

The information contained in this preliminary prospectus supplement and the accompanying prospectus is not complete and may be changed. A registration statement relating to these securities has been declared effective by the Securities and Exchange Commission. This preliminary prospectus supplement and the accompanying prospectus are not an offer to sell these securities and are not soliciting an offer to buy these securities in any jurisdiction where the offering is not permitted.

Filed Pursuant to Rule 424(b)(5)
Registration No. 333-217106

PRELIMINARY PROSPECTUS SUPPLEMENT

SUBJECT TO COMPLETION

DATED JUNE 18, 2018

(To Prospectus dated April 12, 2017)

**8,000 Shares of
Series B Convertible Preferred Stock
16,000,000 shares of Common Stock
Underlying the Series B Preferred Stock**



Matinas BioPharma Holdings, Inc.

We are offering 8,000 shares of our newly designated Series B Convertible Preferred Stock, or the Series B Preferred, with a stated value of \$1,000 per share and convertible into an aggregate of 16,000,000 shares of our common stock at a conversion price of \$0.50 per share. This prospectus supplement and the accompanying prospectus also relate to the offering of the shares of common stock issuable upon conversion of, and an additional 7,200,000 shares of common stock issuable upon payment of dividends under, the Series B Preferred being offered in this offering.

Our common stock is traded on the NYSE American LLC, or NYSE American, under the symbol "MTNB". On June 15, 2018, the last reported sales price of our common stock on NSYE American was \$0.63 per share.

There is no established trading market for the Series B Preferred, and we do not expect an active trading market to develop. We do not intend to list the Series B Preferred on any securities exchange or other trading market. Without an active trading market, the liquidity of the Series B Preferred will be limited.

Each of our officers and directors have indicated an interest in purchasing shares of our Series B Preferred in this offering at the public offering price of \$1,000 per share. However, because indications of interest are not binding agreements or commitments to purchase, we could determine to sell more, less or no shares to any of these potential investors and any of these potential investors could determine to purchase more, less or no shares in this offering.

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-10 of this prospectus supplement, and in the risks discussed in the documents incorporated by reference in this prospectus supplement and accompanying prospectus, as they may be amended, updated or modified periodically in our reports filed with the Securities and Exchange Commission.

We are an "emerging growth company" as defined by the Jumpstart Our Business Startups Act of 2012 and, as such, we have elected to comply with certain reduced public company reporting requirements for this prospectus supplement and future filings.

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

	Per Share	Total
Public offering price	\$	\$
Placement agent fees ⁽¹⁾	\$	\$
Proceeds to us, before expenses	\$	\$

(1) Does not include a non-accountable expense allowance equal to 1% of the gross of this offering payable to ThinkEquity, a division of Fordham Financial Management, Inc. The placement agent will also receive warrants to purchase a number of shares of our common stock equal to 1.5% of the common stock into which the Series B Preferred sold in this offering are convertible, at an exercise price equal to 150% of the conversion price per share for the Series B Preferred. See "Plan of Distribution" for a description of compensation payable to the placement agent.

We have retained ThinkEquity, a division of Fordham Financial Management, Inc. as our exclusive placement agent to use its reasonable efforts to solicit offers to purchase the securities in this offering. The placement agent has no obligation to buy any of the securities from us

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

We expect to deliver the shares of Series B Preferred on or about _____, 2018.

ThinkEquity

A division of Fordham Financial Management, Inc.

The date of this prospectus supplement is _____, 2018.

TABLE OF CONTENTS

Prospectus Supplement	Page
ABOUT THIS PROSPECTUS SUPPLEMENT	S-3
PROSPECTUS SUPPLEMENT SUMMARY	S-4
RISK FACTORS	S-10
SPECIAL NOTE REGARDING FORWARD-LOOKING STATEMENTS	S-12
RATIOS OF COMBINED FIXED CHARGES AND PREFERRED STOCK DIVIDENDS TO EARNINGS	S-13
USE OF PROCEEDS	S-13
MARKET PRICE FOR OUR COMMON STOCK	S-14
DILUTION	S-16
DESCRIPTION OF THE SECURITIES WE ARE OFFERING	S-17
PLAN OF DISTRIBUTION	S-24
LEGAL MATTERS	S-25
EXPERTS	S-25
WHERE YOU CAN FIND MORE INFORMATION	S-25
INCORPORATION OF CERTAIN INFORMATION BY REFERENCE	S-26
Prospectus	
ABOUT THIS PROSPECTUS	1
PROSPECTUS SUMMARY	1
RISK FACTORS	3
FORWARD-LOOKING STATEMENTS	3
USE OF PROCEEDS	3
THE SECURITIES WE MAY OFFER	4
DESCRIPTIONS OF CAPITAL STOCK	4
DESCRIPTION OF STOCK WARRANTS	10
DESCRIPTION OF DEBT SECURITIES	12
DESCRIPTION OF SUBSCRIPTION RIGHTS	17
DESCRIPTION OF UNITS	17
PLAN OF DISTRIBUTION	19
LEGAL MATTERS	23
EXPERTS	23
ADDITIONAL INFORMATION	23
INCORPORATION OF CERTAIN INFORMATION BY REFERENCE	24

ABOUT THIS PROSPECTUS SUPPLEMENT

In this prospectus supplement, “Matinas,” “we,” “us,” “our” or “ours” refer to Matinas BioPharma Holdings, Inc. and its consolidated subsidiaries.

This prospectus supplement and the accompanying prospectus relate to the offering of shares of our securities. Before buying any of the securities offered hereby, we urge you to carefully read this prospectus supplement and the accompanying prospectus, together with the information incorporated herein by reference as described under the headings “Where You Can Find More Information” and “Incorporation of Certain Information by Reference.” These documents contain important information that you should consider when making your investment decision. This prospectus supplement contains information about the securities offered hereby and may add, update or change information in the accompanying prospectus.

You should rely only on the information that we have provided or incorporated by reference in this prospectus supplement and the accompanying prospectus. Neither we nor the placement agent (or any of our or its respective affiliates) 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 and the placement agent are not making offers to sell or solicitations to buy our securities in any jurisdiction in which an offer or solicitation is not authorized or in which the person making that offer or solicitation is not qualified to do so or to anyone to whom it is unlawful to make an offer or solicitation. You should assume that the information in this prospectus supplement and the accompanying prospectus or any related free writing prospectus is accurate only as of the date on the front of the document and that any information that we have incorporated by reference is accurate only as of the date of the document incorporated by reference, regardless of the time of delivery of this prospectus supplement, the accompanying prospectus or any related free writing prospectus, or any sale of a security.

This document is in two parts. The first part is this prospectus supplement, which adds to and updates information contained in the accompanying prospectus. The second part, the 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 and the information contained in the accompanying prospectus, you should rely on the information in this prospectus supplement.

This prospectus supplement and the accompanying prospectus contain 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 or will be filed as exhibits to the registration statement of which this prospectus is a part or as exhibits to documents incorporated by reference herein, and you may obtain copies of those documents as described below under the headings “Where You Can Find More Information” and “Incorporation of Certain Information by Reference.”

PROSPECTUS SUPPLEMENT SUMMARY

The following summary of our business highlights some of the information contained elsewhere in or incorporated by reference into this prospectus supplement. Because this is only a summary, however, it does not contain all of the information that may be important to you. You should carefully read this prospectus supplement and the accompanying prospectus, including the documents incorporated by reference, which are described under "Incorporation of Certain Information by Reference" and "Where You Can Find More Information" in this prospectus supplement. You should also carefully consider the matters discussed in the section titled "Risk Factors" in this prospectus supplement and in the accompanying prospectus and in other periodic reports incorporated by reference herein.

Our Company

We are a clinical-stage biopharmaceutical company currently focused on enabling the delivery of life-changing medicines using our unique and proprietary, lipid nano-crystal (LNC) delivery technology platform. Our LNC delivery technology platform, licensed from Rutgers University on an exclusive worldwide basis, utilizes lipid nano-crystals which can encapsulate small molecules, oligonucleotides, vaccines, peptides, proteins and other medicines potentially making them safer, more tolerable, less toxic and orally bioavailable. The ability of LNC delivery technology platform to efficiently deliver drugs intracellularly results in the targeted and safe delivery of pharmaceuticals directly to the site of infection or inflammation as well as the potential to treat a variety of cell-based pathogens, diseases and conditions. We believe our LNC delivery technology provides us with a stable, safe, efficient and broadly applicable drug delivery platform, with particular utility in diseases and conditions in which the immune system plays a significant modulation role and where the immune system facilitates the active transport of our lipid crystal nano-particles throughout the body.

Currently, we are focused on leveraging our delivery platform in developing our own products within the anti-infective space and on identifying strategic partners whose drug candidates and molecules, in combination with our delivery technology, present the greatest value and innovation while addressing significant markets of unmet medical need.

We believe initially focusing on the anti-infective market has distinct advantages for the development of products, including:

- a current regulatory environment which provides small development and clinical stage companies incentives such as significant periods of regulatory marketing exclusivity and opportunities to reduce development cost and timeline to market for anti-infective drug candidates;
- traditional high correlation between efficacy and safety data in preclinical animal models and the outcome of human clinical trials with anti-infective product candidates, particularly for systemic disease; and
- attractive commercial opportunities for anti-infective products differentiated in safety profile, mode of action and oral bioavailability positioned against current therapies with significant side effects, or drug to drug interactions, limited efficacy and intravenous delivery resulting in lack of convenience, compliance and at a significant burden to the cost of healthcare.

Strategy

Our goal is to become a fully integrated biopharmaceutical company that discovers, develops and commercializes, either ourselves or through strategic partners, novel, life-changing medicines using our proprietary LNC delivery platform technology. Key elements of our strategy include:

- **Rapidly advance our lead antifungal product candidate, MAT2203, through a focused and streamlined clinical development program to obtain regulatory approval in areas of demonstrated unmet medical need supported by significant regulatory exclusivity.** We plan to leverage the current regulatory environment for anti-infectives that address specific needs, to expedite the development of MAT2203. We have completed two Phase 2 clinical trials with MAT2203 and met with the FDA in January 2018 to review our overall data package and further development plans for MAT2203. We are planning a potential pivotal Phase 2 clinical trial using an adaptive design with the goal of generating PK/PD, efficacy, and safety data necessary to support a limited use indication for the prevention of invasive fungal infections in acute lymphocytic leukemia (ALL) patients, an area where there currently exists no approved prevention alternatives. If approved for use in this indication, MAT2203 could be eligible for 12 years of product exclusivity afforded through FDA designation as a QIDP and Orphan drug product.
- **Invest in our LNC delivery platform.** We believe that our unique and proprietary LNC delivery technology platform has broad potential applications across a wide spectrum of compounds and therapeutic areas and is differentiated from any other lipid nanoparticle delivery system available today. Important data has already been generated with our delivery system and other compounds and molecules including antivirals, vaccines (including the influenza vaccine), oligonucleotides (such as messenger RNAs (mRNA) and small interfering RNAs (siRNA)) and anti-inflammatory agents (such as NSAIDs). We intend to invest the resources necessary to better understand and characterize the superiority of our LNC delivery technology platform and are in the process of evaluating several potential strategic collaborations to advance our platform technology in areas of innovative medicine. Furthermore, we expect to continue to establish important intellectual property related to this platform, its applications and development candidates.

- **Develop and grow our ability to formulate and manufacture products utilizing our proprietary LNC delivery technology platform.** We have made significant investments in establishing our own cGMP facility in order to supply products for clinical development of our product candidates. With these facilities, we have also taken steps to improve the formulations for our product candidates which we believe could provide greater efficacy, safety and patient compliance. We plan to continue to invest in maintaining and potentially expanding our manufacturing capacity for cGMP production in preparation for additional preclinical and clinical development programs for other product candidates, as well as early commercial production in an effort to retain exclusive knowledge of the process and intellectual property associated with our LNC delivery technology platform.
- **Advance our second clinical stage product candidate, MAT2501, based on available resources, with a goal of improving the formulation of MAT2501 in order to broaden the therapeutic application and opportunity associated with the potentially first orally-available aminoglycoside supported by significant regulatory exclusivity.** In May 2017 we completed and announced topline results from our first Phase 1 single escalating dose clinical trial of MAT2501 in healthy volunteers in which no serious adverse events were reported and where oral administration of MAT2501 at all tested doses yielded blood levels well below the safety levels recommended for injected amikacin. Prior to commencing our next clinical study with MAT2501, we plan to complete formulation enhancement and preclinical studies to optimize MAT2501 for success in the treatment of non-tuberculous mycobacterium, as well as other bacterial infections where there is significant unmet medical need due to increasing resistance to available therapies and lack of innovation.

Our Anti-Infective Product Candidates

MAT2203

We have leveraged our LNC delivery technology platform to develop two clinical-stage products that we believe have the potential to become best-in-class drugs. Our lead product candidate MAT2203 is an orally-administered LNC formulation of a broad spectrum anti-fungal drug called amphotericin B. We are initially developing MAT2203 for the prevention of invasive fungal infections (IFIs) due to immunosuppressive therapy in patients with Acute Lymphoblastic Leukemia (ALL). In 2017 and early 2018, we completed and announced data from two separate Phase 2 clinical trials involving MAT2203, and we are positioning this product and planning a pivotal Phase 2 adaptive design clinical trial in certain leukemia patients seeking a limited indication approval in patients with ALL, which is expected to commence in the first half of 2019.

MAT2501

Our second clinical stage product candidate is MAT2501, an orally administered, LNC formulation of the broad spectrum aminoglycoside antibiotic amikacin which may be used to treat different types of multidrug-resistant bacteria, including non-tuberculous mycobacterium infections (NTM), as well as various multidrug-resistant gram negative and intracellular bacterial infections. In May 2017, we completed and announced topline results from a Phase 1 single escalating dose clinical trial of MAT2501 in healthy volunteers in which no serious adverse events were reported and where oral administration of MAT2501 at all tested doses yielded blood levels that were well below the safety levels recommended for injected amikacin, supporting further development of MAT2501 for the treatment of NTM infections. If approved, MAT2501 would be the first ever orally available aminoglycoside.

Our LNC Delivery Technology Platform

We have been engaged in developing our LNC delivery technology and leveraged our LNC delivery technology platform to develop two clinical-stage, anti-infective product candidates. Our LNC delivery technology platform is currently being used to encapsulate potent anti-infective drugs in tiny lipid-crystals which are selectively picked up by cells in the mononuclear phagocytic system, such as macrophages, and transported to infected cells. These tiny lipid nano-crystals have a multilayer crystalline, spiral structure with no internal aqueous space. The structure is formed when a series of solid lipid sheets roll up and engulf drug molecules in between the sheets. The result is a lipid crystal drug formulation made up of nano-sized particles. We believe our LNC delivery technology platform provides an effective delivery mechanism without chemically bonding or otherwise altering the drug. Because the medications are locked in the particles, we believe the exposure to sensitive organs will be reduced, potentially resulting in reduced toxic effects. In summary, we believe this unique technology offers (1) targeted and natural intracellular delivery, (2) decreased toxic effects, and (3) flexible administration, including parenteral and oral formulations (even for intravenous (IV)-only medications).

Protection of Payload and Decreased Toxic Effects: A key innovation of our LNC delivery technology is our ability to encapsulate medication inside lipid-crystal particles without leaking. Because of their crystal nature, these particles are truly solid and hold on tightly to their medication pay-load. This becomes important when transporting sensitive genetic material, such as oligonucleotides, where protection against destruction is critical. Keeping molecules stable inside our LNC technology also plays a role in the reduction of toxicity by keeping molecules out of the bloodstream. This is where our LNC delivery technology differs markedly from other lipid-based delivery technology, such as liposomal delivery. Liposomes are liquid delivery systems which typically leak some of their drug content into our circulatory systems, thus still exposing our vulnerable organs and tissues to potential toxic effects. Keeping potentially organ-toxic medications inside the lipid-crystal particles strongly differentiates our LNC delivery technology from other drug delivery approaches.

Natural Targeted Delivery: The size of our individual lipid nano-crystals is typically in the range of 50-500 nm. This is very small and by comparison close to the size of a large virus or a small bacteria. Our body produces several cell-types that are designed to remove viruses and bacteria from our system. These cell types, such as macrophages, are part of our immune system and “swallow” the bacteria and viruses they encounter in order to protect us from infections. Because of the size of our lipid nano-crystals particles and our specific phospholipid surface structure (the cell membranes of bacteria are also made up of phospholipids), macrophages tend to absorb these LNC particles very well. Most other lipid nanoparticle delivery systems have to use an artificial way to manipulate the cell membrane or compromise the integrity of the cell membrane in order to deliver inside a cell. Our LNC technology creates a natural fusion phenomenon by using calcium and a neutrally charged phospholipid which allows our lipid crystals to naturally bind to a cell and fuse in a non-destructive way, allowing for delivery into the cytoplasm of a cell in a non-destructive fashion.

Flexible Formulation: Our LNC delivery platform technology provides for the flexible administration and delivery of molecules. We have demonstrated the ability to achieve stable formulations and delivery intranasally, parenterally and, importantly, orally. Many drugs that are currently on the market are only effective in treating diseases when administered via IV. For example, many anti-infective drugs must be administered via IV in order to be effective. IV administration presents several challenges to care, such as risk of infection, patient discomfort from injections, and higher cost of care than anti-infective drugs that can be taken orally (IV delivery must be performed by a doctor or nurse, often within a very expensive hospital setting). Although several technologies have been used to attempt to convert IV drugs to orally delivered medications, success has been limited due to the difficulty in achieving adequate bioavailability (i.e., the amount of drug that is absorbed into the body) with oral formulation. We believe that the unique crystal-structure in our LNC platform technology protects the drug from degradation when it passes through the gastrointestinal (GI) tract and that its lipid surface features facilitate the particle to be absorbed into the blood stream. The potential application of our LNC delivery technology for the delivery of injectable medications offers significant clinical and commercial value if successfully demonstrated in human clinical trials.

Additional Pipeline Opportunities

We believe our LNC delivery technology platform can be used to reformulate a wide variety of molecules and drugs which (i) require delivery technology to effectively protect molecules and drugs in the body and could benefit from efficient delivery and natural cellular uptake by target cells, (ii) are currently only available in IV formulations, or (iii) otherwise experience significant toxicity-related adverse events. Leveraging our LNC delivery technology platform, we believe we can develop a robust pipeline of product candidates, either internally or through strategic partnerships with pharmaceutical and biotech companies. We have tested a range of pharmaceutical compounds reformulated by our LNC delivery technology platform in proof-of-concept animal studies, including oligonucleotides (mRNA, siRNA, DNA plasmids), vaccines, anti-inflammatory agents and NSAIDs. We also believe our LNC technology platform could become an important potential solution to solve the delivery challenges for therapies being developed using gene editing. By way of example, in 2016 we received a patent issuance related to LNC compositions directed against expressions of proteins. The allowed patent claims cover our proprietary methods related to the composition and the formation of LNC encapsulated siRNA for potential use as therapy for regulating gene expression. We intend to pursue opportunities to develop products, either alone or in partnership with other pharmaceutical or biotech companies, related to our LNC delivery technology platform and this remains a key part of our strategy to maximize the value of this unique and disruptive LNC delivery technology platform.

Exclusive License Agreement with Rutgers University

We in-license our LNC delivery technology platform from Rutgers University. The Amended and Restated Exclusive License Agreement dated January 29, 2015 between us and Rutgers, The State University of New Jersey (successor in interest to the University of Medicine and Dentistry of New Jersey) provides for, among other things, (1) a license issue fee of \$25,000 paid upon execution, (2) royalties on a tiered basis between low single digits and the mid-single digits of net sales of products using such licensed technology, (3) a one-time sales milestone fee of \$100,000 when and if sales of products using the licensed technology reach the specified sales threshold and (4) an annual license fee of initially \$10,000, increasing to \$50,000 over the term of the license agreement. We also agreed to assume the responsibility to pay required patent prosecution and maintenance fees covering the technology.

Unless otherwise terminated by either party, the term of the license, on a country by country basis, shall be the longer of 7-1/2 years from the date of first commercial sale of a product in a country using the licensed technology or until the expiration of the last-to-expire patent rights licensed under the agreement, whichever is longer. Rutgers has the right to terminate the license agreement if we have not commenced commercial sales of at least one product using the licensed technology within nine years of the effective date of the license agreement.

Recent Developments

On June 14, 2018, we terminated the employment of Dominick M. DiPaolo who served as our Senior Vice President of Quality and Regulatory Compliance effective immediately. Mr. DiPaolo will receive one month in base salary as severance, payable in accordance with our standard payroll practices, subject to the execution of a separation agreement and general release.

Implications of Being an Emerging Growth Company

We are an “emerging growth company,” as defined in the Jumpstart Our Business Startups Act of 2012. We will remain an emerging growth company until December 31, 2019, or until the earliest of (i) the last day of the first fiscal year in which our annual gross revenues exceed \$1.07 billion, (ii) the date that we become a “large accelerated filer” as defined in Rule 12b-2 under the Exchange Act, which would occur if the market value of our common stock that is held by non-affiliates exceeds \$700 million as of the last business day of our most recently completed second fiscal quarter, or (iii) the date on which we have issued more than \$1 billion in non-convertible debt during the preceding three year period.

For as long as we remain an “emerging growth company,” we intend to take advantage of certain exemptions from various reporting requirements that are applicable to public companies that are not “emerging growth companies” including, but not limited to, not being required to comply with the auditor attestation requirements of Section 404 of the Sarbanes-Oxley Act, reduced disclosure obligations regarding executive compensation and financial statements in our periodic reports and proxy statements, and exemptions from the requirements of holding a nonbinding advisory vote to approve executive compensation and shareholder approval of any golden parachute payments not previously approved. We will take advantage of these reporting exemptions until we are no longer an “emerging growth company.”

Corporate Information

We were incorporated in Delaware under the name Matinas BioPharma Holdings, Inc. in May 2013. We have two operating subsidiaries: Matinas BioPharma, Inc., a Delaware corporation, and Matinas BioPharma Nanotechnologies, Inc., a Delaware corporation. Nereus BioPharma LLC, a Delaware limited liability company (and Matinas BioPharma’s predecessor) was formed on August 12, 2011. On February 29, 2012, Nereus BioPharma LLC converted from a limited liability company to a corporation and changed its name to Matinas BioPharma, Inc. In July 2013, Matinas BioPharma, Inc. merged with and into a wholly-owned subsidiary of ours, thereby becoming a wholly owned subsidiary of ours. On January 29, 2015, we acquired Aquarius Biotechnologies Inc. which was subsequently renamed Matinas BioPharma Nanotechnologies, Inc.

Our principal executive offices are located at 1545 Route 206 South, Suite 302, Bedminster, New Jersey 07921, and our telephone number is (908) 443-1860. Our website address is www.matinasbiopharma.com. Our website and the information contained on, or that can be accessed through, our website will not be deemed to be incorporated by reference in, and are not considered part of, this prospectus. You should not rely on our website or any such information in making your decision whether to purchase our securities.

The Offering

Series B Preferred offered by us	8,000 shares of our newly designated Series B Convertible Preferred Stock, with a stated value of \$1,000 per share and convertible into an aggregate of 16,000,000 shares of our common stock at a conversion price of \$0.50 per share, with a liquidation preference of \$1,000 per share. See “Description of Capital Stock — Series B Preferred” for further discussion of the terms of the Series B Preferred.
Dividends	Subject to the Beneficial Ownership Limitation, holders of the Series B Preferred will be entitled to receive dividends payable as follows: (i) a number of shares of common stock equal to 10% of the shares of common stock underlying the Series B Preferred then held by such holder on the 12-month anniversary of the effective date (which we sometimes refer to as the “COD Effective Date”) of the filing of the certificate of designation for the Series B Preferred with the Secretary of State of the State of Delaware, (ii) a number of shares of common stock equal to 15% of the shares of common stock underlying the Series B Preferred then held by such holder on the 24-month anniversary of the COD Effective Date and (iii) a number of shares of common stock equal to 20% of the shares of common stock underlying the Series B Preferred then held by such holder on the 36-month anniversary of the COD Effective Date. In the event a purchaser in this offering no longer holds Series B Preferred as of the 12-month anniversary, the 24-month anniversary or the 36-month anniversary, such purchaser will not be entitled to receive any dividends on such anniversary date. In addition, holders of Series B Preferred will be entitled to receive dividends equal, on an as-if-converted to shares of common stock basis, and 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 the common stock.
Optional Conversion	Subject to the Beneficial Ownership Limitation, each share of our Series B Preferred is convertible into 2,000 shares of our common stock at a conversion price of \$0.50 per share at any time at the option of the holder.
Automatic Conversion	Subject to the Beneficial Ownership Limitation, each share of our Series B Preferred shall automatically convert into 2,000 shares of our common stock at a conversion price of \$0.50 per share upon the earlier of (i) the first FDA approval of one of our product candidates, (ii) the three year anniversary of the COD Effective Date or (iii) the consent to conversion by holders of at least 50.1% of the then-outstanding shares of Series B Preferred.
Beneficial Ownership Limitation	We may not effect any optional conversion or any automatic conversion of the Series B Preferred or issue shares of common stock as dividends, and a holder does not have the right to convert any portion of the Series B Preferred to the extent that, after giving effect to such conversion, or such dividend, such holder would beneficially own in excess of the Beneficial Ownership Limitation, or such holder, together with such holder’s affiliates, and any persons acting as a group together with such holder or affiliates, would beneficially own in excess of the Beneficial Ownership Limitation. In such event, we will only be able to convert such portion, or issue such dividend, up to the respective limitation. The “Beneficial Ownership Limitation” is 4.99% of the number of shares of common stock outstanding immediately after giving effect to the issuance of shares of common stock issuable upon conversion of Series B Preferred held by the applicable holder. A holder may, prior to issuance of the Series B Preferred or, with 61 days prior notice to us, elect to increase or decrease the Beneficial Ownership Limitation; provided, however, that in no event may the Beneficial Ownership Limitation exceed 9.99%.
Voting Rights	Except as provided in the Certificate of Designation relating to our Series B Preferred or as otherwise required by law, the holders of Series B Preferred will have no voting rights. However, we may not, without the consent of holders of a majority of the outstanding shares of Series B Preferred, alter or change adversely the powers, preferences or rights given to the Series B Preferred, increase the number of authorized shares of Series B Preferred, or enter into any agreement with respect to the foregoing.
Ranking	The Series B Preferred will rank <ul style="list-style-type: none">• junior to our Series A Preferred Stock;• senior to all of our common stock;• senior to any class or series of our capital stock hereafter created specifically ranking by its terms junior to the Series B Preferred; and• on a parity with any class or series of our capital stock hereafter created specifically ranking by its terms on a parity with the Series B Preferred.

Offering Price	\$1,000 per share
Listing	We are not listing our Series B Preferred on an exchange or any trading system and we do not expect that a trading market for our Series B Preferred will develop.
Tax Considerations	For a discussion of the U.S. federal income tax consequences of purchasing, owning and disposing of the Series B Preferred, please see “Material U.S. Federal Income Tax Considerations.” You are urged to consult your tax advisor with respect to the U.S. federal income tax consequences of owning shares of the Series B Preferred in light of your own particular situation and with respect to any tax consequences arising under the laws of any state, local, foreign or other taxing jurisdiction.
Insider Participation	Each of our officers and directors have indicated an interest in purchasing shares of our Series B Preferred in this offering at the public offering price of \$1,000 per share. However, because indications of interest are not binding agreements or commitments to purchase, we could determine to sell more, less or no shares to any of these potential investors and any of these potential investors could determine to purchase more, less or no shares in this offering.
Use of Proceeds	We currently intend to use the net proceeds from this offering primarily for ongoing development activities for our product candidates and LNC platform delivery technology and for working capital and other general corporate purposes. See “Use of Proceeds” on page S-13 of this prospectus supplement.
Risk Factors	Investing in our securities involves a high degree of risk. See “Risk Factors” beginning on page S-10 of this prospectus supplement and under similar headings in the other documents that are filed after the date hereof and incorporated by reference in this prospectus supplement for a discussion of factors to consider before deciding to purchase any of our securities.
Placement Agent:	ThinkEquity, a division of Fordham Financial Management, Inc., has been engaged as the placement agent for this offering. For a description of the compensation payable to the placement agent, please see “Plan of Distribution.”
Transfer Agent	The registrar, transfer agent and dividend disbursing agent in respect of the Series B Preferred is VStock Transfer, LLC.
Registered Securities	This prospectus also relates to the offering of the shares of our common stock issuable upon conversion of, and an additional 7,200,000 shares of common stock issuable upon payment of dividends under, the Series B Preferred.

RISK FACTORS

An investment in our securities involves a high degree of risk. You should carefully consider the risks described under “Risk Factors” in the accompanying prospectus and our Annual Report on Form 10-K for the year ended December 31, 2017, respectively, as updated by any other document that we subsequently file with the Securities and Exchange Commission and that is incorporated by reference into this prospectus supplement and the accompanying prospectus, as well as the risks described below and all of the other information contained in this prospectus supplement and the accompanying prospectus, and incorporated by reference into this prospectus supplement and the accompanying prospectus, including our financial statements and related notes, before investing in our securities. These risks and uncertainties are not the only ones facing us and there may be additional matters that we are unaware of or that we currently consider immaterial. All of these could adversely affect our business, business prospects, cash flow, results of operations and financial condition. In such case, the trading price of our common stock could decline, and you could lose all or part of your investment in our common stock.

Risks Related to this Offering

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

Because we have not designated the amount of net proceeds received by us from this offering to be used for any particular purpose, our management will have broad discretion as to the application of the net proceeds from this offering and could use them for purposes other than those contemplated at the time of the offering. Our management may use the net proceeds for corporate purposes that may not improve our financial condition or market value.

The Series B Preferred will not be listed on any securities exchange and as such there will not be a public market for such securities.

There is no established public trading market for the Series B Preferred, and we do not expect a market to develop. In addition, we do not intend to apply for listing of the Series B Preferred on any securities exchange or trading system. Without an active market, the liquidity of the Series B Preferred will be limited, and investors may be unable to liquidate their investments in the Series B Preferred.

The Series B Preferred will rank junior to our outstanding Series A Preferred Stock as to liquidation preference. Upon dissolution, you may not recoup all or any portion of your investment.

Our outstanding shares of Series A Preferred Stock has certain preference rights upon any liquidation, dissolution or winding up that will be senior to the Series B Preferred. In the event of a liquidation, dissolution or winding-up of our company, whether voluntary or involuntary, the proceeds and/or assets of our company remaining after giving effect to such transaction, and the payment of all of our debts and liabilities will be distributed first to the holders of our Series A Preferred Stock and thereafter to the holders of Series B Preferred and then to stockholders of common stock (including the holders of our Series A Preferred Stock and Series B Preferred on an “as converted” basis) on a pro rata basis. There can be no assurance that we will have available assets to pay to the holders of Series B Preferred any amounts upon such a liquidation, dissolution or winding-up of our company. In this event, you could lose some or all of your investment.

We may incur future indebtedness that will rank senior to our Series B Preferred or issue additional series of preferred stock that rank on a parity with, or senior to, our Series B Preferred as to dividend payments and liquidation preference.

We and our subsidiaries may incur substantial amounts of additional debt and other obligations that will rank senior to our Series B Preferred, and the terms of our Series B Preferred do not limit the amount of such debt or other obligations that we may incur. The Series B Preferred will rank junior to our outstanding Series A Preferred Stock and the terms of our Series B Preferred will not prohibit us from issuing additional series of preferred stock that would rank on a parity with our Series B Preferred as to dividend payments and liquidation preference. Our certificate of incorporation allows for our board to create new series of preferred stock without further approval by our stockholders, which could adversely affect the rights of the holders of our Series B Preferred Shares and common stock. Following this offering, we anticipate that our board of directors will have the authority to issue up to 8,385,000 shares of our preferred stock without further stockholder approval. The issuances of other series of preferred stock could have the effect of reducing the amounts available to our Series B Convertible Preferred Stock in the event of our liquidation. If we issue preferred stock with voting rights that dilute the voting power of our common stock, the market price of our common stock could decrease, adversely affecting the value of our Series B Preferred. Additional issuances and sales of preferred stock, or the perception that such issuances and sales could occur, may cause prevailing market prices for our common stock to decline and may adversely affect our ability to raise additional capital in the financial markets at times and prices favorable to us.

You will experience immediate and substantial dilution as a result of this offering and may experience additional dilution in the future.

You will incur immediate and substantial dilution as a result of this offering. After giving effect to the sale by us of shares offered in this offering at an assumed public offering price of \$0.50 per share of common stock issuable upon conversion of the Series B Preferred, and after deducting placement agent fees and expenses and other estimated offering expenses payable by us, investors in this offering can expect an immediate dilution of approximately \$0.40 per share. See “Dilution” below for a more detailed discussion of the dilution you will incur if you purchase our Series B Preferred in the offering.

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

To raise additional capital, we may in the future offer additional shares of our common stock or other securities convertible into or exchangeable for our common stock at prices that may not be the same as the price per share in this offering. We may sell shares or other securities in any other offering at a price per share that is less 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 securities convertible or exchangeable into common stock, in future transactions may be higher or lower than the price per share paid by investors in this offering (on a fully-converted basis). Furthermore, sales of a substantial number of shares of our common stock in the public markets, or the perception that such sales could occur, could depress the market price of our common stock.

You may be subject to substantial dilution by exercises of outstanding options and warrants, conversion of preferred shares and by the future issuance of common stock to the former stockholders of Aquarius pursuant to the terms of the merger agreement.

As of March 31, 2018, we had outstanding options to purchase an aggregate of 11,613,820 shares of our common stock at a weighted average exercise price of \$1.33 per share and warrants to purchase an aggregate of 5,957,831 shares of our common stock at a weighted average exercise price of \$0.70 per share. In addition, as of March 31, 2018, we had 1,472,858 shares of Series A Preferred Stock outstanding. Each share of Series A Preferred Stock may be converted into 10 shares of common stock upon the request of the holder. In addition, pursuant to the terms of the merger agreement with Aquarius Biotechnologies, Inc., we will be required to issue up to an additional 3,000,000 shares of our common stock upon the achievement of certain milestones. The milestone consideration consists of (i) 1,500,000 shares issuable upon the dosing of the first patient in a Phase 3 trial sponsored by us for a product utilizing the lipid nano-crystal (LNC) delivery technology platform and (ii) 1,500,000 shares issuable upon FDA approval of the first NDA submitted by us for a product utilizing the lipid nano-crystal (LNC) delivery technology platform. We will also issue warrants to purchase up to an aggregate of 240,000 shares to the placement agent in this offering. The issuance of additional shares of common stock upon the conversion of outstanding Series A Preferred Stock or exercise of outstanding options and warrants or pursuant to the terms of the merger agreement will result in further dilution of the value of our shares.

Our share price has been and could remain volatile.

The market price of our common stock has historically experienced and may continue to experience significant volatility. From January 1, 2016 through June 15, 2018, the market price of our common stock has fluctuated from a high of \$3.99 per share in the first quarter of 2017 to a low of \$0.43 per share in the second quarter of 2018. Our progress in developing our product candidates, the impact of government regulations on our products and industry, the potential sale of a large volume of our common stock by stockholders, our quarterly operating results, changes in general conditions in the economy or the financial markets and other developments affecting us or our competitors could cause the market price of our common stock to fluctuate substantially with significant market losses. If our stockholders sell a substantial number of shares of common stock, especially if those sales are made during a short period of time, those sales could adversely affect the market price of our common stock and could impair our ability to raise capital. In addition, in recent years, the stock market has experienced significant price and volume fluctuations. This volatility has affected the market prices of securities issued by many companies for reasons unrelated to their operating performance and may adversely affect the price of our common stock. In addition, we could be subject to a securities class action litigation as a result of volatility in the price of our stock, which could result in substantial costs and diversion of management’s attention and resources and could harm our stock price, business, prospects, results of operations and financial condition.

SPECIAL NOTE REGARDING FORWARD-LOOKING STATEMENTS

This prospectus supplement, the accompanying prospectus and the documents incorporated by reference herein contain forward-looking statements made pursuant to the safe harbor provisions of the Private Securities Litigation Reform Act of 1995. Forward-looking statements represent our management's judgment regarding future events. In many cases, you can identify forward-looking statements by terminology such as "may," "will," "should," "plan," "expect," "anticipate," "estimate," "predict," "intend," "potential" or "continue" or the negative of these terms or other words of similar import, although some forward-looking statements are expressed differently. All statements other than statements of historical fact included in this prospectus supplement, the accompanying prospectus and the documents incorporated by reference herein regarding our financial position, business strategy and plans or objectives for future operations are forward-looking statements. Without limiting the broader description of forward-looking statements above, we specifically note that statements regarding potential drug candidates, their potential therapeutic effect, the possibility of obtaining regulatory approval, our expected timing for completing clinical trials and clinical trial milestones for our drug candidates, our ability or the ability of our collaborators to manufacture and sell any products, market acceptance or our ability to earn a profit from sales or licenses of any drug candidate or to discover new drugs in the future are all forward-looking in nature. We cannot guarantee the accuracy of forward-looking statements, and you should be aware that results and events could differ materially and adversely from those described in the forward-looking statements due to a number of factors, including, but not limited to:

- our ability to raise additional capital to fund our operations and to develop our product candidates;
- our anticipated timing for preclinical development, regulatory submissions, commencement and completion of clinical trials and product approvals;
- our history of operating losses in each year since inception and the expectation that we will continue to incur operating losses for the foreseeable future;
- our dependence on product candidates, which are still in an early development stage;
- our reliance on proprietary LNC drug delivery technology platform, which is licensed to us by Rutgers University;
- our ability to manufacture GMP batches of our product candidates which are required for pre-clinical and clinical trials and, subsequently, if regulatory approval is obtained for any of our products, our ability to manufacture commercial quantities;
- our ability to complete required clinical trials for our lead product candidate and other product candidates and obtain approval from the FDA or other regulatory agents in different jurisdictions;
- our expectations of the attributes of our product and development candidates, including pharmaceutical properties, efficacy, safety and dosing regimens;
- our dependence on third-parties, including third-parties to manufacture products and third-party contract research organizations (including, without limitation, the National Institutes of Health (NIH)) to conduct our clinical trials;
- our ability to maintain or protect the validity of our patents and other intellectual property;
- our ability to retain and recruit key personnel;
- our ability to internally develop new inventions and intellectual property;
- interpretations of current laws and the passages of future laws;
- our lack of a sales and marketing organization and our ability to commercialize products, if we obtain regulatory approval, whether alone or through potential future collaborators;
- our ability to successfully commercialize, and our expectations regarding future therapeutic and commercial potential with respect to, our product candidates;
- the accuracy of our estimates regarding expenses, ongoing losses, future revenue, capital requirements and our needs for or ability to obtain additional financing;
- developments and projections relating to our competitors or our industry; and
- our ability to adequately support growth.

You should also consider carefully the statements set forth in the section entitled "Risk Factors" in this prospectus supplement and in our Annual Report on Form 10-K for the year ended December 31, 2017, respectively, as updated by any other document that we subsequently filed with the Securities and Exchange Commission and that is incorporated by reference into this prospectus supplement, which address various factors that could cause results or events to differ from those described in the forward-looking statements. All subsequent written and oral forward-looking statements attributable to us or to persons acting on our behalf are expressly qualified in their entirety by the applicable cautionary statements. We have no plans to update these forward-looking statements.

RATIOS OF COMBINED FIXED CHARGES AND PREFERRED STOCK DIVIDENDS TO EARNINGS

Three months ended March 31,	Year ended December 31,					
	2018	2017	2016	2015	2014	2013
(1)	(1)	(1)	(1)	(1)	(1)	(1)

(1) Due to our losses from continuing operations for the three months ended March 31, 2018 and for the years ended December 31, 2017, 2016, 2015, 2014 and 2013 earnings were insufficient to cover fixed charges by \$4.1 million, \$16.6 million, \$8.3 million, \$9.9 million, \$10.5 million, and \$3.7 million, respectively. For this reason, no ratios are provided.

USE OF PROCEEDS

We estimate that the net proceeds received by us from this offering, after deducting placement agent fees and expenses and other estimated offering expenses payable by us, will be approximately \$7,055,000 if all the shares of Series B Preferred offered are sold.

A 1,000 share increase (decrease) in the number of shares of Series B Preferred offered by us, as set forth on the cover page of this prospectus, would increase (decrease) the net proceeds to us by \$920,000, assuming the assumed public offering price of \$1,000 per share of Series B Preferred remains the same, and after deducting estimated placement agent fees and expenses and other estimated offering expenses payable by us.

We currently intend to use the net proceeds from this offering primarily for ongoing development activities for our product candidates and LNC platform delivery technology and for working capital and other general corporate purposes.

This expected use of the net proceeds from this offering represents our intentions based upon our current plans and business conditions, and our management will retain broad discretion as to the ultimate allocation of the proceeds. Pending the use of the net proceeds of this offering, we intend to invest the funds in short-term, investment grade, interest-bearing securities.

MARKET PRICE FOR OUR COMMON STOCK

Prior to July 21, 2014, no public trades occurred in our common stock. On July 21, 2014, our common stock commenced quotation on the OTCQB under the symbol "MTNB". On March 2, 2017, our common stock began trading on NYSE American under the symbol "MTNB". For the periods prior to March 2, 2017, the following table sets forth, for the periods indicated, the reported high and low bid quotations per share for our common stock based on information provided by the OTC Market Group, Inc. Such OTCQB over-the-counter market quotations reflect inter-dealer prices, without markup, markdown or commissions and, particularly because our common stock is traded infrequently, may not necessarily represent actual transactions or a liquid trading market. Beginning March 2, 2017, the table sets forth for the periods indicated the high and low sale prices per share for our common stock, as reported by NYSE American.

Fiscal Period	High	Low
Year Ended December 31, 2018		
First Quarter	\$ 1.38	\$ 0.79
Second Quarter (through June 15, 2018)	0.95	0.43
Year Ended December 31, 2017		
First Quarter	\$ 3.99	\$ 1.39
Second Quarter	3.20	1.40
Third Quarter	1.80	1.01
Fourth Quarter	1.60	1.02
Year Ended December 31, 2016		
First Quarter	\$ 0.90	\$ 0.45
Second Quarter	0.79	0.47
Third Quarter	1.73	0.61
Fourth Quarter	1.95	1.25

On June 15, 2018 the closing price of our common stock, as reported by NYSE American, was \$0.63 per share.

CAPITALIZATION

The following table sets forth our cash and cash equivalents and our capitalization as of March 31, 2018 on:

- an actual basis; and
- on an as adjusted basis to give effect to the sale by us in this offering of 8,000 shares of Series B Preferred, at the assumed public offering price of \$1,000 per share, assuming conversion of all Series B Preferred Shares into an aggregate of 16,000,000 shares of common stock at a conversion price of \$0.50 per share and the issuance of an additional 7,200,000 shares of common stock as dividends to the holders of the Series B Preferred Shares, after deducting placement agent fees and expenses and other estimated offering expenses payable by us.

You should read this table in conjunction with “Management’s Discussion and Analysis of Financial Condition and Results of Operations,” our unaudited financial statements for the period ended March 31, 2018, and our audited financial statements for the year ended December 31, 2017, and the related notes thereto, incorporated by reference in this prospectus.

	As of March 31, 2018	
	Actual	As adjusted
Cash and cash equivalents	\$ 4,263,143	\$ 11,318,143
Restricted cash	691,456	691,456
Shareholders’ equity:		
Preferred Stock, par value \$0.0001; 10,000,000 shares authorized and 1,600,000 shares issued; 1,600,000 Series A shares authorized; 1,472,858 shares of Series A outstanding	\$ 5,602,706	\$ 5,602,706
Common Stock, par value \$0.0001; 250,000,000 shares authorized; 93,981,562 shares issued and outstanding, actual; 117,181,562 shares issued and outstanding as adjusted	\$ 9,396	\$ 11,718
Additional paid-in capital	\$ 58,206,054	\$ 65,258,734
Accumulated deficit	\$ (55,384,546)	\$ (55,384,546)
Total stockholders’ equity	\$ 8,433,610	\$ 15,488,612

The above table does not include the following, as of March 31, 2018:

- 11,613,820 shares issuable upon the exercise of outstanding stock options with a weighted-average exercise price of \$1.33 per share;
- 14,728,858 shares issuable upon conversion of outstanding shares of Series A Preferred Stock;
- 5,957,831 shares issuable upon the exercise of outstanding warrants with a weighted-average exercise price of \$0.70 per share;
- 4,958,225 shares available for future issuance under our equity compensation plans; and
- 3,000,000 shares issuable upon achievement of certain milestones pursuant to the terms of our merger agreement with Aquarius Biotechnologies, Inc.; and
- 240,000 shares issuable upon exercise of warrants granted to the placement agent in this offering.

An increase of 1,000 shares in the number of shares of Series B Preferred offered by us, as set forth on the cover page of this prospectus, would increase our cash and cash equivalents, additional paid-in capital, total stockholders’ equity, and total capitalization on an as adjusted basis by approximately \$920,000, assuming that the assumed public offering price of \$1,000 per share and conversion price per share of the Series B Preferred remains the same, and after deducting the estimated placement agent fees and expenses and other estimated offering expenses payable by us. Similarly, a decrease of 1,000 shares in the number of shares of Series B Preferred offered by us, as set forth on the cover page of this prospectus, would decrease our cash and cash equivalents, additional paid-in capital, total stockholders’ equity, and total capitalization by approximately \$920,000, assuming that the assumed public offering price of \$1,000 per share and the conversion price per share remains the same, and after deducting the estimated placement agent fees and expenses and other estimated offering expenses payable by us. The as adjusted information discussed above is illustrative only and will adjust based on the actual public offering price, and the actual number of shares of Series B Preferred that we offer in this offering, and other terms of this offering determined at pricing.

DILUTION

If you invest in our shares of Series B Preferred in this offering, your ownership interest on an “as converted” basis will be diluted to the extent of the difference between the price per share you pay in this offering and our pro forma net tangible book value per share of common stock after this offering. We calculate net tangible book value per share of common stock by dividing our net tangible book value, which is tangible assets less total liabilities, by the number of outstanding shares of our common stock.

Our net tangible book value as of March 31, 2018 was approximately \$4.1 million, or \$0.04 per share of common stock. Net tangible book value per share after this offering gives effect to the sale by us in this offering of 8,000 shares of Series B Preferred, at the assumed public offering price of \$1,000 per share, with a conversion price of \$0.50 per share, after deducting offering commissions and estimated expenses payable by us. Our net tangible book value as of March 31, 2018, after giving effect to this offering as described above, would have been approximately \$11.1 million, or \$0.10 per share of common stock. This represents an immediate increase in pro forma net tangible book value of \$0.06 per share to existing stockholders and an immediate dilution of \$0.40 per share to new investors purchasing our common stock underlying the Series B Preferred sold in this offering. The following table illustrates the per share dilution:

Assumed public offering price per share		\$	0.50
Net tangible book value per share as of March 31, 2018	\$	0.04	
Increase in net tangible book value per share attributable to this offering	\$	0.06	
Pro forma net tangible book value per share as of March 31, 2018, after giving effect to this offering		\$	0.10
Dilution per share to new investors in this offering		\$	0.40

The above table does not include the following, as of March 31, 2018:

- 11,613,820 shares issuable upon the exercise of outstanding stock options with a weighted-average exercise price of \$1.33 per share;
- 14,728,858 shares issuable upon conversion of outstanding shares of Series A Preferred Stock;
- 5,957,831 shares issuable upon the exercise of outstanding warrants with a weighted-average exercise price of \$0.70 per share;
- 4,958,225 shares available for future issuance under our equity compensation plans; and
- 3,000,000 shares issuable upon achievement of certain milestones pursuant to the terms of our merger agreement with Aquarius Biotechnologies, Inc. and
- 240,000 shares issuable upon exercise of warrants granted to the placement agent in this offering.

An increase of 1,000 shares in the number of shares of Series B Preferred offered by us, as set forth on the cover page of this prospectus, would increase our as adjusted net tangible book value by approximately \$920,000, or approximately \$0.00537 per share of common stock, and decrease the dilution per share to investors in this offering by approximately \$0.00537 per share, assuming that the assumed public offering price per share and conversion price per share of the Series B Preferred remains the same, and after deducting the estimated placement agent fees and expenses and other estimated offering expenses payable by us. Similarly, a decrease of 1,000 shares in the number of shares of Series B Preferred offered by us, as set forth on the cover page of this prospectus, would decrease our as adjusted net tangible book value by approximately \$920,000, or approximately \$0.00564 per share, and increase the dilution per share to investors in this offering by approximately \$0.00564 per share, assuming that the assumed public offering price per share and the conversion price per share remains the same, and after deducting the estimated placement agent fees and expenses and other estimated offering expenses payable by us. The information discussed above is illustrative only and will adjust based on the actual public offering price, and the actual number of shares of Series B Preferred that we offer in this offering, and other terms of this offering determined at pricing.

To the extent that outstanding options or warrants are exercised or we issue shares pursuant to the terms of our merger agreement, new equity awards are issued under our 2013 Equity Incentive Plan, or we issue additional shares of common stock in the future, there may be further dilution to investors participating in this offering. In addition, we need to raise additional capital. If we raise additional capital through the sale of equity or convertible debt securities, the issuance of these securities could result in further dilution to our stockholders.

DESCRIPTION OF THE SECURITIES WE ARE OFFERING

Series B Preferred

The following is a summary of the material terms of the Series B Convertible Preferred Stock. This summary is not complete. The following summary is qualified in its entirety by reference to the form of Certificate of Designation of Series B Preferred, which has been filed as an exhibit to a current report on Form 8-K and is incorporated by reference herein.

General. Our board of directors has designated 8,000 shares of the up to 10,000,000 authorized shares of preferred stock, par value \$0.0001 per share, (of which 1,600,000 shares have been designated as Series A Preferred Stock) as Series B Convertible Preferred Stock. Subject to the limitations prescribed by our certificate of incorporation, our board of directors is authorized to establish the number of shares constituting each series of preferred stock and to fix the designations, powers, preferences and rights of the shares of each of those series and the qualifications, limitations and restrictions of each of those series, all without any further vote or action by our stockholders. Our Series B Preferred is a series of preferred stock. When issued, the shares of Series B Preferred will be validly issued, fully paid and non-assessable. Each share of Series B Preferred will have a stated value of \$1,000 per share.

Rank. The Series B Preferred will rank

- junior to our Series A Preferred Stock and any class or series of our capital stock hereafter created specifically ranking by its terms senior to the Series B Preferred;
- senior to all of our common stock;
- senior to any class or series of our capital stock hereafter created specifically ranking by its terms junior to the Series B Preferred; and
- on a parity with any class or series of our capital stock hereafter created specifically ranking by its terms on a parity with the Series B Preferred;

in each case, as to distributions of assets upon our liquidation, dissolution or winding up whether voluntarily or involuntarily.

Dividends. Subject to the Beneficial Ownership Limitation described below, holders of the Series B Preferred will be entitled to receive dividends payable as follows: (i) a number of shares of common stock equal to 10% of the shares of common stock underlying the Series B Preferred then held by such holder on the 12 month anniversary of the COD Effective Date, (ii) a number of shares of common stock equal to 15% of the shares of common stock underlying the Series B Preferred then held by such holder on the 24-month anniversary of the COD Effective Date and (iii) a number of shares of common stock equal to 20% of the shares of common stock underlying the Series B Preferred then held by such holder on the 36-month anniversary of the COD Effective Date. In the event a purchaser in this offering no longer holds Series B Preferred as of the 12-month anniversary, the 24-month anniversary or the 36 month anniversary, such purchaser will not be entitled to receive any dividends on such anniversary date. In the event a fundamental transaction is consummated prior to the automatic conversion of the Series B Preferred, the dividends will be accelerated and paid (to the extent not previously paid). In addition, holders of Series B Preferred will be entitled to receive dividends equal, on an as-if-converted to shares of common stock basis, and 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 the common stock. Notwithstanding the foregoing, to the extent that a holder's right to participate in any dividend in shares of common stock to which such holder is entitled would result in such Holder exceeding the Beneficial Ownership Limitation, then such holder shall not be entitled to participate in any such dividend to such extent and the portion of such shares that would cause such holder to exceed the Beneficial Ownership Limitation shall be held in abeyance for the benefit of such holder until such time, if ever, as such holder's beneficial ownership thereof would not result in such holder exceeding the Beneficial Ownership Limitation.

Optional Conversion. Subject to the Beneficial Ownership Limitation described below, each share of Series B Preferred will be convertible into shares of our common stock at any time at the option of the holder at a conversion price \$0.50 per share (subject to adjustment for reverse splits, stock combinations and similar changes as provided in the certificate of designation). Dividends will not accrue and will not be paid following optional conversion.

Automatic Conversion. Subject to the Beneficial Ownership Limitation described below, each share of our Series B Preferred shall automatically convert into 2,000 shares of our common stock at a conversion price of \$0.50 per share upon the earlier of (i) the first FDA approval of one of our product candidates, (ii) the 36-month anniversary of the COD Effective Date or (iii) the consent to conversion by holders of at least 50.1% of the outstanding shares of Series B Preferred. In the event the Series B Preferred automatically converts into common stock prior to the 36 month anniversary of the COD Effective Date, the holder on the date of such conversion shall also be entitled to receive those dividends which would have been payable after the conversion date, as if the shares of Series B Preferred had remained unconverted and outstanding through the 36 month anniversary of the COD Effective Date. Such dividend amount shall be payable as set forth above in shares of common stock upon such automatic conversion.

Beneficial Ownership Limitation. We may not effect any optional conversion or any automatic conversion of the Series B Preferred, or issue shares of common stock as dividends and a holder does not have the right to convert any portion of the Series B Preferred to the extent that, after giving effect to such conversion such holder would beneficially own in excess of the Beneficial Ownership Limitation, or such holder, together with such holder's affiliates, and any persons acting as a group together with such holder or affiliates, would beneficially own in excess of the Beneficial Ownership Limitation. The "Beneficial Ownership Limitation" is 4.99% of the number of shares of common stock outstanding immediately after giving effect to the issuance of shares of common stock issuable upon conversion of Series B Preferred held by the applicable holder. A holder may, prior to issuance of the Series B Preferred or, with 61 days prior notice to us, elect to increase or decrease the Beneficial Ownership Limitation; provided, however, that in no event may the Beneficial Ownership Limitation exceed 9.99%.

Liquidation Preference. In the event of a liquidation, dissolution or winding-up of our company, whether voluntary or involuntary, the proceeds and/or assets of our company remaining after giving effect to such transaction, and the payment of all of our debts and liabilities will be distributed first to the holders of our Series A Preferred Stock and thereafter to the holders of Series B Preferred and then to stockholders of common stock (including the holders of our Series A Preferred Stock and Series B Preferred on an “as converted” basis) on a pro rata basis.

Voting Rights. Except as provided in the Certificate of Designation of the Series B Preferred or as otherwise required by law, the holders of Series B Preferred will have no voting rights. However, we may not, without the consent of holders of a majority of the outstanding shares of Series B Preferred, alter or change adversely the powers, preferences or rights given to the Series B Preferred, increase the number of authorized shares of Series B Preferred, or enter into any agreement with respect to the foregoing.

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

Failure to Deliver Conversion Shares. If we fail to timely deliver shares of common stock upon conversion of the Series B Preferred, or the Conversion Shares within the time period specified in the Certificate of Designations (within two trading days after delivery of the notice of conversion, or any shorter standard settlement period in effect with respect to the trading market for our common stock on the date notice is delivered), then we are obligated to pay to the holder, as liquidated damages, for each \$1,000 of stated value of the Series B Preferred Stock being converted, an amount equal to \$10 per Trading Day (increasing to \$20 per Trading Day on the fifth Trading Day after such damages begin to accrue).

Compensation for Buy-In on Failure to Timely Deliver Shares. If we fail to timely deliver the Conversion Shares to the holder, and if after the required delivery date the holder is required by its broker to purchase (in an open market transaction or otherwise) or the holder or its brokerage firm otherwise purchases, shares of common stock to deliver in satisfaction of a sale by the holder of the Conversion Shares which the holder anticipated receiving upon such conversion or exercise (a "Buy-In"), then we are obligated to (A) pay in cash to the holder the amount, if any, by which (x) the holder's total purchase price (including brokerage commissions, if any) for the shares of common stock so purchased, exceeds (y) the amount obtained by multiplying (1) the number of Conversion Shares that we were required to deliver times (2) the actual sale price at which the sell order giving rise to such purchase obligation was executed (including any brokerage commissions), and (B) (1) in the case of conversion at the option of the holder, either reinstate the portion of the Series B Preferred and equivalent number of Conversion Shares for which such conversion was not honored (in which case such conversion shall be deemed rescinded) or deliver to the holder the number of shares of common stock that would have been issued had we timely complied with our conversion and delivery obligations and (2) in the case of an automatic conversion, deliver to the holder the number of shares of common stock that would have been issued had we timely complied with our delivery obligations.

Subsequent Rights Offerings; Pro Rata Distributions. If we grant, issue or sell any common stock equivalents pro rata to the record holders of any class of shares of common stock, or the Purchase Rights, then a holder of Series B Preferred will be entitled to acquire, upon the terms applicable to such Purchase Rights, the aggregate Purchase Rights which the holder could have acquired if the holder had held the number of shares of common stock acquirable upon conversion of the Series B Preferred Stock (without regard to any limitations on conversion). If we declare or make any dividend or other distribution of its assets (or rights to acquire its assets) to holders of common stock, then a holder of Series B Preferred is entitled to participate in such distribution to the same extent as if the holder had held the number of shares of common stock acquirable upon complete conversion of the Series B Preferred (without regard to any limitations on conversion).

Fundamental Transaction. If, at any time while the Series B Preferred is outstanding, (i) we effect any merger or consolidation of the Company with or into another person, (ii) we, directly or indirectly, effect any sale of all or substantially all of its assets in one transaction or a series of related transactions, or (iii) we effect any reclassification, reorganization or recapitalization of the common stock or any compulsory share exchange pursuant to which the common stock is effectively converted into or exchanged for other securities, cash or property, (each a "Fundamental Transaction"), then, upon any subsequent conversion of the Series B Preferred Stock, the Holders shall have the right to receive, for each Conversion Share that would have been issuable upon such conversion immediately prior to the occurrence of such Fundamental Transaction, the same kind and amount of securities, cash or property as it would have been entitled to receive upon the occurrence of such Fundamental Transaction if it had been, immediately prior to such Fundamental Transaction, the holder of one share of Common Stock (the "Alternate Consideration"). For purposes of any such conversion, the determination of the conversion ratio will be appropriately adjusted to apply to such Alternate Consideration based on the amount of Alternate Consideration issuable in respect of one share of common stock in such Fundamental Transaction. If holders of common stock are given any choice as to the securities, cash or property to be received in a Fundamental Transaction, then the holder will be given the same choice as to the Alternate Consideration it receives upon automatic conversion of the Series C Preferred Stock following such Fundamental Transaction. To the extent necessary to effectuate the foregoing provisions, any successor to the Company or surviving entity in such Fundamental Transaction shall file a new Certificate of Designation with the same terms and conditions and issue to the Holders new preferred stock consistent with the foregoing provisions and evidencing the Holders' right to convert such preferred stock into Alternate Consideration.

Exchange Listing

We do not plan on making an application to list the Series B Preferred on any national securities exchange or other nationally recognized trading system.

Transfer Agent, Registrar and Dividend Disbursing Agent

VStock Transfer, LLC will be the transfer agent, registrar and dividend disbursing agent for the Series B Preferred. The address of VStock Transfer, LLC is 18 Lafayette Place, Woodmere, NY, 11598.

MATERIAL U.S. FEDERAL INCOME TAX CONSIDERATIONS

The following is a summary of material U.S. federal income tax considerations that may be applicable to “U.S. holders” and “non-U.S. holders” (each as defined below) with respect to the purchase, ownership, disposition and conversion of the Series B Preferred offered by this prospectus and the ownership and disposition of any common stock received in respect thereof. This summary only applies to holders that hold the Series B Preferred or our common stock as a capital asset within the meaning of Section 1221 of the Internal Revenue Code of 1986, as amended (the “Code”) (generally property held for investment). This summary does not describe all of the tax consequences that may be relevant to each holder of the Series B Preferred or our common stock in light of its particular circumstances.

This summary is based upon provisions of the Code, Treasury regulations, rulings and judicial decisions as of the date hereof. These authorities may change, perhaps retroactively, which could result in U.S. federal income tax consequences different from those discussed below. This summary does not address all aspects of U.S. federal income taxation (such as the alternative minimum tax and the Medicare contribution tax on investment income) and does not describe any foreign, state, local or other tax considerations that may be relevant to a holder of the Series B Preferred or our common stock in light of their particular circumstances. In addition, this summary does not describe the U.S. federal income tax consequences applicable to a holder of the Series B Preferred or our common stock who is subject to special treatment under U.S. federal income tax laws (including, without limitation, corporations that accumulate earnings to avoid U.S. federal income tax, tax-exempt entities or governmental organizations, tax-qualified retirement plans, partnerships or other entities or arrangements treated as partnerships for U.S. federal income tax purposes (and investors therein), banks, insurance companies, and other financial institutions, brokers, dealers, or traders in securities, persons holding the Series B Preferred or our common stock as part of a hedging or conversion transaction or straddle, U.S. expatriates and former U.S. citizens or former long-term U.S. residents, persons for whom our stock constitutes “qualified small business stock” within the meaning of Section 1202 of the Code, persons deemed to sell the Series B Preferred or our common stock under the constructive sale provisions of the Code, and persons who hold or receive shares of our Series B Preferred or shares of our common stock pursuant to the exercise of any employee stock option or otherwise as compensation). We cannot assure you that a change in law will not significantly alter the tax considerations that we describe in this summary.

If a partnership (or any other entity treated as a partnership for U.S. federal income tax purposes) holds the Series B Preferred or our common stock, the U.S. federal income tax treatment of a partner of that partnership generally will depend upon the status of the partner, the activities of the partnership, and certain determinations made at the partner level. Accordingly, partnerships and partners in such partnerships should consult their tax advisors regarding the U.S. federal income tax consequences to them.

You should consult your own tax advisor concerning the U.S. federal income tax consequences to you of acquiring, owning, and disposing of these securities, as well as any tax consequences arising under the laws of any state, local, foreign, or other tax jurisdiction and the possible effects of changes in U.S. federal or other tax laws.

U.S. Holders

Subject to the qualifications set forth above, the discussion in this section is addressed to a holder of our Series B Preferred and common stock received in respect thereof that is a “U.S. holder.” You are a “U.S. holder” if you are a beneficial owner of Series B Preferred or our common stock and you are for U.S. federal income tax purposes;

- an individual who is a citizen or resident of the United States;
- a corporation (or other entity treated as a corporation for U.S. federal income tax purposes) created or organized under the laws of the United States, any state thereof, or the District of Columbia;
- an estate, the income of which is subject to U.S. federal income taxation regardless of its source; or
- a trust that (i) is subject to the primary supervision of a U.S. court and one or more United States persons (within the meaning of Section 7701(a)(30) of the Code) have the authority to control all substantial decisions of the trust or (ii) has made a valid election under applicable Treasury regulations to be treated as a United States person.

Distributions in General. Distributions made with respect to the Series B Preferred and our common stock will be treated as dividends to the extent of our current or accumulated earnings and profits as determined under the Code. We do not, however, currently have significant current or accumulated earnings and profits. Any portion of a distribution that exceeds such earnings and profits will first be applied to reduce a U.S. holder's tax basis in the Series B Preferred or common stock, as the case may be, on a share-by-share basis, and the excess will be treated as gain from the disposition of the Series B Preferred or common stock, the tax treatment of which is discussed below under "Material U.S. Federal Income Tax Considerations - U.S. Holders: Sale or Other Disposition."

Under current law, dividends received by individual holders of the Series B Preferred or our common stock will be subject to a reduced maximum tax rate of 20% if such dividends are treated as "qualified dividend income" for U.S. federal income tax purposes. The rate reduction does not apply to dividends received to the extent that the individual shareholder elects to treat the dividends as "investment income," which may be offset against investment expenses. Furthermore, the rate reduction does not apply to dividends that are paid to individual shareholders with respect to Series B Preferred or common stock that is held for 60 days or less during the 121 day period beginning on the date which is 60 days before the date on which the Series B Preferred or common stock becomes ex-dividend (or where the dividend is attributable to a period or periods in excess of 366 days, Series B Preferred or common stock that is held for 90 days or less during the 181 day period beginning on the date which is 90 days before the date on which the Series B Preferred or common stock becomes ex-dividend). Also, if a dividend received by an individual shareholder that qualifies for the rate reduction is an "extraordinary dividend" within the meaning of Section 1059 of the Code, any loss recognized by such individual shareholder on a subsequent disposition of the stock will be treated as long-term capital loss to the extent of such "extraordinary dividend," irrespective of such shareholder's holding period for the stock. Individual shareholders should consult their own tax advisors regarding the implications of these rules in light of their particular circumstances.

Dividends received by domestic corporate shareholders generally will be eligible for the dividends-received deduction. A dividend received deduction (DRD) provides corporate shareholders with a deduction equal to a specified percentage of all or a portion of the dividends received from a corporation. The purpose of the DRD is to impose a single corporate income tax on the same income. A DRD may apply to 50%, 65% or 100% of the dividend, depending on the percentage of the corporate shareholder's ownership of stock in the distributing corporation. A corporation must have held the dividend-paying stock for more than 45 days during the 91-day period beginning on the date that is 45 days before the date on which such stock becomes ex-dividend with respect to the dividend. That is, a corporation is not entitled to a DRD if the corporation's holding period for the dividend-paying stock is not satisfied over a period immediately before or immediately after the corporation becomes entitled to receive the dividend. Under certain circumstances, dividends received by a corporate shareholder are considered extraordinary dividends. A corporate shareholder may still claim a DRD with respect to extraordinary dividends. However, if a corporation receives an extraordinary dividend on stock that it has held for two years or less before the date of the dividend announcement date, the corporation's adjusted basis in the stock is reduced by the amount of the dividends received deduction and any excess will be taxed as gain as if such shareholder had disposed of its shares.

Distributions of Common Stock. Section 305(a) of the Code states that a stockholder's taxable income does not include in-kind stock dividends; however, the general non-recognition rule in Section 305(a) of the Code is subject to exceptions described in Section 305(b) of the Code, which include "disproportionate distributions." A disproportionate distribution is a distribution or a series of distributions, including deemed distributions, that has the effect of the receipt of cash or other property by some stockholders or holders of debt instruments convertible into stock, and an increase in the proportionate interest of other stockholders in a corporation's assets or earnings and profits. The disproportionate distribution tax rules are complex, the determination is highly dependent on the existence or non-existence of certain facts and the interpretation of such facts or absence thereof, and, as a result, their application is uncertain. Further, a determination of whether the receipt of a distribution of shares of our common stock as described above in "Description of the Securities We Are Offering – Series B Preferred: Dividends" will constitute a disproportionate distribution will depend, in part, on the presence of certain facts, and the determination of whether such facts exist cannot be made in advance of such a distribution.

In the event such a distribution is determined to be non-taxable, a U.S. holder must allocate its tax basis in its existing shares of Series B Preferred between its existing shares of Series B Preferred and the common stock received in proportion to the relative fair market value of the existing shares of Series B Preferred and the common stock. The fair market value of the common stock on the dates that the common stock may be distributed is currently uncertain and we do not intend to obtain an appraisal of the fair market value of the common stock on such dates. In determining the fair market value of the common stock, U.S. holders should consider all relevant facts and circumstances. The holding period for the common stock received should include the holding period for the Series B Preferred with respect to which the common stock was received.

In the event such a distribution is determined to be taxable, whether on the basis that the distribution of the common shares is a disproportionate distribution or otherwise, the fair market value of the shares of common stock received would be treated as a dividend to the extent of the U.S. holder's pro rata share of our current and accumulated earnings and profits, if any, with any excess being treated as a return of capital to the extent thereof and then as capital gain. If the receipt of our common stock is taxable to you, your tax basis in the common stock received should be equal to the fair market value of such common stock when received, and your holding period for the common stock received should begin on the date following the distribution of the common stock.

U.S. holders are strongly urged to consult their own tax advisors to determine the specific tax treatment of a distribution of our common stock.

Conversion of the Series B Preferred into Our Common Stock. Generally, a U.S. holder will not recognize any gain or loss in respect of the receipt of our common stock upon the conversion of the Series B Preferred. The adjusted tax basis of our common stock that a U.S. holder receives on conversion will equal the adjusted tax basis of the Series B Preferred converted, and the holding period of such common stock received on conversion will include the period during which the U.S. holder held the Series B Preferred prior to conversion.

In the event a U.S. holder's Series B Preferred is converted pursuant to an election by such U.S. holder in the case of certain acquisitions or fundamental changes or pursuant to certain other transactions (including our consolidation or merger into another person), the tax treatment of such a conversion will depend upon the facts underlying the particular transaction triggering such a conversion. In this regard, it is possible that any related adjustments of the conversion rate would be treated as a constructive distribution to the U.S. holder as described below under "Material U.S. Federal Income Tax Considerations – U.S. Holders: Constructive Dividends on the Series B Preferred." U.S. holders should consult their own tax advisors to determine the specific tax treatment of a conversion under such circumstances.

Constructive Dividends on the Series B Preferred. Section 305(c) of the Code and Treasury regulations thereunder will treat a U.S. holder of the Series B Preferred as having received a constructive distribution includable in such U.S. holder's income in the manner as described above under "Material U.S. Federal Income Tax Considerations – U.S. Holders: Distributions in General," if and to the extent that certain adjustments in the conversion rate (or failures to make such an adjustment) increase the proportionate interest of such U.S. holder in our earnings and profits. In certain other circumstances, an adjustment to the conversion rate of the Series B Preferred or a failure to make such an adjustment could potentially give rise to constructive distributions to U.S. holders of our common stock. Thus, under certain circumstances, U.S. holders may recognize income in the event of a constructive distribution even though they may not receive any cash or property.

Sale or Other Disposition. Upon any sale, exchange or other disposition of the Series B Preferred (other than by conversion) or our common stock, a U.S. holder generally will recognize capital gain or loss equal to the difference between the amount realized by the U.S. holder and the U.S. holder's adjusted tax basis in the Series B Preferred or common stock. Such capital gain or loss will be long-term capital gain or loss if the U.S. holder's holding period for the Series B Preferred is longer than one year. A U.S. holder should consult its own tax advisors with respect to applicable tax rates and netting rules for capital gains and losses. Certain limitations exist on the deduction of capital losses by both corporate and non-corporate taxpayers.

Information Reporting and Backup Withholding. A U.S. holder may be subject to information reporting and backup withholding when such holder receives dividend payments (including constructive dividends) or receives proceeds from the sale or other taxable disposition of shares of our Series B Preferred or shares of our common stock received in respect thereof. Certain U.S. holders are exempt from backup withholding, including corporations and certain tax-exempt organizations. A U.S. holder will be subject to backup withholding if such holder is not otherwise exempt and such holder:

- fails to furnish the holder's taxpayer identification number (which for an individual is ordinarily his or her social security number);
- furnishes an incorrect taxpayer identification number;
- is notified by the IRS that the holder previously failed to properly report payments of interest or dividends; or
- fails to certify under penalties of perjury that the holder has furnished a correct taxpayer identification number and that the IRS has not notified the holder that the holder is subject to backup withholding.

Backup withholding is not an additional tax. Any amounts withheld under the backup withholding rules may be allowed as a refund or a credit against a U.S. holder's U.S. federal income tax liability, provided the required information is timely furnished to the IRS. U.S. holders should consult their tax advisors regarding their qualification for an exemption from backup withholding and the procedures for obtaining such an exemption.

Non-U.S. Holders

Subject to the qualifications set forth above under the caption "Material U.S. Federal Income Tax Considerations," the discussion in this section is addressed to a holder of our Series B Preferred and common stock received in respect thereof that is a "non-U.S. holders." You are a "non-U.S. holder" if you are a beneficial owner of the Series B Preferred or our common stock and you are not a "U.S. holder" or an entity treated as a partnership for U.S. federal tax purposes.

Distributions in General. Distributions made with respect to the Series B Preferred and our common stock will be treated as dividends to the extent of our current and accumulated earnings and profits as determined under the Code and may be subject to withholding as discussed below. Any portion of a distribution that exceeds our current and accumulated earnings and profits will first be applied to reduce the non-U.S. holder's basis in the Series B Preferred or common stock, as the case may be, and, to the extent such portion exceeds the non-U.S. holder's basis, the excess will be treated as gain from the disposition of the Series B Preferred or the common stock, the tax treatment of which is discussed below under "Material U.S. Federal Income Tax Considerations - Non-U.S. Holders: Sale or Other Disposition."

Dividends paid to a non-U.S. holder of the Series B Preferred or our common stock will be subject to withholding of U.S. federal income tax at a 30% rate or such lower rate as may be specified by an applicable income tax treaty. However, dividends that are effectively connected with the conduct of a trade or business by the non-U.S. holder within the United States (and, where a tax treaty applies, are attributable to a permanent establishment maintained by the non-U.S. holder in the United States) are not subject to the withholding tax, provided that certain certification and disclosure requirements are satisfied, including completing Internal Revenue Service Form W-8ECI (or other applicable form). Instead, such dividends are subject to U.S. federal income tax on a net income basis in the same manner as if the non-U.S. holder were a United States person as defined under the Code, unless an applicable income tax treaty provides otherwise. Any such effectively connected dividends received by a foreign corporation may be subject to an additional branch profits tax at a 30% rate or such lower rate as may be specified by an applicable income tax treaty. A non-U.S. holder of the Series B Preferred or our common stock who wishes to claim the benefit of an applicable treaty rate and avoid backup withholding or withholding on payments made to foreign accounts, as discussed below, for dividends will be required to (i) complete Internal Revenue Service Form W-8BEN or Form W-8BEN-E (or other applicable form) and certify under penalty of perjury that such holder is not a United States person as defined under the Code and is eligible for treaty benefits, or (ii) if the Series B Preferred or common stock is held through certain foreign intermediaries, satisfy the relevant certification requirements of applicable Treasury regulations. A non-U.S. holder of the Series B Preferred or our common stock eligible for a reduced rate of U.S. withholding tax pursuant to an income tax treaty may obtain a refund of any excess amounts withheld by timely filing an appropriate claim for refund with the Internal Revenue Service.

Distributions of Common Stock. As discussed above in "Material U.S. Federal Income Tax Considerations – U.S. Holders: Distributions of Common Stock," a determination of whether the receipt of a distribution of shares of our common stock as described above in "Description of the Securities We Are Offering – Series B Preferred: Dividends" will be treated as a nontaxable distribution will depend, in part, on the presence of certain facts, and the determination of whether such facts exist cannot be made in advance of such a distribution. Because we may not know the extent to which a distribution is a taxable dividend for U.S. federal income tax purposes at the time it is made, for purposes of any applicable withholding rules, we or the applicable withholding agent may treat the entire distribution as a dividend. Any resulting withholding tax attributable to such a dividend may be collected from other amounts payable or distributable to the non-U.S. holder. Non-U.S. holders are strongly urged to consult their own tax advisors to determine the specific tax treatment of a distribution of our common stock.

Conversion of the Series B Preferred into Our Common Stock. As described above under "Material U.S. Federal Income Tax Considerations – U.S. Holders: Conversion of the Series B Preferred into Our Common Stock," a non-U.S. holder generally will not recognize any gain or loss in respect of the receipt of our common stock upon the conversion of the Series B Preferred.

Constructive Dividends on the Series B Preferred. As described above under "Material U.S. Federal Income Tax Considerations – U.S. Holders: Constructive Dividends," in certain circumstances, a non-U.S. holder may be deemed to receive a constructive distribution from us. Adjustments in the conversion rate (or failures to adjust the conversion rate) that increase the proportionate interest of a non-U.S. holder in our earnings and profits could result in deemed distributions to the non-U.S. holder that are treated as dividends for U.S. federal income tax purposes. Any constructive dividend deemed paid to a non-U.S. holder will be subject to U.S. federal income tax or withholding tax in the manner described above under "Material U.S. Federal Income Tax Considerations – Non-U.S. Holders: Distributions in General." It is possible that U.S. federal tax on the constructive dividend would be withheld, if applicable, from subsequent payments on the Series B Preferred.

Sale or Other Disposition. Any gain realized by a non-U.S. holder on the disposition of the Series B Preferred or our common stock will not be subject to U.S. federal income or withholding tax unless:

- the gain is effectively connected with a trade or business of the non-U.S. holder in the United States (and, if required by an applicable income tax treaty, is attributable to a permanent establishment maintained by the non-U.S. holder in the United States);
- the non-U.S. holder is an individual who is present in the United States for 183 days or more in the taxable year of disposition, and certain other conditions are met; or
- the Series B Preferred or our common stock constitutes a U.S. real property interest, or USRPI, by reason of our status as a U.S. real property holding corporation, or USRPHC, for U.S. federal income tax purposes.

Gain described in the first bullet point above generally will be subject to U.S. federal income tax on a net income basis at the regular U.S. federal income tax rates. A non-U.S. holder that is a corporation also may be subject to a branch profits tax at a rate of 30% (or such lower rate specified by an applicable income tax treaty) on such effectively connected gain, as adjusted for certain items.

Gain described in the second bullet point above will be subject to U.S. federal income tax at a rate of 30% (or lower rate specified by an applicable income tax treaty), which may be offset by U.S. source capital losses (even though the individual is not considered a resident of the United States), provided the non-U.S. holder has timely filed U.S. federal income tax returns with respect to such losses.

A non-U.S. holder described in the third bullet point above will be subject to U.S. federal income tax under regular U.S. federal income tax rates with respect to the gain recognized in the same manner as if the non-U.S. holder were a United States person as defined under the Code. We believe we are not currently and do not anticipate becoming a USRPHC. Because the determination of whether we are a USRPHC depends on the fair market value of our USRPIs relative to the fair market value of our other business assets and our non-U.S. real property interests, however, there can be no assurance we are not a USRPHC or will not become one in the future.

Non-U.S. holders should consult their tax advisors regarding potentially applicable income tax treaties that may provide for different rules.

Information reporting and backup withholding. Subject to the discussion below on foreign accounts, a non-U.S. holder will not be subject to backup withholding with respect to distributions on our Series B Preferred or common stock we make to the non-U.S. holder, provided the applicable withholding agent does not have actual knowledge or reason to know such holder is a United States person and the holder certifies its non-U.S. status, such as by providing a valid IRS Form W-8BEN, W-8BEN-E or W-8ECI, or other applicable certification. However, information returns generally will be filed with the IRS in connection with any distributions (including deemed distributions) made on our Series B Preferred and our common stock to the non-U.S. holder, regardless of whether any tax was actually withheld. Copies of these information returns may also be made available under the provisions of a specific treaty or agreement to the tax authorities of the country in which the non-U.S. holder resides or is established.

Information reporting and backup withholding may apply to the proceeds of a sale or other taxable disposition of our Series B Preferred or our common stock within the United States, and information reporting may (although backup withholding generally will not) apply to the proceeds of a sale or other taxable disposition of our Series B Preferred or our common stock outside the United States conducted through certain U.S.-related financial intermediaries, in each case, unless the beneficial owner certifies under penalty of perjury that it is a non-U.S. holder on IRS Form W-8BEN or W-8BEN-E, or other applicable form (and the payor does not have actual knowledge or reason to know that the beneficial owner is a U.S. person) or such owner otherwise establishes an exemption. Proceeds of a disposition of our Series B Preferred or our common stock conducted through a non-U.S. office of a non-U.S. broker generally will not be subject to backup withholding or information reporting.

Backup withholding is not an additional tax. Any amounts withheld under the backup withholding rules may be allowed as a refund or a credit against a non-U.S. holder's U.S. federal income tax liability, provided the required information is timely furnished to the IRS.

Additional Withholding Tax on Payments Made to Foreign Accounts. Withholding taxes may be imposed under the Foreign Account Tax Compliance Act, or FATCA, on certain types of payments made to non-U.S. financial institutions and certain other non-U.S. entities. Specifically, a 30% withholding tax may be imposed on dividends (including deemed dividends) paid on the Series B Preferred or our common stock, or gross proceeds from the sale or other disposition of the Series B Preferred or our common stock paid to a "foreign financial institution" or a "non-financial foreign entity" (each as defined in the Code), unless (i) the foreign financial institution undertakes certain diligence and reporting obligations, (ii) the non-financial foreign entity either certifies it does not have any "substantial United States owners" (as defined in the Code) or furnishes identifying information regarding each substantial United States owner, or (iii) the foreign financial institution or non-financial foreign entity otherwise qualifies for an exemption from these rules. If the payee is a foreign financial institution and is subject to the diligence and reporting requirements in (i) above, it must enter into an agreement with the U.S. Department of the Treasury requiring, among other things, that it undertake to identify accounts held by certain "specified United States persons" or "United States-owned foreign entities" (each as defined in the Code), annually report certain information about such accounts, and withhold 30% on certain payments to non-compliant foreign financial institutions and certain other account holders. Foreign financial institutions located in jurisdictions that have an intergovernmental agreement with the United States governing FATCA may be subject to different rules.

Under the applicable Treasury regulations and administrative guidance, withholding under FATCA generally applies to payments of dividends (including deemed dividends), and will apply to payments of gross proceeds from the sale or other disposition of our Series B Preferred or our common stock on or after January 1, 2019. Because we may not know the extent to which a distribution is a dividend for U.S. federal income tax purposes at the time it is made, for purposes of these withholding rules, we or the applicable withholding agent may treat the entire distribution as a dividend. Prospective investors should consult their tax advisors regarding the potential application of these withholding provisions.

PLAN OF DISTRIBUTION

Pursuant to a placement agency agreement, we have engaged ThinkEquity, a division of Fordham Financial Management, Inc., or the placement agent, to act as our exclusive placement agent in connection with this offering of our securities pursuant to this prospectus on a reasonable efforts basis. The terms of this offering were subject to market conditions and negotiations between us and the placement agent. The placement agency agreement does not give rise to any commitment by the placement agent to purchase any of our securities, and the placement agent will have no authority to bind us by virtue of the engagement agreement. Further, the placement agent does not guarantee that it will be able to raise new capital in any prospective offering. The placement agent may engage sub-agents or selected dealers to assist with the offering.

Investors shall rely solely on this prospectus in connection with the purchase of securities in the offering.

We have agreed to pay the placement agent a total cash fee equal to 7% of the public offering price for the Series B Preferred plus a non-accountable expense allowance equal to 1.0% of the gross proceeds raised in this offering. In addition, we have agreed to issue placement agent warrants to the placement agent to purchase that number of shares of common stock equal to 1.5% of the aggregate number of shares of common stock underlying the shares of Series B Preferred sold in the offering (not including any shares payable pursuant to the contemplated dividend thereunder). The placement agent warrants will be exercisable at any time and from time to time, in whole or in part, during the four-year period commencing one year from the effective date of the offering, at a price per share equal to \$0.75. The placement agent warrants will provide for registration rights (including a one-time demand registration right and unlimited piggyback rights), a cashless exercise option, customary anti-dilution provisions (for stock dividends and splits and recapitalizations) consistent with FINRA Rule 5110, and further, the number of shares underlying the placement agent warrants shall be reduced if necessary to comply with FINRA rules or regulations. We will also reimburse the placement agent for its legal fees and expense in the amount of up to \$75,000. We estimate the total offering expenses of this offering that will be payable by us, excluding the placement agent fees and expenses, will be approximately \$225,000.

The placement agent may be deemed to be an underwriter within the meaning of Section 2(a)(11) of the Securities Act, and any commissions received by it and any profit realized on the resale of the securities sold by it while acting as principal might be deemed to be underwriting discounts or commissions under the Securities Act. As an underwriter, the placement agent would be required to comply with the requirements of the Securities Act and the Exchange Act, including, without limitation, Rule 415(a)(4) under the Securities Act and Rule 10b-5 and Regulation M under the Exchange Act. These rules and regulations may limit the timing of purchases and sales of shares of our securities by the placement agent acting as principal. Under these rules and regulations, the placement agent:

- may not engage in any stabilization activity in connection with our securities; and
- may not bid for or purchase any of our securities or attempt to induce any person to purchase any of our securities, other than as permitted under the Exchange Act, until it has completed its participation in the distribution.

Each of our officers and directors have indicated an interest in purchasing shares of our Series B Preferred in this offering at the public offering price of \$1,000 per share. However, because indications of interest are not binding agreements or commitments to purchase, we could determine to sell more, less or no shares to any of these potential investors and any of these potential investors could determine to purchase more, less or no shares in this offering.

We have agreed that we will not (i) offer, pledge, sell, contract to sell, sell any option or contract to purchase, purchase any option or contract to sell, grant any option, right or warrant to purchase or otherwise transfer or dispose of, directly or indirectly, or file with the Securities and Exchange Commission a registration statement under the Securities Act relating to, any shares of our common stock, or securities convertible into or exchangeable or exercisable for any shares of our common stock, or publicly disclose the intention to make any offer, sale, pledge, disposition or filing, or (ii) enter into any swap or other arrangement that transfers all or a portion of the economic consequences associated with the ownership of any shares of common stock or any such other securities (regardless of whether any of these transactions are to be settled by the delivery of shares of common stock or such other securities, in cash or otherwise), in each case without the prior written consent of ThinkEquity for a period of 90 days after the date of this prospectus, subject to certain exceptions, including the shares of our Series B Preferred, the Conversion Shares to be sold hereunder, any shares of our common stock issued upon the exercise of options granted under our existing equity compensation plans, the issuance of shares in connection with any acquisition, strategic partnership, joint venture or collaboration, and following thirty days after the date of this prospectus, the issuance and sale of shares pursuant to our Controlled Equity OfferingSM Sales Agreement with Cantor Fitzgerald & Co. Our directors and executive officers and certain significant shareholders have entered into lock-up agreements with the placement agent prior to the commencement of this offering pursuant to which each of these persons or entities, with limited exceptions, for a period of 90 days after the date of this prospectus, may not, without the prior written consent of ThinkEquity, (1) offer, pledge, sell, contract to sell, sell any option or contract to purchase, purchase any option or contract to sell, grant any option, right or warrant to purchase, or otherwise transfer or dispose of, directly or indirectly, any shares of our common stock, or any securities convertible into or exercisable or exchangeable for our common stock (including, without limitation, common stock or such other securities which may be deemed to be beneficially owned by such directors, executive officers, managers and members in accordance with the rules and regulations of the SEC and securities which may be issued upon exercise of a stock option or warrant) or (2) enter into any swap or other agreement that transfers, in whole or in part, any of the economic consequences of ownership of the common stock or such other securities, whether any such transaction described in clause (1) or (2) above is to be settled by delivery of common stock or such other securities, in cash or otherwise, or (3) make any demand for or exercise any right with respect to the registration of any shares of our common stock or any security convertible into or exercisable or exchangeable for our common stock.

Determination of offering price

The public offering price of the securities we are offering was negotiated between us and the placement agent based on the trading of our common stock prior to the offering, among other things. Other factors considered in determining the public offering price of the shares of our Series B Preferred include the history and prospects of the Company, the stage of development of our business, our business plans for the future and the extent to which they have been implemented, an assessment of our management, general conditions of the securities markets at the time of the offering and such other factors as were deemed relevant.

Listing

Our common stock is listed on NYSE American under the symbol "MTNB".

Transfer Agent and Registrar

The transfer agent and registrar for our common stock is VStock Transfer, LLC.

Other Relationships

As of the date of this prospectus supplement, an affiliate of ThinkEquity beneficially owns 10,000 shares of Series A Preferred Stock, 314 warrants to purchase shares of our common stock and 839,538 shares of common stock, constituting aggregate beneficial ownership of approximately 0.90% of our outstanding common stock.

As of the date of this prospectus supplement, affiliates of Aegis Capital Corp., which will act as a selected dealer in the offering, own an aggregate of approximately 7.5% of our outstanding common stock and on a beneficial ownership basis, inclusive of their Series A Preferred Stock, warrants and options, approximately 11.5% of our common stock. Adam K. Stern, one of our directors, is an affiliate of Aegis Capital Corp.

LEGAL MATTERS

Lowenstein Sandler LLP, New York, New York, will provide us with an opinion as to the validity of the shares of preferred stock and common stock offered by this prospectus supplement and the accompanying prospectus. Partners of the firm beneficially own an aggregate of 145,000 shares of common stock, 5,000 shares of Series A Preferred Stock, and warrants to purchase 20,000 shares of our common stock with an exercise price of \$0.75 per share. Meister Seelig & Fein LLP, New York, New York is counsel to the placement agent.

EXPERTS

The consolidated balance sheets of Matinas BioPharma Holdings, Inc. and Subsidiaries as of December 31, 2017 and 2016, and the related consolidated statements of operations, stockholders' equity, and cash flows for each of the years in the three-year period ended December 31, 2017, have been audited by EisnerAmper LLP, independent registered public accounting firm, as stated in their report which is incorporated herein by reference, which report contains an explanatory paragraph that describes conditions that raise substantial doubt about the Company's ability to continue as a going concern as described in Note B to the consolidated financial statements. Such financial statements have been incorporated herein by reference in reliance on the report of such firm given upon their authority as experts in accounting and auditing.

WHERE YOU CAN FIND MORE INFORMATION

We file annual, quarterly and current reports, proxy statements and other information with the SEC. We have also filed a registration statement on Form S-3, including exhibits, under the Securities Act with respect to the securities offered by this prospectus supplement and the accompanying prospectus. This prospectus supplement and the accompanying prospectus are a part of the registration statement but do not contain all of the information included in the registration statement or the exhibits. You may read and copy the registration statement and any other document that we file at the SEC's public reference room at 100 F Street, N.E., Room 1580, Washington D.C. 20549. You can call the SEC at 1-800-SEC-0330 for further information on the operation of the public reference room. You can also find our public filings with the SEC on the Internet at a web site maintained by the SEC located at <http://www.sec.gov>.

INCORPORATION OF CERTAIN INFORMATION BY REFERENCE

The SEC allows us to “incorporate by reference” into this prospectus supplement and the accompanying prospectus certain information. This means that we can disclose important information to you by referring you to those documents that contain the information. The information we incorporate by reference is considered a part of this prospectus supplement and the accompanying prospectus, and later information we file with the SEC will automatically update and supersede this information. We incorporate by reference the documents listed below and any future filings we make with the SEC under Section 13(a), 13(c), 14 or 15(d) of the Exchange Act, on or after the date of this prospectus supplement (other than information “furnished” under Items 2.02 or 7.01 (or corresponding information furnished under Item 9.01 or included as an exhibit)) of any Current Report on Form 8-K or otherwise “furnished” to the SEC, unless otherwise stated) until this offering is completed:

- our Annual Report on Form 10-K for the fiscal year ended December 31, 2017, filed with the SEC on March 16, 2018;
- our Annual Report on Form 10-K/A for the fiscal year ended December 31, 2017, filed with the SEC on May 25, 2018;
- our Annual Report on Form 10-K/A for the fiscal year ended December 31, 2017, filed with the SEC on June 14, 2018;
- our Quarterly Report on Form 10-Q for the period ended March 31, 2018, filed with the SEC on May 9, 2018;
- our Current Reports on Form 8-K filed with the SEC on January 8, 2018, March 27, 2018, May 25, 2018 and June 18, 2018 (other than information “furnished” under Items 2.02 or 7.01 (or corresponding information furnished under Item 9.01 or included as an exhibit)); and
- the description of our common stock contained in our Registration Statement on Form 8-A, filed on March 1, 2017, including any amendments thereto or reports filed for the purposes of updating this description.

You may request a copy of these filings, at no cost, by writing to or telephoning us at the following address:

Investor Relations Department
Matinas BioPharma Holdings, Inc.
1545 Route 206 South
Suite 302
Bedminster, NJ 07921
Telephone number: 908-443-1860

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

You should rely only on information contained in, or incorporated by reference into, this prospectus supplement and the accompanying prospectus. We have not authorized anyone to provide you with information different from that contained in this prospectus supplement and the accompanying prospectus or incorporated by reference in this prospectus supplement and the accompanying prospectus. We are not making offers to sell the securities in any jurisdiction in which such 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 such offer or solicitation.



\$150,000,000

**Common Stock
Preferred Stock
Warrants
Debt Securities
Subscription Rights
Units**

We may offer, issue and sell from time to time together or separately, in one or more offerings, any combination of (i) our common stock, (ii) our preferred stock, which we may issue in one or more series, (iii) warrants, (iv) senior or subordinated debt securities, (v) subscription rights and (vi) units, consisting of any combination of the securities listed above. We will describe in a prospectus supplement the securities we are offering and selling, as well as the specific terms of the securities.

The aggregate public offering price of the securities that we are offering will not exceed \$150,000,000. We will offer the securities in an amount and on terms that market conditions will determine at the time of the offering. Our common stock is listed on the NSYE MKT under the symbol "MTNB." The last reported sale price for our common stock on March 30, 2017 was \$2.75 per share. You are urged to obtain current market quotations of our common stock. We have no preferred stock, warrants, debt securities, subscription rights or units listed on any market. Each prospectus supplement will indicate if the securities offered thereby will be listed on any securities exchange.

Investing in our securities involves risk. You should carefully consider the risks that we have described under the section captioned "Risk Factors" in this prospectus on page 3 before buying our Securities.

Should we offer any of the securities described in this prospectus, we will provide you with the specific terms of the particular securities being offered in supplements to this prospectus. You should read this prospectus and any supplement, together with additional information described under the headings "Additional Information" and "Incorporation of Certain Information by Reference," carefully before you invest. This prospectus may not be used to sell securities unless accompanied by a prospectus supplement.

We may sell these securities directly to our stockholders or 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.

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

The date of this prospectus is April 12, 2017

	Page
ABOUT THIS PROSPECTUS	1
PROSPECTUS SUMMARY	1
RISK FACTORS	3
FORWARD-LOOKING STATEMENTS	3
USE OF PROCEEDS	3
THE SECURITIES WE MAY OFFER	4
DESCRIPTION OF CAPITAL STOCK	4
DESCRIPTION OF STOCK WARRANTS	10
DESCRIPTION OF DEBT SECURITIES	12
DESCRIPTION OF SUBSCRIPTION RIGHTS	17
DESCRIPTION OF UNITS	17
PLAN OF DISTRIBUTION	19
LEGAL MATTERS	23
EXPERTS	23
ADDITIONAL INFORMATION	23
INCORPORATION OF CERTAIN INFORMATION BY REFERENCE	24

Unless the context indicates otherwise, “Matinas”, “the Company”, “we”, “us”, and “our” as used herein refers to Matinas BioPharma Holdings, Inc. and its wholly owned subsidiaries, Matinas BioPharma Inc. and Matinas BioPharma Nanotechnologies, Inc.

You may only rely on the information contained in this prospectus or that we have referred you to. We have not authorized anyone to provide you with different information. This prospectus does not constitute an offer to sell or a solicitation of an offer to buy any securities other than the securities offered by this prospectus. This prospectus and any future prospectus supplement do not constitute an offer to sell or a solicitation of an offer to buy any securities in any circumstances in which such offer or solicitation is unlawful. Neither the delivery of this prospectus or any prospectus supplement nor any sale made hereunder shall, under any circumstances, create any implication that there has been no change in our affairs since the date of this prospectus or such prospectus supplement or that the information contained by reference to this prospectus or any prospectus supplement is correct as of any time after its date.

ABOUT THIS PROSPECTUS

This prospectus is part of a registration statement that we filed with the Securities and Exchange Commission (“SEC”) using a “shelf” registration process. Under this shelf registration process, we may from time to time offer and sell, in one or more offerings, any or all of the securities described in this prospectus, separately or together, up to an aggregate initial offering price of \$150,000,000. This prospectus provides you with a general description of our securities being offered. When we issue the securities being offered by this prospectus, we will provide a prospectus supplement that will contain specific information about the terms of that offering. The prospectus supplement may also add, update or change information contained in this prospectus. You should read both this prospectus and any prospectus supplement together with additional information described under the heading “Additional Information” and “Incorporation of Certain Information by Reference.”

PROSPECTUS SUMMARY

The following summary highlights some information from this prospectus. It is not complete and does not contain all of the information that you should consider before making an investment decision. You should read this entire prospectus, including the “Risk Factors” section on page 3, the financial statements and related notes and the other more detailed information appearing elsewhere or incorporated by reference into this prospectus.

We currently do not own or license any U.S. federal trademark registrations or applications. Some trademarks referred to in this prospectus are referred to without the ® and ™ symbols, but such references should not be construed as any indicator that their respective owners will not assert, to the fullest extent under applicable law, their rights thereto.

About Us

We are a clinical-stage biopharmaceutical company focused on developing innovative anti-infectives for orphan indications. Our product and development candidates are derived using our unique and proprietary lipid-crystal nano-particle, or cochleate, formulation platform delivery technology. Our proprietary cochleate delivery technology platform, licensed from Rutgers University on an exclusive worldwide basis, nano-encapsulates drugs and is designed to make these drugs orally bioavailable, well tolerated and safer and less toxic while providing targeted and safe delivery of pharmaceuticals directly to the site of infection or inflammation. We believe our cochleate technology provides us with an efficient and broadly applicable drug delivery platform, with particular utility in diseases and conditions in which the immune system plays a significant modulation role and where the immune system facilitates the active transport of our lipid crystal nano-particles throughout the body.

Currently, we are focused on the anti-infective market and on drug candidates which we believe demonstrate the value and innovation associated with our unique cochleate delivery platform technology while potentially providing significant health economic benefit to the health care system. We believe initially focusing on the anti-infective market has distinct advantages for the development of products which meet significant unmet medical need, including:

- a current regulatory environment which provides small development and clinical stage companies incentives such as significant periods of regulatory marketing exclusivity and opportunities to reduce development cost and timeline to market for anti-infective drug candidates;
- traditional high correlation between efficacy and safety data in preclinical animal models and the outcome of human clinical trials with anti-infective product candidates;
- attractive commercial opportunities for anti-infective product differentiated in safety profile, mode of action and oral bioavailability positioned against current therapies with significant side effects, or drug to drug interactions, limited efficacy and intravenous delivery resulting in lack of convenience, compliance and at a significant burden to the cost of healthcare; and
- an ability to commercialize anti-infective products with a focused and cost-efficient sales and marketing organization.

MAT2203 and MAT2501

We leveraged our platform cochleate delivery technology to develop two clinical-stage products that we believe have the potential to become best-in-class drugs. Our lead product candidate MAT2203 is an orally-administered cochleate formulation of a broad spectrum anti-fungal drug called amphotericin B. We are initially developing MAT2203 for the treatment of serious fungal infections as well as the prevention of invasive fungal infections (IFIs) due to immunosuppressive therapy. We are currently conducting two Phase 2 clinical trials involving MAT2203 and expect to report interim results from our open label NIH run Phase 2a clinical trial and topline results from our ongoing Phase 2 study of MAT2203 in Vulvovaginal Candidiasis in the first half of 2017.

Our second clinical stage product candidate is MAT2501, an orally administered, encochleated formulation of the broad spectrum aminoglycoside antibiotic amikacin which may be used to treat different types of multidrug-resistant bacteria, including non-tuberculous mycobacterium infections (NTM), as well as various multidrug-resistant gram negative and intracellular bacterial infections. We recently completed and announced topline results from a Phase 1 single escalating dose clinical trial of MAT2501 in healthy volunteers in which no serious adverse events were reported and where oral administration of MAT2501 at all tested doses yielded blood levels that were well below the safety levels recommended for injected amikacin, supporting further development of MAT2501 for the treatment of NTM infections.

Implications of Being an Emerging Growth Company

We are an “emerging growth company,” as defined in the Jumpstart Our Business Startups Act of 2012. We will remain an emerging growth company until December 31, 2019, or until the earliest of (i) the last day of the first fiscal year in which our annual gross revenues exceed \$1 billion, (ii) the date that we become a “large accelerated filer” as defined in Rule 12b-2 under the Exchange Act, which would occur if the market value of our common stock that is held by non-affiliates exceeds \$700 million as of the last business day of our most recently completed second fiscal quarter, or (iii) the date on which we have issued more than \$1 billion in non-convertible debt during the preceding three year period.

For as long as we remain an “emerging growth company,” we intend to take advantage of certain exemptions from various reporting requirements that are applicable to public companies that are not “emerging growth companies” including, but not limited to, not being required to comply with the auditor attestation requirements of Section 404 of the Sarbanes-Oxley Act, reduced disclosure obligations regarding executive compensation and financial statements in our periodic reports and proxy statements, and exemptions from the requirements of holding a nonbinding advisory vote to approve executive compensation and shareholder approval of any golden parachute payments not previously approved. We will take advantage of these reporting exemptions until we are no longer an “emerging growth company.”

Corporate Information

We were incorporated in Delaware under the name Matinas BioPharma Holdings, Inc. in May 2013. We have two operating subsidiaries: Matinas BioPharma, Inc., a Delaware corporation, and Matinas BioPharma Nanotechnologies, Inc., a Delaware corporation. Nereus BioPharma LLC, a Delaware limited liability company (and Matinas BioPharma’s predecessor) was formed on August 12, 2011. On February 29, 2012, Nereus BioPharma LLC converted from a limited liability company to a corporation and changed its name to Matinas BioPharma, Inc. In July 2013, Matinas BioPharma, Inc. entered into entered into a merger agreement (the “2013 Merger Agreement”) with Matinas Merger Sub, Inc., a Delaware corporation and our wholly owned subsidiary, or Merger Sub. Pursuant to the terms of the 2013 Merger Agreement, as a condition of and contemporaneously with the initial closing of the 2013 Private Placement, Merger Sub merged (the “2013 Merger”) with and into Matinas BioPharma and Matinas BioPharma became a wholly owned subsidiary of ours. After consummation of the Merger transaction, the management of Matinas BioPharma became the management of Holdings and the board representatives consisted of four former Board members of Matinas BioPharma and Mr. Adam Stern as the Aegis Capital Corp. nominee. Because Holdings was formed solely to effect the 2013 Merger and the 2013 Private Placement, with no operations, and assets consisting solely of cash and cash equivalents, we accounted for the 2013 Merger as a reverse acquisition. The legal acquirer Matinas BioPharma becomes the successor entity, and its historical results became the historical results for Holdings (the legal acquirer and the registrant). On January 29, 2015, we acquired Aquarius Biotechnologies Inc. which was subsequently renamed Matinas BioPharma Nanotechnologies, Inc.

Our principal executive offices are located at 1545 Route 206 South, Suite 302, Bedminster, New Jersey 07921, and our telephone number is (908) 443-1860. Our website address is www.matinasbiopharma.com. Our website and the information contained on, or that can be accessed through, our website will not be deemed to be incorporated by reference in, and are not considered part of, this prospectus. You should not rely on our website or any such information in making your decision whether to purchase our securities.

RISK FACTORS

An investment in our securities involves a high degree of risk. Before making an investment decision, you should carefully consider the risks described under “Risk Factors” in the applicable prospectus supplement and in our most recent Annual Report on Form 10-K, and in our updates to those Risk Factors in our Quarterly Reports on Form 10-Q or Current Reports on Form 8-K following the most recent Form 10-K, and in all other information appearing in this prospectus or incorporated by reference into this prospectus and any applicable prospectus supplement. The material risks and uncertainties that management believes affect us will be described in those documents. In addition to those risk factors, there may be additional risks and uncertainties of which management is not aware or focused on or that management deems immaterial. Our business, financial condition or results of operations could be materially adversely affected by any of these risks. The trading price of our securities could decline due to any of these risks, and you may lose all or part of your investment. This prospectus is qualified in its entirety by these risk factors.

FORWARD-LOOKING STATEMENTS

This prospectus, including the documents that we incorporate by reference, contains forward-looking statements as that term is defined in the federal securities laws. The events described in forward-looking statements contained in this prospectus, including the documents that we incorporate by reference, may not occur. Generally, these statements relate to our business plans or strategies, projected or anticipated benefits or other consequences of our plans or strategies, financing plans, projected or anticipated benefits from acquisitions that we may make, or projections involving anticipated revenues, earnings or other aspects of our operating results or financial position, and the outcome of any contingencies. Any such forward-looking statements are based on current expectations, estimates and projections of management. We intend for these forward-looking statements to be covered by the safe-harbor provisions for forward-looking statements. Words such as “may,” “expect,” “believe,” “anticipate,” “project,” “plan,” “intend,” “estimate,” and “continue,” and their opposites and similar expressions are intended to identify forward-looking statements. We caution you that these statements are not guarantees of future performance or events and are subject to a number of uncertainties, risks and other influences, many of which are beyond our control that may influence the accuracy of the statements and the projections upon which the statements are based. Factors that may affect our results include, but are not limited to, the risks and uncertainties discussed in the “Risk Factors” section on page 3 of this prospectus, in our most recent Annual Report on Form 10-K or in other reports we file with the Securities and Exchange Commission.

Any one or more of these uncertainties, risks and other influences could materially affect our results of operations and whether forward-looking statements made by us ultimately prove to be accurate. Our actual results, performance and achievements could differ materially from those expressed or implied in these forward-looking statements. We undertake no obligation to publicly update or revise any forward-looking statements, whether from new information, future events or otherwise.

You should rely only on the information in this prospectus. We have not authorized any other person to provide you with different information. If anyone provides you with different or inconsistent information, you should not rely upon it. You should assume that the information in this prospectus was accurate on the date of the front cover of this prospectus only. Our business, financial condition, results of operations and prospects may have changed since that date.

USE OF PROCEEDS

Unless we inform you otherwise in the prospectus supplement, we will use the net proceeds from the sale of the securities offered by this prospectus and the exercise price from the exercise of any convertible securities, if any, for working capital and general corporate purposes, which may include research and development funding, funding for clinical trials for our product candidates, manufacturing, acquisitions or investments in businesses, products or technologies that are complementary to our own and capital expenditures. Pending their uses, we intend to invest the net proceeds of this offering in interest-bearing bank accounts or in short-term, interest-bearing, investment-grade securities.

THE SECURITIES WE MAY OFFER

General

The descriptions of the securities contained in this prospectus, together with the applicable prospectus supplements, summarize all of the material terms and provisions of the various types of securities that we may offer. We will describe in the applicable prospectus supplement relating to any securities the particular terms of the securities offered by that prospectus supplement. If any particular terms of a security described in the applicable prospectus supplement differ from any of the terms described herein, then the terms described herein will be deemed superseded by the terms set forth in that prospectus supplement. We will also include in the prospectus supplement information, where applicable, about material United States federal income tax considerations relating to the securities, and the securities exchange, if any, on which the securities will be listed.

We may sell from time to time, in one or more offerings:

- common stock;
- preferred stock;
- debt securities;
- warrants to purchase shares of common stock, preferred stock or other securities;
- subscription rights, and
- units consisting of any combination of the securities listed above.

In this prospectus, we refer to the common stock, preferred stock, debt securities, warrants, subscription rights and units collectively as “securities.” The total dollar amount of all securities that we may sell will not exceed \$150,000,000.

If we issue debt securities at a discount from their original stated principal amount, then, for purposes of calculating the total dollar amount of all securities issued under this prospectus, we will treat the initial offering price of the debt securities as the total original principal amount of the debt securities.

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

DESCRIPTION OF CAPITAL STOCK

General

Our authorized capital stock consists of:

- 250,000,000 shares of common stock, par value \$0.0001 per share; and
- 10,000,000 shares of Preferred Stock, par value \$0.0001 per share, of which as of the date of this prospectus 1,600,000 shares have been designated as Series A Preferred Stock.

As of close of business on March 30, 2017, 89,333,282 shares of common stock were issued and outstanding and 1,600,000 shares of Series A Preferred Stock were issued and outstanding.

The additional shares of our authorized stock available for issuance might be issued at times and under circumstances so as to have a dilutive effect on earnings per share and on the equity ownership of the holders of our common stock. The ability of our board of directors to issue additional shares of stock could enhance the board's ability to negotiate on behalf of the stockholders in a takeover situation but could also be used by the board to make a change-in-control more difficult, thereby denying stockholders the potential to sell their shares at a premium and entrenching current management. The following description is a summary of the material provisions of our capital stock. You should refer to our amended and restated certificate of incorporation and by-laws, both of which are on file with the SEC as exhibits to previous SEC filings, for additional information. The summary below is qualified by provisions of applicable law.

Common Stock

Voting. The holders of our common stock are entitled to one vote for each share held of record on all matters on which the holders are entitled to vote (or consent to).

Dividends. The holders of our common stock are entitled to receive, ratably, dividends only if, when and as declared by our Board of Directors out of funds legally available therefor and after provision is made for each class of capital stock having preference over the common stock (including the common stock).

Liquidation Rights. In the event of our liquidation, dissolution or winding-up, the holders of our common stock are entitled to share, ratably, in all assets remaining available for distribution after payment of all liabilities and after provision is made for each class of capital stock having preference over the common stock (including the common stock).

Conversion Rights. The holders of our common stock have no conversion rights.

Preemptive and Similar Rights. The holders of our common stock have no preemptive or similar rights.

Redemption/Put Rights. There are no redemption or sinking fund provisions applicable to the common stock. All of the outstanding shares of our common stock are fully-paid and nonassessable.

Transfer Agent and Registrar

The transfer agent and registrar for our common stock is VStock Transfer, LLC.

Preferred Stock

We are authorized to issue up to 10,000,000 shares of preferred stock, par value \$0.0001 per share, (of which 1,600,000 shares have been designated as Series A Preferred Stock) with such designations, rights, and preferences as may be determined from time to time by our Board of Directors. Accordingly, our Board of Directors is empowered, without stockholder approval, to issue preferred stock with dividend, liquidation, conversion, voting, or other rights that could adversely affect the voting power or other rights of the holders of our common stock. The issuance of preferred stock could have the effect of restricting dividends on our common stock, diluting the voting power of our common stock, impairing the liquidation rights of our common stock, or delaying or preventing a change in control of our company, all without further action by our stockholders.

Our board of directors has the authority, within the limitations and restrictions prescribed by law and without stockholder approval, to provide by resolution for the issuance of shares of preferred stock, and to fix the rights, preferences, privileges and restrictions thereof, including dividend rights, conversion rights, voting rights, terms of redemption, liquidation preference and the number of shares constituting any series of the designation of such series, by delivering an appropriate certificate of amendment to our amended and restated certificate of incorporation to the Delaware Secretary of State pursuant to the Delaware General Corporation Law (the "DGCL"). The issuance of preferred stock could have the effect of decreasing the market price of the common stock, impeding or delaying a possible takeover and adversely affecting the voting and other rights of the holders of our common stock.

If we offer a specific series of preferred stock under this prospectus, we will describe the terms of the preferred stock in the prospectus supplement for such offering and will file a copy of the certificate establishing the terms of the preferred stock with the SEC. To the extent required, this description will include:

- the title and stated value;
- the number of shares offered, the liquidation preference per share and the purchase price;
- the dividend rate(s), period(s) and/or payment date(s), or method(s) of calculation for such dividends;
- whether dividends will be cumulative or non-cumulative and, if cumulative, the date from which dividends will accumulate;
- the procedures for any auction and remarketing, if any;
- the provisions for a sinking fund, if any;
- the provisions for redemption, if applicable;
- any listing of the preferred stock on any securities exchange or market;
- whether the preferred stock will be convertible into our common stock, and, if applicable, the conversion price (or how it will be calculated) and conversion period;
- whether the preferred stock will be exchangeable into debt securities, and, if applicable, the exchange price (or how it will be calculated) and exchange period;
- voting rights, if any, of the preferred stock;
- a discussion of any material and/or special U.S. federal income tax considerations applicable to the preferred stock;
- the relative ranking and preferences of the preferred stock as to dividend rights and rights upon liquidation, dissolution or winding up of the affairs of Matinas; and
- any material limitations on issuance of any class or series of preferred stock ranking senior to or on a parity with the series of preferred stock as to dividend rights and rights upon liquidation, dissolution or winding up of Matinas.

Transfer Agent and Registrar for Preferred Stock

The transfer agent and registrar for any series or class of preferred stock will be set forth in each applicable prospectus supplement.

Series A Preferred Stock

In connection with the 2016 Private Placement, our Board of Directors created out of the authorized and unissued shares of our preferred stock, a series of preferred stock comprised of 1,600,000 shares of Series A Preferred Stock. We have 1,600,000 shares of our Series A Preferred Stock outstanding as of March 30, 2017, which are convertible into 16,000,000 shares of common stock based on the current conversion price.

Rank. The Series A Preferred Stock ranks above all other classes of stock outstanding as of the date hereof with respect to dividend rights and liquidation preferences.

Dividends. Holders of Series A Preferred Stock are entitled to receive cumulative dividends at the rate per share of 8% per annum, payable in shares of our common stock, which annual dividend will accumulate until such time as the shares of Series A Preferred Stock are converted, at which time the accumulated dividend will be satisfied by delivery of shares of common stock (“PIK Shares”) at a price per share of common stock equal to the then conversion price. Each holder of shares of Series A Preferred Stock will be entitled to receive dividends equal, on an as-if-converted to shares of common stock basis, to and in the same form as dividends actually paid on shares of our common stock when, as, and if such dividends are paid on shares of our common stock.

Liquidation. Upon any dissolution, liquidation or winding up, whether voluntary or involuntary, holders of Series A Preferred Stock will be entitled to (i) first receive distributions out of our assets in an amount per share equal to \$5.00 (the “Stated Value”) plus all accrued and unpaid dividends, whether capital or surplus before any distributions shall be made on any shares of common stock and (ii) second, on an as-converted basis alongside the common stock.

Conversion. Upon the earlier of (i) notice by us to the holders that we have elected to convert all outstanding shares of Series A Preferred Stock; provided however that in the event we elect to force automatic conversion pursuant to this clause (i), the conversion date for purposes of calculating the accrued dividend is deemed to be July 29, 2019, which is the third anniversary of the initial closing, (ii) July 29, 2019, (iii) the approval of the MAT2203 product candidate by the U.S. Food and Drug Administration or the European Medicines Agency (the “Regulatory Approval”) or (iv) the Regulatory Approval of MAT2501 product candidate, without any action on the part of the holder (each of the foregoing, a “Mandatory Conversion Date”), all of the outstanding shares of Series A Preferred Stock will automatically convert to common stock (a “Mandatory Conversion”). In addition, each share of Series A Preferred Stock shall be convertible, at any time and from time to time at the option of the holder thereof, into that number of shares of common stock determined by dividing the Stated Value of such Series A Preferred Stock by the conversion price. The conversion price currently is \$0.50 per share of common stock and is subject to adjustment described below.

Stock Dividends and Stock Splits. If we pay a stock dividend or otherwise make a distribution payable in shares of common stock on shares of common stock or any other common stock equivalents, subdivide or combine outstanding common stock, or reclassify common stock, the conversion price will be adjusted by multiplying the then conversion price by a fraction, the numerator of which shall be the number of shares of common stock outstanding immediately before such event, and the denominator of which shall be the number of shares outstanding immediately after such event.

Fundamental Transaction. If we effect a fundamental transaction, then upon any subsequent conversion of Series A Preferred Stock, the holder thereof shall have the right to receive, for each share of common stock that would have been issuable upon such conversion immediately prior to the occurrence of such fundamental transaction, the number of shares of the successor’s or acquiring corporation’s common stock or of our common stock, if we are the surviving corporation, and any additional consideration receivable as a result of such fundamental transaction by a holder of the number of shares of common stock into which shares of our Series A Preferred Stock is convertible immediately prior to such fundamental transaction. A fundamental transaction means: (i) our merger or consolidation with or into another entity, (ii) any sale of all or substantially all of our assets in one transaction or a series of related transactions, or (iii) any reclassification of our common stock or any compulsory share exchange by which common stock is effectively converted into or exchanged for other securities, cash or property.

Voting Rights. Except as otherwise provided in the Certificate of Designation or required by law, shares of our Series A Preferred Stock have no class voting rights. The Certificate of Designations provides that each share of Series A Preferred Stock will entitle its holder to vote with the common stock on an as-if converted to shares of common stock basis. Notwithstanding certain protections in the Certificate of Designations, Delaware law also provides holders of preferred stock with certain rights. The holders of the outstanding shares of Series A Convertible Preferred Stock generally will be entitled to vote as a class upon a proposed amendment to our certificate of incorporation if the amendment would:

- increase or decrease the aggregate number of authorized shares of our Series A Convertible Preferred Stock;
- increase or decrease the par value of the shares of our Series A Convertible Preferred Stock; or
- alter or change the powers, preferences, or special rights of the shares of our Series A Convertible Preferred Stock so as to affect them adversely.

Fractional Shares. No fractional shares of common stock will be issued upon conversion of shares of our Series A Preferred Stock. Rather, we shall round up to the next whole share.

Royalties. Pursuant to the terms of the Certificate of Designations for our outstanding Series A Preferred Stock, we may be required to pay, subject to certain vesting requirements, in the aggregate, a royalty equal to (i) 4.5% of Net Sales (as defined in the Certificate of Designation) from MAT 2203 and/or MAT 2501, subject in all cases to a cap of \$25 million per calendar year, and (ii) 7.5% of Licensing Proceeds (as defined in the Certificate of Designations) from MAT2203 and/or MAT2501, subject in all cases to a cap of \$10 million per calendar year. Our obligation to pay such royalty will expire when the patents covering the applicable product expire, which is currently expected to be in 2033.

Royalty Vesting. The shares of Series A Preferred Stock will vest, in equal thirds, upon each of the first, second and third vesting dates; provided however, if the Series A Preferred Stock automatically convert into common stock prior to July 29, 2019, which is the 36 month anniversary of the initial closing of the 2016 Private Placement, then the outstanding shares of Series A Preferred Stock shall be deemed to be fully vested as of the date of conversion. Once a vesting date has occurred, the portion that vested on such vesting date shall be unaffected by any conversion thereafter of such shares of our Series A Preferred Stock.

Each holder is entitled to a portion of the royalty payment, if any, as determined based on the length of time that such holder's shares of Series A Preferred Stock remain unconverted. If a holder elects to convert all of his shares of Series A Preferred Stock into common stock prior to July 29, 2017, the first 12 month anniversary after the Initial Closing, the holder will forfeit any rights to future royalty payments, if any. If a holder elects to convert any portion of his Series A Preferred Stock to common stock at any time prior to the third vesting date, such holder will forfeit any rights to future royalty payments if any, with respect to such the unvested portion of such converted shares.

Allocation of Royalty Payment. Once the aggregate Royalty Payment Amount is calculated based on the criteria set forth above under "Royalties," that amount will be allocated to the holders of the Participating Royalty Interests (as defined in the Certificate of Designations) based on their pro rata ownership. The royalty payable to each holder shall be calculated as follows:

(i) Prior to the third Vesting Date, the royalty payable to each holder will be equal to the aggregate Royalty Payment Amount divided by the aggregate Participating Royalty Interests on the applicable record date multiplied by the number of Participating Royalty Interests held by such holder on the applicable record date.

(ii) On or after the third Vesting Date, the Royalty payable to each holder will be calculated by multiplying the aggregate Royalty Payment Amount by the percentage set forth in each holder's Royalty Payment Rights certificate. The percentage set forth in each Royalty Payment Rights certificate will be calculated as follows:

$$\frac{\text{Number of Participating Royalty Interests Held by Investor on the Third Vesting Date}}{\text{Total Participating Royalty Interests on the Third Vesting Date}}$$

Separability. The royalty payment rights may not be transferred separately from the Series A Preferred Stock until July 29, 2019. Prior to July 29, 2019, if a holder transfers any of its shares of Series A Preferred Stock, such holder will lose any rights to any future royalty payments with respect to the shares of Series A Preferred Stock that were transferred. After July 29, 2019, we will issue a certificate representing the royalty payment rights to (i) each holder of Series A Preferred Stock at such 36 month anniversary date and (ii) any holder of Series A Preferred Stock which converted its shares of Series A Preferred Stock prior to July 29, 2019 but is listed on a list of holders as at a vesting date as a person entitled to receive royalty payments. Following the issuance of royalty payment rights certificates, such royalty payment rights may be transferred, subject to the availability of an exemption from registration under applicable state and federal securities laws, separately from the Series A Preferred Stock.

Unsecured Obligations. The royalty payment rights are unsecured obligations of ours.

VStock Transfer, LLC is the transfer agent and registrar for our Series A Preferred Stock.

Anti-takeover Effects of Delaware Law and of our Amended and Restated Certificate of Incorporation

The following paragraphs summarize certain provisions of the DGCL and our amended and restated certificate of incorporation that may have the effect of discouraging an acquisition of Matinas. The summary does not purport to be complete and is subject to and qualified in its entirety by reference to the DGCL and our amended and restated certificate of incorporation and by-laws, copies of which are on file with the SEC. Please refer to “Additional Information” below for directions on obtaining these documents.

Section 203 of the Delaware General Corporation Law

We are subject to Section 203 of the Delaware General Corporation Law, which prohibits a Delaware corporation from engaging in any business combination with any interested stockholder for a period of three years after the date that such stockholder became an interested stockholder, with the following exceptions:

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

In general, Section 203 defines business combination to include the following:

- any merger or consolidation involving the corporation and the interested stockholder;
- any sale, transfer, pledge or other disposition of 10% or more of the assets of the corporation involving the interested stockholder;
- subject to certain exceptions, any transaction that results in the issuance or transfer by the corporation of any stock of the corporation to the interested stockholder;
- any transaction involving the corporation that has the effect of increasing the proportionate share of the stock or any class or series of the corporation beneficially owned by the interested stockholder; or
- the receipt by the interested stockholder of the benefit of any loss, advances, guarantees, pledges or other financial benefits by or through the corporation.

In general, Section 203 defines an “interested stockholder” as an entity or person who, together with the person’s affiliates and associates, beneficially owns, or within three years prior to the time of determination of interested stockholder status did own, 15% or more of the outstanding voting stock of the corporation.

Certificate of Incorporation and Bylaws

Our certificate of incorporation and bylaws contain provisions that could have the effect of discouraging potential acquisition proposals or tender offers or delaying or preventing a change of control of our company. These provisions are as follows:

- they provide that special meetings of stockholders may be called only by the board of directors, President or our Chairman of the Board of Directors, or at the request in writing by stockholders of record owning at least fifty (50%) percent of the issued and outstanding voting shares of common stock;
- they do not include a provision for cumulative voting in the election of directors. Under cumulative voting, a minority stockholder holding a sufficient number of shares may be able to ensure the election of one or more directors. The absence of cumulative voting may have the effect of limiting the ability of minority stockholders to effect changes in our board of directors; and
- they allow us to issue “blank check” preferred stock, the terms of which may be established and shares of which may be issued without stockholder approval.

Potential Effects of Authorized but Unissued Stock

We have shares of common stock and preferred stock available for future issuance without stockholder approval. We may utilize these additional shares for a variety of corporate purposes, including future public offerings to raise additional capital, to facilitate corporate acquisitions or payment as a dividend on the capital stock.

The existence of unissued and unreserved common stock and preferred stock may enable our board of directors to issue shares to persons friendly to current management or to issue preferred stock with terms that could render more difficult or discourage a third-party attempt to obtain control of us by means of a merger, tender offer, proxy contest or otherwise, thereby protecting the continuity of our management. In addition, the board of directors has the discretion to determine designations, rights, preferences, privileges and restrictions, including voting rights, dividend rights, conversion rights, redemption privileges and liquidation preferences of each series of preferred stock, all to the fullest extent permissible under the DGCL and subject to any limitations set forth in our amended and restated certificate of incorporation. The purpose of authorizing the board of directors to issue preferred stock and to determine the rights and preferences applicable to such preferred stock is to eliminate delays associated with a stockholder vote on specific issuances. The issuance of preferred stock, while providing desirable flexibility in connection with possible financings, acquisitions and other corporate purposes, could have the effect of making it more difficult for a third-party to acquire, or could discourage a third-party from acquiring, a majority of our outstanding voting stock.

DESCRIPTION OF STOCK WARRANTS

We summarize below some of the provisions that will apply to the warrants unless the applicable prospectus supplement provides otherwise. This summary may not contain all information that is important to you. The complete terms of the warrants will be contained in the applicable warrant certificate and warrant agreement. These documents have been or will be included or incorporated by reference as exhibits to the registration statement of which this prospectus is a part. You should read the warrant certificate and the warrant agreement. You should also read the prospectus supplement, which will contain additional information and which may update or change some of the information below.

General

We may issue, together with common or preferred stock as units or separately, warrants for the purchase of shares of our common stock, shares of our preferred stock, debt securities or other securities. The terms of each warrant will be discussed in the applicable prospectus supplement relating to the particular series of warrants. The form(s) of certificate representing the warrants and/or the warrant agreement, will be, in each case, filed with the SEC as an exhibit to a document incorporated by reference in the registration statement of which this prospectus is a part on or prior to the date of any prospectus supplement relating to an offering of the particular warrant. The following summary of material provisions of the warrants and the warrant agreements are subject to, and qualified in their entirety by reference to, all the provisions of the warrant agreement and warrant certificate applicable to a particular series of warrants.

The prospectus supplement relating to any series of warrants that are offered by this prospectus will describe, among other things, the following terms to the extent they are applicable to that series of warrants:

- the procedures and conditions relating to the exercise of the warrants;
- the number of shares of our common or preferred stock, if any, issued with the warrants;
- the date, if any, on and after which the warrants and any related shares of our common or preferred stock will be separately transferable;
- the offering price of the warrants, if any;
- the number of shares of our common or preferred stock, debt securities or other securities which may be purchased upon exercise of the warrants and the price or prices at which such securities may be purchased upon exercise;
- the date on which the right to exercise the warrants will begin and the date on which the right will expire;
- a discussion of any material United States federal income tax considerations applicable to the exercise of the warrants;
- anti-dilution provisions of the warrants, if any;
- call provisions of the warrants, if any; and
- any other material terms of the warrants.

Each warrant may entitle the holder to purchase for cash, or, in limited circumstances, by effecting a cashless exercise for, the number of shares of our common or preferred stock at the exercise price that is described in the applicable prospectus supplement. Warrants will be exercisable during the period of time described in the applicable prospectus supplement. After that period, unexercised warrants will be void. Warrants may be exercised in the manner described in the applicable prospectus supplement.

A holder of a warrant will not have any of the rights of a holder of our common or preferred stock before the stock is purchased upon exercise of the warrant. Therefore, before a warrant is exercised, the holder of the warrant will not be entitled to receive any dividend payments or exercise any voting or other rights associated with shares of our common or preferred stock which may be purchased when the warrant is exercised.

Transfer Agent and Registrar

The transfer agent and registrar, if any, for any warrants will be set forth in the applicable prospectus supplement.

DESCRIPTION OF DEBT SECURITIES

We summarize below some of the provisions that will apply to the debt securities unless the applicable prospectus supplement provides otherwise. This summary may not contain all information that is important to you. The debt securities may be issued pursuant to, in the case of senior debt securities, a senior indenture, and in the case of subordinated debt securities, a subordinated indenture, in each case in the forms filed as exhibits to this registration statement, which we refer to as the “**indentures**.” The indentures will be entered into between us and a trustee to be named prior to the issuance of any debt securities, which we refer to as the “**trustee**.” The indentures will not limit the amount of debt securities that can be issued thereunder and will provide that the debt securities may be issued from time to time in one or more series pursuant to the terms of one or more securities resolutions or supplemental indentures creating such series.

The complete terms of the debt securities will be contained in the applicable indenture for the particular offering of debt securities itself which will describe the terms and definitions of the offered debt securities and contain additional information about such debt securities. You should also read the prospectus supplement, which will contain additional information and which may update or change some of the information below.

General

When we offer to sell a particular series of debt securities, we will describe the specific terms of the securities in a prospectus supplement. The prospectus supplement will set forth the following terms, as applicable, of the debt securities offered thereby:

- the designation, aggregate principal amount, currency or composite currency and denominations;
- the price at which such debt securities will be issued and, if an index formula or other method is used, the method for determining amounts of principal or interest;
- the maturity date and other dates, if any, on which principal will be payable;
- whether or not the debt securities will be secured or unsecured, and the terms of any secured debt;
- whether the debt securities rank as senior debt, senior subordinated debt, subordinated debt or any combination thereof, and the terms of any subordination;
- the interest rate (which may be fixed or variable), if any;
- the date or dates from which interest will accrue and on which interest will be payable, and the record dates for the payment of interest;
- the manner of paying principal and interest;
- the place or places where principal and interest will be payable;
- the terms of any mandatory or optional redemption by us or any third party including any sinking fund;
- the terms of any conversion or exchange;
- the terms of any redemption at the option of holders or put by the holders;
- any tax indemnity provisions;
- if the debt securities provide that payments of principal or interest may be made in a currency other than that in which debt securities are denominated, the manner for determining such payments;
- the portion of principal payable upon acceleration of a Discounted Debt Security (as defined below);
- whether and upon what terms debt securities may be defeased;

- any events of default or covenants in addition to or in lieu of those set forth in the indentures;
- provisions for electronic issuance of debt securities or for debt securities in uncertificated form; and
- any additional provisions or other special terms not inconsistent with the provisions of the indentures, including any terms that may be required or advisable under United States or other applicable laws or regulations, or advisable in connection with the marketing of the debt securities.

Debt securities of any series may be issued as registered debt securities or uncertificated debt securities, in such denominations as specified in the terms of the series.

Securities may be issued under the indentures as Discounted Debt Securities to be offered and sold at a substantial discount from the principal amount thereof. Special United States federal income tax and other considerations applicable thereto will be described in the prospectus supplement relating to such Discounted Debt Securities. “**Discounted Debt Security**” means a security where the amount of principal due upon acceleration is less than the stated principal amount.

We are not obligated to issue all debt securities of one series at the same time and, unless otherwise provided in the prospectus supplement, we may reopen a series, without the consent of the holders of the debt securities of that series, for the issuance of additional debt securities of that series. Additional debt securities of a particular series will have the same terms and conditions as outstanding debt securities of such series, except for the date of original issuance and the offering price, and will be consolidated with, and form a single series with, such outstanding debt securities.

Ranking

The senior debt securities will rank equally with all of our other senior and unsubordinated debt. Our secured debt, if any, will be effectively senior to the senior debt securities to the extent of the value of the assets securing such debt. The subordinated debt securities will be subordinate and junior in right of payment to all of our present and future senior indebtedness to the extent and in the manner described in the prospectus supplement and as set forth in the board resolution, officer’s certificate or supplemental indenture relating to such offering.

We have only a stockholder’s claim on the assets of our subsidiaries. This stockholder’s claim is junior to the claims that creditors of our subsidiaries have against our subsidiaries. Holders of our debt securities will be our creditors and not creditors of any of our subsidiaries. As a result, all the existing and future liabilities of our subsidiaries, including any claims of their creditors, will effectively be senior to the debt securities with respect to the assets of our subsidiaries. In addition, to the extent that we issue any secured debt, the debt securities will be effectively subordinated to such secured debt to the extent of the value of the assets securing such secured debt.

The debt securities will be obligations exclusively of Matinas BioPharma Holdings, Inc. To the extent that our ability to service our debt, including the debt securities, may be dependent upon the earnings of our subsidiaries, our ability to do so will be dependent on the ability of our subsidiaries to distribute those earnings to us as dividends, loans or other payments.

Certain Covenants

Any covenants that may apply to a particular series of debt securities will be described in the prospectus supplement relating thereto.

Successor Obligor

The indentures provide that, unless otherwise specified in the securities resolution or supplemental indenture establishing a series of debt securities, we shall not consolidate with or merge into, or transfer all or substantially all of our assets to, any person in any transaction in which we are not the survivor, unless:

- the person is organized under the laws of the United States or a jurisdiction within the United States;
- the person assumes by supplemental indenture all of our obligations under the relevant indenture, the debt securities and any coupons;

- immediately after the transaction no Default (as defined below) exists; and
- we deliver to the trustee an officers' certificate and opinion of counsel stating that the transaction complies with the foregoing requirements.

In such event, the successor will be substituted for us, and thereafter all of our obligations under the relevant indenture, the debt securities and any coupons will terminate.

Exchange of Debt Securities

Registered debt securities may be exchanged for an equal aggregate principal amount of registered debt securities of the same series and date of maturity in such authorized denominations as may be requested upon surrender of the registered debt securities at an agency of the Company maintained for such purpose and upon fulfillment of all other requirements of such agent.

Defaults and Remedies

Unless the securities resolution or supplemental indenture establishing the series otherwise provides (in which event the prospectus supplement will so state), an “**Event of Default**” with respect to a series of debt securities will occur if:

- (1) we default in any payment of interest on any debt securities of such series when the same becomes due and payable and the default continues for a period of 30 days;
- (2) we default in the payment of the principal and premium, if any, of any debt securities of such series when the same becomes due and payable at maturity or upon redemption, acceleration or otherwise and such default shall continue for five or more days;
- (3) we default in the performance of any of our other agreements applicable to the series and the default continues for 30 days after the notice specified below;
- (4) a court of competent jurisdiction enters an order or decree under any Bankruptcy Law (as defined below) that:
 - (A) is for relief against us in an involuntary case,
 - (B) appoints a Custodian (as defined below) for us or for all or substantially all of our property, or
 - (C) orders the liquidation of us, and the order or decree remains unstayed and in effect for 90 days;
- (5) we pursuant to or within the meaning of any Bankruptcy Law:
 - (A) commence a voluntary case,
 - (B) consent to the entry of an order for relief against us in an involuntary case,
 - (C) consent to the appointment of a Custodian for us or for all or substantially all of our property, or
 - (D) make a general assignment for the benefit of our creditors; or
- (6) there occurs any other Event of Default provided for in such series.

The term “**Bankruptcy Law**” means Title 11 of the United States Code or any similar Federal or State law for the relief of debtors. The term “**Custodian**” means any receiver, trustee, assignee, liquidator or a similar official under any Bankruptcy Law.

“**Default**” means any event which is, or after notice or passage of time would be, an Event of Default. A Default under subparagraph (3) above is not an Event of Default until the trustee or the holders of at least 25% in principal amount of the series notify us of the Default and we do not cure the Default within the time specified after receipt of the notice.

The trustee may require indemnity satisfactory to it before it enforces the indentures or the debt securities of the series. Subject to certain limitations, holders of a majority in principal amount of the debt securities of the series may direct the trustee in its exercise of any trust or power with respect to such series. Except in the case of Default in payment on a series, the trustee may withhold from securityholders of such series notice of any continuing Default if the trustee determines that withholding notice is in the interest of such securityholders. We are required to furnish the trustee annually a brief certificate as to our compliance with all conditions and covenants under the indentures.

The indentures do not have cross-default provisions. Thus, a default by us on any other debt, including any other series of debt securities, would not constitute an Event of Default.

Amendments and Waivers

The indentures and the debt securities or any coupons of the series may be amended, and any Default may be waived as follows:

Unless the securities resolution or supplemental indenture otherwise provides (in which event the applicable prospectus supplement will so state), the debt securities and the indentures may be amended with the consent of the holders of a majority in principal amount of the debt securities of all series affected voting as one class. Unless the securities resolution or supplemental indenture otherwise provides (in which event the applicable prospectus supplement will so state), a Default other than a Default in payment on a particular series may be waived with the consent of the holders of a majority in principal amount of the debt securities of the series. However, without the consent of each securityholder affected, no amendment or waiver may:

- change the fixed maturity of or the time for payment of interest on any debt security;
- reduce the principal, premium or interest payable with respect to any debt security;
- change the place of payment of a debt security or the currency in which the principal or interest on a debt security is payable;
- change the provisions for calculating any redemption or repurchase price with respect to any debt security;
- reduce the amount of debt securities whose holders must consent to an amendment or waiver;
- make any change that materially adversely affects the right to convert any debt security;
- waive any Default in payment of principal of or interest on a debt security; or
- adversely affect any holder's rights with respect to redemption or repurchase of a debt security.

Without the consent of any securityholder, the indentures or the debt securities may be amended to:

- provide for assumption of our obligations to securityholders in the event of a merger or consolidation requiring such assumption;
- to cure any ambiguity, omission, defect or inconsistency;
- to conform the terms of the debt securities to the description thereof in the prospectus and prospectus supplement offering such debt securities;
- to create a series and establish its terms;
- to provide for assumption of our obligations to securityholders in the event of a merger or consolidation requiring such assumption;
- to make any change that does not adversely affect the rights of any securityholder;
- to add to our covenants; or
- to make any other change to the indentures so long as no debt securities are outstanding.

Conversion Rights

Any securities resolution or supplemental indenture establishing a series of debt securities may provide that the debt securities of such series will be convertible at the option of the holders thereof into or for our common stock or other equity or debt instruments. The securities resolution or supplemental indenture may establish, among other things, (1) the number or amount of shares of common stock or other equity or debt instruments for which \$1,000 aggregate principal amount of the debt securities of the series is convertible, as may be adjusted pursuant to the terms of the relevant indenture and the securities resolution; and (2) provisions for adjustments to the conversion rate and limitations upon exercise of the conversion right. The indentures provide that we will not be required to make an adjustment in the conversion rate unless the adjustment would require a cumulative change of at least 1% in the conversion rate. However, we will carry forward any adjustments that are less than 1% of the conversion rate and take them into account in any subsequent adjustment of the conversion rate.

Legal Defeasance and Covenant Defeasance

Debt securities of a series may be defeased in accordance with their terms and, unless the securities resolution or supplemental indenture establishing the terms of the series otherwise provides, as set forth below. We at any time may terminate as to a series all of our obligations (except for certain obligations, including obligations with respect to the defeasance trust and obligations to register the transfer or exchange of a debt security, to replace destroyed, lost or stolen debt securities and coupons and to maintain paying agencies in respect of the debt securities) with respect to the debt securities of the series and any related coupons and the relevant indenture, which we refer to as legal defeasance. We at any time may terminate as to a series our obligations with respect to any restrictive covenants which may be applicable to a particular series, which we refer to as covenant defeasance.

We may exercise our legal defeasance option notwithstanding our prior exercise of our covenant defeasance option. If we exercise our legal defeasance option, a series may not be accelerated because of an Event of Default. If we exercise our covenant defeasance option, a series may not be accelerated by reference to any covenant which may be applicable to a series.

To exercise either defeasance option as to a series, we must (1) irrevocably deposit in trust with the trustee (or another trustee) money or U.S. Government Obligations (as defined below), deliver a certificate from a nationally recognized firm of independent accountants expressing their opinion that the payments of principal and interest when due on the deposited U.S. Government Obligations, without reinvestment, plus any deposited money without investment will provide cash at such times and in such amounts as will be sufficient to pay the principal and interest when due on all debt securities of such series to maturity or redemption, as the case may be; and (2) comply with certain other conditions. In particular, we must obtain an opinion of tax counsel that the defeasance will not result in recognition of any gain or loss to holders for federal income tax purposes.

“**U.S. Government Obligations**” means direct obligations of the United States or any agency or instrumentality of the United States, the payment of which is unconditionally guaranteed by the United States, which, in either case, have the full faith and credit of the United States pledged for payment and which are not callable at the issuer’s option, or certificates representing an ownership interest in such obligations.

Regarding the Trustee

Unless otherwise indicated in a prospectus supplement, the trustee will also act as depository of funds, transfer agent, paying agent and conversion agent, as applicable, with respect to the debt securities. We may remove the trustee as the trustee under a given indenture with or without cause if we so notify the trustee three months in advance and if no Default occurs during the three-month period. The indenture trustee may also provide additional unrelated services to us as a depository of funds, registrar, trustee and similar services.

Governing Law

The indentures and the debt securities will be governed by New York law, except to the extent that the Trust Indenture Act of 1939 is applicable.

DESCRIPTION OF SUBSCRIPTION RIGHTS

We may issue subscription rights to purchase our common stock, preferred stock or debt securities. These subscription rights may be offered independently or together with any other security offered hereby and may or may not be transferable by the stockholder receiving the subscription rights in such offering. In connection with any offering of subscription 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 subscription rights we offer, if any, will, to the extent applicable, include specific terms relating to the offering, including some or all of the following:

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

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 (but, to the extent convertible securities are included in the units, the holder of the units will be deemed the holder of the convertible securities and not the holder of the underlying securities). The 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;
- the terms of the unit agreement governing the units;
- United States federal income tax considerations relevant to the units; and
- whether the units will be issued in fully registered global form.

This summary of certain general terms of units and any summary description of units in the applicable prospectus supplement do not purport to be complete and are qualified in their entirety by reference to all provisions of the applicable unit agreement and, if applicable, collateral arrangements and depositary arrangements relating to such units. The forms of the unit agreements and other documents relating to a particular issue of units will be filed with the SEC each time we issue units, and you should read those documents for provisions that may be important to you.

FORMS OF SECURITIES

Each debt security and, to the extent applicable, warrant, subscription right and unit, will be represented either by a certificate issued in definitive form to a particular investor or by one or more global securities representing the entire issuance of securities. Certificated securities in definitive form and global securities will be issued in registered form. Definitive securities name you or your nominee as the owner of the security, and in order to transfer or exchange these securities or to receive payments other than interest or other interim payments, you or your nominee must physically deliver the securities to the trustee, registrar, paying agent or other agent, as applicable. Global securities name a depositary or its nominee as the owner of the debt securities or warrants represented by these global securities. The depositary maintains a computerized system that will reflect each investor's beneficial ownership of the securities through an account maintained by the investor with its broker/dealer, bank, trust company or other representative, as we explain more fully below.

Global Securities

Registered Global Securities. We may issue the registered debt securities and, to the extent applicable, warrants, subscription rights and units in the form of one or more fully registered global securities that will be deposited with a depositary or its nominee identified in the applicable prospectus supplement and registered in the name of that depositary or nominee. In those cases, one or more registered global securities will be issued in a denomination or aggregate denominations equal to the portion of the aggregate principal or face amount of the securities to be represented by registered global securities. Unless and until it is exchanged in whole for securities in definitive registered form, a registered global security may not be transferred except as a whole by and among the depositary for the registered global security, the nominees of the depositary or any successors of the depositary or those nominees.

If not described below, any specific terms of the depositary arrangement with respect to any securities to be represented by a registered global security will be described in the prospectus supplement relating to those securities. We anticipate that the following provisions will apply to all depositary arrangements.

Ownership of beneficial interests in a registered global security will be limited to persons, called participants, that have accounts with the depositary or persons that may hold interests through participants. Upon the issuance of a registered global security, the depositary will credit, on its book-entry registration and transfer system, the participants' accounts with the respective principal or face amounts of the securities beneficially owned by the participants. Any dealers, underwriters or agents participating in the distribution of the securities will designate the accounts to be credited. Ownership of beneficial interests in a registered global security will be shown on, and the transfer of ownership interests will be effected only through, records maintained by the depositary, with respect to interests of participants, and on the records of participants, with respect to interests of persons holding through participants. The laws of some states may require that some purchasers of securities take physical delivery of these securities in definitive form. These laws may impair your ability to own, transfer or pledge beneficial interests in registered global securities.

So long as the depository, or its nominee, is the registered owner of a registered global security, that depository or its nominee, as the case may be, will be considered the sole owner or holder of the securities represented by the registered global security for all purposes under the applicable indenture or warrant agreement. Except as described below, owners of beneficial interests in a registered global security will not be entitled to have the securities represented by the registered global security registered in their names, will not receive or be entitled to receive physical delivery of the securities in definitive form and will not be considered the owners or holders of the securities under the applicable indenture or warrant agreement. Accordingly, each person owning a beneficial interest in a registered global security must rely on the procedures of the depository for that registered global security and, if that person is not a participant, on the procedures of the participant through which the person owns its interest, to exercise any rights of a holder under the applicable indenture or warrant agreement. We understand that under existing industry practices, if we request any action of holders or if an owner of a beneficial interest in a registered global security desires to give or take any action that a holder is entitled to give or take under the applicable indenture or warrant agreement, the depository for the registered global security would authorize the participants holding the relevant beneficial interests to give or take that action, and the participants would authorize beneficial owners owning through them to give or take that action or would otherwise act upon the instructions of beneficial owners holding through them.

Principal, premium, if any, and interest payments on debt securities and any payments to holders with respect to warrants represented by a registered global security registered in the name of a depository or its nominee will be made to the depository or its nominee, as the case may be, as the registered owner of the registered global security. None of Matinas, the trustees, the warrant agents or any other agent of Matinas, agent of the trustees or agent of the warrant agents will have any responsibility or liability for any aspect of the records relating to payments made on account of beneficial ownership interests in the registered global security or for maintaining, supervising or reviewing any records relating to those beneficial ownership interests.

We expect that the depository for any of the securities represented by a registered global security, upon receipt of any payment of principal, premium, interest or other distribution of underlying securities or other property to holders on that registered global security, will immediately credit participants' accounts in amounts proportionate to their respective beneficial interests in that registered global security as shown on the records of the depository. We also expect that payments by participants to owners of beneficial interests in a registered global security held through participants will be governed by standing customer instructions and customary practices, as is now the case with the securities held for the accounts of customers in bearer form or registered in "street name," and will be the responsibility of those participants.

If the depository for any of these securities represented by a registered global security is at any time unwilling or unable to continue as depository or ceases to be a clearing agency registered under the Securities Exchange Act of 1934, as amended (the "**Exchange Act**"), and a successor depository registered as a clearing agency under the Exchange Act is not appointed by us within 90 days, we will issue securities in definitive form in exchange for the registered global security that had been held by the depository. Any securities issued in definitive form in exchange for a registered global security will be registered in the name or names that the depository gives to the relevant trustee or warrant agent or other relevant agent of ours or theirs. It is expected that the depository's instructions will be based upon directions received by the depository from participants with respect to ownership of beneficial interests in the registered global security that had been held by the depository.

PLAN OF DISTRIBUTION

Initial Offering and Sale of Securities

Unless otherwise set forth in a prospectus supplement accompanying this prospectus, we, and certain holders of our securities, may sell the securities being offered hereby, from time to time, by one or more of the following methods:

- to or through underwriting syndicates represented by managing underwriters;
- through one or more underwriters without a syndicate for them to offer and sell to the public;
- through dealers or agents; and
- to investors directly in negotiated sales or in competitively bid transactions.

Offerings of securities covered by this prospectus also may be made into an existing trading market for those securities in transactions at other than a fixed price, either:

- on or through the facilities of the NYSE MKT or any other securities exchange or quotation or trading service on which those securities may be listed, quoted, or traded at the time of sale; and/or

- to or through a market maker otherwise than on the securities exchanges or quotation or trading services set forth above.

At-the-market offerings, if any, will be conducted by underwriters acting as principal or agent of the Company, who may also be third-party sellers of securities as described above. The prospectus supplement with respect to the offered securities will set forth the terms of the offering of the offered securities, including:

- the name or names of any underwriters, dealers or agents;
- the purchase price of the offered securities and the proceeds to us from such sale;
- any underwriting discounts and commissions or agency fees and other items constituting underwriters' or agents' compensation;
- any initial public offering price and any discounts or concessions allowed or reallocated or paid to dealers;
- any securities exchange on which such offered securities may be listed; and
- any underwriter, agent or dealer involved in the offer and sale of any series of the securities will be named in the prospectus supplement.

The distribution of the securities may be effected from time to time in one or more transactions:

- at fixed prices, which may be changed;
- at market prices prevailing at the time of the sale;
- at varying prices determined at the time of sale; or
- at negotiated prices.

Each prospectus supplement will set forth the manner and terms of an offering of securities including:

- whether that offering is being made to underwriters or through agents or directly;
- the rules and procedures for any auction or bidding process, if used;
- the securities' purchase price or initial public offering price; and
- the proceeds we anticipate from the sale of the securities, if any.

In addition, we may enter into derivative or hedging transactions with third parties, or sell securities not covered by this prospectus to third parties in privately negotiated transactions. If the applicable prospectus supplement indicates, in connection with such a transaction, the third parties may sell securities covered by and pursuant to this prospectus and an applicable prospectus supplement. If so, the third party may use securities pledged by us or borrowed from us or others to settle such sales and may use securities received from us to close out any related short positions. We may also loan or pledge securities covered by this prospectus and an applicable prospectus supplement to third parties, who may sell the loaned securities or, in an event of default in the case of a pledge, sell the pledged securities pursuant to this prospectus and the applicable prospectus supplement.

Sales Through Underwriters

If underwriters are used in the sale of some or all of the securities covered by this prospectus, the underwriters will acquire the securities for their own account. The underwriters may resell the securities, either directly to the public or to securities dealers, at various times in one or more transactions, including negotiated transactions, at a fixed public offering price or at varying prices determined at the time of sale. The obligations of the underwriters to purchase the securities will be subject to certain conditions. Unless indicated otherwise in a prospectus supplement, the underwriters will be obligated to purchase all the securities of the series offered if any of the securities are purchased.

Any initial public offering price and any concessions allowed or reallocated to dealers may be changed intermittently.

Sales Through Agents

Unless otherwise indicated in the applicable prospectus supplement, when securities are sold through an agent, the designated agent will agree, for the period of its appointment as agent, to use its best efforts to sell the securities for our account and will receive commissions from us as will be set forth in the applicable prospectus supplement.

Securities bought in accordance with a redemption or repayment under their terms also may be offered and sold, if so indicated in the applicable prospectus supplement, in connection with a remarketing by one or more firms acting as principals for their own accounts or as agents for us. Any remarketing firm will be identified and the terms of its agreement, if any, with us and its compensation will be described in the prospectus supplement. Remarketing firms may be deemed to be underwriters in connection with the securities remarketed by them.

If so indicated in the applicable prospectus supplement, we may authorize agents, underwriters or dealers to solicit offers by certain specified institutions to purchase securities at a price set forth in the prospectus supplement pursuant to delayed delivery contracts providing for payment and delivery on a future date specified in the prospectus supplement. These contracts will be subject only to those conditions set forth in the applicable prospectus supplement, and the prospectus supplement will set forth the commissions payable for solicitation of these contracts.

Direct Sales

We may also sell offered securities directly to institutional investors or others. In this case, no underwriters or agents would be involved. The terms of such sales will be described in the applicable prospectus supplement.

General Information

Broker-dealers, agents or underwriters may receive compensation in the form of discounts, concessions or commissions from us and/or the purchasers of securities for whom such broker-dealers, agents or underwriters may act as agents or to whom they sell as principal, or both (this compensation to a particular broker-dealer might be in excess of customary commissions).

Underwriters, dealers and agents that participate in any distribution of the offered securities may be deemed “underwriters” within the meaning of the Securities Act, so any discounts or commissions they receive in connection with the distribution may be deemed to be underwriting compensation. Those underwriters and agents may be entitled, under their agreements with us, to indemnification by us against certain civil liabilities, including liabilities under the Securities Act, or to contribution by us to payments that they may be required to make in respect of those civil liabilities. Certain of those underwriters or agents may be customers of, engage in transactions with, or perform services for, us or our affiliates in the ordinary course of business. We will identify any underwriters or agents, and describe their compensation, in a prospectus supplement. Any institutional investors or others that purchase offered securities directly, and then resell the securities, may be deemed to be underwriters, and any discounts or commissions received by them from us and any profit on the resale of the securities by them may be deemed to be underwriting discounts and commissions under the Securities Act.

We will file a supplement to this prospectus, if required, pursuant to Rule 424(b) under the Securities Act, if we enter into any material arrangement with a broker, dealer, agent or underwriter for the sale of securities through a block trade, special offering, exchange distribution or secondary distribution or a purchase by a broker or dealer. Such prospectus supplement will disclose:

- the name of any participating broker, dealer, agent or underwriter;
- the number and type of securities involved;
- the price at which such securities were sold;
- any securities exchanges on which such securities may be listed;
- the commissions paid or discounts or concessions allowed to any such broker, dealer, agent or underwriter where applicable; and
- other facts material to the transaction.

In order to facilitate the offering of certain securities under this prospectus or an applicable prospectus supplement, certain persons participating in the offering of those securities may engage in transactions that stabilize, maintain or otherwise affect the price of those securities during and after the offering of those securities. Specifically, if the applicable prospectus supplement permits, the underwriters of those securities may over-allot or otherwise create a short position in those securities for their own account by selling more of those securities than have been sold to them by us and may elect to cover any such short position by purchasing those securities in the open market.

In addition, the underwriters may stabilize or maintain the price of those securities by bidding for or purchasing those securities in the open market and may impose penalty bids, under which selling concessions allowed to syndicate members or other broker-dealers participating in the offering are reclaimed if securities previously distributed in the offering are repurchased in connection with stabilization transactions or otherwise. 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. The imposition of a penalty bid may also affect the price of securities to the extent that it discourages resales of the securities. No representation is made as to the magnitude or effect of any such stabilization or other transactions. Such transactions, if commenced, may be discontinued at any time.

In order to comply with the securities laws of certain states, if applicable, the securities must be sold in such jurisdictions only through registered or licensed brokers or dealers. In addition, in certain states the securities may not be sold unless they have been registered or qualified for sale in the applicable state or an exemption from the registration or qualification requirement is available and is complied with.

Rule 15c6-1 under the Securities Exchange Act of 1934 generally requires that trades in the secondary market settle in three business days, unless the parties to any such trade expressly agree otherwise. Your prospectus supplement may provide that the original issue date for your securities may be more than three scheduled business days after the trade date for your securities. Accordingly, in such a case, if you wish to trade securities on any date prior to the third business day before the original issue date for your securities, you will be required, by virtue of the fact that your securities initially are expected to settle in more than three scheduled business days after the trade date for your securities, to make alternative settlement arrangements to prevent a failed settlement.

This prospectus, any applicable prospectus supplement and any applicable pricing supplement in electronic format may be made available on the Internet sites of, or through other online services maintained by, us and/or one or more of the agents and/or dealers participating in an offering of securities, or by their affiliates. In those cases, prospective investors may be able to view offering terms online and, depending upon the particular agent or dealer, prospective investors may be allowed to place orders online.

Other than this prospectus, any applicable prospectus supplement and any applicable pricing supplement in electronic format, the information on our or any agent's or dealer's website and any information contained in any other website maintained by any agent or dealer:

- is not part of this prospectus, any applicable prospectus supplement and any applicable pricing supplement or the registration statement of which they form a part;
- has not been approved or endorsed by us or by any agent or dealer in its capacity as an agent or dealer, except, in each case, with respect to the respective website maintained by such entity; and
- should not be relied upon by investors.

There can be no assurance that we will sell all or any of the securities offered by this prospectus.

This prospectus may also be used in connection with any issuance of any securities upon exercise of a warrant or a subscription right.

In addition, we may issue the securities as a dividend or distribution or in a subscription rights offering to our existing security holders. In some cases, we or dealers acting with us or on our behalf may also purchase securities and reoffer them to the public by one or more of the methods described above. This prospectus may be used in connection with any offering of our securities through any of these methods or other methods described in the applicable prospectus supplement.

LEGAL MATTERS

Unless otherwise indicated in the applicable prospectus supplement, the validity of the securities offered hereby will be passed upon for us by Lowenstein Sandler LLP, New York, New York. If the validity of the securities offered hereby in connection with offerings made pursuant to this prospectus are passed upon by counsel for the underwriters, dealers or agents, if any, such counsel will be named in the prospectus supplement relating to such offering.

EXPERTS

The consolidated balance sheets of Matinas BioPharma Holdings, Inc. and Subsidiaries as of December 31, 2016 and 2015, and the related consolidated statements of operations, stockholders' equity, and cash flows for each of the years in the two-year period ended December 31, 2016, have been audited by EisnerAmper LLP, independent registered public accounting firm, as stated in their report which is incorporated herein by reference. Such financial statements have been incorporated herein by reference in reliance on the report of such firm given upon their authority as experts in accounting and auditing.

ADDITIONAL INFORMATION

This prospectus is part of a Registration Statement on Form S-3 that we have filed with the SEC relating to the shares of our securities being offered hereby. This prospectus does not contain all of the information in the Registration Statement and its exhibits. The Registration Statement, its exhibits and the documents incorporated by reference in this prospectus and their exhibits, all contain information that is material to the offering of the Securities hereby. Whenever a reference is made in this prospectus to any of our contracts or other documents, the reference may not be complete. You should refer to the exhibits that are a part of the Registration Statement in order to review a copy of the contract or documents. The Registration Statement and the exhibits are available at the SEC's Public Reference Room or through its Website.

We file annual, quarterly and current reports, proxy statements and other information with the SEC. You can read and copy any materials we file with the SEC at its Public Reference Room at 100 F Street, N.E., Washington, D.C. 20549 and at its regional offices, a list of which is available on the Internet at <http://www.sec.gov/contact/addresses.htm>. You may obtain information on the operation of the Public Reference Room by calling the SEC at 1-800-SEC-0330. The SEC maintains an Internet site at <http://www.sec.gov> that contains reports, proxy and information statements, and other information regarding issuers, such as us, that file electronically with the SEC. Additionally, you may access our filings with the SEC through our website at <http://www.Matinasbio.com>. The information on our website is not part of this prospectus.

We will provide you without charge, upon your oral or written request, with a copy of any or all reports, proxy statements and other documents we file with the SEC, as well as any or all of the documents incorporated by reference in this prospectus or the registration statement (other than exhibits to such documents unless such exhibits are specifically incorporated by reference into such documents). Requests for such copies should be directed to:

Investor Relations Department
Matinas BioPharma Holdings, Inc.
1545 Route 206 South
Suite 302
Bedminster, NJ 07921
Telephone number: 908-443-1860

You should rely only on the information in this prospectus and the additional information described above and under the heading “Incorporation of Certain Information by Reference” below. We have not authorized any other person to provide you with different information. If anyone provides you with different or inconsistent information, you should not rely upon it. We are not making an offer to sell these securities in any jurisdiction where the offer or sale is not permitted. You should assume that the information in this prospectus was accurate on the date of the front cover of this prospectus only. Our business, financial condition, results of operations and prospects may have changed since that date.

INCORPORATION OF CERTAIN INFORMATION BY REFERENCE

The SEC allows us to “incorporate by reference” information that we file with it into this prospectus, 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. The information incorporated by reference is considered to be a part of this prospectus, and information that we file later with the SEC will automatically update and supersede information contained in this prospectus and any accompanying prospectus supplement.

We incorporate by reference the documents listed below that we have previously filed with the SEC:

- our Annual Report on Form 10-K for the fiscal year ended December 31, 2016, filed with the SEC on March 31, 2017;
- our Current Reports on Form 8-K filed with the SEC on January 19, 2017, and March 30, 2017; and
- the description of our common stock contained in our Registration Statement on Form 8-A, filed on March 1, 2017, including any amendments thereto or reports filed for the purposes of updating this description.

All documents filed by us pursuant to Sections 13(a), 13(c), 14 or 15(d) of the Exchange Act after the date of the initial registration statement and prior to effectiveness of the registration statement shall be deemed to be incorporated by reference in this prospectus and to be a part hereof from the date of filing of such reports and documents. All reports and other documents that we file with the SEC under Sections 13(a), 13(c), 14 or 15(d) of the Exchange Act after the date of this prospectus but before the termination of the offering of the Securities hereunder will also be considered to be incorporated by reference into this prospectus from the date of the filing of these reports and documents, and will supersede the information herein; provided, however, that all reports that we “furnish” to the SEC will not be considered incorporated by reference into this prospectus. We undertake to provide without charge to each person (including any beneficial owner) who receives a copy of this prospectus, upon written or oral request, a copy of all of the preceding documents that are incorporated by reference (other than exhibits, unless the exhibits are specifically incorporated by reference into these documents). You may request a copy of these materials in the manner set forth under the heading “Additional Information,” above.



Matinas BioPharma Holdings, Inc.

**8,000 Shares of
Series B Convertible Preferred Stock
16,000,000 shares of Common Stock
Underlying the Series B Preferred Stock**

PROSPECTUS SUPPLEMENT

ThinkEquity

A division of Fordham Financial Management, Inc.

June , 2018
