the market price of our common stock to decline and to be highly volatile. Sales of our common stock to Keystone, if any, will depend upon market conditions and other factors to be determined by us, in our sole discretion. We may ultimately decide to sell to Keystone all, some or none of the additional shares of our common stock that may be available for us to sell pursuant to the Purchase Agreement. If and when we do sell shares to Keystone, after Keystone has acquired the shares, Keystone may resell all, some or none of those shares at any time or from time to time in its discretion. Therefore, sales to Keystone by us under the Purchase Agreement may result in substantial dilution to the interests of other holders of our common stock.

In addition, if we sell a substantial number of shares to Keystone under the Purchase Agreement, or if investors expect that we will do so, the actual sales of shares or the mere existence of our arrangement with Keystone may make it more difficult for us to sell equity or equity-related securities in the future at a time and at a price that we might otherwise wish to effect such sales. However, we have the right to control the timing and amount of any additional sales of our shares to Keystone and the Purchase Agreement may be terminated by us at any time at our discretion without any cost to us.

Pursuant to the terms of the Purchase Agreement, we have the right, but not the obligation, to direct Keystone to purchase up to \$2,750,000 of our common stock, in addition to the Commitment Shares being issued to Keystone on the date of the prospectus supplement. The Purchase Agreement prohibits us from issuing or selling to Keystone under the Purchase Agreement shares of our common stock if those shares, when aggregated with all other shares of our common stock then beneficially owned by Keystone, would exceed the Beneficial Ownership Limitation or the Exchange Cap. The table below illustrates the potential dilutive effects of the proposed issuances to Keystone of up to \$2,750,000 of our common stock at various price points.

Assumed Average Purchase Price Per Share	Number of Registered Shares to be Issued if Full Purchase ⁽¹⁾	Percentage of Outstanding Shares After Giving Effect to the Issuance to Keystone ⁽²⁾	Gross Proceeds from the Sale of Shares to Keystone Under the Purchase Agreement
\$ 0.20	12,500,000	27.3%	\$ 2,750,000
\$ 0.24 ⁽³⁾	11,458,333	25.6%	\$ 2,750,000
\$ 0.50	5,500,000	14.2%	\$ 2,750,000
\$ 0.75	3,666,666	9.9%	\$ 2,749,999
\$ 1.00	2,750,000	7.6%	\$ 2,750,000

(1) Includes the total number of shares that we would have sold under the Purchase Agreement at the corresponding assumed average purchase price set forth in the first column, up to the aggregate purchase price of \$2,750,000, if available, without regard for the Beneficial Ownership Limitation or Exchange Cap, and excludes the Commitment Shares.

(2) The denominator is based on 32,851,252 shares outstanding as of March 17, 2023, adjusted to include the issuance of (i) 400,000 Commitment Shares to Keystone as consideration for its commitment to purchase shares of our common stock under the Purchase Agreement and (ii) the number of shares set forth in the adjacent column that we would have sold to Keystone, assuming the average purchase price in the first column. The numerator is based on the number of shares issuable under the Purchase Agreement (that are the subject of this offering) at the corresponding assumed average purchase price set forth in the first column.

(3) The closing sale price of our common stock on April 26, 2023.

DESCRIPTION OF SECURITIES

The following summary of the material terms of our securities is not intended to be a complete description of all of the rights and preferences of such securities. Because it is only a summary, it does not contain all of the information that may be important to you, and is qualified by reference to our amended and restated certificate of incorporation, as amended, our amended and restated bylaws, the certificates of designation establishing the terms of each series of our preferred stock (together, the "Certificates of Designation"), the Section 382 Rights Agreement and the form of common stock purchase warrant issued in our rights offering, which are exhibits to the registration statement to which this prospectus supplement relates. We urge you to read each of the amended and restated certificate of incorporation, amended and restated bylaws, Certificates of Designation, the Section 382 Rights Agreement and the form of common stock purchase warrant in their entirety for a complete description of the rights and preferences of our securities.

Common Stock

The material terms and provisions of our common stock are described under the caption "Description of Capital Stock" in the accompanying prospectus.

Preferred Stock

Our certificate of incorporation authorizes our board of directors to issue "blank check" preferred stock. The board of directors may divide this stock into series and set their rights. Under the terms of our certificate of incorporation, our board of directors has the authority, without further action by our stockholders, to issue up to 5,000,000 shares of preferred stock in one or more series and to determine and alter all rights, preferences, and privileges and qualifications, limitations, and restrictions thereof (including, without limitation, voting rights and the limitation and exclusion thereof), applicable to the shares of each series. The ability of our board to issue preferred stock without stockholder approval could have the effect of delaying, deferring or preventing a change of control of us or the removal of existing management.

Series G Preferred Stock

In April 2022, a series of our preferred stock was designated as Series G Redeemable Preferred Stock ("Series G preferred stock"), consisting of 3,260 designated shares.

Holders of Series G preferred stock are entitled to receive dividends commencing from July 1, 2022 at the rate of 6% per annum, compounded quarterly, of the stated value of \$1,000 per share, subject to adjustment. The Series G dividends will increase by 1% per annum every quarter to a max of 12% per annum.

In the event of our liquidation, holders of Series G preferred stock will be entitled to receive an amount equal to \$1,000 per share plus any accrued and unpaid dividends thereon (the "Series G Liquidation Preference Amount"). After payment of the full Series G Liquidation Preference Amount, holders of Series G preferred stock will not be entitled to any further participation in the assets of our company.

We have the right to redeem the Series G preferred stock at any time at a redemption price equal to the sum of the original issuance price per share and accrued and unpaid dividends.

The Series G preferred stock has no voting rights, other than the right to vote for any amendment, waiver or repeal of any of the powers, designations, preferences and rights of the Series G preferred stock.

Holders of Series G preferred stock have no conversion rights.

Series H Preferred Stock

The Series H Junior Participating Preferred Stock (“Series H preferred stock”) is reserved for issuance pursuant to the Rights Agreement (defined below). Upon issuance, each share of Series H preferred stock (i) will entitle the holder thereof, when, as and if declared, to quarterly dividend payments equal to the greater of \$1.00 per share and 1,000 times the dividend declared per share of our common stock, (ii) will entitle the holder thereof to receive the greater of \$1.00 per share (plus accrued and unpaid dividends) and 1,000 times the payment made per share of our common stock upon liquidation, and (iii) will entitle the holder thereof to receive 1,000 times the amount received per share of our common stock if shares of common stock are exchanged via merger, consolidation or a similar transaction.

Holders of our Series H preferred stock have no preemptive, subscription, redemption or conversion rights.

There are currently no shares of Series H preferred stock issued and outstanding.

Description of Rights Agreement

On April 7, 2022, we entered into a Section 382 Rights Agreement (the “Rights Agreement”) pursuant to which we issued the purchase rights. Pursuant to the Rights Agreement, our board of directors declared a dividend of one preferred share purchase right (a “Right”) for each outstanding share of our common stock to purchase from us one one-thousandth of a share of our Series H preferred stock at a price of \$10.00 per one one-thousandth of a share of Series H preferred stock, subject to adjustment. The dividend was payable to stockholders of record on April 12, 2022.

The Rights Agreement is designed to prevent our company from facing a substantial limitation on our ability to use our Tax Benefits (as such term is defined in the Rights Agreement) to offset potential future income taxes for federal income tax purposes. Our ability to use our Tax Benefits would be substantially limited if we experience an “ownership change,” as such term is defined in Section 382 of the Internal Revenue Code of 1986, as amended (the “Code”). A company generally experiences an ownership change if the percentage of its shares of stock owned by its “5-percent shareholders,” as such term is defined in Section 382 of the Code, increases by more than 50 percentage points over a rolling three-year period. The Rights Agreement is intended to reduce the likelihood of an ownership change under Section 382 of the Code by deterring any Person (as such term is defined in the Rights Agreement) or group of affiliated or associated Persons from acquiring Beneficial Ownership (as such term is defined in the Rights Agreement) of 4.99% or more of the outstanding common stock.

The following is a summary of the terms of the Rights Agreement. The summary does not purport to be complete and is qualified in its entirety by reference to the full text of the Rights Agreement.

Effectiveness. The Rights Agreement became effective on April 7, 2022 (the “Effective Date”). Upon and following the Effective Date, Rights will be issued in respect of all outstanding shares of common stock on the record date of April 12, 2022, and for all shares of common stock issued after such record date and, subject to the terms described in the Rights Agreement, prior to the earliest of the Distribution Date (as defined below), the redemption of the Rights or the expiration of the Rights as provided by the Rights Agreement.

Distribution and Transfer of Rights; Distribution Date; Rights Certificates. Subject to certain exceptions specified in the Rights Agreement, the Rights will separate from our common stock and become exercisable following the earlier of (i) 10 business days from the public announcement that a person or group of affiliated or associated persons has become an Acquiring Person (as defined below) or such earlier date on which a majority of our board becomes aware of the existence of an Acquiring Person or (ii) such date (prior to such time as any person or group of affiliated persons becomes an Acquiring Person), if any, as may be determined by action of the board, in its sole discretion, following the commencement of, or public announcement of an intention to commence, a tender or exchange offer the consummation of which would result in any person or group of affiliated or associated persons becoming an Acquiring Person (the earlier of such dates being called the “Distribution Date”). A person or group of affiliated or associated persons becomes an “Acquiring Person” upon acquiring Beneficial Ownership of 4.99% or more of the outstanding shares of common stock, except in certain situations (including a person or group of affiliated or associated persons that currently has Beneficial Ownership of the outstanding shares of common stock in excess of such thresholds unless and until such person or group becomes the Beneficial Owner of a percentage of shares of common stock outstanding that exceeds by 0.5% or more the percentage of shares of common stock outstanding that such person or group owned as of the first public announcement of the adoption of the Rights Agreement).

The Rights Agreement provides that, until the Distribution Date (or earlier redemption or expiration of the Rights), the Rights will be transferred with and only with the common stock. Until the Distribution Date (or earlier redemption or expiration of the Rights), new common stock certificates issued after the record date of April 12, 2022 upon transfer or new issuances of common stock will contain a legend incorporating the Rights Agreement by reference (and notice of such legend will be furnished to holders of book entry shares). Until the Distribution Date (or earlier redemption or expiration of the Rights), the surrender for transfer of any certificates for shares of common stock (or of any book entry shares of common stock) outstanding as of the record date of April 12, 2022, even without such legend (or notice of such legend) or a copy of the Summary of Rights, will also constitute the transfer of the Rights associated with the shares of common stock represented by such certificate (or book entry). As soon as practicable following the Distribution Date, separate certificates evidencing the Rights (“Right Certificates”) will be mailed to holders of record of the common stock as of the close of business on the Distribution Date and such separate Right Certificates alone will evidence the Rights.

The Rights are not exercisable until the Distribution Date. The Rights will expire on the earliest of (i) April 6, 2025, (ii) the effective date of the repeal of Section 382 or any successor statute if our board determines in its sole discretion that the Rights Agreement is no longer necessary or desirable for the preservation of NOLs or other tax benefits, (iii) the first day of our taxable year to which the our board determines in its sole discretion that no NOLs or other Tax Benefits may be carried forward or (iv) the day following the certification of the voting results of our 2022 annual meeting of stockholders, or any adjournment thereof, if at or before such annual meeting or adjournment thereof, a proposal to approve the Rights Agreement has not been approved by stockholders, unless the Rights are earlier redeemed or exchanged by us, in each case as described below, or upon the occurrence of certain transactions.

Exempt Persons and Transactions. The Rights Agreement includes procedures whereby our board will consider requests to exempt (a) any person or group (an “Exempt Person”) which would otherwise be an “Acquiring Person”, or (b) any transaction (an “Exempt Transaction”) resulting in the Beneficial Ownership of common stock, prior to the consummation of such transaction, from the Acquiring Person trigger, in each case as determined by our board in its sole discretion, provided that it shall only grant such an exemption if it determines in its sole discretion that such ownership would not reasonably be expected to jeopardize or endanger the availability of the NOLs or other tax benefits to our company or if it otherwise determines that the exemption is in our best interests; provided further that, (A) in the case of an Exempt Person, if our board later makes a contrary determination with respect to the effect of such person or group’s Beneficial Ownership with respect to the availability to us of our NOLs or other tax benefits, such person or group shall cease to be an Exempt Person and (B) in the case of an Exempt Person or Exempt Transaction, our board in its sole discretion may require the applicable person or group to make certain representations or undertakings, the violation or attempted violation of which will be subject to such consequences as our board may determine in its sole discretion, including that such person or group shall become an “Acquiring Person”.

Flip-In Trigger. If any person or group of affiliated or associated persons becomes an Acquiring Person, each holder of a Right (other than Rights beneficially owned by the Acquiring Person, affiliates and associates of the Acquiring Person and certain transferees thereof which will thereupon become null and void) will thereafter have the right to receive upon exercise of a Right that number of shares of common stock having a market value of two times the exercise price of the Right.

Flip-Over Trigger. If, after a person or group has become an Acquiring Person, the Company is acquired in a merger or other business combination transaction or 50% or more of its consolidated assets or earning power are sold, proper provisions will be made so that each holder of a Right (other than Rights beneficially owned by an Acquiring Person, affiliates and associates of the Acquiring Person and certain transferees thereof which will have become null and void) will thereafter have the right to receive upon the exercise of a Right that number of shares of common stock of the person with whom the Company has engaged in the foregoing transaction (or its parent) that at the time of such transaction have a market value of two times the exercise price of the Right.

Exchange. At any time after any person or group becomes an Acquiring Person and prior to the earlier of one of the events described in the previous paragraph or the acquisition by such Acquiring Person of 50% or more of the outstanding shares of common stock, our board may exchange the Rights (other than Rights owned by such Acquiring Person, affiliates and associates of the Acquiring Person and certain transferees thereof which will have become null and void), in whole or in part, for shares of our common stock at an exchange ratio of five shares of common stock per Right.

Redemption. At any time prior to the time any person or group becomes an Acquiring Person, our board may redeem the Rights in whole, but not in part, at a price of \$0.001 per Right (the “Redemption Price”) payable, at our option, in cash, shares of common stock or such other form of consideration as our board shall determine in its sole discretion. The redemption of the Rights may be made effective at such time, on such basis and with such conditions as our board in its sole discretion may establish. Immediately upon any redemption of the Rights, the right to exercise the Rights will terminate and the only right of the holders of Rights will be to receive the Redemption Price.

Series I Preferred Stock

In August 2022, a series of our preferred stock was designated as Series I Convertible Preferred Stock (“Series I preferred stock”), consisting of 150,000 designated shares. As of March 17, 2023, 9,480 shares of Series I preferred stock were outstanding, which are convertible into 21,064,560 shares of our Common Stock.

Holders of Series I preferred stock will be 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.

Upon our liquidation, dissolution or winding-up, whether voluntary or involuntary, holders of Series I preferred stock will be entitled to receive out of our assets, whether capital or surplus, the same amount that a holder of common stock would receive if the Series I preferred stock were fully converted (disregarding for such purpose any conversion limitations under the certificate of designation) to common stock, which amounts shall be paid pari passu with all holders of common stock.

We are not obligated to redeem or repurchase any shares of Series I preferred stock. Shares of Series I preferred stock are not otherwise entitled to any redemption rights, or mandatory sinking fund or analogous provisions.

Except as otherwise provided in the certificate of designation or as otherwise required by law, the Series I preferred stock has no voting rights.

Each share of Series I preferred stock will be convertible 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 I preferred stock by a conversion price of \$0.45 per share. In addition, the conversion price per share is subject to adjustment for stock dividends, distributions, subdivisions, combinations or reclassifications and for certain dilutive issuances. Subject to limited exceptions, a holder of the Series I preferred stock will not have the right to convert any portion of the Series I preferred stock to the extent that, after giving effect to the conversion, the holder, together with its affiliates, would beneficially own in excess of 4.99% of the number of shares of our common stock outstanding immediately after giving effect to its conversion. A holder of the Series I preferred stock may not increase the beneficial ownership limitation provisions of such holder's Series I preferred stock without our prior consent (which may be withheld in our sole discretion).

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 I preferred stock, the holders of the Series I 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 I preferred stock.

If, at any time while the Series I preferred stock is outstanding, we sell or grant (or announce any offer, sale or grant) of any shares of common stock or common stock equivalents entitling any person to acquire shares of our common stock at an effective price per share that is lower than the then conversion price (such lower price, the "Base Conversion Price"), then the conversion price will be reduced to equal the Base Conversion Price. The Base Conversion Price may not be less than \$0.16. In addition, no conversion price adjustment will be made in respect of the following exempt issuances (each, an "Exempt Issuance"): (i) shares of common stock or options issued to employees or directors of our company pursuant to a plan, agreement or arrangement approved by the Board; (ii) securities exercisable or exchangeable for or convertible into shares of Common Stock issued and outstanding on the date of this Certificate of Designation, provided that such securities have not been amended since the date of this Certificate of Designation to increase the number of such securities or to decrease the exercise price, exchange price or conversion price of such securities (other than in connection with stock splits or combinations) or to extend the term of such securities; (iii) shares of Common Stock, options or convertible securities issued as acquisition consideration pursuant to the acquisition of another entity by the Company by merger, purchase of substantially all of the assets or other reorganization or to a joint venture agreement, provided that such issuances are approved by the Board and that such securities are issued as "restricted securities" (as defined in Rule 144) and carry no registration rights that require or permit the filing of any registration statement in connection therewith until the 180th day after the date of this Certificate of Designation, and provided further that any such issuance shall only be to a Person (or to the equity holders of a Person) which is, itself or through its subsidiaries, an operating company or an owner of an asset in a business synergistic with the business of the Company and shall provide to the Company additional benefits in addition to the investment of funds, but shall not include a transaction in which the Company is issuing securities primarily for the purpose of raising capital or to an entity whose primary business is investing in securities; (iv) shares of Common Stock, options or convertible securities issued in connection with sponsored research, collaboration, technology license, development, OEM, marketing or other similar agreements or strategic partnerships approved by the Board, provided that such securities are issued as "restricted securities" (as defined in Rule 144) and carry no registration rights that require or permit the filing of any registration statement in connection therewith until the 180th day after the date of this Certificate of Designation, and provided that any such issuance shall not include a transaction in which the Company is issuing securities primarily for the purpose of raising capital or to an entity whose primary business is investing in securities; and (v) shares of Common Stock issued in connection with the issuance of bona fide commercial bank debt or equipment lease transactions, provided that such issuances are approved by the Board and that such securities are issued as "restricted securities" (as defined in Rule 144) and carry no registration rights that require or permit the filing of any registration statement in connection therewith until the 180th day after the date of this Certificate of Designation.

Warrants

The warrants were issued in connection with our rights offering completed in August 2022 and pursuant to a warrant agent agreement between us and Continental Stock Transfer & Trust Company, LLC, the warrant agent. There is no public trading market for the warrants.

Exercisability

Each warrant will be exercisable at any time and will expire five years from the date of issuance. The warrants will be exercisable, at the option of each holder, in whole or in part by delivering to us a duly executed exercise notice and payment in full for the number of shares of our common stock purchased upon such exercise, except in the case of a cashless exercise as discussed below. The number of shares of common stock issuable upon exercise of the warrants is subject to adjustment in certain circumstances, including a stock split of, stock dividend on, or a subdivision, combination or recapitalization of the common stock. If we effect a merger, consolidation, sale of substantially all of our assets, or other similar transaction, then, upon any subsequent exercise of a warrants, the warrant holder 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 exercise in full of the warrant.

Cashless Exercise

If at any time there is no effective registration statement registering, or the prospectus contained therein is not available for issuance of, the shares issuable upon exercise of the warrant, the holder may exercise the warrant on a cashless basis. When exercised on a cashless basis, a portion of the warrant is cancelled in payment of the purchase price payable in respect of the number of shares of our common stock purchasable upon such exercise.

Exercise Price

Each warrant represents the right to purchase 2,222 shares of common stock at an exercise price of \$0.50 per share. In addition, the exercise price per share is subject to adjustment for stock dividends, distributions, subdivisions, combinations, or reclassifications, and for certain dilutive issuances. Subject to limited exceptions, a holder of warrants will not have the right to exercise any portion of the warrant to the extent that, after giving effect to the exercise, the holder, together with its affiliates, and any other person acting as a group together with the holder or any of its affiliates, would beneficially own in excess of 4.99% of the number of shares of our common stock outstanding immediately after giving effect to its exercise. The holder may not increase the beneficial ownership limitation provisions of the warrant with our prior consent (which may be withheld in our sole discretion).

Anti-Dilution Protection

If, at any time after the initial exercise date of the warrants until the two (2) year anniversary of the initial exercise date, we sell or grant (or announce any offer to sell or grant) any shares of common stock or common stock equivalents entitling any person to acquire shares of our common Stock at an effective price per share that is lower than the then exercise price (such lower price, the "Base Share Price"), then the exercise price will be reduced to equal the Base Share Price. The Base Share Price may not be less than \$0.16. In addition, no conversion price adjustment will be made in respect of an Exempt Issuance.

Redemption Right

We may redeem the warrants at a price of \$0.01 per underlying share of common stock at any time following the one-year anniversary of issuance if the volume-weighted average price of our common stock is above \$2.10 for ten consecutive trading days, subject to certain conditions and limitations.

Fundamental Transactions

In the event of a fundamental transaction, as described in the warrants and generally including, with certain exceptions, any reorganization, recapitalization or reclassification of our common stock, the sale, transfer or other disposition of all or substantially all of our properties or assets, our consolidation or merger with or into another person, the acquisition of more than 50% of our outstanding common stock, or any person or group becoming the beneficial owner of 50% of the voting power represented by our outstanding common stock, the holders of the warrants will be entitled to receive upon exercise of the warrants the kind and amount of securities, cash or other property that the holders would have received had they exercised the warrants immediately prior to such fundamental transaction. Additionally, as more fully described in the warrant, in the event of certain fundamental transactions, the holders of the warrants will be entitled to receive consideration in an amount equal to the Black Scholes value of the warrants on the date of consummation of such transaction.

Transferability

Subject to applicable laws and restrictions, a holder may transfer a warrant upon surrender of the warrant to us with a completed and signed assignment in the form attached to the warrant. The transferring holder will be responsible for any tax liability that may arise as a result of the transfer.

Rights as Stockholder

Except as set forth in the warrant, the holder of a warrant, solely in such holder's capacity as a holder of a warrant, will not be entitled to vote, to receive dividends, or to any of the other rights of our stockholders.

Amendments and Waivers

The provisions of each warrant may be modified or amended or the provisions thereof waived with the written consent of us and the holder.

Anti-Takeover Charter Provisions and Laws

Some features of our certificate of incorporation and amended and restated bylaws and the Delaware General Corporation Law (the "DGCL"), which are further described below, may have the effect of deterring third parties from making takeover bids for control of our company or may be used to hinder or delay a takeover bid.

Limitations on Stockholder Actions

Our certificate of incorporation provides that stockholder action may only be taken at a meeting of the stockholders. Thus, an owner of a majority of the voting power could not take action to replace the board of directors, or any class of directors, without a meeting of the stockholders, nor could he amend the bylaws without presenting the amendment to a meeting of the stockholders. Furthermore, under the provisions of the certificate of incorporation and bylaws, only the board of directors has the power to call a special meeting of stockholders. Therefore, a stockholder, even one who owns a majority of the voting power, may neither replace sitting board of directors members nor amend the bylaws before the next annual meeting of stockholders.

Advance Notice Provisions

Our bylaws establish advance notice procedures for the nomination of candidates for election as directors by stockholders, as well as for other stockholder proposals to be considered at annual meetings. Generally, we must receive a notice of intent to nominate a director or raise any other matter at a stockholder meeting not less than 120 days before the first anniversary of the mailing of our proxy statement for the previous year's annual meeting. The notice must contain required information concerning the person to be nominated or the matters to be brought before the meeting and concerning the stockholder submitting the proposal.

Delaware Law

As a Delaware corporation, we are subject to Section 203 of the DGCL, which provides that a corporation may not engage in any business combination with an interested stockholder during the three years after the stockholder becomes an interested stockholder unless:

- the corporation's board of directors approved in advance either the business combination or the transaction which resulted in the stockholder becoming an interested stockholder;
- the interested stockholder owned at least 85 percent of the corporation's voting stock at the time the transaction commenced; or

- the business combination is approved by the corporation's board of directors and the affirmative vote of at least two-thirds of the voting stock which is not owned by the interested stockholder.

An interested stockholder is anyone who owns 15% or more of a corporation's voting stock, or who is an affiliate or associate of the corporation and was the owner of 15% or more of the corporation's voting stock at any time within the previous three years; and the affiliates and associates of any those persons. Section 203 of the DGCL makes it more difficult for an interested stockholder to implement various business combinations with our company for a three-year period, although our stockholders may vote to exclude it from the law's restrictions.

Classified Board

Our certificate of incorporation and bylaws divide our board of directors into three classes with staggered three-year terms. There are currently four directors. One class is comprised of two directors and a second and third classes are comprised of one director each. At each annual meeting of stockholders, the terms of one class of directors will expire and the newly nominated directors of that class will be elected for a term of three years. The board of directors will be able to determine the total number of directors constituting the full board of directors and the number of directors in each class, but the total number of directors may not exceed nine nor may the number of directors in any class exceed six. No reduction in the total number of directors or in the number of directors in a given class will have the effect of removing a director from office or reducing the term of any then-sitting director. Stockholders may only remove directors for cause. If the board of directors increases the number of directors in a class, it will be able to fill the vacancies created for the full remaining term of a director in that class even though the term may extend beyond the next annual meeting. The directors will also be able to fill any other vacancies for the full remaining term of the director whose death, resignation or removal caused the vacancy.

A person who has a majority of the voting power at a given meeting will not in any one year be able to replace a majority of the directors since only one class of the directors will stand for election in any one year. As a result, at least two annual meeting elections will be required to change the majority of the directors by the requisite vote of stockholders. The purpose of classifying the board of directors is to provide for a continuing body, even in the face of a person who accumulates a sufficient amount of voting power, whether by ownership or proxy or a combination, to have a majority of the voting power at a given meeting and who may seek to take control of our Company without paying a fair premium for control to all of the owners of our common stock. This will allow the board of directors time to negotiate with such a person and to protect the interests of the other stockholders who may constitute a majority of the shares not actually owned by that person. However, it may also have the effect of deterring third parties from making takeover bids for control of our Company or may be used to hinder or delay a takeover bid.

DIVIDEND POLICY

In the past, we have not declared or paid cash dividends on our common stock. We do not intend to pay cash dividends in the future, rather, we intend to retain future earnings, if any, to fund the operation and expansion of our business and for general corporate purposes.

PLAN OF DISTRIBUTION

Pursuant to this prospectus supplement and the accompanying prospectus, we are offering up to \$2,750,000 of shares of our common stock and 200,000 shares of our common stock are being issued to Keystone as Commitment Shares pursuant to the Purchase Agreement. This prospectus supplement and the accompanying prospectus also cover the resale of these shares by Keystone to the public.

We may, from time to time and at our sole discretion, direct Keystone to purchase shares of our common stock. The purchase price per share is based on the market price of our common stock at the time of sale as computed under the Purchase Agreement. Keystone may not assign or transfer its rights and obligations under the Purchase Agreement.

Keystone is an “underwriter” within the meaning of Section 2(a)(11) of the Securities Act.

Keystone has informed us that it intends to use one or more registered broker-dealers to effectuate all sales, if any, of our common stock that it has acquired and may in the future acquire from us pursuant to the Purchase Agreement. Such sales will be made at prices and at terms then prevailing or at prices related to the then current market price. The shares of our common stock may be sold in one or more of the following manners:

- Ordinary brokerage transactions and transactions in which the broker solicits purchasers; or
- A block trade in which the broker-dealer so engaged will attempt to sell the shares as agent, but may position and resell a portion of the block as principal to facilitate the transaction.

Each such registered broker-dealer will be an underwriter within the meaning of Section 2(a)(11) of the Securities Act. Keystone has informed us that each such broker-dealer will receive commissions from Keystone that will not exceed customary brokerage commissions.

Brokers, dealers, underwriters or agents participating in the distribution of the shares of our common stock offered by this prospectus supplement may receive compensation in the form of commissions, discounts, or concessions from the purchasers, for whom the broker-dealers may act as agent, of the shares sold by Keystone through this prospectus supplement. The compensation paid to any such particular broker-dealer by any such purchasers of shares of our common stock sold by Keystone may be less than or in excess of customary commissions. Neither we nor Keystone can presently estimate the amount of compensation that any agent will receive from any purchasers of shares of our common stock sold through this prospectus supplement.

We know of no existing arrangements between Keystone or any other stockholder, broker, dealer, underwriter or agent relating to the sale or distribution of the shares of our common stock offered by this prospectus supplement and accompanying prospectus.

We may from time to time file with the Commission one or more supplements to this prospectus supplement or amendments to the registration statement to which this prospectus supplement relates to amend, supplement or update information contained in this prospectus supplement, including, if and when required under the Securities Act, to disclose certain information relating to a particular sale of shares offered by this prospectus supplement, including the names of any brokers, dealers, underwriters or agents participating in the distribution of such shares, any compensation paid to any such brokers, dealers, underwriters or agents, and any other required information.

As consideration for its irrevocable commitment to purchase our common stock under the Purchase Agreement, we have agreed to issue 400,000 shares of our common stock to Keystone as Commitment Shares, with 200,000 being delivered on the date of this prospectus supplement and the remaining 200,000 shares being delivered at the time we raise a minimum of \$2,750,000 under the Purchase Agreement or any other financing source. We also have agreed to reimburse Keystone for the fees and disbursements of its counsel, payable upon the initial settlement under the Purchase Agreement, in an amount equal to \$25,000. In addition, Keystone is entitled to receive a fee of \$1,500 in connection with each Purchase to cover standard fees and expenses for the review of the applicable Purchase notice and related deposit of shares.

We also have agreed to indemnify Keystone and certain other persons against certain liabilities in connection with the offering of shares of our common stock offered hereby, including liabilities arising under the Securities Act or, if such indemnity is unavailable, to contribute amounts required to be paid in respect of such liabilities. Keystone has agreed to indemnify us against liabilities under the Securities Act that may arise from certain written information furnished to us by Keystone specifically for use in this prospectus supplement or, if such indemnity is unavailable, to contribute amounts required to be paid in respect of such liabilities. Insofar as indemnification for liabilities arising under the Securities Act may be permitted to our directors, officers, and controlling persons, we have been advised that in the opinion of the Commission this indemnification is against public policy as expressed in the Securities Act and is therefore, unenforceable.

Keystone has represented to us that at no time prior to the Purchase Agreement has Keystone or its agents, representatives or affiliates engaged in or effected, in any manner whatsoever, directly or indirectly, any short sale (as such term is defined in Rule 200 of Regulation SHO of the Exchange Act) of our common stock or any hedging transaction, which establishes a net short position with respect to our common stock. Keystone agreed that during the term of the Purchase Agreement, it, its agents, representatives or affiliates will not enter into or effect, directly or indirectly, any of the foregoing transactions.

We have advised Keystone that it is required to comply with Regulation M promulgated under the Exchange Act. With certain exceptions, Regulation M precludes Keystone, any affiliated purchasers, and any broker-dealer or other person who participates in the distribution from bidding for or purchasing, or attempting to induce any person to bid for or purchase any security which is the subject of the distribution until the entire distribution is complete. Regulation M also prohibits any bids or purchases made in order to stabilize the price of a security in connection with the distribution of that security. All of the foregoing may affect the marketability of the securities offered by this prospectus supplement.

This offering will terminate on the date that all shares offered by this prospectus supplement have been resold by Keystone. We may suspend the sale of shares to Keystone pursuant to this prospectus supplement for certain periods of time for certain reasons, including if this prospectus supplement is required to be supplemented or amended to include additional material information.

Our common stock is traded on The NYSE American under the symbol "NAVB." Our transfer agent is Continental Stock Transfer & Trust Company.

LEGAL MATTERS

The validity of the securities being offered by this prospectus supplement has been passed upon for us by Maslon LLP, Minneapolis, Minnesota. McMurdo Law Group, LLC has acted as counsel for Keystone in connection with certain legal matters relating to this offering.

EXPERTS

The financial statements for the years ended December 31, 2022 and 2021 incorporated in this prospectus supplement by reference to the Annual Report on Form 10-K for the year ended December 31, 2022, have been so incorporated in reliance on the report (which contains an explanatory paragraph relating to substantial doubt about the ability of the Company to continue as a going concern as described in Note 2 to the financial statements) of Marcum LLP, an independent registered public accounting firm, given on the authority of said firm as experts in auditing and accounting.

WHERE YOU CAN FIND MORE INFORMATION

This prospectus supplement and the accompanying prospectus are part of a registration statement that we have filed with the Commission and do not contain all of the information in the registration statement. For further information, we refer you to the registration statement and the exhibits and schedules filed as a part of the registration statement. Statements contained in this prospectus or any prospectus supplement concerning the contents of any contract or any other document are not necessarily complete. If a contract or document has been filed or incorporated by reference as an exhibit to the registration statement, we refer you to the copy of the contract or document that has been filed. Each statement in this prospectus or any prospectus supplement relating to a contract or document filed as an exhibit is qualified in all respects by the filed exhibit. The Commission maintains a web site (<http://www.sec.gov>) that contains reports, proxy and information statements and other information regarding issuers like us that file electronically with the Commission.

We are subject to the reporting and information requirements of the Exchange Act, and, as a result, we file periodic reports, proxy statements and other information with the Commission. These periodic reports, proxy statements and other information will be available for access at the web site of the Commission referred to above.

INCORPORATION OF CERTAIN INFORMATION BY REFERENCE

The Commission allows us to “incorporate by reference” information from other documents that we file with it, which means that we can disclose important information to you by referring you to those documents. The information incorporated by reference is considered to be part of this prospectus supplement and the accompanying prospectus, and subsequent information that we file with the Commission will automatically update and supersede that information.

We are incorporating by reference the information or documents listed below that we have filed with the Commission (SEC File No. 001-35076):

- our annual report on Form 10-K for the year ended December 31, 2022, filed with the Commission on [March 27, 2023](#);
- our current reports on Form 8-K and all amendments thereto, filed with the Commission on [January 10, 2023](#), [March 16, 2023](#), [March 31, 2023](#), and [April 13, 2023](#); and
- the description of our common stock contained in our registration statement on Form 8-A, filed with the Commission on [February 8, 2011](#), including all amendments and reports filed for the purpose of updating such description.

In addition, all documents subsequently filed by us pursuant to Sections 13(a), 13(c), 14 or 15(d) of the Exchange Act, prior to the termination of the offering shall be deemed to be incorporated by reference into this prospectus, including all such documents we may file with the Commission after the date of the initial registration statement and prior to the effectiveness of the registration statement, but excluding any information deemed furnished and not filed with the Commission.

We will provide to each person, including any beneficial owners, to whom a prospectus is delivered, a copy of any or all of the reports or documents that have been incorporated by reference in the prospectus contained in the registration statement but not delivered with the prospectus. We will provide these reports or documents upon written or oral request at no cost to the requester. You should direct any written requests for documents to Navidea Biopharmaceuticals, Inc., Attention: Chief Financial Officer, 4995 Bradenton Avenue, Suite 240, Dublin, Ohio 43017-3552. You may also telephone us at (614) 793-7500.

You may also access these documents, free of charge, on the Commission's website at www.sec.gov or on our website at <https://ir.navidea.com/sec-filings>. Except for the specific incorporated documents listed above, the information contained in, or that can be accessed through, our website is not incorporated by reference into this prospectus supplement or the registration statement of which it forms a part.

Any statement contained in a document incorporated by reference herein shall be deemed modified or superseded to the extent that a statement contained herein or in any other subsequently filed document which also is or is deemed to be incorporated by reference herein modifies or supersedes such statement.



Navidea Biopharmaceuticals, Inc.

\$100,000,000

**Common Stock
Preferred Stock
Debt Securities
Warrants
Purchase Contracts
Rights
Units**

We may offer and sell, from time to time, in one or more offerings, up to \$100,000,000 aggregate amount of any securities described in this prospectus, separately or together in any combination, in one or more classes or series, in amounts, at prices, and on terms that we will determine at the time of the offering.

This prospectus provides a general description of the securities we may offer. Each time we sell securities, we will provide specific terms of the securities offered in one or more supplements to this prospectus. The prospectus supplement may also add, update or change information contained in this prospectus. You should read this prospectus and the applicable prospectus supplement carefully before you invest in any securities. This prospectus may not be used to consummate a sale of securities unless accompanied by the applicable prospectus supplement.

We will sell these securities directly to purchasers, or through agents on our behalf, or through underwriters or dealers as designated from time to time. If any agents or underwriters are involved in the sale of any of these securities, the applicable prospectus supplement will provide the names of the agents or underwriters and any applicable fees, commissions or discounts.

Our common stock is listed on the NYSE American exchange (the "NYSE American") under the symbol "NAV.B." The last reported sale price of our common stock on February 5, 2021 was \$2.66 per share. The applicable prospectus supplement will contain information, where applicable, as to the listing of any other securities covered by the prospectus supplement other than our common stock on the NYSE American or any other securities exchange.

Investing in our securities involves a high degree of risk. Before investing in our securities, we recommend that you carefully read this entire prospectus, including the section entitled "Risk Factors" on page 7, any applicable supplements to this prospectus, and the documents we file with the U.S. Securities and Exchange Commission from time to time.

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

The date of this prospectus is February 16, 2021.

TABLE OF CONTENTS

ABOUT THIS PROSPECTUS	2
WHERE YOU CAN FIND MORE INFORMATION	3
INCORPORATION BY REFERENCE	4
CAUTIONARY NOTE REGARDING FORWARD-LOOKING STATEMENTS	5
ABOUT NAVIDEA BIOPHARMACEUTICALS, INC.	6
RISK FACTORS	7
USE OF PROCEEDS	8
DESCRIPTION OF CAPITAL STOCK	9
DESCRIPTION OF DEBT SECURITIES	12
DESCRIPTION OF WARRANTS	20
DESCRIPTION OF PURCHASE CONTRACTS	21
DESCRIPTION OF RIGHTS	22
DESCRIPTION OF UNITS	23
TRANSFER AGENT AND REGISTRAR	24
ANTI-TAKEOVER CHARTER PROVISIONS AND LAWS	24
PLAN OF DISTRIBUTION	26
LEGAL MATTERS	28
EXPERTS	28
EXPENSES	

ABOUT THIS PROSPECTUS

This prospectus is a part of a registration statement on Form S-3 that we filed with the U.S. Securities and Exchange Commission (the ‘SEC’) utilizing a “shelf” registration process. Under this shelf registration process, we may offer to sell the securities described in this prospectus, alone or in combination, in one or more offerings up to a total aggregate offering price of \$100,000,000.

This prospectus provides a general description of the securities we may offer. We may provide specific terms of securities to be offered in one or more supplements to this prospectus. We may also provide a specific plan of distribution for any securities to be offered in a prospectus supplement. Prospectus supplements may also add, update or change information in this prospectus. If the information varies between this prospectus and the accompanying prospectus supplement, you should rely on the information in the accompanying prospectus supplement.

Before purchasing any securities, you should carefully read both this prospectus and any prospectus supplement, together with the additional information described under the heading “Incorporation by Reference.” You should rely only on the information contained or incorporated by reference in this prospectus, any prospectus supplement and any free writing prospectus prepared by or on behalf of us or to which we have referred you. None of us, nor any underwriters, have authorized any other person to provide you with different information. If anyone provides you with different or inconsistent information, you should not rely on it. We take no responsibility for, and can provide no assurance as to the reliability of, any other information that others may give you. You should assume that the information contained in this prospectus, any prospectus supplement or any free writing prospectus is accurate only as of the date on its respective cover, and that any information incorporated by reference is accurate only as of the date of the document incorporated by reference, unless we indicate otherwise. Our business, financial condition, results of operations and prospects may have changed since those dates. This prospectus contains summaries of certain provisions contained in some of the documents described herein, but reference is made to the actual documents for complete information. All of the summaries are qualified in their entirety by the actual documents. Copies of some of the documents referred to herein have been filed, will be filed or will be incorporated by reference as exhibits to the registration statement of which this prospectus is a part, and you may obtain copies of those documents as described below under the heading “Where You Can Find More Information.”

This prospectus and any applicable prospectus supplement do not constitute an offer to sell or the solicitation of an offer to buy any securities other than the registered securities to which they relate. We are not making offers to sell common stock or any other securities described in this prospectus in any jurisdiction in which an offer or solicitation is not authorized or in which the person making such offer or solicitation is not qualified to do so or to anyone to whom it is unlawful to make an offer or solicitation.

In this prospectus, “we,” “us,” “our” and “Navidea” refer to Navidea Biopharmaceuticals, Inc. and its subsidiaries.

WHERE YOU CAN FIND MORE INFORMATION

We have filed with the SEC a registration statement on Form S-3 under the Securities Act, as amended (the "*Securities Act*"), with respect to the securities being offered by this prospectus. This prospectus, which constitutes part of the registration statement, omits certain information, exhibits, schedules and undertakings set forth in the registration statement. You should refer to the registration statement and its exhibits and schedules for additional information. Whenever we make reference in this prospectus to any of our contracts, agreements or other documents, the references are not necessarily complete and you should refer to the exhibits filed with the registration statement for copies of the actual contract, agreement or other document. Statements contained in this prospectus as to the contents of any contract or other document referred to in this prospectus are not necessarily complete and, where that contract is an exhibit to the registration statement, each statement is qualified in all respects by reference to the exhibit to which the reference relates.

The SEC maintains an internet website at <http://www.sec.gov> that contains reports, proxy and information statements and other information regarding issuers that file electronically with the SEC. The periodic reports, proxy statements and other information we file with the SEC are available for inspection on the Commission's website free of charge as soon as reasonably practicable after they are electronically filed with, or furnished to, the SEC. We also maintain a website at <http://www.navidea.com> where you may access these materials free of charge. We have included our website address as an inactive textual reference only and the information contained in, and that can be accessed through, our website is not incorporated into and is not part of this prospectus.

INCORPORATION BY REFERENCE

The SEC allows us to “incorporate by reference” into this prospectus the information we file with the SEC (Commission File No. 001-35076), which means that we can disclose important information to you by referring you to those documents. The information incorporated by reference is an important part of this prospectus. Information that we file with the SEC after the date of this prospectus will automatically update this prospectus. We incorporate by reference the documents listed below, and any filings we make with the SEC under Sections 13(a), 13(c), 14, or 15(d) of the Securities Exchange Act of 1934 after the initial filing of the registration statement that contains this prospectus (except, in each case, documents or information deemed to have been furnished and not filed in accordance with SEC rules):

- our annual report on Form 10-K for the year ended December 31, 2019, filed with the SEC on [March 18, 2020](#);
- our quarterly reports on Form 10-Q for the quarters ended March 31, 2020, June 30, 2020 and September 30, 2020, filed with the SEC on [May 15, 2020](#), [August 14, 2020](#) and [November 13, 2020](#), respectively;
- our current reports on Form 8-K and all amendments thereto on Form 8-K/A, filed with the SEC on [February 14, 2020](#), [February 18, 2020](#), [May 12, 2020](#), [May 21, 2020](#), [June 4, 2020](#), [July 31, 2020](#), [August 10, 2020](#), [August 12, 2020](#), [August 17, 2020](#), [September 2, 2020](#), [September 10, 2020](#) and [December 28, 2020](#); and
- the description of our common stock contained in our registration statement on Form 8-A, filed with the SEC on [February 8, 2011](#), including all amendments and reports filed for the purpose of updating such description.

Information furnished by us in Current Reports on Form 8-K under Items 2.02 and 7.01 (and exhibits filed on such form that are related to such items unless such Form 8-K expressly provides to the contrary) is expressly not incorporated by reference in this prospectus.

We will provide to each person, including any beneficial owner, to whom a prospectus is delivered, without charge, upon written or oral request, a copy of any or all of the documents that are incorporated by reference into this prospectus but not delivered with the prospectus, including exhibits that are specifically incorporated by reference into such documents. You may request a copy of these filings at no cost, by writing to or telephoning us at:

Navidea Biopharmaceuticals, Inc.
Attention: Jed A. Latkin
4995 Bradenton Avenue, Suite 240
Dublin, Ohio 43017-3552
(614) 793-7500

CAUTIONARY NOTE REGARDING FORWARD-LOOKING STATEMENTS

The Private Securities Litigation Reform Act of 1995 (the “*PSLRA*”) provides a safe harbor for forward-looking statements made by or on behalf of the Company. Statements in this document which relate to other than strictly historical facts, such as statements about the Company’s plans and strategies, expectations for future financial performance, new and existing products and technologies, anticipated clinical and regulatory pathways, the ability to obtain, and timing of, regulatory approvals of the Company’s products, the timing and anticipated results of commercialization efforts, and anticipated markets for the Company’s products, are forward-looking statements within the meaning of the PSLRA. The words “anticipate,” “believe,” “estimate,” “expect,” “future,” “intend,” “plan,” “project,” and similar expressions identify forward-looking statements that speak only as of the date hereof. Investors are cautioned that such statements involve risks and uncertainties that could cause actual results to differ materially from historical or anticipated results due to many factors including, but not limited to, our history of operating losses and uncertainty of future profitability, accumulated deficit, future capital needs, the outcome of any pending litigation, uncertainty of capital funding, dependence on royalties and grant revenue, limited product line and distribution channels, competition, risks of development of new products, our ability to maintain effective control over financial reporting, our ability to comply with NYSE American continued listing standards, and other risks set forth in our Form 10-K under Item 1A, “Risk Factors” and beginning on page 9 of this prospectus. Navidea undertakes no obligation to publicly update or revise any forward-looking statements. These forward-looking statements are subject to a number of risks, uncertainties and assumptions, including, but not limited to:

- the impact of the global COVID-19 pandemic on our business, financial condition or prospects, including a decline in the volume of procedures using our products, potential delays and disruptions to global supply chains, manufacturing activities, logistics, operations, employees and contractors, the business activities of our suppliers, distributors, customers and other business partners, as well as the effects on worldwide economies, financial markets, social institutions, labor markets and healthcare systems;
- our history of operating losses and uncertainty of future profitability;
- our ability to successfully complete research and further development of our drug candidates;
- the timing, cost and uncertainty of obtaining regulatory approvals of our drug candidates, including delays and additional costs related to the ongoing COVID-19 pandemic;
- our ability to successfully commercialize our drug candidates, including delays or disruptions related to the ongoing COVID-19 pandemic;
- our ability to raise capital sufficient to fund our development programs, including unavailability of funds or delays in receiving funds as a result of the ongoing COVID-19 pandemic;
- delays in receipt of anticipated proceeds from our capital funding transactions and other receivables;
- our dependence on royalties and grant revenue;
- our limited product line and distribution channels;
- advances in technologies and development of new competitive products;
- our ability to maintain effective control over financial reporting;
- the outcome of any pending litigation;
- our ability to comply with NYSE American continued listing standards; and
- other risk factors set forth in this report and detailed in our most recent Annual Report on Form 10-K and other SEC filings.

In addition, in this prospectus, we use words such as “anticipate,” “believe,” “estimate,” “expect,” “future,” “intend,” “plan,” “project,” and similar expressions to identify forward-looking statements.

We undertake no obligation to update publicly or revise any forward-looking statements, whether as a result of new information, future events or otherwise after the date of this report. In light of these risks and uncertainties, the forward-looking events and circumstances discussed in this report may not occur and actual results could differ materially from those anticipated or implied in the forward-looking statements.

ABOUT NAVIDEA BIOPHARMACEUTICALS, INC.

The following is only a summary. We urge you to read the more detailed description of our business, financial statements, notes to the financial statements and other information incorporated herein by reference from our other filings with the SEC, including, but not limited to Part I, Item 1 of our Annual Report on Form 10-K for the fiscal year ended December 31, 2019. See the section entitled “Where You Can Find More Information” for the location of information incorporated by reference in this prospectus. Investors should also consider the information provided under the heading “Risk Factors” on page 7 and as set forth in our Annual Report on Form 10-K for the fiscal year ended December 31, 2019.

Navidea Biopharmaceuticals, Inc., a Delaware corporation (NYSE American: NAVB), is a biopharmaceutical company focused on the development and commercialization of precision immunodiagnostic agents and immunotherapeutics. Navidea is developing multiple precision-targeted products based on our Manocept™ platform to enhance patient care by identifying the sites and pathways of undetected disease and enable better diagnostic accuracy, clinical decision-making and targeted treatment.

Navidea’s Manocept platform is predicated on the ability to specifically target the CD206 mannose receptor expressed on activated macrophages. The Manocept platform serves as the molecular backbone of Tc99m tilmanocept, the first product developed and commercialized by Navidea based on the platform.

In March 2017, the Company completed the sale to Cardinal Health 414, LLC (“Cardinal Health 414”) of its assets related to the Company’s radioactive diagnostic agent Tc99m tilmanocept, marketed under the Lymphoseek® trademark, used for lymphatic mapping, lymph node biopsy, and the diagnosis of metastatic spread to lymph nodes for staging of cancer, in Canada, Mexico and the United States.

Other than Tc99m tilmanocept, which the Company has a license to distribute outside of Canada, Mexico and the United States, none of the Company’s drug product candidates have been approved for sale in any market.

Our business is focused on two primary types of drug products: (i) diagnostic substances, including Tc99m tilmanocept and other diagnostic applications of our Manocept platform, and NAV4694 (sublicensed in April 2018), and (ii) therapeutic development programs, including therapeutic applications of our Manocept platform.

Our corporate headquarters are located at 4995 Bradenton Avenue, Suite 240, Dublin, Ohio 43017-3552 and our telephone number is (614) 793-7500. We maintain a website at www.navidea.com, to which we regularly post copies of our press releases as well as additional information about us. The information contained on, or that can be accessed through, our website is not a part of this prospectus. We have included our website address in this prospectus solely as an inactive textual reference.

Our annual reports on Form 10-K, quarterly reports on Form 10-Q, current reports on Form 8-K and all amendments to those reports filed or furnished pursuant to Section 13(a) or 15(d) of the Securities Exchange Act of 1934, as amended (the “Exchange Act”), are available free of charge through the investor relations page of our internet website as soon as reasonably practicable after we electronically file such material with, or furnish it to, the SEC.

RISK FACTORS

Investing in our securities involves a high degree of risk. Prior to making a decision about investing in our securities, you should carefully consider the specific risk factors discussed in the sections entitled “Risk Factors” contained in our annual report on Form 10-K for the fiscal year ended December 31, 2019 under the heading “Item 1A. Risk Factors,” and as described or may be described in any subsequent quarterly report on Form 10-Q under the heading “Item 1A. Risk Factors,” as well as in any applicable prospectus supplement and contained or to be contained in our filings with the SEC and incorporated by reference in this prospectus, together with all of the other information contained in this prospectus, or any applicable prospectus supplement. For a description of these reports and documents, and information about where you can find them, see “Where You Can Find More Information” and “Incorporation By Reference.” If any of the risks or uncertainties described in our SEC filings or any prospectus supplement or any additional risks and uncertainties actually occur, our business, financial condition and results of operations could be materially and adversely affected. In that case, the trading price of our securities could decline and you might lose all or part of the value of your investment.

USE OF PROCEEDS

We will retain broad discretion over the use of the net proceeds from the sale of the securities offered hereby. Unless otherwise indicated in the applicable prospectus supplement, we currently intend to use the net proceeds from the sale of securities under this prospectus for general corporate purposes, including, but not limited to, additions to working capital, repayment of indebtedness and financing capital expenditures and licenses or acquisitions. Pending any specific application, we may initially invest funds in short-term marketable securities or apply them to the reduction of short-term indebtedness. The prospectus supplement relating to a particular offering of securities by us will identify the use of proceeds for that offering.

DESCRIPTION OF CAPITAL STOCK

General

The following description of our capital stock is only a summary and is subject to the provisions of our amended and restated certificate of incorporation and our amended and restated bylaws, which are filed as exhibits to the report to which this exhibit is attached.

Our authorized capital stock consists of:

- 300,000,000 shares of common stock, \$0.001 par value per share; and
- 5,000,000 shares of undesignated preferred stock, \$0.001 par value per share, of which we have designated 150,000 as Series D Redeemable Convertible Preferred Stock (the “*Series D Preferred*”).

As of February 5, 2021, there are 27,984,669 shares of common stock outstanding and no shares of Series D Preferred outstanding.

Common Stock

Dividends

Subject to the rights and preferences of any outstanding preferred stock, each share of common stock is entitled to receive, when and as declared by the board of directors, out of our available assets at such time, such dividends as may be declared from time to time by the board of directors. We have never paid dividends on our common stock and do not intend to do so in the foreseeable future. We intend to retain any future earnings to finance our growth.

Liquidation

If our company is liquidated, any assets that remain after the creditors are paid, and the owners of preferred stock receive any liquidation preferences, will be distributed to the owners of our common stock pro-rata. Neither the merger or consolidation by us into or with any other corporation, nor the merger or consolidation of any other corporation into or with us, nor the sale, lease, exchange or other disposition (for cash, shares of stock, securities, or other consideration) of all or substantially all our assets, will be deemed to be a dissolution, liquidation, or winding up of our business, whether voluntary or involuntary.

Voting Rights

Each share of our common stock entitles the owner to one vote. There is no cumulative voting. Our directors are elected by a plurality of the votes of the shares present in person or represented by proxy at meetings of our stockholders and entitled to vote in the election of directors.

Preemptive Rights

Owners of our common stock do not have any preemptive rights. We may sell shares of our common stock to third parties without first offering it to current stockholders.

Redemption Rights

We do not have the right to buy back shares of our common stock except in extraordinary transactions such as mergers and court approved bankruptcy reorganizations. Owners of our common stock do not ordinarily have the right to require us to buy their common stock. We do not have a sinking fund to provide assets for any buy back.

Conversion Rights

Shares of our common stock cannot be converted into any other kind of stock except in extraordinary transactions, such as mergers and court approved bankruptcy reorganizations.

Market Information

Our common stock is listed on the NYSE American under the symbol “NAVB.”

Transfer Agent and Registrar

The transfer agent for our common stock is Continental Stock Transfer & Trust Company, located at One State Street, 30th Floor, New York, NY 10004. Their telephone number is (212) 509-4000.

Blank Check Preferred Stock

Our certificate of incorporation authorizes our board of directors to issue “blank check” preferred stock. The board of directors may divide this stock into series and set their rights.

Under the terms of our certificate of incorporation, our board of directors has the authority, without further action by our stockholders, to issue up to 5,000,000 shares of preferred stock in one or more series and to determine and alter all rights, preferences, and privileges and qualifications, limitations, and restrictions thereof (including, without limitation, voting rights and the limitation and exclusion thereof).

The purpose of authorizing our board of directors to issue preferred stock and determine its rights and preferences is to eliminate delays associated with a stockholder vote on specific issuances. The issuance of preferred stock, while providing flexibility in connection with possible acquisitions, future financings and other corporate purposes, could make it more difficult for a third party to acquire, or could adversely affect the rights of our common stockholders by restricting dividends on the common stock, diluting the voting power of the common stock, impairing the liquidation rights of the common stock or delaying or preventing a change in control without further action by the stockholders. As a result of these or other factors, the issuance of preferred stock could have an adverse impact on the market price of our common stock.

All shares of preferred stock offered hereby will, when issued, be fully paid and non-assessable and, unless otherwise stated in a prospectus supplement relating to the series of preferred stock being offered, will not have any preemptive or similar rights. We will set forth in a prospectus supplement relating to the class or series of preferred stock being offered the specific terms of each series of our preferred stock, including the price at which the preferred stock may be purchased, the number of shares of preferred stock offered, and the terms, if any, on which the preferred stock may be convertible into common stock or exchangeable for other securities.

Description of Series D Preferred

On August 31, 2020, Navidea filed with the Secretary of State of the State of Delaware a Certificate of Designations, Voting Powers, Preferences, Limitations, Restrictions, and Relative Rights of Series D Redeemable Convertible Preferred Stock (the “*Series D Preferred Certificate*”). The Series D Preferred Certificate authorizes 150,000 shares of Series D Preferred and establishes the rights and preferences of the Series D Preferred, including as follows:

- Except with respect to transactions that may adversely affect any right, preference, privilege or voting power of the Series D Preferred, the Series D Preferred has no voting rights.
- Whenever Navidea’s board of directors declares a dividend on Navidea’s common stock, each record holder of a share of Series D Preferred on the record date set by the board will be entitled to receive an amount equal to such dividend declared on one share of common stock multiplied by the number of shares of common stock into which such share of Series D Preferred could be converted on the record date, without regard to any conversion limitations in the Series D Preferred Certificate.

- Holders of the Series D Preferred may convert some or all of the Series D Preferred into shares of the Company's common stock at a 10% discount to market, provided that Navidea may not issue such conversion shares in excess of 19.99% of the number of shares of Common Stock outstanding as of the date of the initial Call Closing the Exchange Cap (which, as of the date hereof, is approximately 5,150,000 shares) without shareholder approval, which the Company is not required to seek.
- At no time may a holder of Series D Preferred convert shares of Series D Preferred (or have its Series D Preferred redeemed) if the number of shares of Company common stock to be issued pursuant to such conversion or redemption, when aggregated with all other shares of Company common stock owned by such holder at such time, would result in the holder owning (as determined in accordance with Section 13(d) of the Securities Exchange Act of 1934, as amended, and the rules thereunder) more than 4.99% of all of the Company common stock outstanding at such time; provided, however, that such holder may waive this limitation by providing the Company with sixty-one (61) days' prior notice. Notwithstanding the foregoing, in no instance may the Company issue shares of common stock to any holder of Series D Preferred if as a result such holder would be the beneficial owner of more than 9.99% of all of the Company common stock outstanding at such time. This 9.99% limitation may not be waived.
- The Company has the right to redeem any outstanding shares of Series D Preferred at any time at a price of \$110 per share, payable in cash or in registered shares of common stock.

Exclusive Forum Selection

Our Amended and Restated By-Laws provide that, unless the Company consents in writing to the selection of an alternative forum, the Court of Chancery of the State of Delaware shall be the sole and exclusive forum for

- (i) any derivative action or proceeding brought on behalf of the Company,
- (ii) any action asserting a claim of breach of a fiduciary duty owed by any director, officer or other employee of the Company to the Company or the corporation's stockholders,
- (iii) any action asserting a claim arising pursuant to any provision of the Delaware General Corporation Law, or
- (iv) any action asserting a claim governed by the internal affairs doctrine.

This choice of forum provision may limit a stockholder's ability to bring a claim in a judicial forum that the stockholder finds favorable for disputes with us or any of our directors, officers, or other employees, which may discourage lawsuits against us and our directors, officers, and other employees. This choice of forum provision does not preclude or contract the scope of exclusive federal jurisdiction for any actions brought under the Exchange Act. Section 27 of the Exchange Act creates exclusive federal jurisdiction over all suits brought to enforce any duty or liability created by the Exchange Act or the rules and regulations thereunder. As a result, the exclusive forum provision will not apply to suits brought to enforce any duty or liability created by the Exchange Act or any other claim for which the federal courts have exclusive jurisdiction, and the Company does not intend for the exclusive forum provision to apply to Exchange Act claims. Additionally, this choice of forum provision will not apply to claims as to which the Court of Chancery of the State of Delaware does not have subject matter jurisdiction. It could apply, however, to a suit that falls within one or more of the categories enumerated in the exclusive forum provision and that asserts claims under the Securities Act, inasmuch as Section 22 of the Securities Act creates concurrent jurisdiction for federal and state courts over all suits brought to enforce any duty or liability created by the Securities Act or the rules and regulations thereunder. There is uncertainty as to whether a court would enforce such an exclusive forum provision with respect to claims under the Securities Act. In addition, our stockholders will not be deemed to have waived the Company's compliance with the federal securities laws and the rules and regulations thereunder. Subject to the foregoing, any person or entity purchasing or otherwise acquiring any interest in shares of capital stock of the corporation shall be deemed to have notice of and consented to this provision of our Amended and Restated By-Laws.

DESCRIPTION OF DEBT SECURITIES

The following description, together with the additional information we include in any applicable prospectus supplement, summarizes certain general terms and provisions of the debt securities that we may offer in one or more series under this prospectus. When we offer to sell a particular series of debt securities, we will describe the specific terms of the series in a supplement to this prospectus. We will also indicate in the supplement to what extent the general terms and provisions described in this prospectus apply to a particular series of debt securities.

We may issue debt securities either separately, or together with, or upon the conversion or exercise of or in exchange for, other securities described in this prospectus. Debt securities may be our senior, senior subordinated or subordinated obligations and, unless otherwise specified in a supplement to this prospectus, the debt securities will be our direct, unsecured obligations.

We will issue the debt securities under the indenture that we will enter into with a national banking association or other eligible party, as trustee. The indenture will be qualified under the Trust Indenture Act of 1939, as amended (the "*Trust Indenture Act*"). We have filed the form of indenture as an exhibit to the registration statement of which this prospectus is a part, and supplemental indentures and forms of debt securities containing the terms of the debt securities being offered will be filed as exhibits to the registration statement of which this prospectus is a part or will be incorporated by reference from reports that we file with the SEC.

The following summary of material provisions of the debt securities and the indenture is subject to, and qualified in its entirety by reference to, all of the provisions of the indenture applicable to a particular series of debt securities. The summary is not complete. The form of the indenture has been filed as an exhibit to the registration statement and you should read the indenture for provisions that may be important to you. We urge you to read the applicable prospectus supplements and any related free writing prospectuses related to the debt securities that we may offer under this prospectus, as well as the complete indenture that contains the terms of the debt securities.

General

We can issue an unlimited amount of debt securities under the indenture that may be in one or more series with the same or various maturities, at par, at a premium, or at a discount. The terms of each series of debt securities will be established by or pursuant to a resolution of our board of directors and set forth in an officer's certificate or a supplemental indenture. The particular terms of each series of debt securities will be described in a prospectus supplement relating to such series (including any pricing supplement or term sheet), including the following terms, if applicable:

- the title and ranking of the debt securities (including the terms of any subordination provisions);
- the price or prices (expressed as a percentage of the principal amount) at which we will sell the debt securities;
- the aggregate principal amount of the debt securities being offered and any limit on the aggregate principal amount of such series of debt securities;
- whether any of our direct or indirect subsidiaries will guarantee the debt securities, including the terms of subordination, if any, of such guarantees;
- the date or dates on which the principal of the securities of the series is payable;
- the interest rate, if any, and the method for calculating the interest rate;
- the dates from which interest will accrue, the interest payment dates and the record dates for the interest payments;

- the place or places where principal of, and any interest on, the debt securities will be payable (and the method of such payment), where the securities of such series may be surrendered for registration of transfer or exchange, and where notices and demands to us in respect of the debt securities may be delivered;
- any mandatory or optional redemption terms;
- any obligation we have to redeem or purchase the debt securities pursuant to any sinking fund or analogous provisions or at the option of a holder of debt securities and the period or periods within which, the price or prices at which and the terms and conditions upon which securities of the series shall be redeemed or purchased, in whole or in part, pursuant to such obligation;
- any dates, if any, on which and the price or prices at which we will repurchase debt securities at the option of the holders of debt securities and other detailed terms and provisions of such repurchase obligations;
- the denominations in which the debt securities will be issued;
- whether the debt securities will be issued in the form of certificated debt securities or global debt securities;
- the currency of denomination of the debt securities, which may be U.S. dollars or any foreign currency, and if such currency of denomination is a composite currency, the agency or organization, if any, responsible for overseeing such composite currency;
- the designation of the currency, currencies or currency units in which payment of the principal of, and any interest on, the debt securities will be made;
- if payments of principal of, any interest on, the debt securities will be made in one or more currencies or currency units other than that or those in which the debt securities are denominated, the manner in which the exchange rate with respect to such payments will be determined;
- the manner in which the amounts of payment of principal of, or any interest on, the debt securities will be determined, if these amounts may be determined by reference to an index based on a currency or currencies or by reference to a commodity, commodity index, stock exchange index or financial index;
- any provisions relating to any security provided for the debt securities;
- any addition to, deletion of or change in the events of default described in this prospectus or in the indenture with respect to the debt securities and any change in the acceleration provisions described in this prospectus or in the indenture with respect to the debt securities;
- any addition to, deletion of or change in the covenants described in this prospectus or in the indenture with respect to the debt securities;
- any depositaries, interest rate calculation agents, exchange rate calculation agents or other agents appointed with respect to the debt securities;
- the provisions, if any, relating to conversion or exchange of any series of debt securities, including if applicable, the conversion or exchange price and period, the securities or other property into which the debt securities will be convertible, provisions as to whether conversion or exchange will be mandatory, at the option of the holders thereof or at our option, the events requiring an adjustment of the conversion price or exchange price and provisions affecting conversion or exchange if such series of debt securities are redeemed; and
- any other terms of the series of debt securities that may supplement, modify or delete any provision of the indenture as it applies to that series, including any terms that may be required under applicable law or regulations or advisable in connection with the marketing of the debt securities.

We may issue debt securities that provide for an amount less than their stated principal amount to be due and payable upon maturity or a declaration of acceleration of their maturity following an event of default pursuant to the terms of the indenture. We will provide you with information on the federal income tax considerations and other special considerations applicable to any of these debt securities in the applicable prospectus supplement.

If we denominate the purchase price of any of the debt securities in a foreign currency or currencies or a foreign currency unit or units, or if the principal of and any premium and interest on any series of debt securities is payable in a foreign currency or currencies or a foreign currency unit or units, we will provide you with information on the restrictions, elections, general tax considerations, specific terms and other information with respect to that issue of debt securities and such foreign currency or currencies or foreign currency unit or units in the applicable prospectus supplement.

Transfer and Exchange

Each debt security will be represented by either one or more global securities registered in the name of The Depository Trust Company (the “*depository*”) or a nominee of the depository (we will refer to any such debt security as a “*global debt security*”), or a certificate issued in definitive registered form (we will refer to any debt security represented by a certificate as a “*certificated debt security*”) as set forth in the applicable prospectus supplement. Except as set forth below, global debt securities will not be issuable in certificated form.

Certificated Debt Securities

You may transfer or exchange certificated debt securities at any office we maintain for this purpose in accordance with the terms of the indenture. No service charge will be made for any transfer or exchange of certificated debt securities, but we may require payment of a sum sufficient to cover any tax or other governmental charge payable in connection with a transfer or exchange.

You may effect the transfer of certificated debt securities and the right to receive the principal of, premium and interest on certificated debt securities only by surrendering the certificate representing those certificated debt securities and either reissuance by us or the trustee of the certificate to the new holder or the issuance by us or the trustee of a new certificate to the new holder.

Global Debt Securities and Book-Entry System

Each global debt security will be deposited with, or on behalf of, the depository, and registered in the name of the depository or a nominee of the depository. Beneficial interests in global debt securities will not be issuable in certificated form unless (i) the depository has notified us that it is unwilling or unable to continue as depository for such global debt security or has ceased to be qualified to act as such as required by the indenture and we fail to appoint a successor depository within 90 days of such event, (ii) we determine, in our sole discretion, not to have such securities represented by one or more global securities or (iii) any other circumstances shall exist, in addition to or in lieu of those described above, as may be described in the applicable prospectus supplement. Unless and until a global debt security is exchanged for certificated debt securities under the limited circumstances described in the previous sentence, a global debt security may not be transferred except as a whole by the depository to its nominee or by the nominee to the depository, or by the depository or its nominee to a successor depository or to a nominee of the successor depository.

Covenants

We will set forth in the applicable prospectus supplement any restrictive covenants applicable to any issue of debt securities.

No Protection In the Event of a Change of Control

Unless we state otherwise in the applicable prospectus supplement, the debt securities will not contain any provisions which may afford holders of the debt securities protection in the event we have a change in control or in the event of a highly leveraged transaction (whether or not such transaction results in a change in control) which could adversely affect holders of debt securities.

Consolidation, Merger and Sale of Assets

We may not consolidate with or merge with or into, or convey, transfer or lease all or substantially all of our assets to any person (a *successor person*) unless:

- We are the surviving corporation or the successor person (if other than us) is a corporation organized and validly existing under the laws of any U.S. domestic jurisdiction and expressly assumes our obligations on the debt securities and under the indenture; and
- immediately after giving effect to the transaction, no default or event of default, shall have occurred and be continuing.

Notwithstanding the above, any of our subsidiaries may consolidate with, merge into or transfer all or part of its properties to us.

Events of Default

“*Event of Default*” means with respect to any series of debt securities, any of the following:

- default in the payment of any interest upon any debt security of that series when it becomes due and payable, and continuance of such default for a period of 30 days (unless the entire amount of the payment is deposited by us with the trustee or with a paying agent prior to the expiration of the 30-day period);
- default in the payment of principal of any security of that series at its maturity;
- default in the performance or breach of any covenant by us in the indenture (other than defaults described above or defaults relating to a covenant that has been included in the indenture solely for the benefit of a series of debt securities other than that series), which default continues uncured for a period of 60 days after we receive written notice from the trustee, or we and the trustee receive written notice from the holders of not less than 25% in principal amount of the outstanding debt securities of that series as provided in the indenture;
- certain voluntary or involuntary events of bankruptcy, insolvency or reorganization of our company; and
- any other event of default provided with respect to a series of debt securities, including any events of default relating to guarantors, if any, or subsidiaries that is described in the applicable prospectus supplement.

No event of default with respect to a particular series of debt securities (except as to certain events of bankruptcy, insolvency or reorganization) necessarily constitutes an event of default with respect to any other series of debt securities. The occurrence of certain events of default or an acceleration under the indenture may constitute an event of default under certain indebtedness of ours or our subsidiaries outstanding from time to time.

If an event of default with respect to any series of debt securities at the time outstanding occurs and is continuing (other than an event of default resulting from certain events of bankruptcy, insolvency or reorganization), then the trustee or the holders of not less than 25% in principal amount of the outstanding debt securities of that series may, by a notice in writing to us (and to the trustee if given by the holders), declare to be due and payable immediately the principal of (or, if the debt securities of that series are discount securities, that portion of the principal amount as may be specified in the terms of that series) and accrued and unpaid interest, if any, on all debt securities of that series. In the case of an event of default resulting from certain events of bankruptcy, insolvency or reorganization, the principal amount (or such specified amount) of and accrued and unpaid interest, if any, on all outstanding debt securities will become and be immediately due and payable without any declaration or other act on the part of the trustee or any holder of outstanding debt securities. At any time after a declaration of acceleration with respect to debt securities of any series has been made, but before a judgment or decree for payment of the money due has been obtained by the trustee, the holders of a majority in principal amount of the outstanding debt securities of that series, by written notice to us and the trustee, may rescind and annul such declaration of acceleration and its consequences if all events of default, other than the non-payment of accelerated principal and interest, if any, with respect to debt securities of that series, have been cured or waived as provided in the indenture. We refer you to the prospectus supplement relating to any series of debt securities that are discount securities for the particular provisions relating to acceleration of a portion of the principal amount of such discount securities upon the occurrence of an event of default.

The indenture provides that the trustee will be under no obligation to perform any duty or exercise any of its rights or powers under the indenture unless the trustee receives indemnity satisfactory to it against any cost, liability or expense which might be incurred by it in performing such duty or exercising such right of power. Subject to certain rights of the trustee, the holders of a majority in principal amount of the outstanding debt securities of any series will have the right to direct the time, method and place of conducting any proceeding for any remedy available to the trustee or exercising any trust or power conferred on the trustee with respect to the debt securities of that series.

No holder of any debt security of any series will have any right to institute any proceeding, judicial or otherwise, with respect to the indenture or for the appointment of a receiver or trustee, or for any remedy under the indenture, unless:

- that holder has previously given to the trustee written notice of a continuing event of default with respect to debt securities of that series;
- the holders of not less than 25% in principal amount of the outstanding debt securities of that series have made written request to the trustee to institute the proceedings in respect of such event of default in its own name as trustee under the indenture;
- such holder or holders have offered to the trustee indemnity or security satisfactory to the trustee against the costs, expenses and liabilities which might be incurred by the trustee in compliance with such request;
- the trustee has failed to institute any such proceeding for 60 days after its receipt of such notice, request and offer of indemnity; and
- no direction inconsistent with such written request has been given to the trustee during such 60-day period by holders of a majority in principal amount of the outstanding debt securities of that series.

Notwithstanding any other provision in the indenture, the holder of any debt security will have an absolute and unconditional right to receive payment of the principal of, and any interest on, that debt security on or after the due dates expressed in that debt security (or, in the case of redemption, on the redemption date) and to institute suit for the enforcement of any such payment and such rights shall not be impaired without the consent of such holder.

The indenture requires us, within 120 days after the end of our fiscal year, to furnish to the trustee a statement as to compliance with the indenture from our principal executive officer, principal financial officer or principal accounting officer. If a default or event of default occurs and is continuing with respect to the debt securities of any series and if it is actually known to a responsible officer of the trustee, the trustee shall mail to each holder of the debt securities of that series notice of a default or event of default within 60 days after it occurs or, if later, after a responsible officer of the trustee has knowledge of such default or event of default. The indenture provides that the trustee may withhold notice to the holders of debt securities of any series of any default or event of default (except in payment on any debt securities of that series) with respect to debt securities of that series if the trustee determines in good faith that withholding notice is in the interest of the holders of those debt securities.

Modification and Waiver

We and the trustee may modify and amend or supplement the indenture or the debt securities of one or more series without the consent of any holder of any debt security:

- to add guarantees with respect to debt securities of a series or secure debt securities of a series;
- to surrender any of our rights or powers under the indenture;
- to add covenants or events of default for the benefit of the holders of any series of debt securities;
- to comply with the applicable procedures of the applicable depository;
- to cure any ambiguity, defect or inconsistency;
- to comply with covenants in the indenture described above under the heading “Consolidation, Merger and Sale of Assets”;
- to provide for uncertificated securities in addition to or in place of certificated securities;
- to make any change that does not materially adversely affect the rights of any holder of debt securities;
- to provide for the issuance of and establish the form and terms and conditions of debt securities of any series as permitted by the indenture;
- to effect the appointment of a successor trustee with respect to the debt securities of any series and to add to or change any of the provisions of the indenture to provide for or facilitate administration by more than one trustee;
- to comply with requirements of the SEC in order to effect or maintain the qualification of the indenture under the Trust Indenture Act; and
- for certain other reasons set forth in any prospectus supplement.

We may also modify and amend the indenture with the consent of the holders of at least a majority in principal amount of the outstanding debt securities of each series affected by the modifications or amendments. We may not make any modification or amendment without the consent of the holders of each affected debt security then-outstanding if that amendment will:

- reduce the principal amount of debt securities whose holders must consent to an amendment, supplement or waiver;
- reduce the rate of or extend the time for payment of interest (including default interest) on any debt security;
- reduce the principal of, or change the fixed maturity of, any debt security or reduce the amount of, or postpone the date fixed for, the payment of any sinking fund or analogous obligation with respect to any series of debt securities;
- reduce the principal amount of discount securities payable upon acceleration of maturity;
- waive a default in the payment of the principal of, or interest, if any, on any debt security (except a rescission of acceleration of the debt securities of any series by the holders of at least a majority in principal amount of the then-outstanding debt securities of that series and a waiver of the payment default that resulted from such acceleration);

- make the principal of, or any interest on, any debt security payable in currency other than that stated in the debt security;
- make any change to certain provisions of the indenture relating to, among other things, the right of holders of debt securities to receive payment of the principal of, and any interest on, those debt securities and to institute suit for the enforcement of any such payment;
- make any change to certain provisions of the indenture relating to waivers or amendments; or
- waive a redemption payment with respect to any debt security, provided that such redemption is made at our option.

Except for certain specified provisions, the holders of at least a majority in principal amount of the outstanding debt securities of any series may, on behalf of the holders of all debt securities of that series, by written notice to the trustee, waive our compliance with provisions of the indenture or the debt securities with respect to such series. The holders of a majority in principal amount of the outstanding debt securities of any series may, on behalf of the holders of all the debt securities of such series, waive any past default under the indenture with respect to that series and its consequences, except a default in the payment of the principal of, or any interest on, any debt security of that series; provided, however, that the holders of a majority in principal amount of the outstanding debt securities of any series may rescind an acceleration and its consequences, including any related payment default that resulted from the acceleration.

Defeasance of Debt Securities and Certain Covenants in Certain Circumstances

Legal Defeasance

The indenture provides that, unless otherwise provided by the terms of the applicable series of debt securities, we may be discharged from any and all obligations in respect of the debt securities of any series (subject to certain exceptions). We will be so discharged upon the deposit with the trustee, in trust, of money and/or U.S. government obligations or, in the case of debt securities denominated in a single currency other than U.S. dollars, government obligations of the government that issued or caused to be issued such currency, that, through the payment of interest and principal in accordance with their terms, will provide money in an amount sufficient in the opinion of a nationally recognized firm of independent public accountants or investment bank to pay and discharge each installment of principal and interest, if any, on and any mandatory sinking fund payments in respect of the debt securities of that series on the stated maturity of those payments in accordance with the terms of the indenture and those debt securities.

This discharge may occur only if, among other things, we have delivered to the trustee an opinion of counsel stating that we have received from, or there has been published by, the United States Internal Revenue Service a ruling or, since the date of execution of the indenture, there has been a change in the applicable United States federal income tax law, in either case to the effect that, and based thereon such opinion shall confirm that, the holders of the debt securities of that series will not recognize income, gain or loss for United States federal income tax purposes as a result of the deposit, defeasance and discharge and will be subject to United States federal income tax on the same amounts and in the same manner and at the same times as would have been the case if the deposit, defeasance and discharge had not occurred.

Defeasance of Certain Covenants

The indenture provides that, unless otherwise provided by the terms of the applicable series of debt securities, upon compliance with certain conditions:

- we may omit to comply with the covenant described under the heading “Consolidation, Merger and Sale of Assets” and certain other covenants set forth in the indenture, as well as any additional covenants which may be set forth in the applicable prospectus supplement; and

- any omission to comply with those covenants will not constitute a default or an event of default with respect to the debt securities of that series (“covenant defeasance”).

The conditions include:

- depositing with the trustee money and/or U.S. government obligations or, in the case of debt securities denominated in a single currency other than U.S. dollars, government obligations of the government that issued or caused to be issued such currency, that, through the payment of interest and principal in accordance with their terms, will provide money in an amount sufficient in the opinion of a nationally recognized firm of independent public accountants or investment bank to pay and discharge each installment of principal of, and interest, if any, on and any mandatory sinking fund payments in respect of the debt securities of that series on the stated maturity of those payments in accordance with the terms of the indenture and those debt securities; and
- delivering to the trustee an opinion of counsel to the effect that the holders of the debt securities of that series will not recognize income, gain or loss for United States federal income tax purposes as a result of the deposit and related covenant defeasance and will be subject to United States federal income tax on the same amounts and in the same manner and at the same times as would have been the case if the deposit and related covenant defeasance had not occurred.

Governing Law

The indenture and the debt securities, including any claim or controversy arising out of or relating to the indenture or the securities, will be governed by the laws of the State of New York (without regard to the conflicts of laws provisions thereof other than Section 5-1401 of the General Obligations Law).

DESCRIPTION OF WARRANTS

We may issue warrants for the purchase of common stock in one or more series. We may issue warrants independently or together with common stock, and the warrants may be traded separate and apart from our common stock. Each series of warrants will be issued under a warrant agreement, as described in the applicable prospectus supplement. We urge you to read any applicable warrant agreements, because those documents, and not these descriptions, define your rights as a holder of warrants. A copy of the form of warrant agreement reflecting the provisions of the warrants in a particular offering will be filed as an exhibit to a current report on Form 8-K, to be incorporated into the registration statement of which this prospectus constitutes a part prior to the issuance of any warrants.

The applicable prospectus supplement will describe the terms of the warrants offered thereby and the warrant agreement relating to such warrants, including but not limited to the following:

- the offering price or prices;
- the aggregate amount of common stock that may be purchased upon exercise of such warrants and minimum number of warrants that are exercisable;
- the currency or currency units in which the offering price, if any, and the exercise price are payable;
- the number of securities, if any, with which such warrants are being offered and the number of such warrants being offered with each security;
- the date on and after which such warrants and the related securities, if any, will be transferrable separately;
- the amount of securities purchasable upon exercise of each warrant and the price at which the securities may be purchased upon such exercise, and events or conditions under which the amount of securities may be subject to adjustment;
- the date on which the right to exercise such warrants shall commence and the date on which such right shall expire;
- the circumstances, if any, which will cause the warrants to be deemed to be automatically exercised;
- any material risk factors, if any, relating to such warrants;
- the identity of any warrant agent; and
- any other terms of such warrants (which shall not be inconsistent with the provisions of the warrant agreement).

The terms of the warrants that we offer may or may not have the same material terms as our currently outstanding warrants.

Prior to the exercise of any warrants, holders of such warrants will not have any rights of holders of the securities purchasable upon such exercise, including the right to receive payments of dividends, if any, on the securities purchasable upon such exercise, statutory appraisal rights or the right to vote such underlying securities. Prospective purchasers of warrants should be aware that material U.S. federal income tax, accounting and other considerations may be applicable to instruments such as warrants.

DESCRIPTION OF PURCHASE CONTRACTS

We may issue purchase contracts for the purchase or sale of common stock, preferred stock or other securities issued by us or by third parties as specified in the applicable prospectus supplement. Each purchase contract will entitle the holder thereof to purchase or sell, and obligate us to sell or purchase on specified dates, such securities at a specified purchase price, which may be based on a formula, all as set forth in the applicable prospectus supplement. We may, however, satisfy our obligations, if any, with respect to any purchase contract by delivering the cash value of such purchase contract or the cash value of the securities otherwise deliverable, as set forth in the applicable prospectus supplement. The applicable prospectus supplement will also specify the methods by which the holders may purchase or sell such securities, and any acceleration, cancellation or termination provisions or other provisions relating to the settlement of a purchase contract. The price per security and the number of securities may be fixed at the time the purchase contracts are entered into or may be determined by reference to a specific formula set forth in the applicable purchase contracts.

The purchase contracts may be issued separately or as part of units consisting of a purchase contract and debt securities or debt obligations of third parties, including U.S. treasury securities, or any other securities described in the applicable prospectus supplement or any combination of the foregoing, securing the holders' obligations to purchase the securities under the purchase contracts, which we refer to herein as "*purchase units*."

The purchase contracts may require holders to secure their obligations under the purchase contracts in a specified manner. The purchase contracts also may require us to make periodic payments to the holders of the purchase contracts or the purchase units, as the case may be, or vice versa, and those payments may be unsecured or pre-funded on some basis.

The prospectus supplement relating to any purchase contracts or purchase units we may offer will contain the specific terms of the purchase contracts or purchase units. These terms may include the following:

- whether the purchase contracts obligate the holder to purchase or sell, or both, our common stock, preferred stock, or debt securities, and the nature and amount of each of those securities, or method of determining those amounts;
- whether the purchase contracts are to be prepaid or not;
- whether the purchase contracts are to be settled by delivery, or by reference or linkage to the value, performance or level of our common stock or preferred stock;
- any acceleration, cancellation, termination or other provisions relating to the settlement of the purchase contracts; and
- whether the purchase contracts will be issued in fully registered global form.

The description in the applicable prospectus supplement of any purchase contract or purchase unit we offer will not necessarily be complete and will be qualified in its entirety by reference to the applicable purchase contract or purchase unit, which will be filed with the SEC if we offer purchase contracts or purchase units. For more information on how you can obtain copies of any purchase contract or purchase unit we may offer, see the section entitled "Where You Can Find More Information". We urge you to read the applicable purchase contract or applicable purchase unit and any applicable prospectus supplement in their entirety.

DESCRIPTION OF RIGHTS

We may issue rights to purchase common stock, preferred stock, or other securities. We may issue rights independently or together with any other offered security, which may or may not be transferable by the security holder. In connection with any offering of rights, we may enter into a standby arrangement with one or more underwriters or other purchasers pursuant to which the underwriters or other purchasers may be required to purchase any securities remaining unsubscribed for after such offering.

The prospectus supplement relating to any rights we may offer will contain the specific terms of the rights. These terms may include the following:

- the price, if any, for the rights;
- the exercise price payable for each common stock, preferred stock, or other securities upon the exercise of the rights;
- the number of rights issued to each security holder;
- the number and terms of each common stock, preferred stock, or other securities which may be purchased per each right;
- the extent to which the rights are transferable;
- any provisions for adjustment of the number or amount of securities receivable upon exercise of the rights or the exercise price of the rights;
- any other terms of the rights, including the terms, procedures and limitations relating to the exchange and exercise of the rights;
- the date on which the right to exercise the rights shall commence, and the date on which the rights shall expire;
- the extent to which the rights may include an over-subscription privilege with respect to unsubscribed securities; and
- if applicable, the material terms of any standby underwriting or purchase arrangement entered into by us in connection with the offering of rights.

The description in the applicable prospectus supplement of any rights we offer will not necessarily be complete and will be qualified in its entirety by reference to the applicable rights certificate or rights agreement, which will be filed with the SEC if we offer rights. For more information on how you can obtain copies of any rights certificate or rights agreement if we offer rights, see the section entitled "Where You Can Find More Information". We urge you to read the applicable rights certificate, the applicable rights agreement and any applicable prospectus supplement in their entirety.

DESCRIPTION OF UNITS

We may issue units comprised of one or more of the other securities described in this prospectus in any combination. Each unit will be issued so that the holder of the unit is also the holder of each security included in the unit. Thus, the holder of a unit will have the rights and obligations of a holder of each included security. A unit agreement under which a unit is issued may provide that the securities included in the unit may not be held or transferred separately, at any time or at any time before a specified date.

The applicable prospectus supplement may describe:

- the designation and terms of the units and of the securities comprising the units, including whether and under what circumstances those securities may be held or transferred separately;
- any provisions for the issuance, payment, settlement, transfer or exchange of the units or of the securities comprising the units; and
- any additional terms of the governing unit agreement.

The applicable prospectus supplement will describe the terms of any units. The preceding description and any description of units in the applicable prospectus supplement does not purport to be complete and is subject to and is qualified in its entirety by reference to the unit agreement and, if applicable, collateral arrangements and depository arrangements relating to such units.

TRANSFER AGENT AND REGISTRAR

The transfer agent and registrar for our common stock is Continental Stock Transfer & Trust Company, located in New York, New York.

ANTI-TAKEOVER CHARTER PROVISIONS AND LAWS

Some features of our certificate of incorporation and bylaws and the Delaware General Corporation Law (the “DGCL”), which are further described below, may have the effect of deterring third parties from making takeover bids for control of our company or may be used to hinder or delay a takeover bid. This would decrease the chance that our stockholders would realize a premium over market price for their shares of common stock as a result of a takeover bid. See the section entitled “Risk Factors”.

Limitations on Stockholder Actions

Our certificate of incorporation provides that stockholder action may only be taken at a meeting of the stockholders. Thus, an owner of a majority of the voting power could not take action to replace the board of directors, or any class of directors, without a meeting of the stockholders, nor could he amend the bylaws without presenting the amendment to a meeting of the stockholders. Furthermore, under the provisions of the certificate of incorporation and bylaws, only the board of directors has the power to call a special meeting of stockholders. Therefore, a stockholder, even one who owns a majority of the voting power, may neither replace sitting board of directors members nor amend the bylaws before the next annual meeting of stockholders.

Advance Notice Provisions

Our bylaws establish advance notice procedures for the nomination of candidates for election as directors by stockholders, as well as for other stockholder proposals to be considered at annual meetings. Generally, we must receive a notice of intent to nominate a director or raise any other matter at a stockholder meeting not less than 120 days before the first anniversary of the mailing of our proxy statement for the previous year’s annual meeting. The notice must contain required information concerning the person to be nominated or the matters to be brought before the meeting and concerning the stockholder submitting the proposal.

Delaware Law

We are incorporated in Delaware, and as such are subject to Section 203 of the DGCL, which provides that a corporation may not engage in any business combination with an interested stockholder during the three years after the stockholder becomes an interested stockholder unless:

- the corporation’s board of directors approved in advance either the business combination or the transaction which resulted in the stockholder becoming an interested stockholder;
- the interested stockholder owned at least 85 percent of the corporation’s voting stock at the time the transaction commenced; or
- the business combination is approved by the corporation’s board of directors and the affirmative vote of at least two-thirds of the voting stock which is not owned by the interested stockholder.

An interested stockholder is anyone who owns 15% or more of a corporation’s voting stock, or who is an affiliate or associate of the corporation and was the owner of 15% or more of the corporation’s voting stock at any time within the previous three years; and the affiliates and associates of any those persons. Section 203 of the DGCL makes it more difficult for an interested stockholder to implement various business combinations with our Company for a three-year period, although our stockholders may vote to exclude it from the law’s restrictions.

Classified Board

Our certificate of incorporation and bylaws divide our board of directors into three classes with staggered three-year terms. There are currently six directors. Each class is comprised of two directors each. At each annual meeting of stockholders, the terms of one class of directors will expire and the newly nominated directors of that class will be elected for a term of three years. The board of directors will be able to determine the total number of directors constituting the full board of directors and the number of directors in each class, but the total number of directors may not exceed nine nor may the number of directors in any class exceed six. No reduction in the total number of directors or in the number of directors in a given class will have the effect of removing a director from office or reducing the term of any then-sitting director. Stockholders may only remove directors for cause. If the board of directors increases the number of directors in a class, it will be able to fill the vacancies created for the full remaining term of a director in that class even though the term may extend beyond the next annual meeting. The directors will also be able to fill any other vacancies for the full remaining term of the director whose death, resignation or removal caused the vacancy.

A person who has a majority of the voting power at a given meeting will not in any one year be able to replace a majority of the directors since only one class of the directors will stand for election in any one year. As a result, at least two annual meeting elections will be required to change the majority of the directors by the requisite vote of stockholders. The purpose of classifying the board of directors is to provide for a continuing body, even in the face of a person who accumulates a sufficient amount of voting power, whether by ownership or proxy or a combination, to have a majority of the voting power at a given meeting and who may seek to take control of our Company without paying a fair premium for control to all of the owners of our common stock. This will allow the board of directors time to negotiate with such a person and to protect the interests of the other stockholders who may constitute a majority of the shares not actually owned by that person. However, it may also have the effect of deterring third parties from making takeover bids for control of our Company or may be used to hinder or delay a takeover bid.

PLAN OF DISTRIBUTION

We may sell the securities from time to time, by a variety of methods, including the following:

- on any national securities exchange or quotation service on which our securities may be listed at the time of sale, including the NYSE American;
- in the over-the-counter market;
- in transactions otherwise than on such exchange or in the over-the-counter market, which may include privately negotiated transactions and sales directly to one or more purchasers;
- through ordinary brokerage transactions and transactions in which the broker-dealer solicits purchasers;
- through purchases by a broker-dealer as principal and resale by the broker-dealer for its account;
- through underwriters, broker-dealers, agents, in privately negotiated transactions, or any combination of these methods;
- through short sales;
- through the writing or settlement of options or other hedging transactions, whether through an options exchange or otherwise;
- a combination of any of these methods; or
- by any other method permitted pursuant to applicable law.

The securities may be distributed from time to time in one or more transactions:

- at a fixed price or prices, which may be changed;
- at market prices prevailing at the time of sale;
- at prices related to such prevailing market prices; or
- at negotiated prices.

Offers to purchase the securities being offered by this prospectus may be solicited directly. Agents may also be designated to solicit offers to purchase the securities from time to time. Any agent involved in the offer or sale of our securities will be identified in a prospectus supplement.

If a dealer is utilized in the sale of the securities being offered by this prospectus, the securities will be sold to the dealer, as principal. The dealer may then resell the securities to the public at varying prices to be determined by the dealer at the time of resale.

If an underwriter is utilized in the sale of the securities being offered by this prospectus, an underwriting agreement will be executed with the underwriter at the time of sale and the name of any underwriter will be provided in the prospectus supplement that the underwriter will use to make resales of the securities to the public. In connection with the sale of the securities, we or the purchasers of securities for whom the underwriter may act as agent, may compensate the underwriter in the form of underwriting discounts or commissions. The underwriter may sell the securities to or through dealers, and those dealers may receive compensation in the form of discounts, concessions or commissions from the underwriters and/or commissions from the purchasers for which they may act as agent. Unless otherwise indicated in a prospectus supplement, an agent will be acting on a best efforts basis and a dealer will purchase securities as a principal, and may then resell the securities at varying prices to be determined by the dealer.

Any compensation paid to underwriters, dealers or agents in connection with the offering of the securities, and any discounts, concessions or commissions allowed by underwriters to participating dealers will be provided in the applicable prospectus supplement. Underwriters, dealers and agents participating in the distribution of the securities may be deemed to be underwriters within the meaning of the Securities Act, and any discounts and commissions received by them and any profit realized by them on resale of the securities may be deemed to be underwriting discounts and commissions. In compliance with the guidelines of the Financial Industry Regulatory Authority, Inc. (“FINRA”), the maximum amount of underwriting compensation, including underwriting discounts and commissions, to be paid in connection with any offering of securities pursuant to this prospectus may not exceed 8% of the aggregate principal amount of securities offered. We may enter into agreements to indemnify underwriters, dealers and agents against civil liabilities, including liabilities under the Securities Act, or to contribute to payments they may be required to make in respect thereof and to reimburse those persons for certain expenses.

The securities may or may not be listed on a national securities exchange. To facilitate the offering of securities, certain persons participating in the offering may engage in transactions that stabilize, maintain or otherwise affect the price of the securities. This may include over-allotments or short sales of the securities, which involve the sale by persons participating in the offering of more securities than were sold to them. In these circumstances, these persons would cover such over-allotments or short positions by making purchases in the open market or by exercising their over-allotment option, if any. In addition, these persons may stabilize or maintain the price of the securities by bidding for or purchasing securities in the open market or by imposing penalty bids, whereby selling concessions allowed to dealers participating in the offering may be reclaimed if securities sold by them are repurchased in connection with stabilization transactions. The effect of these transactions may be to stabilize or maintain the market price of the securities at a level above that which might otherwise prevail in the open market. These transactions may be discontinued at any time.

If indicated in the applicable prospectus supplement, underwriters or other persons acting as agents may be authorized to solicit offers by institutions or other suitable purchasers to purchase the securities at the public offering price set forth in the prospectus supplement, pursuant to delayed delivery contracts providing for payment and delivery on the date or dates stated in the prospectus supplement. These purchasers may include, among others, commercial and savings banks, insurance companies, pension funds, investment companies and educational and charitable institutions. Delayed delivery contracts will be subject to the condition that the purchase of the securities covered by the delayed delivery contracts will not at the time of delivery be prohibited under the laws of any jurisdiction in the United States to which the purchaser is subject. The underwriters and agents will not have any responsibility with respect to the validity or performance of these contracts.

We may engage in at-the-market offerings into an existing trading market in accordance with rule 415(a)(4) under the Securities Act. In addition, we may enter into derivative transactions with third parties, or sell securities not covered by this prospectus to third parties in privately negotiated transactions. If the applicable prospectus supplement so indicates, in connection with those derivatives, the third parties may sell securities covered by this prospectus and the applicable prospectus supplement, including in short sale transactions. If so, the third party may use securities pledged by us or others to settle those sales or to close out any related open borrowings of common stock, and may use securities received from us in settlement of those derivatives to close out any related open borrowings of our common stock. In addition, we may loan or pledge securities to a financial institution or other third party that in turn may sell the securities using this prospectus and an applicable prospectus supplement. Such financial institution or other third party may transfer its economic short position to investors in our securities or in connection with a concurrent offering of other securities.

The underwriters, dealers and agents may engage in transactions with us, or perform services for us, in the ordinary course of business for which they receive compensation.

LEGAL MATTERS

Unless otherwise indicated in the applicable prospectus supplement, the validity of the securities offered by this prospectus, and any supplement thereto, has been passed upon for us by Thompson Hine LLP, 335 Madison Avenue, 12th Floor, New York, New York 10017-4611.

EXPERTS

The financial statements as of December 31, 2019 and 2018 incorporated in this prospectus by reference to the Annual Report on Form 10-K for the years ended December 31, 2019 and 2018, respectively, have been so incorporated in reliance on the report, which refers to the adoption of new accounting standard ASU No. 2016-02, Leases (Topic 842), as amended, effective January 1, 2019, and which includes an explanatory paragraph as to the Company's ability to continue as a going concern, of Marcum LLP, an independent registered public accounting firm, given on the authority of said firm as experts in auditing and accounting.