

MATINAS

BIOPHARMA

33,333,334 Shares of Common Stock Warrants to Purchase up to 33,333,334 Shares of Common Stock

We are offering (i) 33,333,334 shares of our common stock and (ii) warrants to purchase up to an aggregate of 33,333,334 shares of our common stock (the “Warrants”). Each share of common stock is being sold together with one Warrant to purchase one share of our common stock. The Warrants are exercisable six months from the date of issuance at an exercise price of \$0.35 per share and will expire five and one-half years following the date of issuance. The shares of common stock and Warrants will be issued separately. This prospectus supplement and the accompanying prospectus also covers the shares of common stock issuable upon the exercise of the warrants being offered.

Our common stock is traded on the NYSE American LLC (“NYSE American”) under the symbol “MTNB”. On April 2, 2024, the last reported sales price of our common stock on NYSE American was \$0.35 per share.

There is no established trading market for the Warrants and we do not expect a market to develop. We do not intend to apply for a listing for the Warrants on any securities exchange or other nationally recognized trading system. Without an active trading market, the liquidity of the Warrants will be limited.

Investing in our securities involves a high degree of risk. See “Risk Factors” beginning on page S-4 of this prospectus supplement and in the documents we incorporate by reference into this prospectus supplement and the accompanying prospectus.

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

We have engaged A.G.P./Alliance Global Partners (“AGP”) to act as our placement agent (the “Placement Agent”) in connection with this offering. The Placement Agent has agreed to use its reasonable best efforts to place the securities offered by this prospectus supplement and the accompanying prospectus. The Placement Agent is not purchasing or selling any securities pursuant to this prospectus supplement or the accompanying prospectus, nor are we requiring any minimum purchase or sale of any specific number of shares. We have agreed to pay the Placement Agent the fee set forth in the table below:

	Per Share and Accompanying Warrant	Total
Offering price	\$ 0.30	\$ 10,000,000.20
Placement Agent Fees ⁽¹⁾	\$ 0.021	\$ 700,000.01
Proceeds to us, before expenses ⁽²⁾	\$ 0.279	\$ 9,300,000.19

(1) We have agreed to pay the Placement Agent a cash placement commission equal to 7.0% of the aggregate proceeds from the sale of the securities sold in this offering. We have also agreed to reimburse the Placement Agent for certain expenses incurred in connection with this offering. See “Plan of Distribution” beginning on page S-11 for additional information regarding the compensation to be paid to the Placement Agent.

(2) The amount of the offering proceeds to us presented in this table does not give effect to any exercise of the Warrants being issued in this offering.

We expect that delivery of the securities being offered pursuant to this prospectus supplement and the accompanying prospectus will be made on or about April 5, 2024, subject to the satisfaction of certain customary closing conditions.

Sole Placement Agent

A.G.P.

The date of this prospectus supplement is April 2, 2024.

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ABOUT THIS PROSPECTUS SUPPLEMENT

In this prospectus supplement, “Matinas,” the “Company,” “we,” “us,” “our” or “ours” refer to Matinas BioPharma Holdings, Inc., a Delaware corporation and its wholly-owned subsidiaries.

All trademarks or trade names referred to in this prospectus supplement are the property of their respective owners. Solely for convenience, the trademarks and trade names in this prospectus supplement 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. We do not intend the use or display of other companies’ trademarks and trade names to imply a relationship with, or endorsement or sponsorship of us by, any other companies.

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 relate to the offering of shares of our common stock and Warrants to purchase shares of our common stock. Before buying the shares of common stock and Warrants to buy shares of common stock 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 common stock and warrants 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 and in any free writing prospectus we have authorized for use in connection with this offering. 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 we have authorized for use in connection with this offering 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 such related free writing prospectus, or any sale of a security.

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

This summary highlights information contained elsewhere in this prospectus supplement. This summary does not contain all of the information that you should consider before deciding to invest in our securities. You should read this entire prospectus supplement and the accompanying prospectus carefully, including the “Risk Factors” section in this prospectus supplement and under similar captions in the documents incorporated by reference into this prospectus supplement. In this prospectus supplement, unless otherwise stated or the context otherwise requires, references to “Matinas”, “Company”, “we”, “us”, “our” or similar references mean Matinas BioPharma Holdings, Inc. and its subsidiaries on a consolidated basis.

Overview

We are a clinical-stage biopharmaceutical company focused on delivering groundbreaking therapies using our lipid nanocrystal (LNC) platform delivery technology (LNC Platform). We are seeking to develop an internal pipeline of products utilizing the LNC Platform to successfully encapsulate small molecules and small oligonucleotides and facilitate targeted and extrahepatic delivery to desired cells and tissues without toxicity. In addition, we believe the LNC Platform can also support building an external pipeline of products for leading pharmaceutical companies seeking to develop novel formulations that capitalize on the unique characteristics of the LNC Platform to facilitate, enhance and optimize the delivery of complex molecules, including small molecules, antisense oligonucleotides (ASOs) and silencing or short interfering RNAs (siRNAs).

Our current lead product candidate is MAT2203 (oral amphotericin B), a highly potent antifungal drug which, by virtue of LNC delivery, has been made oral, safe, and well-tolerated for prolonged administration in patients with life-threatening invasive fungal infections. Following the successful EnACT Phase 2 trial in the treatment of cryptococcal meningitis, MAT2203 is now positioned for a single, Phase 3 registration trial (the ORALTO trial) in support of a New Drug Application (NDA) for the treatment of invasive aspergillosis in patients with limited treatment options.

Additional internal discovery programs are currently directed at:

1. the safe and effective delivery of chemotherapeutic agents for oncology applications; and,
2. the formulation and delivery of small oligonucleotides, such as antisense oligonucleotides (ASOs) and silencing or short interfering RNAs (siRNAs), with a primary therapeutic focus on inflammation.

We are dedicated to maximizing the value associated with our unique LNC Platform. This proprietary platform technology, which partially relies upon an exclusive worldwide license from Rutgers University to certain intellectual property, nano-encapsulates chemical and biological payloads in a manner that facilitates safe, efficient, and targeted intracellular delivery for a wide variety of molecules. LNCs have been used to successfully deliver a variety of therapeutic compounds in vivo, including small molecules, peptides, proteins, and small oligonucleotides. Importantly, LNCs are well differentiated from other lipid nanoparticle delivery technologies.

Our LNCs are primarily comprised of phospholipids, like phosphatidylserine (PS), calcium (which is required to keep LNCs intact) and a designated therapeutic cargo, which is trapped inside or between the bilayers of the LNC, resulting in a highly stable, crystalline structure which protects the cargo and allows for oral administration surviving gastrointestinal conditions. Outside of cells, such as in gastrointestinal fluid and in blood, normal extracellular levels of calcium maintain this crystalline structure, whereas in tissues LNCs are avidly taken up by professional phagocytes, as well as infected, inflamed, and malignant cells. In the much lower calcium environment of the cytosol, LNCs lose their crystalline structure and release their cargo intracellularly.

LNCs have a novel targeting profile utilizing PS to facilitate both membrane fusion and PS-receptor mediated endocytosis. Depending on the therapeutic target being approached, the cargo may either have a direct impact inside that particular cell, or, alternatively blood cells such as neutrophils can act as a vehicle to indirectly deliver cargo to target tissues, as in the case of infection or inflammation. LNCs also have a neutral immunogenic profile enabling repeated administration, unlike lipid nanoparticle (LNP) delivery, which because of inherent cytotoxicity may also not be amenable to repeat administration. Uniquely, the highly stable structure of LNCs permits oral administration (not possible with LNPs) since the cargo is protected within the LNC structure from the harsh environment of the gastrointestinal tract.

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Preclinical and clinical studies have consistently demonstrated that orally administered LNCs can successfully deliver therapeutic cargos *in vivo*, to sites of infection, to areas of inflammation, and to tumors. All these target tissues have cells with PS exposed on their surface (which creates opportunities for direct fusion with the cell membrane), as well as specific PS-recognizing receptors on tissue-resident professional phagocytes (which facilitates additional cellular uptake via endocytosis). The ability to target diseased tissues - and potentially avoid off-target effects - the capability to enter cells via both fusion and endocytic mechanisms, and the ability of LNCs to encapsulate - and deliver - a broad range of therapeutic agents provides a solid foundation from which to create a broad pipeline of internal product candidates and external partnerships. While the delivery of therapeutic nucleic acids has advanced considerably in recent years, to date there has been little progress in orally delivered oligonucleotide therapeutics beyond conjugated oligos specifically targeting the liver. Similarly, there are also significant potential opportunities for both small molecules (with potential for both enhanced safety and increased efficacy) and small oligonucleotides in the oncology area.

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 originally formed on August 12, 2011 as Nereus BioPharma LLC, and Matinas BioPharma Nanotechnologies, Inc., a Delaware corporation originally formed on January 29, 2015 as Aquarius Biotechnologies, Inc.

Our principal executive offices are located at 1545 Route 206 South, Suite 302, Bedminster, New Jersey 07921, and our telephone number is (908) 484-8805. 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.

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The Offering

Shares of Common Stock offered by us	33,333,334 shares of common stock
Warrants offered by us	Warrants to purchase up to 33,333,334 shares of our common stock. Each Warrant will be exercisable six months from the date of issuance at an exercise price of \$0.35 per share and will expire five and one-half years following the date of issuance. The shares of common stock and Warrants will be issued separately but will be purchased together in this offering. This prospectus supplement also covers the shares of common stock issuable upon the exercise of the Warrants being offered. The exercise price and number of shares of common stock issuable upon exercise of the Warrants will be subject to certain further adjustments as described herein.
Shares of common stock outstanding before this offering	217,482,830 shares of common stock.
Shares of common stock to be outstanding after this offering	250,816,164 shares of common stock, assuming no exercise of the Warrants issued in this offering.
Use of proceeds	We intend to use the net proceeds, if any, from this offering, for working capital and general corporate purposes. See “ <i>Use of Proceeds</i> ” on page S-7 of this prospectus supplement.
NYSE American symbol	Our common stock is listed on NYSE American under the symbol “MTNB”.
Risk Factors	Investing in our securities involves significant risks. Before making a decision whether to invest in our securities, please read the information contained in or incorporated by reference under the heading “ <i>Risk Factors</i> ” in this prospectus supplement, the documents we have incorporated by reference herein, and under similar headings in other documents filed after the date hereof and incorporated by reference into this prospectus supplement. See “ <i>Incorporation of Certain Information by Reference</i> ” and “ <i>Where You Can Find More Information</i> ”.

Listing

There is no established public trading market for the Warrants and we do not expect a market to develop. In addition, we do not intend to apply for listing of the Warrants on NYSE American or on any national securities or other national recognized trading system. Without an active trading market, the liquidity of the Warrants will be limited.

The above discussion is based on 217,482,830 shares of our common stock outstanding as of March 31, 2024 and excludes, as of that date, the following:

- 46,031,560 shares of common stock issuable upon exercise of stock options, with a weighted average exercise price of \$0.84 per share, under our Amended and Restated 2013 Equity Compensation Plan (the “2013 Plan”);
- 12,272,125 shares of common stock available for future issuance under our 2013 Plan; and
- 33,333,334 shares of common stock issuable upon exercise of the Warrants offered hereby.

Except as otherwise indicated, the information in this prospectus supplement assumes no exercise of options or exercise of warrants described above.

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RISK FACTORS

An investment in our securities involves a high degree of risk. Before deciding whether to purchase our securities offered by this prospectus supplement and the accompanying prospectus, you should carefully consider the risks and uncertainties described under “Risk Factors” in our Annual Report on Form 10-K for the fiscal year ended December 31, 2023, any subsequent Quarterly Report on Form 10-Q and our other filings with the SEC incorporated by reference herein. If any of these risks actually occur, our business, financial condition and results of operations could be materially and adversely affected and we may not be able to achieve our goals, the value of our securities could decline and you could lose some or all of your investment. Additional risks not presently known to us or that we currently believe are immaterial may also significantly impair our business operations. If any of these risks occur, our business, results of operations or financial condition and prospects could be harmed. In that event, the market price of our common stock and the value of the Warrants could decline, and you could lose all or part of your investment.

Risks Related to this Offering and our Common Stock

We may allocate the net proceeds from this offering in ways that you or other stockholders may not approve.

We currently intend to use the net proceeds of this offering, if any, for working capital and general corporate purposes, which may include capital expenditures, research and development expenditures, regulatory affairs expenditures, clinical trial expenditures, acquisitions of new technologies and investments, and the financing of possible acquisitions or business expansions. This expected use of the net proceeds from this offering represents our intentions based upon our current plans and business conditions. The amounts and timing of our actual expenditures may vary significantly depending on numerous factors, including the progress of our development efforts, the status of and results from clinical trials, as well as any third party intellectual property or other assets that we may opportunistically identify and seek to license or acquire or any collaborations that we may enter into with third parties for our product candidates, and any unforeseen cash needs. Because the number and variability of factors that will determine our use of the proceeds from this offering, their ultimate use may vary substantially from their currently intended use. As a result, our management will retain broad discretion over the allocation of the net proceeds from this offering and could spend the proceeds in ways that do not necessarily improve our operating results or enhance the value of our common stock. See “Use of Proceeds.”

Investors in this offering will suffer immediate and substantial dilution as a result of this offering.

Because the effective offering price per common share and warrant is higher than the as adjusted net tangible book value per share of common stock after giving effect to this offering, you will suffer immediate and substantial dilution in the net tangible book value of the securities you purchase in this offering. For a further description of the dilution that investors in this offering will experience, see “Dilution.”

In the event that holders of our outstanding warrants, stock options and convertible preferred stock exercise or convert their securities into our common stock, you will suffer additional dilution in your investment.

There is no established public trading market for the Warrants being offered in this offering.

There is no established public trading market for the Warrants being offered in this offering, and we do not expect a market to develop. In addition, we do not intend to apply to list the Warrants on any national securities exchange or other nationally recognized trading system, including NYSE American. Without an active market, the liquidity of the Warrants will be limited.

The Warrants being offered may not have value.

The Warrants being offered by us in this offering have an exercise price of \$0.35 per share and expire five and one-half years from the original issuance date. In the event that the market price of our common stock does not exceed the exercise price of the Warrants during the period when they are exercisable, the Warrants may not have any value.

Holders of the Warrants will have no rights as shareholders until they acquire shares of our common stock, if ever.

If you acquire Warrants to purchase shares of our common stock in this offering, you will have no rights with respect to our common stock until you acquire shares of such common stock upon exercise of your Warrants. Upon exercise of your Warrants, you will be entitled to exercise the rights of a common shareholder only as to matters for which the record date occurs after the exercise date.

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. 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.

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CAUTIONARY NOTE REGARDING FORWARD-LOOKING STATEMENTS

This prospectus supplement, the accompanying prospectus and the documents incorporated herein by reference, contain certain forward-looking statements that involve substantial risks and uncertainties. All statements contained in this prospectus supplement, the accompanying prospectus, and the documents incorporated herein and therein by reference, other than statements of historical facts, are forward-looking statements including statements regarding our strategy, future operations, future financial position, future revenue, projected costs, prospects, plans, objectives of management and expected market growth. These statements involve known and unknown risks, uncertainties and other important factors that may cause our actual results, performance or achievements to be materially different from any future results, performance or achievements expressed or implied by the forward-looking statements.

The words “may,” “can,” “anticipate,” “assume,” “should,” “indicate,” “would,” “believe,” “contemplate,” “expect,” “seek,” “estimate,” “continue,” “plan,” “point to,” “project,” “predict,” “could,” “intend,” “target,” “potential” and similar expressions are intended to identify forward-looking statements, although not all forward-looking statements contain these identifying words. These forward-looking statements include, among other things, statements about:

- 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 our proprietary lipid nanocrystal (LNC) platform delivery technology, and certain related patents which are exclusively licensed to us by Rutgers University (Rutgers);
- our ability to manufacture GMP batches of our product candidates which are required for preclinical 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 dependence on third parties, including third parties to manufacture our intermediates and final product formulations and third-party contract research organizations 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;

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- developments and projections relating to our competitors or our industry; and
- our operations, business and financial results could be adversely impacted by global instability caused by armed conflicts, pandemics and geo-political uncertainty.

These forward-looking statements are only predictions and we may not actually achieve the plans, intentions or expectations disclosed in our forward-looking statements, so you should not place undue reliance on our forward-looking statements. Actual results or events could differ materially from the plans, intentions and expectations disclosed in the forward-looking statements we make. We have based these forward-looking statements largely on our current expectations and projections about future events and trends that we believe may affect our business, financial condition and operating results. We have included important factors in the cautionary statements included in this prospectus supplement, as well as certain information incorporated by reference into this prospectus supplement and the accompanying prospectus, that could cause actual future results or events to differ materially from the forward-looking statements that we make. Our forward-looking statements do not reflect the potential impact of any future acquisitions, mergers, dispositions, joint ventures or investments we may make.

Discussions containing these forward-looking statements may be found, among other places, in the sections titled “Business,” “Risk Factors” and “Management’s Discussion and Analysis of Financial Condition and Results of Operations” incorporated by reference from our most recent Annual Report on Form 10-K for the fiscal year ended December 31, 2023, as well as any amendments thereto, filed with the SEC. Additional factors are discussed under the caption “Risk Factors” in this prospectus supplement, the accompanying prospectus and any free writing prospectus we authorize for use in connection with this offering and under similar headings in the other documents that are incorporated by reference into this prospectus supplement. New risks and uncertainties arise from time to time, and it is impossible for us to predict these events or how they may affect us. We disclaim any intention or obligation to update or revise any forward-looking statements, whether as a result of new information, future events or otherwise, except as may be required by law.

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

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USE OF PROCEEDS

We estimate that the net proceeds from the sale of common stock and Warrants in this offering are expected to be approximately \$ 9.1 million, after deducting estimated offering expenses payable by us. We will only receive additional proceeds from the exercise of the Warrants we are selling in this offering if the Warrants are

exercised for cash. We cannot predict when or if these Warrants will be exercised and it is possible that these Warrants may expire and may never be exercised.

We currently intend to use the net proceeds from this offering, if any, for working capital and general corporate purposes.

The timing and amount of our actual expenditures will be based on many factors, including cash flows from operations and the anticipated growth of our business. As of the date of this prospectus, we cannot specify with certainty all of the particular uses for the net proceeds to us from this offering. As a result, our management will have broad discretion regarding the timing and application of the net proceeds from this offering. Pending their ultimate use, we intend to invest the net proceeds in short-term, investment-grade, interest-bearing instruments.

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DILUTION

If you invest in our securities in this offering, you will suffer immediate and substantial dilution in the book value of the shares you purchase in an amount equal to the difference between the offering price per share and related Warrant in this offering, attributing no value to the Warrants, and the as adjusted net tangible book value per share of our common stock immediately after this offering.

Our net tangible book value is the amount of our total tangible assets less our total liabilities. Net tangible book value per share is our net tangible book value divided by the number of shares of common stock outstanding as of December 31, 2023. Our net tangible book value as of December 31, 2023 was approximately \$14.9 million, or \$0.07 per share of common stock.

After giving effect to the sale of 33,333,334 shares of common stock and the related Warrants in this offering at a combined offering price of \$0.30 per share and related Warrant, assuming no exercise of the Warrants, attributing no value to the Warrants, and after deducting the Placement Agent fees and estimated offering expenses payable by us, our as adjusted net tangible book value as of December 31, 2023 would have been approximately \$24.1 million, or \$0.10 per share. This amount represents an immediate increase in as adjusted net tangible book value of \$0.03 per share to our existing stockholders, and an immediate dilution of \$0.20 per share to new investors participating in this offering.

The following table illustrates this dilution on a per share basis:

Offering price per share and related Warrant		\$	0.30
Net tangible book value per share as of December 31, 2023	\$	0.07	
Increase in net tangible book value per share as of December 31, 2023, attributable to the new investors	\$	0.03	
As adjusted net tangible book value per share as of December 31, 2023, after giving effect to this offering		\$	0.10
Dilution per share to new investors		\$	0.20

The above discussion and table are based on approximately 217,264,526 shares of common stock outstanding on December 31, 2023, and excludes, as of that date, the following:

- 46,707,934 shares of common stock issuable upon exercise of stock options, with a weighted average exercise price of \$0.83 per share, under our 2013 Plan;
- 2,905,170 shares of common stock available for future issuance under our 2013 Plan; and
- 33,333,334 shares of common stock issuable upon exercise of the Warrants offered hereby.

To the extent options or warrants are exercised, new options are issued under our 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 may choose to raise additional capital because of market conditions or strategic considerations, even if we believe that we have sufficient funds for our current or future operating plans. 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.

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DESCRIPTION OF THE SECURITIES WE ARE OFFERING

In this offering, we are offering shares of our common stock, Warrants to purchase shares of our common stock (and the shares of common stock issuable from time to time upon exercise of the Warrants).

Common Stock

The material terms and provisions of our common stock and each other class of our securities that qualifies or limits our common stock are described under the caption “Description of Our Capital Stock” in the accompanying prospectus. Our common stock is listed on NYSE American under the symbol “MTNB”. Our transfer agent is VStock Transfer, LLC.

Warrants

The following is a summary of the material terms and provisions of the Warrants that are being offered hereby. This summary is subject to and qualified in its entirety by the form of Warrant, which has been provided to the investors in this offering and which will be filed with the SEC as an exhibit to a Current Report on Form 8-K in connection with this offering and incorporated by reference into the registration statement of which this prospectus supplement forms a part.

Duration and Exercise Price

The Warrants offered hereby will have an exercise price of \$0.35 per share. The Warrants will be exercisable six months from the date of issuance and will be exercisable for five and one-half years from the date of issuance. The exercise price and number of shares of common stock issuable upon exercise are subject to appropriate adjustment in the event of share dividends, share splits, reorganizations or similar events affecting our shares of common stock. Warrants will be issued in certificated form only.

Exercisability

The Warrants will be exercisable, at the option of each holder, in whole or in part, by delivering to us a duly executed exercise notice accompanied by payment in full for the number of shares of common stock purchased upon such exercise (except in the case of a cashless exercise as discussed below). A holder (together with its affiliates) may not exercise any portion of such holder’s warrants to the extent that the holder would own more than 4.99% (or, at the election of the purchaser, 9.99%) of our outstanding shares of common stock immediately after exercise, except that upon at least 61 days’ prior notice from the holder to us, the holder may increase the amount of ownership of outstanding shares of common stock after exercising the holder’s Warrants up to 9.99% of the number of shares of common stock outstanding immediately after giving effect to

the exercise, as such percentage ownership is determined in accordance with the terms of the Warrants. Purchasers in this offering may also elect prior to the issuance of Warrants to have the initial exercise limitation set at 9.99% of our outstanding shares of common stock.

Cashless Exercise

If at the time of exercise of the Warrant there is no effective registration statement registering, or the prospectus contained therein is not available for the resale of the shares of common stock issuable upon exercise of the Warrant, then the Warrants will only be exercisable on a “cashless exercise” basis under which the holder will receive upon such exercise a net number of common shares determined according to a formula set forth in the Warrants.

Fundamental Transactions

In the event of any fundamental transaction, as described in the Warrants and generally including any merger with or into another entity, sale of all or substantially all of our assets, tender offer or exchange offer, or reclassification of our shares of common stock, then upon any subsequent exercise of a Warrant, the holder will have the right to receive as alternative consideration, for each share of common stock that would have been issuable upon such exercise immediately prior to the occurrence of such fundamental transaction, the number of shares of common stock of the successor or acquiring corporation or of our company, if it is the surviving corporation, and any additional consideration receivable upon or as a result of such transaction by a holder of the number of shares of common stock for which the Warrant is exercisable immediately prior to such event. In certain circumstances, the holder will have the right to receive the Black Scholes Value of the warrant calculated pursuant to a formula set forth in the Warrants, payable either in cash or in the same type or form of consideration that is being offered and being paid to the holders of our common stock as described in the Warrants.

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Transferability

In accordance with its terms and subject to applicable laws, a Warrant may be transferred at the option of the holder upon surrender of the Warrant to us together with the appropriate instruments of transfer and payment of funds sufficient to pay any transfer taxes (if applicable).

Fractional Shares

No fractional shares of common stock will be issued upon the exercise of the Warrants. Rather, the number of shares of common stock to be issued will, at our election, either be rounded up to the nearest whole number or we will pay a cash adjustment in respect of such final fraction in an amount equal to such fraction multiplied by the exercise price.

Trading Market

There is no established trading market for the Warrants, and we do not expect a market to develop. We do not intend to apply for a listing for the Warrants on any securities exchange or other nationally recognized trading system. Without an active trading market, the liquidity of the Warrants will be limited.

Rights as a Shareholder

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

Listing on NYSE American

Our common stock is listed on NYSE American under the symbol “MTNB”. There is no established public trading market for the Warrants, and we do not expect a market to develop. We do not intend to apply for a listing for the Warrants on any securities exchange or other nationally recognized trading system. Without an active trading market, the liquidity of the Warrants will be limited.

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PLAN OF DISTRIBUTION

A.G.P. has agreed to act as our placement agent in connection with this offering subject to the terms and conditions of the Placement Agency Agreement dated April 2, 2024. The Placement Agent is not purchasing or selling any of the securities offered by this prospectus supplement, nor is it required to arrange the purchase or sale of any specific number or dollar amount of securities, but has agreed to use its reasonable best efforts to arrange for the sale of all of the securities offered hereby. We will enter into a securities purchase agreement directly with the investors who purchase our securities in this offering. We may not sell the entire amount of securities offered pursuant to this prospectus.

We will deliver the securities being issued to the investors upon receipt of such investor’s funds for the purchase of the securities offered pursuant to this prospectus supplement. We expect to deliver the securities being offered pursuant to this prospectus supplement on or about April 5, 2024, subject to the satisfaction of customary closing conditions.

We have agreed to indemnify the Placement Agent against specified liabilities, including liabilities under the Securities Act of 1933, as amended (the “Securities Act”), and to contribute to payments the Placement Agent may be required to make in respect thereof.

Fees and Expenses

We have engaged A.G.P. as our sole placement agent in connection with this offering. This offering is being conducted on a “reasonable best efforts” basis and 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 securities. We have agreed to pay the Placement Agent a fee based on the aggregate proceeds as set forth in the table below.

	Per Share and Accompanying Warrants		Total
Offering price	\$	0.30	\$ 10,000,000.20
Placement agent fees ⁽¹⁾	\$	0.021	\$ 700,000.01
Proceeds, before expenses, to us ⁽²⁾	\$	0.279	\$ 9,300,000.19

(1) We have agreed to pay the Placement Agent a cash placement commission equal to 7.0% of the aggregate proceeds from the sale of the securities sold in this offering. We have also agreed to reimburse the Placement Agent for certain expenses incurred in connection with this offering.

(2) The amount of the offering proceeds to us presented in this table does not give effect to any exercise of the Warrants being issued in this offering.

We have also agreed to reimburse the Placement Agent at closing for legal and other expenses incurred by them in connection with the offering in an aggregate amount up to \$50,000. We estimate the total expenses payable by us for this offering, excluding the Placement Agent fees and expenses, will be approximately \$200,000.

Regulation M

The Placement Agent may be deemed to be an underwriter within the meaning of Section 2(a)(11) of the Securities Act, and any commissions received by it and any profit realized on the resale of the shares 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 Securities Exchange Act of 1934, as amended (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 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.

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Listing

Our Common Stock is listed on NYSE American under the trading symbol "MTNB." We do not intend to apply for a listing of the Warrants on any national securities exchange or other nationally recognized trading system.

Lock-Up Agreements

Our directors and executive officers have entered into lock-up agreements. Under these agreements, these individuals have agreed, subject to specified exceptions, not to sell or transfer any shares of Common Stock or securities convertible into, or exchangeable or exercisable for, our shares of Common Stock during a period ending 90 days after the date of this prospectus supplement, without first obtaining the written consent of the Placement Agent. Specifically, these individuals have agreed, in part, not to:

- offer, sell, hypothecate, pledge or otherwise dispose of or enter into any transaction which is designed to, or might reasonably be expected to, result in the disposition (whether by actual disposition or effective economic disposition due to cash) directly or indirectly, of any shares of common stock or any securities convertible into, or exercisable or exchangeable for, shares of common stock;
- enter into any swap or other arrangement that transfers to another, in whole or in part, any of the economic consequences of ownership of our securities, whether any such transaction is to be settled by delivery of our shares of Common Stock, in cash or otherwise;
- make any demand for or exercise any right with respect to the registration of any of our securities;
- publicly disclose the intention to make any offer, sale, pledge or disposition, or to enter into any transaction, swap, hedge;
- or other arrangement relating to any of our securities.

Notwithstanding these limitations, these shares of Common Stock may be transferred under limited circumstances, including, without limitation, by gift, will or intestate succession.

In addition, we have agreed that, subject to certain exceptions, (i) we will not conduct any issuances of our Common Stock for a period of 90 days after the closing of this offering (or 60 days after the closing of this offering in the event we publicly announce we have entered into an agreement for an acquisition, joint venture, strategic alliance or other strategic transaction, including, without limitation, collaborations or arrangements involving research and development or the purchase, sale or licensing of intellectual property) and that (ii) we will not enter into a variable rate transaction for a period of 180 days after the closing of this offering; provided, however, that after 90 days, we can issue shares of common stock in an at-the-market offering.

Discretionary Accounts

The Placement Agent does not intend to confirm sales of the securities offered hereby to any accounts over which it has discretionary authority.

Other Activities and Relationships

The Placement Agent and certain of its affiliates are full service financial institutions engaged in various activities, which may include securities trading, commercial and investment banking, financial advisory, investment management, investment research, principal investment, hedging, financing and brokerage activities. The Placement Agent and certain of its affiliates have, from time to time, performed, and may in the future perform, various commercial and investment banking and financial advisory services for us and our affiliates, for which they received or will receive customary fees and expenses.

In the ordinary course of their various business activities, the Placement Agent and certain of its affiliates may make or hold a broad array of investments and actively trade debt and equity securities (or related derivative securities) and financial instruments (including bank loans) for their own account and for the accounts of their customers, and such investment and securities activities may involve securities and/or instruments issued by us and our affiliates. If the Placement Agent or its affiliates have a lending relationship with us, they routinely hedge their credit exposure to us consistent with their customary risk management policies. The Placement Agent and its affiliates may hedge such exposure by entering into transactions that consist of either the purchase of credit default swaps or the creation of short positions in our securities or the securities of our affiliates, including potentially the Common Stock offered hereby. Any such short positions could adversely affect future trading prices of the Common Stock offered hereby. The Placement Agent and certain of its affiliates may also communicate independent investment recommendations, market color or trading ideas and/or publish or express independent research views in respect of such securities or instruments and may at any time hold, or recommend to clients that they acquire, long and/or short positions in such securities and instruments.

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LEGAL MATTERS

The validity of the securities offered hereby will be passed upon for us by Lowenstein Sandler LLP, New York, New York. Sullivan & Worcester LLP, New York, New York is acting as counsel for the Placement Agent in connection with certain legal matters relating to this offering.

EXPERTS

The consolidated audited financial statements incorporated by reference in this prospectus and elsewhere in the registration statement have been incorporated by reference in reliance upon the report of EisnerAmper LLP, independent registered public accounting firm, upon the authority of said firm as experts in accounting and auditing. The 2023 and 2022 audited annual consolidated financial statements of Matinas BioPharma Holdings, Inc., as of and for the years ended December 31, 2023 and 2022, have been audited by EisnerAmper LLP, independent registered public accounting firm.

WHERE YOU CAN FIND MORE INFORMATION

We are subject to the informational requirements of the Exchange Act and in accordance therewith we file annual, quarterly, and other reports, proxy statements and other information with the SEC under the Exchange Act. Such reports, proxy statements and other information, including the Registration Statement, and exhibits and schedules thereto, are available to the public through the SEC's website at www.sec.gov.

We make available free of charge on or through our website our Annual Reports on Form 10-K, Quarterly Reports on Form 10-Q, Current Reports on Form 8-K and amendments to those reports filed or furnished pursuant to Section 13(a) or 15(d) of the Securities Exchange Act of 1934, as amended, as soon as reasonably practicable after we electronically file such material with or otherwise furnish it to the SEC.

We have filed with the SEC a registration statement under the Securities Act, relating to the offering of these securities. The registration statement, including the attached exhibits, contains additional relevant information about us and the securities. This prospectus does not contain all of the information set forth in the registration statement. You can obtain a copy of the registration statement, at prescribed rates, from the SEC at the address listed above, or for free at www.sec.gov. The registration statement and the documents referred to below under "*Incorporation of Certain Information by Reference*" are also available on our website, <https://www.matinasbiopharma.com/investors>.

We have not incorporated by reference into this prospectus supplement the information on our website, and you should not consider it to be a part of this prospectus supplement.

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INCORPORATION OF CERTAIN INFORMATION BY REFERENCE

The following documents filed with the SEC are incorporated by reference into this prospectus supplement:

- our Annual Report on Form 10-K for the year ended December 31, 2023, filed with the SEC on [March 27, 2024](#);
- our Current Reports on Form 8-K, filed with the SEC on [February 20, 2024](#), [February 26, 2024](#), [March 22, 2024](#), [March 22, 2024](#) and [March 25, 2024](#) and (other than any portions thereof deemed furnished and not filed); and
- the description of our common stock contained in our [Form 8-A](#), filed on March 1, 2017.

We also incorporate by reference all documents we file pursuant to Section 13(a), 13(c), 14 or 15 of the Exchange Act (other than any portions of filings that are furnished rather than filed pursuant to Items 2.02 and 7.01 of a Current Report on Form 8-K) after the date of this prospectus supplement and prior to the termination of the offering.

Any statement contained in a document incorporated or deemed to be incorporated by reference herein shall be deemed to be modified or superseded for the purposes of this registration statement to the extent that a statement contained herein or in any other subsequently filed document which also is or deemed to be incorporated by reference herein modifies or supersedes such statement. Any statement so modified or superseded shall not be deemed, except as so modified or superseded, to constitute a part of this registration statement.

Upon written or oral request, we will provide you without charge, a copy of any or all of the documents incorporated by reference, other than exhibits to those documents unless the exhibits are specifically incorporated by reference in the documents. Any such request should be addressed to us at:

Investor Relations Department
Matinas BioPharma Holdings, Inc.
1545 Route 206 South
Suite 302
Bedminster, NJ 07921
Telephone number: 908-484-8805

You should rely only on information contained in, or incorporated by reference into, this prospectus supplement and the accompanying prospectus or any free writing prospectus we authorize for use in connection with this offering. We have not authorized anyone to provide you with information different from that contained in such documents or incorporated by reference in such documents. We are not making offers to sell the securities in any jurisdiction in which such an offer or solicitation is not authorized or to anyone to whom it is unlawful to make such offer or solicitation.

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PROSPECTUS

\$200,000,000



Common Stock
Preferred Stock
Warrants
Debt Securities
Subscription Rights
Units

We may offer and sell, from time to time in one or more offerings, any combination of common stock, preferred stock, warrants, debt securities, subscription rights or units having an aggregate initial offering price not exceeding \$200,000,000. The preferred stock, warrants, debt securities, subscription rights and units may be convertible or exercisable or exchangeable for common stock or preferred stock or other securities of ours and have not been approved for listing on any market or exchange, and we have not

made any application for such listing.

Each time we sell a particular class or series of securities, we will provide specific terms of the securities offered in a supplement to this prospectus. The prospectus supplement may also add, update or change information in this prospectus. You should read this prospectus and any prospectus supplement, as well as the documents incorporated by reference or deemed to be incorporated by reference into this prospectus, carefully before you invest in any securities.

This prospectus may not be used to offer or sell our securities unless accompanied by a prospectus supplement relating to the offered securities.

Our common stock is traded on the NYSE American LLC, or NYSE American, under the symbol “MTNB”. On June 8, 2023, the last reported sales price of our common stock on NYSE American was \$0.37 per share. Each prospectus supplement will indicate if the securities offered thereby will be listed on any securities exchange.

These securities may be sold directly by us, through dealers or agents designated from time to time, to or through underwriters or dealers or through a combination of these methods on a continuous or delayed basis. See “Plan of Distribution” in this prospectus. We may also describe the plan of distribution for any particular offering of our securities in a prospectus supplement. If any agents, underwriters or dealers are involved in the sale of any securities in respect of which this prospectus is being delivered, we will disclose their names and the nature of our arrangements with them in a prospectus supplement. The net proceeds we expect to receive from any such sale will also be included in a prospectus supplement.

Investing in our securities involves various risks. See “Risk Factors” beginning on page 2 of this prospectus and in the applicable prospectus supplement, and in the risks discussed in the documents incorporated by reference in this prospectus and in the applicable prospectus supplement, as they may be amended, updated or modified periodically in our reports filed with the Securities and Exchange Commission. You should carefully read and consider these risk factors before you invest in our securities.

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

This prospectus is dated June 20, 2023

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ABOUT THIS PROSPECTUS

This prospectus is part of a shelf registration statement that we filed with the Securities and Exchange Commission (the “SEC”) using a “shelf” registration process. Under this shelf registration process, we may sell any combination of the securities described in this prospectus in one or more offerings from time to time having an aggregate initial offering price of \$200,000,000. This prospectus provides you with a general description of the securities we may offer. Each time we offer securities, we will provide you with a prospectus supplement that describes the specific amounts, prices and terms of the securities we offer. The prospectus supplement also may add, update or change information contained in this prospectus. You should read carefully both this prospectus and any prospectus supplement together with additional information described below under the caption “Where You Can Find More Information.”

This prospectus does not contain all the information provided in the registration statement we filed with the SEC. You should read both this prospectus, including the section titled “Risk Factors,” and the accompanying prospectus supplement, together with the additional information described under the heading “Where You Can Find More Information.”

You should rely only on the information contained or incorporated by reference in this prospectus or a prospectus supplement. 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 on it. This prospectus is not an offer to sell securities, and it is not soliciting an offer to buy securities in any jurisdiction where the offer or sale is not permitted. You should assume that the information appearing in this prospectus or any prospectus supplement, as well as information we have previously filed with the SEC and incorporated by reference, is accurate as of the date on the front of those documents only. Our business, financial condition, results of operations and prospects may have changed since those dates.

OUR BUSINESS

The following summary of our business highlights some of the information contained elsewhere in or incorporated by reference into this prospectus. 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, 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. You should also carefully consider the matters discussed in the section titled “Risk Factors” in this prospectus and in other periodic reports incorporated by reference herein.

Overview

We are a clinical-stage biopharmaceutical company focused on delivering groundbreaking therapies using our lipid nanocrystal (LNC) platform delivery technology

(LNC Platform) to maximize global clinical impact and patient access. The Company is developing an internal portfolio of products and strives to be the partner of choice for leading pharmaceutical companies seeking to develop novel formulations that capitalize on the unique characteristics of the LNC Platform to facilitate, enhance and optimize the delivery of complex nucleic acids. Our current internal pipeline consists of MAT2203 (oral amphotericin B), a highly potent antifungal drug which we have successfully made oral, safe, and well-tolerated for patients. We also have internal discovery programs ongoing in the formulation and delivery of small oligonucleotides, namely antisense oligonucleotides (ASOs) and silencing or short interfering RNAs (siRNAs). We are also intent on expanding the application of our LNC Platform through collaborations with well-respected pharmaceutical companies whose molecules and compounds benefit from the unique capabilities of our delivery technology, which can provide oral bioavailability and facilitate non-toxic and efficient intracellular delivery of nucleic acids, particularly in the fields of mRNA and DNA.

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 originally formed on August 12, 2011 as Nereus BioPharma LLC, and Matinas BioPharma Nanotechnologies, Inc., a Delaware corporation originally formed on January 29, 2015 as Aquarius Biotechnologies, Inc.

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Our principal executive offices are located at 1545 Route 206 South, Suite 302, Bedminster, New Jersey 07921, and our telephone number is (908) 484-880-5443. 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. **Risks Associated with Our Business and this Offering**

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

- We have incurred losses since our inception and anticipate that we will continue to incur significant losses for the foreseeable future, and our future profitability is uncertain.
- Our product candidates must undergo rigorous clinical testing. Such clinical testing may fail to demonstrate safety and efficacy and any of our product candidates could cause undesirable side effects, which would substantially delay or prevent regulatory approval or commercialization.
- We are dependent on patents and proprietary technology. If we fail to adequately protect this intellectual property or if we otherwise do not have exclusivity for the marketing of our products, our ability to commercialize products could suffer.
- If our competitors are able to develop and market products that are more effective, safer or more affordable than ours are, or obtain marketing approval before we do, our commercial opportunities may be limited.
- We may not be able to manufacture, or otherwise secure the manufacture of, sufficient amounts of our product candidates for our preclinical studies and clinical trials.
- If you purchase our securities in this offering, you may incur dilution.
- We will have broad discretion in the use of the net proceeds from this offering and may not use them effectively.
- Our ability to advance our clinical development programs could be impacted by the COVID-19 pandemic.

RISK FACTORS

Investing in our securities involves a high degree of risk. Prior to making a decision about investing in our securities, you should carefully consider the specific risk factors discussed in the sections entitled “Risk Factors” contained in our annual report on Form 10-K for the fiscal year ended December 31, 2022 under the heading “Item 1A. Risk Factors,” and as described or may be described in any subsequent quarterly report on Form 10-Q under the heading “Item 1A. Risk Factors,” as well as in any applicable prospectus supplement and contained or to be contained in our filings with the SEC and incorporated by reference in this prospectus, together with all of the other information contained in this prospectus, or any applicable prospectus supplement. For a description of these reports and documents, and information about where you can find them, see “Where You Can Find More Information” and “Incorporation of Certain Information by Reference.” If any of the risks or uncertainties described in our SEC filings or any prospectus supplement or any additional risks and uncertainties actually occur, our business, financial condition and results of operations could be materially and adversely affected.

In that case, the trading price of our securities could decline and you might lose all or part of the value of your investment.

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DISCLOSURE REGARDING FORWARD-LOOKING STATEMENTS

This prospectus contains forward-looking statements. Such forward-looking statements include those that express plans, anticipation, intent, contingency, goals, targets or future development and/or otherwise are not statements of historical fact. These forward-looking statements are based on our current expectations and projections about future events and they are subject to risks and uncertainties known and unknown that could cause actual results and developments to differ materially from those expressed or implied in such statements.

In some cases, you can identify forward-looking statements by terminology, such as “expects,” “anticipates,” “intends,” “estimates,” “plans,” “believes,” “seeks,” “may,” “should,” “could” or the negative of such terms or other similar expressions. Accordingly, these statements involve estimates, assumptions and uncertainties that could cause actual results to differ materially from those expressed in them. Any forward-looking statements are qualified in their entirety by reference to the factors discussed throughout this prospectus.

You should read this prospectus and any accompanying prospectus supplement and the documents that we reference herein and therein and have filed as exhibits to the registration statement, of which this prospectus is part, completely and with the understanding that our actual future results may be materially different from what we expect. You should assume that the information appearing in this prospectus and any accompanying prospectus supplement is accurate as of the date on the front cover of this prospectus or such prospectus supplement only. Because the risk factors referred to above, as well as the risk factors referred to on page 2 of this prospectus and incorporated herein by reference, could cause actual results or outcomes to differ materially from those expressed in any forward-looking statements made by us or on our behalf, you should not place undue reliance on any forward-looking statements. Further, any forward-looking statement speaks only as of the date on which it is made, and we undertake no obligation to update any forward-looking statement to reflect events or circumstances after the date on which the statement is made or to reflect the occurrence of unanticipated events. New factors emerge from time to time, and it is not possible for us to predict which factors will arise. In addition, we cannot assess the impact of each factor on our

business or the extent to which any factor, or combination of factors, may cause actual results to differ materially from those contained in any forward-looking statements. We qualify all of the information presented in this prospectus and any accompanying prospectus supplement, and particularly our forward-looking statements, by these cautionary statements.

USE OF PROCEEDS

Except as otherwise provided in the applicable prospectus supplement, we intend to use the net proceeds from the sale of the securities offered by this prospectus for working capital and general corporate purposes.

The intended application of proceeds from the sale of any particular offering of securities using this prospectus will be described in the accompanying prospectus supplement relating to such offering. The precise amount and timing of the application of these proceeds will depend on our funding requirements and the availability and costs of other funds.

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THE SECURITIES WE MAY OFFER

The descriptions of the securities contained in this prospectus, together with the applicable prospectus supplements, summarize all 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 we indicate in the applicable prospectus supplement, the terms of the securities may differ from the terms we have summarized below. 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 \$200,000,000.

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.

When particular securities are offered, a supplement to this prospectus will be filed with the SEC, which will describe the terms of the offering and sale of the offered securities.

DESCRIPTION OF COMMON STOCK

The following is a summary of all material characteristics of our common stock as set forth in our articles of incorporation and bylaws. The summary does not purport to be complete and is qualified in its entirety by reference to our articles of incorporation and bylaws, each as amended, and to the provisions of Chapters 78 and 92A of the Delaware General Corporation Law, as amended.

General

Our authorized capital stock consists of:

- 500,000,000 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 8,000 shares have been designated as Series B Preferred Stock.

As of close of business on June 8, 2023, 217,264,526 shares of common 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).

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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.

DESCRIPTION OF PREFERRED STOCK

We are authorized to issue up to 10,000,000 shares of preferred stock, par value \$0.0001 per share, 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;

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- 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.

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;

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- 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.

In addition, our certificate of incorporation requires that, to the fullest extent permitted by law, and unless the Company consents in writing to the selection of an alternative forum, the Court of Chancery of the State of Delaware will, to the fullest extent permitted by law, be the sole and exclusive forum for each of the following:

- any derivative action or proceeding brought in the name or right of the Company or on its behalf,
- any action asserting a claim for breach of any fiduciary duty owed by any director, officer, employee or agent of the Company to the Company or the Company’s stockholders,
- any action asserting a claim against the Company or any director or officer of the Company arising pursuant to, or a claim against the Company or any director or officer of the Company with respect to the interpretation or application of any provision of, the Delaware General Corporation Law, the certificate of incorporation or the bylaws of the Company, or
- any action asserting a claim governed by the internal affairs doctrine.

Because the applicability of the exclusive forum provision is limited to the extent permitted by law, we believe that the exclusive forum provision would not apply to suits brought to enforce any duty or liability created by the Exchange Act or any other claim for which the federal courts have exclusive jurisdiction, and that federal courts have concurrent jurisdiction over all suits brought to enforce any duty or liability created by the Securities Act. We note that there is uncertainty as to whether a court would enforce the provision and that investors cannot waive compliance with the federal securities laws and the rules and regulations thereunder. Although we believe this provision benefits us by providing increased consistency in the application of Delaware law in the types of lawsuits to which it applies, the provision may have the effect of discouraging lawsuits against our directors and officers.

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;

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- 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. In certain circumstances, we or the securityholders may remove the trustee as the trustee under a given indenture. 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.

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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 depositary, or its nominee, is the registered owner of a registered global security, that depositary 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 depositary 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 depositary 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 depositary or its nominee will be made to the depositary 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 depositary 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 depositary. 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 depositary for any of these securities represented by a registered global security is at any time unwilling or unable to continue as depositary or ceases to be a clearing agency registered under the Securities Exchange Act of 1934, as amended (the "Exchange Act"), and a successor depositary 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 depositary. Any securities issued in definitive form in exchange for a registered global security will be registered in the name or names that the depositary gives to the relevant trustee or warrant agent or other relevant agent of ours or theirs. It is expected that the depositary's instructions will be based upon directions received by the depositary from participants with respect to ownership of beneficial interests in the registered global security that had been held by the depositary.

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We may sell the securities being offered pursuant to this prospectus through underwriters or dealers, through agents, or directly to one or more purchasers or through a combination of these methods. The applicable prospectus supplement will describe the terms of the offering of the securities, including:

- the name or names of any underwriters, if any, and if required, any dealers or agents;
- the purchase price of the securities and the proceeds we will receive from the sale;
- any underwriting discounts and other items constituting underwriters' compensation;
- any discounts or concessions allowed or reallocated or paid to dealers; and
- any securities exchange or market on which the securities may be listed.

We may distribute the securities from time to time in one or more transactions at:

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

Only underwriters named in the prospectus supplement are underwriters of the securities offered by the prospectus supplement.

If underwriters are used in an offering, we will execute an underwriting agreement with such underwriters and will specify the name of each underwriter and the terms of the transaction (including any underwriting discounts and other terms constituting compensation of the underwriters and any dealers) in a prospectus supplement. The securities may be offered to the public either through underwriting syndicates represented by managing underwriters or directly by one or more investment banking firms or others, as designated. If an underwriting syndicate is used, the managing underwriter(s) will be specified on the cover of the prospectus supplement. If underwriters are used in the sale, the offered securities will be acquired by the underwriters for their own accounts and may be resold from time to time in one or more transactions, including negotiated transactions, at a fixed public offering price or at varying prices determined at the time of sale. Any public offering price and any discounts or concessions allowed or reallocated or paid to dealers may be changed from time to time. Unless otherwise set forth in the prospectus supplement, the obligations of the underwriters to purchase the offered securities will be subject to conditions precedent and the underwriters will be obligated to purchase all of the offered securities if any are purchased.

We may grant to the underwriters options to purchase additional securities to cover over-allotments, if any, at the public offering price, with additional underwriting commissions or discounts, as may be set forth in a related prospectus supplement. The terms of any over-allotment option will be set forth in the prospectus supplement for those securities.

If we use a dealer in the sale of the securities being offered pursuant to this prospectus or any prospectus supplement, we will sell the securities to the dealer, as principal. The dealer may then resell the securities to the public at varying prices to be determined by the dealer at the time of resale. The names of the dealers and the terms of the transaction will be specified in a prospectus supplement.

We may sell the securities directly or through agents we designate from time to time. We will name any agent involved in the offering and sale of securities and we will describe any commissions we will pay the agent in the prospectus supplement. Unless the prospectus supplement states otherwise, any agent will act on a best-efforts basis for the period of its appointment.

We may authorize agents or underwriters to solicit offers by institutional investors to purchase securities from us at the public offering price set forth in the prospectus supplement pursuant to delayed delivery contracts providing for payment and delivery on a specified date in the future. We will describe the conditions to these contracts and the commissions we must pay for solicitation of these contracts in the prospectus supplement.

In connection with the sale of the securities, underwriters, dealers or agents may receive compensation from us or from purchasers of the securities for whom they act as agents in the form of discounts, concessions or commissions. Underwriters may sell the securities to or through dealers, and those dealers may receive compensation in the form of discounts, concessions or commissions from the underwriters or commissions from the purchasers for whom they may act as agents. Underwriters, dealers and agents that participate in the distribution of the securities, and any institutional investors or others that purchase 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 may provide agents and underwriters with indemnification against particular civil liabilities, including liabilities under the Securities Act, or contribution with respect to payments that the agents or underwriters may make with respect to such liabilities. Agents and underwriters may engage in transactions with, or perform services for, us in the ordinary course of business.

In addition, we may enter into derivative transactions with third parties (including the writing of options), 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, pursuant to this prospectus and the applicable prospectus supplement, sell securities covered by this prospectus and the applicable prospectus supplement. If so, the third party may use securities 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 the 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. The third party in such sale transactions will be an underwriter and will be identified in the applicable prospectus supplement or in a post-effective amendment.

To facilitate an offering of a series of securities, persons participating in the offering may engage in transactions that stabilize, maintain, or otherwise affect the market price of the securities. This may include over-allotments or short sales of the securities, which involves the sale by persons participating in the offering of more securities than have been sold to them by us. In those circumstances, such persons would cover such over-allotments or short positions by purchasing in the open market or by exercising the over-allotment option granted to those persons. In addition, those persons may stabilize or maintain the price of the securities by bidding for or purchasing securities in the open market or by imposing penalty bids, whereby selling concessions allowed to underwriters or dealers participating in any such offering may be reclaimed if securities sold by them are repurchased in connection with stabilization transactions. The effect of these transactions may be to stabilize or maintain the market price of the securities at a level above that which might otherwise prevail in the open market. Such transactions, if commenced, may be discontinued at any time. We make no representation or prediction as to the direction or magnitude of any effect that the transactions described above, if implemented, may have on the price of our securities.

All securities we may offer, other than common stock, will be new issues of securities with no established trading market. Any agents or underwriters may make a market in these securities, but will not be obligated to do so and may discontinue any market making at any time without notice. We cannot guarantee the liquidity of the trading

markets for any securities. There is currently no market for any of the offered securities, other than our common stock which is listed on the NYSE American. We have no current plans for listing of the preferred stock, warrants, units or subscription rights on any securities exchange or quotation system; any such listing with respect to any particular preferred stock, warrants, units or subscription rights will be described in the applicable prospectus supplement or other offering materials, as the case may be. Any underwriters to whom securities are sold by us for public offering and sale may make a market in the securities, but such underwriters will not be obligated to do so and may discontinue any market making at any time without notice.

In order to comply with the securities laws of some states, if applicable, the securities offered pursuant to this prospectus will be sold in those states only through registered or licensed brokers or dealers. In addition, in some states 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 complied with.

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Under Rule 15c6-1 of the Exchange Act, unless the parties to any such trade expressly agree otherwise, trades in the secondary market generally are required to settle (a) in two business days, prior to May 28, 2024 and (b) in one business day starting on May 28, 2024. The applicable prospectus supplement may provide that the original issue date for your securities may be more than two 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 (prior to May 28, 2024) or second business day (on or after May 28, 2024) 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 website or the website of any agent or dealer, and any information contained in any other website maintained by any agent or dealer:

- is not part of this prospectus, any applicable prospectus supplement or 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 common stock or preferred stock upon exercise of a warrant if such issuance is not exempt from the registration requirements of the Securities Act.

In addition, we may issue the securities as a dividend or distribution or in a subscription rights offering to our existing securityholders. 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.

Under Rule 15c6-1 of the Exchange Act, unless the parties to any such trade expressly agree otherwise, trades in the secondary market generally are required to settle (a) in two business days, prior to May 28, 2024 and (b) in one business day starting on May 28, 2024. The applicable prospectus supplement may provide that the original issue date for your securities may be more than two 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 (prior to May 28, 2024) or second business day (on or after May 28, 2024) 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 website or the website of any agent or dealer, and any information contained in any other website maintained by any agent or dealer:

- is not part of this prospectus, any applicable prospectus supplement or 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 common stock or preferred stock upon exercise of a warrant if such issuance is not exempt from the registration requirements of the Securities Act.

In addition, we may issue the securities as a dividend or distribution or in a subscription rights offering to our existing securityholders. 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.

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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 (the "Company") as of December 31, 2022 and 2021, and the related

consolidated statements of operations and comprehensive loss, stockholders' equity, and cash flows for each of the years then ended, have been audited by EisnerAmper LLP, an 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.

WHERE YOU CAN FIND MORE INFORMATION

This prospectus constitutes a part of a registration statement on Form S-3 filed under the Securities Act. As permitted by the SEC's rules, this prospectus and any prospectus supplement, which form a part of the registration statement, do not contain all the information that is included in the registration statement. You will find additional information about us in the registration statement. Any statements made in this prospectus or any prospectus supplement concerning legal documents are not necessarily complete and you should read the documents that are filed as exhibits to the registration statement or otherwise filed with the SEC for a more complete understanding of the document or matter.

We file annual, quarterly and current reports, proxy statements and other information with the SEC. You may read, without charge, and copy the documents we file at the SEC's public reference rooms in Washington, D.C. at 100 F Street, NE, Room 1580, Washington, DC 20549. You can request copies of these documents by writing to the SEC and paying a fee for the copying cost. Please call the SEC at 1-800-SEC-0330 for further information on the public reference rooms. Our SEC filings are also available to the public at no cost from the SEC's website at <http://www.sec.gov>.

INCORPORATION OF DOCUMENTS BY REFERENCE

We have filed a registration statement on Form S-3 with the Securities and Exchange Commission under the Securities Act. This prospectus is part of the registration statement but the registration statement includes and incorporates by reference additional information and exhibits. The Securities and Exchange Commission permits us to "incorporate by reference" the information contained in documents we file with the Securities and Exchange Commission, which means that we can disclose important information to you by referring you to those documents rather than by including them in this prospectus. Information that is incorporated by reference is considered to be part of this prospectus and you should read it with the same care that you read this prospectus. Information that we file later with the Securities and Exchange Commission will automatically update and supersede the information that is either contained, or incorporated by reference, in this prospectus, and will be considered to be a part of this prospectus from the date those documents are filed. We have filed with the Securities and Exchange Commission, and incorporate by reference in this prospectus:

- Annual Report on [Form 10-K](#) for the year ended December 31, 2022, filed on March 15, 2023;
- Quarterly Report on [Form 10-Q](#) for the quarter ended March 31, 2023, filed on May 10, 2023;
- Definitive Proxy Statement on [Schedule 14A](#), filed on September 22, 2022;
- Current Reports on Form 8-K, filed on [January 12, 2023](#), [January 30, 2023](#), [March 15, 2023](#), [April 18, 2023](#) and [May 10, 2023](#) (other than any portions thereof deemed furnished and not filed); and
- The description of our common stock contained in our [Form 8-A](#), filed on March 1, 2017.

We also incorporate by reference all additional documents that we file with the Securities and Exchange Commission under the terms of Sections 13(a), 13(c), 14 or 15(d) of the Securities Exchange Act of 1934, as amended, that are made after the initial filing date of the registration statement of which this prospectus is a part until the offering of the particular securities covered by a prospectus supplement or term sheet has been completed. We are not, however, incorporating, in each case, any documents or information that we are deemed to furnish and not file in accordance with Securities and Exchange Commission rules.

You may request, and we will provide you with, a copy of these filings, at no cost, by contacting us at:

Investor Relations Department
Matinas BioPharma Holdings, Inc.
1545 Route 206 South
Suite 302
Bedminster, NJ 07921
Telephone number: (908) 484-8805



33,333,334 Shares of Common Stock

Warrants to Purchase up to 33,333,334 Shares of Common Stock

PROSPECTUS SUPPLEMENT

Sole Placement Agent

A.G.P.

April 2, 2024

