
**United States
Securities and Exchange Commission
Washington, D.C. 20549**

SCHEDULE 14A

**Proxy Statement Pursuant to Section 14(a) of the
Securities Exchange Act of 1934**

Filed by the Registrant ☒

Filed by a Party other than the Registrant ☐

Check the appropriate box:

- ☐ Preliminary Proxy Statement
- ☐ Confidential, For Use of the Commission Only (as permitted by Rule 14a-6(e)(2))
- ☒ Definitive Proxy Statement
- ☐ Definitive Additional Materials
- ☐ Soliciting Materials Pursuant to Rule 14a-12

MATINAS BIOPHARMA HOLDINGS, INC.

(Name of Registrant as Specified in Its Charter)

(Name of Person(s) Filing Proxy Statement, if Other Than the Registrant)

Payment of Filing Fee (Check the appropriate box):

- ☒ No fee required.
- ☐ Fee computed on table below per Exchange Act Rules 14a-6(i)(1) and 0-11.

(1) Title of each class of securities to which transaction applies:

(2) Aggregate number of securities to which transaction applies:

(3) Per unit price or other underlying value of transaction computed pursuant to Exchange Act Rule 0-11 (set forth the amount on which the filing fee is calculated and state how it was determined):

(4) Proposed maximum aggregate value of transaction:

(5) Total fee paid:

- ☐ Fee paid previously with preliminary materials:
- ☐ Check box if any part of the fee is offset as provided by Exchange Act Rule 0-11(a)(2) and identify the filing for which the offsetting fee was paid previously. Identify the previous filing by registration statement number, or the Form or Schedule and the date of its filing.

(1) Amount Previously Paid:

(2) Form, Schedule or Registration Statement No.:

(3) Filing Party:

(4) Date Filed:

MATINAS BIOPHARMA HOLDINGS, INC.

1545 ROUTE 206 SOUTH
SUITE 302
BEDMINSTER NJ 07921

NOTICE OF SPECIAL MEETING OF STOCKHOLDERS

To be held on January 26, 2021

To the Stockholders of
Matinas BioPharma Holdings, Inc.

NOTICE IS HEREBY GIVEN that a Special Meeting of Stockholders of Matinas BioPharma Holdings, Inc. (the "Company") will be held on January 26, 2021, beginning at 9 a.m. local time. Due to concerns regarding COVID-19 and to assist in protecting the health and well-being of our stockholders and employees, the Special Meeting will be held via the internet. Stockholders will be able to listen, vote and ask questions regardless of location via the internet at www.virtualshareholdermeeting.com/MTNB2021 by using the control number included on your notice regarding the availability of proxy materials, proxy card (printed in the box and marked by the arrow) and the instructions that accompanied your proxy materials. **You will not be able to attend the Special Meeting in person.** At the Special Meeting, stockholders will act on the following matters:

- To approve, an amendment to our Certificate of Incorporation to effect a reverse stock split of our common stock at a ratio in the range of 1-for-2 to 1-for-15, with such reverse stock split to be effected at such ratio, time and date, if at all, as determined by our Board of Directors in its sole discretion; and
- To approve the adjournment of the Special Meeting, if necessary, if a quorum is present, to solicit additional proxies if there are not sufficient votes to approve the Authorized Shares Proposal or the Reverse Stock Split Proposal.

Only stockholders of record of our common stock at the close of business on December 3, 2020 are entitled to receive notice of and to vote at the Special Meeting or any postponement or adjournment thereof.

Your vote is important. Whether you plan to attend the meeting virtually or not, you may vote your shares by marking, signing, dating and mailing the enclosed proxy card in the envelope provided. If you attend the meeting virtually and prefer to vote during the meeting, you may do so even if you have already voted your shares. You may revoke your proxy in the manner described in the proxy statement at any time before it has been voted at the meeting.

By Order of the Board of Directors

/s/ Jerome D. Jabbour

Jerome D. Jabbour
Chief Executive Officer

December 17, 2020
Bedminster, New Jersey

**MATINAS BIOPHARMA HOLDINGS, INC.
1545 ROUTE 206 SOUTH
SUITE 302
BEDMINSTER NJ 07921**

PROXY STATEMENT

This proxy statement contains information related to a Special Meeting of Stockholders to be held on January 26, 2021 at 9 a.m. local time via the internet at www.virtualshareholdermeeting.com/MTNB2021, or at such other time and place to which the Special Meeting may be adjourned or postponed. The enclosed proxy is solicited by the Board of Directors of Matinas BioPharma Holdings, Inc. (the "Board"). The proxy materials relating to the Special Meeting are being mailed to stockholders entitled to vote at the meeting on or about December 17, 2020.

Important Notice of Availability of Proxy Materials for the Special Meeting of Stockholders to be held on January 26, 2021.

Our proxy materials including our Proxy Statement for the Special Meeting and proxy card are available on the Internet at www.proxyvote.com. Under Securities and Exchange Commission rules, we are providing access to our proxy materials both by sending you this full set of proxy materials, and by notifying you of the availability of our proxy materials on the Internet.

ABOUT THE MEETING

Why are we calling this Special Meeting?

We are calling the Special Meeting to seek the approval of our stockholders:

- To approve, an amendment to our Certificate of Incorporation to effect a reverse stock split of our common stock at a ratio in the range of 1-for-2 to 1-for-15, with such reverse stock split to be effected at such ratio, time and date, if at all, as determined by our Board of Directors (the "Board") in its sole discretion (the "Reverse Stock Split Proposal"); and
- To approve the adjournment of the Special Meeting, if necessary, if a quorum is present, to solicit additional proxies if there are not sufficient votes to approve the Reverse Stock Split Proposal (the "Adjournment Proposal").

What are the Board's recommendations?

Our Board believes that approval of the Reverse Stock Split Proposal and the Adjournment Proposal are advisable and in our best interests and that of our stockholders and recommends that you vote FOR these proposals.

Who is entitled to vote at the meeting?

Only stockholders of record of our common stock at the close of business on the record date, December 3, 2020, are entitled to receive notice of the Special Meeting and to vote the shares of common stock that they held on that date at the meeting, or any postponement or adjournment of the meeting. Holders of our common stock are entitled to one vote per share on each matter to be voted upon.

As of the record date, we had 199,441,758 outstanding shares of common stock.

Who can attend the meeting?

The Special Meeting will take place virtually through the Internet, in light of the COVID-19 pandemic and related public health concerns. There will not be a physical meeting location and you will not be able to attend the Special Meeting in person. We have designed the format of the virtual Special Meeting to ensure that our stockholders who attend the Special Meeting online will be afforded the same rights and opportunities to participate as they would at an in-person meeting. You will be able to attend the Special Meeting online, vote your shares online during the Special Meeting and submit questions online during the Special Meeting by visiting www.virtualshareholdermeeting.com/MTNB2021. You are entitled to attend and participate in the Special Meeting only if you were a stockholder of record as of the close of business on December 3, 2020. To be admitted to the Special Meeting at www.virtualshareholdermeeting.com/MTNB2021, you must enter the 16-digit control number

found on your proxy card, notice of internet availability or other proxy materials. If you do not have a control number, please contact the brokerage firm, bank, dealer, or other similar organization that holds your account as soon as possible so that you can be provided with a control number. The Special Meeting will begin promptly at 9:00 a.m. local time. We encourage you to access the Special Meeting before it begins. Online check-in will start 15 minutes before the meeting on January 26, 2021. If you encounter any difficulties accessing the virtual meeting during the check-in or meeting time, please call the technical support number that will be posted on the virtual Special Meeting log-in page.

What constitutes a quorum?

The presence at the Special Meeting, virtually or by proxy, of the holders of a majority of our common stock outstanding on the record date will constitute a quorum for our meeting. Signed proxies received but not voted and broker non-votes will be included in the calculation of the number of shares considered to be present at the meeting.

How do I vote?

You can vote on matters that come before the Special Meeting by completing, dating and signing the enclosed proxy card and returning it in the enclosed postage-paid envelope.

Your shares will be voted as you indicate on your proxy card. If you vote the enclosed proxy but you do not indicate your voting preferences, and with respect to any other matter that properly comes before the meeting, the individuals named on the proxy card will vote your shares FOR the matters submitted at the meeting, or if no recommendation is given, in their own discretion.

If you are a stockholder of record, to submit your proxy by telephone or via the Internet, follow the instructions on the proxy card. If you hold your shares in street name, you may vote by telephone or via the Internet as instructed by your broker, bank or other nominee.

If you are a stockholder of record, virtually attend the Special Meeting and prefer to vote online at the Special Meeting, you may do so even if you have already voted your shares by proxy. If you hold shares in "street name," however, you must provide a legal proxy executed by your broker or other nominee in order to vote your shares at the Special Meeting.

What if I vote and then change my mind?

You may revoke your proxy at any time before it is exercised by:

- filing with our Secretary of a notice of revocation;
- sending in another duly executed proxy by telephone, internet or mail bearing a later date; or
- attending the meeting virtually and casting your vote online.

Your latest vote will be the vote that is counted.

What is the difference between holding shares as a stockholder of record and as a beneficial owner?

Many of our stockholders hold their shares through a stockbroker, bank or other nominee rather than directly in their own name. As summarized below, there are some distinctions between shares held of record and those owned beneficially.

Stockholder of Record

If your shares are registered directly in your name with our transfer agent, VStock Transfer, LLC, you are considered, with respect to those shares, the stockholder of record. As the stockholder of record, you have the right to grant your voting proxy directly to us or to vote virtually at the Special Meeting.

Beneficial Owner

If your shares are held in a stock brokerage account or by a bank or other nominee, you are considered the beneficial owner of shares held in street name, and these proxy materials are being forwarded to you by your broker, bank or nominee which is considered, with respect to those shares, the stockholder of record. As the beneficial owner,

you have the right to direct your broker as to how to vote and are also invited to attend the Special Meeting. However, because you are not the stockholder of record, you may not vote these shares online at the Special Meeting unless you obtain a signed proxy from the record holder giving you the right to vote the shares. If you do not vote your shares or otherwise provide the stockholder of record with voting instructions, your shares may constitute broker non-votes. The effect of broker non-votes is more specifically described in “*What vote is required to approve each proposal?*” below.

What vote is required to approve each proposal?

The holders of a majority of our shares of common stock outstanding on the record date must be present, virtually or by proxy, at the Special Meeting in order to have the required quorum for the transaction of business. Pursuant to Delaware corporate law, abstentions and broker non-votes will be counted for the purpose of determining whether a quorum is present.

Assuming that a quorum is present, the following votes will be required:

- With respect to the Reverse Stock Split Proposal, approval will require the affirmative vote of the majority of the shares issued and outstanding as of the Record Date, and abstentions will have the same effect as a vote against this proposal.
- With respect to the Adjournment Proposal, approval will require the affirmative vote of a majority of the votes cast virtually or represented by proxy at the Special Meeting, and abstentions will have the same effect as a vote against the proposal.

Holders of common stock will not have any dissenters’ rights of appraisal in connection with any of the matters to be voted on at the meeting.

What are “broker non-votes”?

Broker non-votes occur when nominees, such as banks and brokers holding shares on behalf of beneficial owners, do not receive voting instructions from the beneficial holders at least ten days before the meeting. If that happens, the nominees may vote those shares only on matters deemed “routine”. Nominees cannot vote on non-routine matters unless they receive voting instructions from beneficial holders. The determination of which proposals are deemed “routine” versus “non-routine” may not be made by the New York Stock Exchange until after the date on which this proxy statement has been mailed to you. As such, it is important that you provide voting instructions to your bank, broker or other nominee, if you wish to determine the voting of your shares.

How are we soliciting this proxy?

We are soliciting this proxy on behalf of our Board and will pay all expenses associated therewith. We have engaged MacKenzie Partners, Inc. (“MacKenzie”) as the proxy solicitor for the Special Meeting for an approximate fee of \$7,500 plus fees for additional services, if needed. We have also agreed to reimburse MacKenzie for its reasonable out of pocket expenses. Some of our officers and other employees also may, but without compensation other than their regular compensation, solicit proxies by further mailing or personal conversations, or by telephone, facsimile or other electronic means.

We will also, upon request, reimburse brokers and other persons holding stock in their names, or in the names of nominees, for their reasonable out-of-pocket expenses for forwarding proxy materials to the beneficial owners of the capital stock and to obtain proxies.

If you have questions about the proposals or if you need additional copies of the proxy statement or the enclosed proxy card you should contact:



1407 Broadway, 27th Floor
New York, New York 10018
Email: proxy@mackenziepartners.com
Call Collect: (212) 929-5500
Toll-Free: (800) 322-2885

PROPOSAL 1: REVERSE STOCK SPLIT PROPOSAL

General

The Board has unanimously approved, and recommended that our stockholders approve, an amendment to our Certificate of Incorporation in substantially the form attached hereto as Annex A (the “Reverse Split Amendment”), to effect a reverse stock split at a ratio in the range of 1-for-2 to 1-for-15, to be determined at the discretion of the Board, whereby each outstanding 2 to 15 shares would be combined, converted and changed into 1 share of our common stock. This proposal is referred to in this Proxy Statement as the “Reverse Stock Split Proposal.” If the stockholders approve the Reverse Split Amendment, the Board will have discretion to determine, as it deems to be in the best interest of our stockholders, the specific ratio to be used within the range described above and the timing of the reverse stock split, which must occur any time prior to the first anniversary of its approval by the stockholders.

The reverse stock split will be realized simultaneously for all outstanding shares of common stock and the ratio will be the same for all outstanding shares of common stock. The reverse stock split will affect all holders of our common stock uniformly and each stockholder will hold the same percentage of common stock outstanding immediately following the reverse stock split as that stockholder held immediately prior to the reverse stock split, except for adjustments that may result from the treatment of fractional shares as described below. The Reverse Split Amendment will not change the total number of authorized shares of common stock, and the par value of the common stock will remain at \$0.0001 per share. The number of authorized shares of preferred stock will also remain the same.

The Board unanimously approved and recommended seeking stockholder approval of this Reverse Stock Split Proposal on November 22, 2020. The Board may determine in its discretion not to effect any reverse stock split and not to file the Reverse Split Amendment. Subject to approval of the Reverse Split Amendment through the approval of this Reverse Stock Split Proposal, no further action on the part of our stockholders will be required to either implement or abandon the reverse stock split. As detailed below, if the Board does not effect the reverse stock split by filing the Reverse Split Amendment before the close of business on January 26, 2022, the Board will no longer be permitted to effect the reverse stock split as the authority of the Board to effect the reverse stock split will expire as of the close of business on January 26, 2022.

The Board’s determination as to whether and when to effect a reverse stock split and the specific ratio to be used will be based on a number of factors, including the closing bid price for our common stock, prevailing market conditions, existing and expected trading prices for our common stock, actual or forecasted results of operations, and the likely effect of such results on the market price of our common stock.

The reverse stock split is not being proposed in response to any effort of which we are aware to accumulate shares of our common stock or obtain control of us, nor is it a plan by management to recommend a series of similar actions to our Board or our stockholders.

There are certain risks associated with a reverse stock split, and we cannot accurately predict whether, or assure that, the reverse stock split will produce or maintain the desired results (for more information on the risks, see the section below entitled “Certain Risks Associated with the Reverse Stock Split”). However, our Board believes that the benefits to us and our stockholders outweigh the risks and recommends that you vote in favor of the Reverse Stock Split Proposal.

Purposes of the Proposed Reverse Stock Split

We believe that the reverse stock split could enhance the appeal of our common stock to the financial community, including institutional investors, and the general investing public. We believe that a number of institutional investors and investment funds are reluctant to invest in lower-priced securities and that brokerage firms may be reluctant to recommend lower-priced securities to their clients, which may be due in part to a perception that lower-priced securities are less promising as investments, are less liquid in the event that an investor wishes to sell its shares, or are less likely to be followed by institutional securities research firms and therefore more likely to have less third-party analysis of the company available to investors. We believe that the reduction in the number of issued and outstanding shares of our common stock caused by the reverse stock split, together with the anticipated increased stock price immediately following and resulting from the reverse stock split, may encourage broader interest and trading in our common stock and thus possibly promote greater liquidity for our stockholders, thereby resulting in a broader market for our common stock than that which currently exists.

Moreover, we may in the future determine that submission of an application to the New York Stock Exchange or The NASDAQ Stock Market for “uplisting” of our Common Stock is in the best interest of our shareholders. The New York Stock Exchange and each tier of the Nasdaq has its own listing criteria. We may in the future consider targeting the New York Stock Exchange or NASDAQ Global Market, both of which require, among other criteria, an initial bid price of at least \$4.00 per share and, following initial listing, maintenance of a continued price of at least \$1.00 per share. On the record date, the sale price of our common stock on the NYSE American was \$1.04 per share. A decrease in the number of issued and outstanding shares of our common stock resulting from the reverse stock split should, absent other factors, assist in ensuring that our per share market price of our common stock remains above the required price. However, we cannot provide any assurance that (i) we will pursue a listing on the New York Stock Exchange, the Nasdaq Global Market, or any other tier of The NASDAQ Stock Market or (ii) even if we do, our minimum bid price would remain over the minimum bid price requirement of the New York Stock Exchange or tier of the Nasdaq Stock Market on which we may list.

In addition, in order to be included in certain biotechnology and pharmaceutical trading indices and exchange-traded funds (ETFs), our stock must meet certain eligibility requirements, including, among other things, minimum daily trading volume and bid price standards. As noted above, we believe that the reduction in the number of issued and outstanding shares of our common stock caused by the reverse stock split, together with the anticipated increased stock price immediately following and resulting from the reverse stock split, should, absent other factors, assist in meeting such requirements. However, we cannot provide any assurance that we will meet any such index or ETF standards or that our common stock will ever be included in any such indices or ETFs following the reverse stock split.

Even if this proposal is approved, the Board will have complete discretion as to whether or not to consummate the reverse stock split and the specific ratio to be used. We cannot assure you that all or any of the anticipated beneficial effects on the trading market for our common stock will occur. The Board cannot predict with certainty what effect the reverse stock split will have on the market price of our common stock, particularly over the longer term. Some investors may view a reverse stock split negatively, which could result in a decrease in our market capitalization. Additionally, any improvement in liquidity due to increased institutional or brokerage interest or lower trading commissions may be offset by the lower number of outstanding shares. In addition, investors might consider the increased proportion of unissued authorized shares to issued shares to have an anti-takeover effect under certain circumstances because the proportion allows for dilutive issuances.

Determination of Ratio

In determining the reverse stock split ratio, the Board will consider numerous factors, including:

- the historical and projected performance of our common stock;
- prevailing market conditions;
- general economic and other related conditions prevailing in our industry and in the marketplace;
- the projected impact of the reverse stock split ratio on trading liquidity in our common stock;
- our capitalization (including the number of shares of our common stock issued and outstanding);
- the prevailing trading price for our common stock and the volume level thereof; and
- potential devaluation of our market capitalization as a result of a reverse stock split.

Principal Effects of the Reverse Stock Split

A reverse stock split refers to a reduction in the number of outstanding shares of a class of a corporation’s capital stock, which may be accomplished, as in this case, by reclassifying and combining all of our outstanding shares of common stock into a proportionately smaller number of shares. After the effective date of the proposed reverse stock split, each stockholder will own a reduced number of shares of common stock. For example, if the Board decides to implement the 1-for-4 reverse stock split, then a stockholder holding 10,000 shares of our common stock before the reverse stock split would instead hold 2,500 shares of our common stock immediately after the reverse stock split. However, the proposed reverse stock split will affect all stockholders uniformly and will not affect any stockholder’s percentage ownership interest in our company (except to the extent that the reverse stock split would result in any stockholders receiving cash in lieu of fractional shares) or proportionate voting power as described below. All shares of common stock will also remain validly issued, fully paid and non-assessable.

The proposed reverse stock split will also reduce the number of shares of common stock reserved for future awards under our Amended and Restated 2013 Equity Compensation Plan. The per share exercise price of all outstanding option awards will be increased proportionately and the number of shares of common stock issuable upon the exercise of all outstanding option awards will be reduced proportionately. These adjustments will result in approximately the same aggregate exercise price being required to be paid for all outstanding option awards upon exercise, although the aggregate number of shares issuable upon exercise of such option awards will be reduced proportionately following the reverse stock split. The number of shares of outstanding restricted stock subject to outstanding awards will be reduced proportionately.

The proposed reverse stock split will also reduce the number of shares of common stock issued upon a conversion of our Series B Preferred Stock. The conversion price applicable to the Series B Preferred Stock will be increased proportionately, which will reduce the aggregate number of shares of common stock issuable upon any such conversion or redemption proportionately with the reduction to the total number of shares of outstanding common stock.

We are currently authorized to issue up to 500,000,000 shares of common stock, par value \$0.0001 per share, of which 199,641,758 shares were issued and outstanding as of December 15, 2020, and 10,000,000 shares of preferred stock, par value \$0.0001 per share, of which 4,366 shares of Series B Preferred Stock were issued and outstanding as of December 15, 2020. If we effect the proposed reverse stock split and file the Reverse Split Amendment, the number of shares of our authorized common stock will remain unchanged and the number of shares of our authorized preferred stock will remain unchanged. The Reverse Split Amendment will also not affect the par value of our common stock, which will remain at \$0.0001 per share, or our preferred stock, which will remain at \$0.0001 per share.

Because implementation of the reverse stock split would not change the total number of shares of our common stock authorized for issuance, the number of shares of our common stock available for issuance following the implementation of the reverse stock split would increase to the extent the reverse stock split reduces the number of outstanding shares of our common stock. Accordingly, the reverse stock split would provide us with additional authorized, unissued and otherwise unreserved shares available for future corporate purposes, including future acquisitions, investment opportunities, the establishment of collaboration or other strategic agreements, capital raising transactions involving equity or convertible debt securities, future at the market offerings of common stock, or issuance under current or future employee equity plans. The issuance of equity securities in connection with such transactions may result in potentially significant dilution of our current stockholders' ownership interests in us.

The following table contains approximate information relating to our common stock immediately following the reverse stock split under certain possible exchange ratios, based on share information as of December 15, 2020. All share numbers are rounded down to the nearest whole share but otherwise do not reflect the potential effect of rounding down for fractional shares that may result from the reverse stock split.

	Pre-Reverse Split	1-for-2	1-for-5	1-for-10	1-for-15
Number of authorized shares of Common Stock	500,000,000	500,000,000	500,000,000	500,000,000	500,000,000
Number of outstanding shares of common stock	199,641,758	99,820,879	39,928,352	19,964,176	13,309,451
Number of shares of common stock issuable upon exercise of outstanding stock options	23,022,938	11,511,469	4,604,588	2,302,294	1,534,863
Number of shares of Common Stock issuable upon exercise of outstanding warrants	1,327,810	663,905	265,562	132,781	88,521
Number of shares of Common Stock issuable upon conversion of the Series B Preferred Stock	8,732,000	4,366,000	1,746,400	873,200	582,133
Number of shares of Common Stock reserved for issuance in connection with future awards under the Company's Amended and Restated 2013 Equity Compensation Plan	3,009,734	1,504,867	601,947	300,973	200,649
Number of shares of Common Stock authorized, but unissued and unreserved	264,265,760	382,132,880	452,853,151	476,426,576	484,284,384

In addition, the reverse stock split may increase the number of stockholders who own odd lots (less than 100 shares). Any stockholder who owns fewer than 200 to 1,500 shares of common stock, depending on the final ratio, prior to the reverse stock split will own fewer than 100 shares of common stock following the reverse stock split. Stockholders who hold odd lots typically experience an increase in the cost of selling their shares and may have greater difficulty in effecting sales. Furthermore, some stockholders may cease being stockholders of our Company following the reverse stock split. Any stockholder who owns fewer than 2 to 15 shares of common stock, depending on the final ratio, prior to the reverse stock split will own less than one share of common stock following the reverse stock split and therefore such stockholder will receive cash equal to the market value of such fractional share and cease being a stockholder of our Company, as further described below under "Treatment of Fractional Shares". Although the number of our outstanding shares of common stock would decrease as a result of the reverse stock split, the Board does not intend to use the reverse stock split as a part of, or a first step in, a "going private" transaction within the meaning of Rule 13e-3 of the Securities Exchange Act of 1934, as amended (the "Exchange Act"). There is no plan or contemplated plan by our Company to take itself private as of the date of this Proxy Statement.

Our common stock is currently registered under Section 12(b) of the Exchange Act, and we are subject to the periodic reporting and other requirements of the Exchange Act. The proposed reverse stock split will not affect the registration of our common stock under the Exchange Act. If the proposed reverse stock split is implemented, our common stock will continue to be reported on the NYSE American under the symbol "MTNB".

Certain Risks Associated with the Reverse Stock Split

Before voting on the Reverse Stock Split Proposal, you should consider the following risks associated with the implementation of the reverse stock split:

- Although we expect that the reverse stock split will result in an increase in the market price of our common stock, we cannot assure you that the reverse stock split, if implemented, will increase the market price of our common stock in proportion to the reduction in the number of shares of our common stock outstanding or result in a permanent increase in the market price. Accordingly, the total market capitalization of our

common stock after the proposed reverse stock split may be lower than the total market capitalization before the proposed reverse stock split and, in the future, the market price of our common stock following the reverse stock split may not exceed or remain higher than the market price prior to the proposed reverse stock split.

- The effect the reverse stock split may have upon the market price of our common stock cannot be predicted with any certainty, and the history of similar reverse stock splits for companies in similar circumstances to ours is varied. The market price of our common stock is dependent on many factors, including our business and financial performance, general market conditions, prospects for future success and other factors detailed from time to time in the reports we file with the SEC. If the reverse stock split is implemented and the market price of our common stock declines, the percentage decline as an absolute number and as a percentage of our overall market capitalization may be greater than would occur in the absence of the reverse stock split.
- The reverse stock split may result in some stockholders owning “odd lots” of less than 100 shares of our common stock on a post-split basis. These odd lots may be more difficult to sell, or require greater transaction costs per share to sell, than shares in “round lots” of even multiples of 100 shares.
- While the Board believes that a higher stock price may help generate investor interest, there can be no assurance that the reverse stock split will result in a per share price that will attract institutional investors or investment funds or that such share price will satisfy the investing guidelines of institutional investors or investment funds. As a result, the trading liquidity of our common stock may not necessarily improve.
- Although the Board believes that the decrease in the number of shares of our common stock outstanding as a consequence of the reverse stock split and the anticipated increase in the market price of our common stock could encourage interest in our common stock and possibly promote greater liquidity for our stockholders, such liquidity could also be adversely affected by the reduced number of shares outstanding after the reverse stock split.
- Furthermore, because implementation of the reverse stock split would not change the total number of shares of our common stock authorized for issuance, the number of shares of our common stock available for issuance following the implementation of the reverse stock split would increase to the extent the reverse stock split reduces the number of outstanding shares of our common stock. Such available shares may be used for future corporate purposes, including future acquisitions, investment opportunities, the establishment of collaboration or other strategic agreements, capital raising transactions involving equity or convertible debt securities, future at the market offerings of common stock, or issuance under current or future employee equity plans, and the issuance of equity securities in connection with such transactions may result in potentially significant dilution of our current stockholders’ ownership interests in us.

Treatment of Fractional Shares

Stockholders will not receive fractional post-reverse stock split shares in connection with the reverse stock split. Instead, we will pay to each registered stockholder, in cash, the value of any fractional share interest in our common stock arising from the reverse stock split. Those registered stockholders who hold their shares in certificate form will receive a cash payment for their fractional interest, if applicable, following the surrender of their pre-reverse stock split stock certificates for post-reverse stock split shares. The cash payment would equal the fraction to which the stockholder would otherwise be entitled multiplied by the closing sales price of the common stock as reported on the NYSE (or other market on which our common stock is listed), as of the effective date of the reverse stock split. This cash payment may be subject to applicable U.S. federal, state and local income tax.

No transaction costs will be assessed on stockholders for the cash payment. Stockholders will not be entitled to receive interest for the period of time between the effective date of the reverse stock split and the date payment is made for their fractional share interest in our common stock. You should also be aware that, under the escheat laws of certain jurisdictions, sums due for fractional interests that are not timely claimed after the funds are made available may be required to be paid to the designated agent for each such jurisdiction. Thereafter, stockholders otherwise entitled to receive such funds may have to obtain the funds directly from the state to which they were paid.

If you believe that you may not hold sufficient shares of our common stock at the effective date of the reverse stock split to receive at least one share in the reverse stock split and you want to continue to hold our common stock after the split, you may do so by either:

- purchasing a sufficient number of shares of our common stock;
or
- if you have shares of common stock in more than one account, consolidating your accounts, so that in each case you hold a number of shares of our common stock in each of your accounts prior to the reverse stock split that would entitle you to receive at least one share of our common stock on a post-reverse stock split basis. Common stock held in registered form (that is, shares held by you in your own name on our share register maintained by its transfer agent) and common stock held in “street name” (that is, shares held by you through a bank, broker or other nominee) for the same investor would be considered held in separate accounts and would not be aggregated when implementing the reverse stock split. Also, shares of common stock held in registered form but in separate accounts by the same investor would not be aggregated when implementing the reverse stock split.

After the reverse stock split, then-current stockholders would have no further interest in us with respect to their fractional shares. A person otherwise entitled to a fractional share interest would not have any voting, dividend or other rights in respect of his or her fractional interest except to receive the cash payment as described above. Such cash payments would reduce the number of post-split stockholders to the extent that there are stockholders holding fewer than that number of pre-split shares within the exchange ratio that is determined by the Board as described above. Reducing the number of post-split stockholders, however, is not the purpose of this proposal or the reverse stock split.

Effect on Beneficial Stockholders

Stockholders holding our common stock through a bank, broker or other nominee should note that such banks, brokers or other nominees may have different procedures for processing the reverse stock split than those that would be put in place by us for registered stockholders that hold such shares directly, and their procedures may result, for example, in differences in the precise cash amounts being paid by such nominees in lieu of a fractional share. If you hold your shares with such a bank, broker or other nominee and if you have questions in this regard, you are encouraged to contact your bank, broker or nominee.

Effect on Registered Certificated Shares

Some registered stockholders may hold their shares of common stock in certificate form or a combination of certificate and book-entry form. If any of your shares of our common stock are held in certificate form, you will receive a letter of transmittal from our transfer agent as soon as practicable after the effective date of the reverse stock split. The letter of transmittal will contain instructions on how to surrender your certificate(s) representing your presplit shares to the transfer agent. Upon receipt of your properly completed and executed letter of transmittal and your stock certificate(s), you will be issued the appropriate number of shares either in certificate form or electronically in book-entry form under the direct registration system. If you are entitled to a payment in lieu of any fractional share interest, payment will be made as described above under “Treatment of Fractional Shares.” No new stock certificates or payments in lieu of fractional shares will be issued to a stockholder until such stockholder has surrendered such stockholder’s outstanding certificate(s) together with the properly completed and executed letter of transmittal to the transfer agent.

Beginning on the effective date of the reverse stock split, each certificate representing pre-reverse stock split shares will be deemed for all corporate purposes to evidence ownership of post-reverse stock split shares.

STOCKHOLDERS SHOULD NOT DESTROY ANY PRE-SPLIT STOCK CERTIFICATES AND SHOULD NOT SUBMIT ANY CERTIFICATES UNTIL THEY ARE REQUESTED TO DO SO.

Effect on Registered Book-Entry Holders

Our registered stockholders may hold some or all of their shares electronically in book-entry form under the direct registration system for securities. These stockholders will not have stock certificates evidencing their ownership of our common stock. They are, however, provided with a statement reflecting the number of shares registered in their accounts.

- If you hold shares in a book-entry form, you do not need to take any action to receive your post-split shares or your cash payment in lieu of any fractional share interest, if applicable. If you are entitled to post-split shares, a transaction statement will automatically be sent to your address of record indicating the number of shares you hold.
- If you are entitled to a payment in lieu of any fractional share interest, a check will be mailed to you at your registered address as soon as practicable after our transfer agent completes the aggregation and sale described above in “Treatment of Fractional Shares.” By signing and cashing this check, you will warrant that you owned the shares for which you receive a cash payment.

Procedure for Effecting the Reverse Stock Split

If our stockholders approve this proposal, and the Board elects to effect the reverse stock split, we will affect the reverse stock split by filing the Reverse Split Amendment with the Secretary of State of the State of Delaware. The reverse stock split will become effective, and the combination of, and reduction in, the number of our outstanding shares as a result of the reverse stock split will occur automatically, at the effective time set forth in the Reverse Split Amendment, without any action on the part of our stockholders and without regard to the date that stock certificates representing any certificated shares prior to the reverse stock split are physically surrendered for new stock certificates. Beginning at the effective time of the reverse stock split, each certificate representing pre-reverse stock split shares will be deemed for all corporate purposes to evidence ownership of post-reverse stock split shares. The text of the Reverse Split Amendment is subject to modification to include such changes as may be required by the office of the Secretary of State of the State of Delaware and as the Board deems necessary and advisable to effect the reverse stock split.

The Board reserves the right, notwithstanding stockholder approval and without further action by the stockholders, to elect not to proceed with the reverse stock split if, at any time prior to filing the Reverse Split Amendment, the Board, in its sole discretion, determines that it is no longer in the best interests of us and our stockholders to proceed with the reverse stock split. By voting in favor of the reverse stock split, you are expressly also authorizing the Board to delay (until January 26, 2022) or abandon the reverse stock split. If the Reverse Split Amendment has not been filed with the Secretary of State of the State of Delaware by the close of business on January 26, 2022, the Board will abandon the reverse stock split.

Material U.S. Federal Income Tax Consequences of the Reverse Stock Split

The following is a summary of important U.S. federal income tax considerations of the reverse stock split. This discussion is based upon the provisions of the U.S. Internal Revenue Code of 1986, as amended (the “Code”), the Treasury regulations promulgated under the Code, and U.S. administrative rulings and court decisions, all as in effect on the date hereof and all of which are subject to change, possibly with retroactive effect, and differing interpretations. Changes in these authorities may cause the U.S. federal income tax consequences of the reverse stock split to vary substantially from the consequences summarized below.

This discussion only addresses stockholders who hold our common stock as capital assets. It does not purport to be complete and does not address stockholders subject to special rules, such as financial institutions, tax-exempt organizations, insurance companies, dealers in securities, foreign stockholders, stockholders who hold their pre-reverse stock split shares as part of a straddle, hedge or conversion transaction, and stockholders who acquired their pre-reverse stock split shares pursuant to the exercise of employee stock options or otherwise as compensation. It does not address tax considerations under state, local, foreign and other laws. The tax treatment of a stockholder may vary depending upon the particular facts and circumstances of such stockholder. Each stockholder is urged to consult with such stockholder’s own tax advisor with respect to the individual federal, state, local and foreign tax consequences of the reverse stock split to him, her or it.

The reverse stock split is intended to constitute a reorganization within the meaning of Section 368(a)(1)(E) of the Code. Assuming the reverse stock split qualifies as reorganization, a stockholder generally will not recognize gain or loss on the reverse stock split, except to the extent of cash, if any, received in lieu of a fractional share interest. The aggregate tax basis of the post-reverse stock split shares received will be equal to the aggregate tax basis of the pre-reverse stock split shares exchanged therefor (excluding any portion of the holder's basis allocated to fractional shares), and the holding period of the post-reverse stock split shares received will include the holding period of the pre-reverse stock split shares exchanged.

A holder of the pre-reverse stock split shares who receives cash will generally be treated as having exchanged a fractional share interest for cash in a redemption by us. The amount of any gain or loss will be equal to the difference between the portion of the tax basis of the pre-reverse stock split shares allocated to the fractional share interest and the cash received and generally should be capital gain or loss and generally would be a long-term gain or loss to the extent that the holder's holding period exceeds 12 months.

The foregoing views are not binding on the Internal Revenue Service ("IRS") or the courts. The Company has not sought and will not seek an opinion of ruling from the IRS regarding the federal income tax consequences of the reverse stock split. This discussion should not be considered as tax or investment advice, and the tax consequences of the reverse stock split may not be the same for all stockholders. Accordingly, each stockholder should consult with his or her own tax advisor with respect to all of the potential tax consequences to him, her or it of the reverse stock split.

Accounting Matters

The par value per share of our common stock will remain unchanged at \$0.0001 per share after the reverse stock split. As a result, our stated capital, which consists of the par value per share of our common stock multiplied by the aggregate number of shares of our common stock issued and outstanding, will be reduced proportionately at the effective time of the reverse stock split. Correspondingly, our additional paid-in capital, which consists of the difference between our stated capital and the aggregate amount paid to us upon the issuance of all currently outstanding shares of our common stock, will be increased by a number equal to the decrease in stated capital. Further, net loss per share, book value per share and other per share amounts will be increased as a result of the reverse stock split because there will be fewer shares of our common stock outstanding.

No Appraisal Rights

Our stockholders are not entitled to appraisal rights under Delaware law or our Certificate of Incorporation with respect to the Reverse Split Amendment, and we will not independently provide our stockholders with any such right.

Required Vote

Approval of the Reverse Stock Split Proposal requires the affirmative vote of a majority of our issued and outstanding shares of common stock entitled to vote. There will be no broker non-votes with respect to this proposal. Abstentions will have the effect of a vote "AGAINST" this proposal.

Recommendation of the Board

The Board recommends stockholders vote **"FOR"** the Reverse Stock Split Proposal.

**PROPOSAL 2:
ADJOURNMENT PROPOSAL**

Our stockholders are being asked to consider and vote upon an adjournment of the Special Meeting, if necessary, if a quorum is present, to solicit additional proxies if there are insufficient votes in favor of approval of the Reverse Stock Split Proposal.

Required Vote

Approval of the Adjournment Proposal requires the affirmative vote of the holders of the majority of shares of common stock present in person, by remote communication, if applicable, or represented by proxy at the meeting and entitled to vote. There will be no broker non-votes with respect to this proposal. Abstentions will have the same effect as a vote against the proposal.

Recommendation of the Board

The Board recommends that the stockholders vote **“FOR”** the Adjournment Proposal.

SECURITY OWNERSHIP OF CERTAIN BENEFICIAL OWNERS AND MANAGEMENT

The following table sets forth the number of shares of common stock beneficially owned as of December 15, 2020 by:

- each of our stockholders who is known by us to beneficially own 5% or more of our common stock;
- each of our named executive officers;
- each of our directors; and
- all of our directors and current executive officers as a group.

Beneficial ownership is determined based on the rules and regulations of the SEC. A person has beneficial ownership of shares if such individual has the power to vote and/or dispose of shares. This power may be sole or shared and direct or indirect. Applicable percentage ownership in the following table is based on 199,641,758 shares outstanding as of December 15, 2020. In computing the number of shares beneficially owned by a person and the percentage ownership of that person, shares of common stock that are subject to options or warrants held by that person and exercisable as of, or within 60 days of, December 15, 2020 are counted as outstanding. These shares, however, are not counted as outstanding for the purposes of computing the percentage ownership of any other person(s). Except as may be indicated in the footnotes to this table and pursuant to applicable community property laws, each person named in the table has sole voting and dispositive power with respect to the shares of common stock set forth opposite that person's name. Unless indicated below, the address of each individual listed below is c/o Matinas BioPharma Holdings, Inc., 1545 Route 206 South, Suite 302, Bedminster, NJ 07921.

Name of Beneficial Owner	Number of Shares Beneficially Owned	Percentage of Shares Beneficially Owned
5% Stockholders		
Boxer Capital, LLC ⁽¹⁾	11,478,634	5.7%
Vivo Capital, LLC ⁽²⁾	11,279,323	5.6%
Directors and Executive Officers		
Jerome D. Jabbour ⁽³⁾	2,820,992	1.4%
Herbert Conrad ⁽⁴⁾	5,722,642	2.8%
Eric Ende ⁽⁵⁾	944,035	* 0%
Natasha Giordano ⁽⁶⁾	47,987	* %
Patrick LePore ⁽⁷⁾	801,515	* %
James Scibetta ⁽⁸⁾	1,512,401	* %
Matthew Wikler ⁽⁹⁾	868,123	* %
James J. Ferguson ⁽¹⁰⁾	303,126	* %
Keith A. Kucinski ⁽¹¹⁾	457,001	* %
Hui Liu ⁽¹²⁾	0	* %
Raphael Mannino ⁽¹³⁾	2,189,775	1.1*
Theresa Matkovits ⁽¹⁴⁾	466,667	* %
Directors and Executive Officers as a group (12 persons) ⁽¹⁵⁾	16,134,264	7.8%

* Less than 1%

(1) Based solely on information contained in a Schedule 13F filed on November 17, 2020. The address for the reporting person is 11682 El Camino Real, Suite 320, San Diego, CA 92130.

(2) Based solely on information contained in a Schedule 13F filed on November 13, 2020. The address for the reporting person is 192 Lytton Avenue, Palo Alto, CA 94301.

(3) Includes (i) 15 convertible preferred shares convertible into 30,000 shares of common stock, and (ii) 2,366,668 shares of common stock issuable upon exercise of options that are exercisable within sixty days of December 15, 2020. Does not include 1,895,832 shares of common stock underlying options that are not exercisable within sixty days of December 15, 2020.

(4) Includes (i) 100 convertible preferred shares convertible into 200,000 shares of common stock, and (ii) 1,068,076 shares of common stock issuable upon exercise of options that are exercisable within sixty days of December 15, 2020. Does not include 81,736 shares of common stock underlying options that are not exercisable within sixty days of December 15, 2020.

(5) Includes (i) 12 convertible preferred shares convertible into 24,000 shares of common stock, and (ii) 804,743 shares of common stock issuable upon exercise of options that are exercisable within sixty days of December 15, 2020. Does not include 81,736 shares of common stock underlying options that are not exercisable within sixty days of December 15, 2020.

- (6) Includes 47,987 shares of common stock issuable upon exercise of options that are exercisable within sixty days of December 15, 2020. Does not include 239,930 shares of common stock underlying options that are not exercisable within sixty days of December 15, 2020.
- (7) Includes 401,515 shares of common stock issuable upon exercise of options that are exercisable within sixty days of December 15, 2020. Does not include 106,735 shares of common stock underlying options that are not exercisable within sixty days of December 15, 2020.
- (8) Includes (i) 12 convertible preferred shares convertible to 24,000 shares of common stock, and (ii) 867,243 shares of common stock issuable upon exercise of options that are exercisable within sixty days of December 15, 2020. Does not include 81,736 shares of common stock underlying options that are not exercisable within sixty days of December 15, 2020.
- (9) Includes (i) 6 convertible preferred shares convertible into 12,000 shares of common stock, and (ii) 623,493 shares of common stock issuable upon exercise of options that are exercisable within sixty days of December 15, 2020. Does not include 112,986 shares of common stock underlying options that are not exercisable within sixty days of December 15, 2020.
- (10) Includes 303,126 shares of common stock issuable upon exercise of options that are exercisable within sixty days of December 15, 2020. Does not include 796,874 shares of common stock underlying options that are not exercisable within sixty days of December 15, 2020.
- (11) Includes 362,501 shares of common stock issuable upon exercise of options that are exercisable within sixty days of December 15, 2020. Does not include 687,499 shares of common stock underlying options that are not exercisable within sixty days of December 15, 2020.
- (12) Does not include 350,000 shares of common stock underlying options that are not exercisable within sixty days of December 15, 2020.
- (13) Includes (i) 10 convertible preferred shares that are convertible into 20,000 shares of common stock, and (ii) 740,210 shares of common stock issuable upon exercise of options that are exercisable within sixty days of December 15, 2020. Does not include 244,790 shares of common stock underlying options that are not exercisable within sixty days of December 15, 2020.
- (14) Includes 466,667 shares of common stock issuable upon exercise of options that are exercisable within sixty days of December 15, 2020. Does not include 758,333 shares of common stock underlying options that are not exercisable within sixty days of December 15, 2020.
- (15) See notes (3) through (14).

STOCKHOLDER PROPOSALS FOR 2021 ANNUAL MEETING

Our by-laws state that a stockholder must provide timely written notice of a proposal to be brought before the meeting and supporting documentation as well as be present at such meeting, either in person or by a representative. Any stockholder proposals submitted for inclusion in our proxy statement and form of proxy for our 2021 Annual Meeting of Stockholders must be timely received at our principal executive office no later than August 2, 2021 no earlier than July 3, 2021 in order to be considered for inclusion in our proxy statement and form of proxy; provided, however, that in the event the Annual Meeting is scheduled to be held on a date more than thirty (30) days before the anniversary date of the immediately preceding Annual Meeting of Stockholders (the "Anniversary Date") or more than sixty (60) days after the Anniversary Date, a stockholder's notice shall be timely if received at our principal executive office not later than the close of business on the later of (i) the ninetieth (90th) day prior to the scheduled date of such Annual Meeting; and (ii) the tenth (10th) day following the day on which such public announcement of the date of such Annual Meeting is first made by us. Such proposals must also comply with the requirements as to form and substance established by the SEC if such proposals are to be included in the proxy statement and form of proxy. Proxies solicited by our Board will confer discretionary voting authority with respect to these proposals, subject to the SEC's rules and regulations governing the exercise of this authority. Any such proposal shall be mailed to: Matinas BioPharma Holdings, Inc., 1545 Route 206 South, Suite 302, Bedminster, New Jersey 07921, Attn.: Corporate Secretary.

HOUSEHOLDING OF SPECIAL MEETING MATERIALS

Some banks, brokers and other nominee record holders may be participating in the practice of "householding" proxy statements. This means that only one copy of this Proxy Statement may have been sent to multiple stockholders in the same household. We will promptly deliver a separate copy of this Proxy Statement to any stockholder upon written or oral request to: Matinas BioPharma Holdings, Inc., 1545 Route 206 South, Suite 302, Bedminster, New Jersey 07921, Attn.: Secretary, or by phone at (908) 443-1860. Any stockholder who wants to receive a separate copy of this Proxy Statement, or of our proxy statements or annual reports in the future, or any stockholder who is receiving multiple copies and would like to receive only one copy per household, should contact the stockholder's bank, broker, or other nominee record holder, or the stockholder may contact us at the address and phone number above.

OTHER MATTERS

As of the date of this proxy statement, the Board does not intend to present at the Special Meeting of Stockholders any matters other than those described herein and does not presently know of any matters that will be presented by other parties. If any other matter requiring a vote of the stockholders should come before the meeting, it is the intention of the persons named in the proxy to vote with respect to any such matter in accordance with the recommendation of the Board or, in the absence of such a recommendation, in accordance with the best judgment of the proxy holder.

By Order of the Board of Directors

/s/ Jerome D. Jabbour

Jerome D. Jabbour,
Chief Executive Officer

December 17, 2020
Bedminster, New Jersey

**CERTIFICATE OF AMENDMENT
OF
CERTIFICATE OF INCORPORATION
OF
MATINAS BIOPHARMA HOLDINGS, INC.**

Pursuant to Section 242 of the General Corporation Law of the State of Delaware, Matinas BioPharma Holdings, Inc., a corporation organized and existing under the laws of the State of Delaware (the “**Corporation**”), does hereby certify as follows:

1. The name of the Corporation is Matinas BioPharma Holdings, Inc. The Corporation was incorporated by the filing of its original Certificate of Incorporation with the Secretary of State of the State of Delaware on May 21, 2013, which was amended by a certificate of amendment filed with the Secretary of State of the State of Delaware on October 29, 2015 (as so amended, the “**Certificate of Incorporation**”).

2. The Certificate of Incorporation of the Corporation is hereby amended to increase the authorized shares of the Corporation’s common stock by deleting the first paragraph under Section A of Article V, and replacing such paragraph with the following:

“The total number of shares of capital stock which the Corporation shall have authority to issue is Five Hundred Ten Million (510,000,000), of which (i) Five Hundred Million (500,000,000) shares shall be a class designated as common stock, par value \$0.0001 per share (the “Common Stock”), and (ii) Ten Million Shares (10,000,000) shares shall be a class designated as preferred stock, par value \$0.0001 per share (the “Preferred Stock”). Upon the filing and effectiveness (the “**Effective Time**”) pursuant to the DGCL of this Certificate of Amendment to the Certificate of Incorporation, each [•] shares of the Corporation’s Common Stock issued and outstanding immediately prior to the Effective Time shall, automatically and without any action on the part of the Corporation or respective holders thereof, be combined and converted into one (1) validly issued, fully paid and non-assessable share of Common Stock (the “**Reverse Split**”); provided, however, that the Corporation shall issue no fractional shares as a result of the actions set forth herein but shall instead pay to the holder of such fractional share a sum in cash equal to such fraction multiplied by the closing sales price of the Common Stock as reported on The Nasdaq Capital Market on the last trading day before the Effective Time (as adjusted to give effect to the Reverse Split).”

3. The Board of Directors of the Corporation has duly adopted a resolution pursuant to Section 242 of the General Corporation Law of the State of Delaware setting forth a proposed amendment to the Certificate of Incorporation of the Corporation and declaring said amendment to be advisable. The requisite stockholders of the Corporation have duly approved said proposed amendment in accordance with Section 242 of the General Corporation Law of the State of Delaware.

4. This Certificate of Amendment and the amendment to the Certificate of Incorporation effected hereby shall be effective immediately upon filing.

[Signature Page Follows]

IN WITNESS WHEREOF, the Corporation has caused this Certificate of Amendment to be signed by its Chief Executive Officer on this __ day of _____, 20__.

MATINAS BIOPHARMA HOLDINGS, INC.

By: _____

Name: Jerome D. Jabbour

Title: Chief Executive Officer

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MATINAS BIOPHARMA HOLDINGS, INC.
1545 ROUTE 206 SOUTH - SUITE 302
BEDMINSTER, NJ 07921

VOTE BY INTERNET

Before The Meeting - Go to www.proxyvote.com

Use the Internet to transmit your voting instructions and for electronic delivery of information up until 11:59 p.m. Eastern Time on January 25, 2021. Have your proxy card in hand when you access the web site and follow the instructions to obtain your records and to create an electronic voting instruction form.

During The Meeting - Go to www.virtualshareholdermeeting.com/MTNB2021

You may attend the meeting via the Internet and vote during the meeting. Have the information that is printed in the box marked by the arrow available and follow the instructions.

VOTE BY PHONE - 1-800-690-6903

Use any touch-tone telephone to transmit your voting instructions up until 11:59 p.m. Eastern Time on January 25, 2021. Have your proxy card in hand when you call and then follow the instructions.

VOTE BY MAIL

Mark, sign and date your proxy card and return it in the postage-paid envelope we have provided or return it to Vote Processing, c/o Broadridge, 51 Mercedes Way, Edgewood, NY 11717.

TO VOTE, MARK BLOCKS BELOW IN BLUE OR BLACK INK AS FOLLOWS:

D27959-S13731

KEEP THIS PORTION FOR YOUR RECORDS
DETACH AND RETURN THIS PORTION ONLY

THIS PROXY CARD IS VALID ONLY WHEN SIGNED AND DATED.

MATINAS BIOPHARMA HOLDINGS, INC.

The Board of Directors recommends that you vote FOR the following proposals:

- | | For | Against | Abstain |
|---|--------------------------|--------------------------|--------------------------|
| 1. To approve an amendment to the Company's Certificate of Incorporation to effect a reverse stock split of the Company's common stock at a ratio in the range of 1-for-2 to 1-for-15, with such reverse stock split to be effected at such ratio, time and date, if at all, as determined by the Company's Board of Directors. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2. To approve the adjournment of the Special Meeting, if necessary, if a quorum is present, to solicit additional proxies if there are insufficient votes in favor of approval of Proposal 1. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

Please sign exactly as your name(s) appear(s) hereon. When signing as attorney, executor, administrator, or other fiduciary, please give full title as such. Joint owners should each sign personally. All holders must sign. If a corporation or partnership, please sign in full corporate or partnership name by authorized officer.

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Signature [PLEASE SIGN WITHIN BOX]

Date

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Signature (Joint Owners)

Date

Important Notice Regarding the Availability of Proxy Materials for the Special Meeting:
The Proxy Statement is available at www.proxyvote.com.

D27960-S13731

MATINAS BIOPHARMA HOLDINGS, INC.
Special Meeting of Stockholders
January 26, 2021 9:00 AM
This proxy is solicited by the Board of Directors

The stockholder hereby appoints Jerome D. Jabbour and Keith Kucinski, or either of them, as proxies, each with the power to appoint their substitute, and hereby authorizes them to represent and to vote, as designated on the reverse side of this ballot, all of the shares of stock of Matinas BioPharma Holdings, Inc. that the stockholder is entitled to vote at the Special Meeting of Stockholders to be held at 9:00 AM, EST on January 26, 2021, via the internet at www.virtualshareholdermeeting.com/MTNB2021, and any adjournment or postponement thereof.

This proxy, when properly executed, will be voted in the manner directed herein. If no such direction is made, this proxy will be voted in accordance with the Board of Directors' recommendations.

Continued and to be signed on reverse side