
**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):
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- (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 ANNUAL MEETING OF STOCKHOLDERS

To be held on October 25, 2017

To the Stockholders of
Matinas BioPharma Holdings, Inc.

NOTICE IS HEREBY GIVEN that the Annual Meeting of Stockholders of Matinas BioPharma Holdings, Inc. (the “Company”) will be held at the offices of Lowenstein Sandler LLP, located at One Lowenstein Drive, Roseland, NJ 07068, on October 25, 2017, beginning at 9 a.m. local time. At the Annual Meeting, stockholders will act on the following matters:

- To elect six directors to serve until the next Annual Meeting of Stockholders and until their respective successors shall have been duly elected and qualified;
- To ratify the appointment of EisnerAmper LLP as our independent registered public accounting firm for the year ending December 31, 2017; and
- To consider any other matters that may properly come before the Annual Meeting.

Only stockholders of record at the close of business on September 7, 2017 are entitled to receive notice of and to vote at the Annual Meeting or any postponement or adjournment thereof.

Your vote is important. Whether you plan to attend the meeting 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 and prefer to vote in person, 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/ Roelof Rongen
Roelof Rongen,
Chief Executive Officer

September 15, 2017
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 the Annual Meeting of Stockholders to be held on October 25, 2017 at 9 a.m. local time, at the offices of Lowenstein Sandler LLP, located at One Lowenstein Drive, Roseland, NJ 07068, or at such other time and place to which the Annual 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 Annual Meeting are being mailed to stockholders entitled to vote at the meeting on or about September 15, 2017.

Important Notice of Availability of Proxy Materials for the Annual Meeting of Stockholders to be held on October 25, 2017.

Our proxy materials including our Proxy Statement for the 2017 Annual Meeting, our Annual report for the fiscal year ended December 31, 2016 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 Annual Meeting?

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

- To elect six directors to serve until the next Annual Meeting of Stockholders and until their respective successors shall have been duly elected and qualified;
- To ratify the appointment of EisnerAmper LLP as our independent registered public accounting firm for the year ending December 31, 2017; and
- To consider any other matters that may properly come before the Annual Meeting.

What are the Board's recommendations?

Our Board believes that the election of the director nominees identified herein and the appointment of EisnerAmper LLP as our independent registered public accounting firm for the year ending December 31, 2017 is advisable and in the best interests of the Company and its stockholders and recommends that you vote FOR these proposals.

Who is entitled to vote at the meeting?

Only stockholders of record at the close of business on the record date, September 7, 2017, are entitled to receive notice of the Annual 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 92,601,330 outstanding shares of common stock.

Who can attend the meeting?

All stockholders as of the record date, or their duly appointed proxies, may attend the Annual Meeting. Please note that if you hold your shares in "street name" (that is, through a broker or other nominee), you will need to bring a copy of your proxy card delivered to you by your broker or a legal proxy given to you by your broker and check in at the registration desk at the meeting.

If you are a stockholder of record and plan to attend the Annual Meeting, please contact the Corporate Secretary by email at corporatesecretary@matinasbiopharma.com or by phone at (908) 443-1860 to register to attend the Annual Meeting. If you hold shares through an intermediary, such as a bank or broker, and you plan to attend, you must send a written request to attend either by regular mail or email, along with proof of share ownership, such as a bank or brokerage firm account statement, confirming ownership to: Matinas BioPharma Holdings, Inc., 1545 Route 206 South, Suite 302, Bedminster NJ 07921, Attn: Corporate Secretary or corporatesecretary@matinasbiopharma.com. Please plan to arrive at the meeting location within a reasonable period of time before the start of the Annual Meeting.

What constitutes a quorum?

The presence at the Annual Meeting, in person 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 Annual 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, attend the Annual Meeting and prefer to vote in person, 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 Annual 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 the Secretary of the Company a notice of revocation;
- sending in another duly executed proxy by telephone, internet or mail bearing a later date; or
- attending the meeting and casting your vote in person.

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 in person at the Annual 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 Annual Meeting. However, because you are not the stockholder of record, you may not vote these shares in person at the Annual 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 common stock outstanding on the record date must be present, in person or by proxy, at the Annual 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 election of directors (Proposal No. 1), the six nominees receiving the highest number of FOR votes (from the holders of shares present in person or represented by proxy) will be elected as directors.
- With respect to the ratification of the appointment of EisnerAmper LLP as our independent registered public accounting firm (Proposal No. 2), approval will require the affirmative vote of a majority of the votes cast in person or by proxy at the Annual Meeting.
- With respect to the approval of any other matter that may properly come before the Annual Meeting, approval will require the affirmative vote of a majority of the votes cast in person or by proxy at the Annual Meeting.

Holders of the 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", such as the ratification of auditors. Nominees cannot vote on non-routine matters unless they receive voting instructions from beneficial holders, resulting in so-called "broker non-votes."

The election of directors (Proposal No. 1) is not considered to be a "routine" matter and brokers are not permitted to vote on this matter if the broker has not received instructions from the beneficial owner. Accordingly, it is particularly important that beneficial owners instruct their brokers how they wish to vote their shares. The ratification of our independent registered public accounting firm (Proposal No. 2) is considered to be a "routine" matter, and hence your brokerage firm will be able to vote on Proposals No. 2 even if it does not receive instructions from you, so long as it holds your shares in its name.

How are we soliciting this proxy?

We are soliciting this proxy on behalf of our Board by mail and will pay all expenses associated therewith. 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.

PROPOSAL 1: ELECTION OF DIRECTORS

At the Annual Meeting, six directors are to be elected. All directors of the Company will hold office until the next Annual Meeting of Stockholders or until their respective successors are duly elected and qualified or their earlier resignation or removal.

It is the intention of the persons named in the proxies for the holders of common stock to vote the proxies for the election of the nominees named below, unless otherwise specified in any particular proxy. Our management does not contemplate that the nominees will become unavailable for any reason, but if that should occur before the meeting, proxies will be voted for another nominee, or other nominees, to be selected by our Board of Directors. In accordance with our by-laws and Delaware law, a stockholder entitled to vote for the election of directors may withhold authority to vote for certain nominees for directors or may withhold authority to vote for all nominees for directors. The director nominees receiving a plurality of the votes of the holders of shares of common stock present in person or by proxy at the meeting and entitled to vote on the election of directors will be elected directors. Broker non-votes will not be treated as a vote for or against any particular director nominee and will not affect the outcome of the election. Stockholders may not vote, or submit a proxy, for a greater number of nominees than the six nominees named below.

Director Nominees

The following table sets forth the name, age, position and tenure of each of our current directors each of whom are up for re-election at the 2017 Annual Meeting:

| Name | Age | Position(s) | Served as an Officer or Director Since |
|-----------------|-----|--------------------------------------|--|
| Herbert Conrad | 84 | Chairman of the Board | 2013 |
| Roelof Rongen | 52 | Chief Executive Officer and Director | 2013 |
| Eric Ende | 48 | Director | 2017 |
| Stefano Ferrari | 56 | Director | 2013 |
| James Scibetta | 52 | Director | 2013 |
| Adam Stern | 53 | Director | 2013 |

The following biographical descriptions set forth certain information with respect to the director nominees, based on information furnished to the Company by each director nominee.

Herbert Conrad has served as our Chairman of the Board since July 2013 and as Chairman of the Board of Matinas BioPharma since October 2012. He also serves on the board of directors of Celldex Therapeutics, Inc. (NASDAQ: CLDX), Arbutus Biopharma Corporation (NASDAQ: ABUS) and as an Advisor to the Seaver Autism Center at Mount Sinai Hospital. Mr. Conrad was the President of the U.S. Pharmaceuticals Division of Hoffmann-La Roche, Inc. from 1982 until his retirement in 1993. Prior to that, he held many positions of increasing responsibility at Roche Pharmaceuticals in the United States. Mr. Conrad previously served on the board of directors of Pharmasset, Inc. (chairman), Savient Pharmaceuticals, Inc., (NASDAQ: SVNT) Dura Pharmaceuticals, Inc., UroCor, Inc., GenVec, Inc. (NASDAQ: GNVC) (chairman), Sicor, Inc., Bone Care International, Inc. (chairman), Sapphire Therapeutics, Inc. (chairman), the medical advisory board of Henry Schein Inc. (NASDAQ: HSIC), and he was a Director and Co-Founder of Reliant. Pharmasset was acquired by Gilead Sciences, Inc. for \$11 billion in 2011. He received B.S. and M.S. degrees from the Brooklyn College of Pharmacy and an honorary Doctorate in Humane Letters from Long Island University. We believe Mr. Conrad is qualified to serve on our board of directors due to his extensive expertise and experience in the life sciences industry and his extensive board experience.

Roelof Rongen See description under "Management."

Eric Ende has served on our board of directors since April 2017. Dr. Ende is president of Ende BioMedical Consulting Group, a privately-held consulting company which is focused on helping life sciences companies raise capital, identify licensing partners, and optimize corporate structure as well as analyzing both private and public investment opportunities for clients within the life sciences industry, a position he has held since 2009. Dr. Ende serves as co-founder, chief executive and chief financial officer of WellFit Holdings, LLC, a private company focused on developing fitness technologies. In addition, Dr. Ende consulted with Icahn Enterprises in their efforts to appoint board members at Forest Labs, Genzyme, Biogen IDEC, and Amylin. Dr. Ende served on the board of directors and as a member of the audit and risk management committee of Genzyme Corp. (NASDAQ: GENZ) from 2010 until it was acquired by Sanofi (NSYE: SNY) in 2011. Dr. Ende is currently serving on the Technology Transfer Committee of Mount Sinai Innovation Partners and served as the Chairman of the Unsecured Creditor's Committee overseeing the bankruptcy of Egenix, Inc. From 2002 through 2008, Dr. Ende was the senior biotechnology analyst at Merrill Lynch. From 2000 through 2002, Dr. Ende was the senior biotechnology analyst at Banc of America Securities and, from 1997 to 2000, he was a biotechnology analyst at Lehman Brothers. Dr. Ende received an MBA in Finance & Accounting from NYU – Stern Business School in 1997, an MD from Mount Sinai School of Medicine in 1994, and a BS in Biology and Psychology from Emory University in 1990. We believe Dr. Ende is qualified to serve on our board of directors due to his industry experience, including as president of Ende BioMedical Consulting Group and as a biotechnology analyst, and his prior public company board experience.

Stefano Ferrari has served on our board of directors since July 2013 and as a director of Matinas BioPharma since October 2012. Mr. Ferrari is the CEO and a director of Prime Acquisition Corp., a private equity fund focusing on real estate and renewable energy, a position he has held since October 2013. He is also the founder and managing member of Chestnut Hill Sciences, LLC (2004), a human and animal health care company dedicated to the development of dietary supplements, including omega-3 based products. He is the founder of Murami Pharma, Inc. (“Murami”) and has served as its CEO since its inception in 2011. Murami is a biopharmaceutical development stage company focusing on small-peptide therapeutics. Prior to Murami, Mr. Ferrari was the CEO of Bioseutica B.V. (2008-2011), a multinational holding company comprising KD-Pharma, a leading manufacturer of omega-3-concentrates, and the leading lysozyme manufacturers Fordras and Neova Technologies, amongst others. Over the last 17 years, Mr. Ferrari was founder, common shareholder and senior executive of several multinational companies operating in the pharmaceutical, food and ingredients industries. Besides Bioseutica, these companies include Prospa B.V. (1995-2002), a multinational holding company in the pharmaceutical industry, Fordras S.A. (2002-2008), ProAparts Lda (2001-2012), and Societa Prodotti Antibiotici S.p.A., the Italian pharmaceutical company that developed and marketed polyene antifungal medications. Mr. Ferrari has served on several boards, including Ikonisys Inc., Carigent Therapeutics, Inc., The Richard B. Fisher Center for Performing Arts, and St. Simeon Lda, a private family fund. He has 25 years of experience in investing in diverse industries, including real estate, pharmaceuticals, and media and entertainment. Mr. Ferrari earned his B.A. degree in International Business Administration from the University of San Francisco. We believe Mr. Ferrari is qualified to serve on our board of directors due to his extensive expertise and experience in the development and marketing of polyene antifungal medications, his extensive contacts in the manufacturing industry related to omega-3 based products and also his M&A experience.

James S. Scibetta has served as a member of our board of directors since November 2013. Since July 2017, Mr. Scibetta has served as chief executive officer of Maverick Therapeutics, Inc., a privately-held, development stage immune-oncology company. From October 2015 through June 2017, Mr. Scibetta served as President and Chief Financial Officer of Pacira Pharmaceuticals, Inc. (NASDAQ: PCRX). Prior to that, Mr. Scibetta was the Chief Financial Officer of Pacira since 2008. Prior to joining Pacira in August 2008, he served as a consultant to Genzyme Corporation following the sale of Bioenvision Inc. (NASDAQ: BIVN) to Genzyme in 2007. From 2006 to 2007 Mr. Scibetta was CFO of Bioenvision. From 2001 to 2006, he was Executive Vice President and Chief Financial Officer of Merrimack Pharmaceuticals Inc. (NASDAQ: MACK). Mr. Scibetta has previously served on the board of directors at the following life sciences companies: Nephros Inc. (NASDAQ: NEPH), Merrimack Pharmaceuticals and Labopharm Inc. Prior to his executive management experience, Mr. Scibetta spent over a decade in investment banking where he was responsible for sourcing and executing transactions for a broad base of public and private healthcare and life sciences companies. He currently serves as a member of the board of directors and chairman of the audit committee of MonoSol Rx, Inc., a privately-held specialty pharmaceutical company. Mr. Scibetta received his Bachelor of Science in Physics from Wake Forest University and an MBA from the University of Michigan. We believe Mr. Scibetta is qualified to serve on our board of directors because of his extensive management experience in the pharmaceutical industry, his investment banking experience and his experience as a chief financial officer and audit committee member of several publicly traded companies.

Adam Stern has served as a member of our board of directors since July 2013. Mr. Stern has been the head Private Equity Banking at Aegis Capital Corp. and CEO of SternAegis Ventures since 2012 and became one of our directors in July 2013. Prior to Aegis, from 1997 to November 2012, he was with Spencer Trask Ventures, Inc., most recently as a Senior Managing Director, where he managed the structured finance group focusing primarily on the technology and life science sectors. Mr. Stern held increasingly responsible positions from 1989 to 1997 with Josephthal & Co., Inc., members of the New York Stock Exchange, where he served as Senior Vice President and Managing Director of Private Equity Marketing. He has been a FINRA licensed securities broker since 1987 and a General Securities Principal since 1991. Mr. Stern is a director of Dance Biopharm, Inc. Mr. Stern is a former director of InVivo Therapeutics Holdings Corp. (NASDAQ Global Market: NVIV), Organovo Holdings, Inc. (NASDAQ Global Market: ONVO), LabStyle Innovations Corporation (NASDAQ Capital Market: DRIO) and PROLOR Biotech Ltd., which was sold to Opko Health, Inc. (NASDAQ Global Select: OPK) for approximately \$600 million in 2013. Mr. Stern holds a Bachelor of Arts degree with honors from the University of South Florida in Tampa. We believe Mr. Stern is qualified to serve on our board of directors because of his extensive experience in corporate finance with special emphasis on the life science industries.

There are no family relationships among any of our directors or executive officers.

Vote Required

Directors will be elected by a plurality of the votes cast by the holders of our common stock voting in person or by proxy at the annual meeting. Abstentions and broker non-votes will each be counted as present for purposes of determining the presence of a quorum, but will have no effect on the vote for election of directors.

THE BOARD OF DIRECTORS RECOMMENDS THAT THE STOCKHOLDERS VOTE FOR THE ELECTION OF THE DIRECTOR NOMINEES.

Corporate Governance Matters

Board of Director Composition

Our board of directors currently consists of six members. We have no formal policy regarding board diversity. Our priority in selection of board members is identification of members who will further the interests of our stockholders through his or her established record of professional accomplishment, the ability to contribute positively to the collaborative culture among board members, knowledge of our business and understanding of the competitive landscape.

Board of Director Meetings

Our Board met twelve times in 2016. Each of the directors attended at least 75% of the aggregate of (i) the total number of meetings of our Board (held during the period for which such directors served on the Board) and (ii) the total number of meetings of all committees of our Board on which the director served (during the periods for which the director served on such committee or committees). The Company does not have a formal policy requiring members of the Board to attend our annual meetings. Roleof Rongen and Herbert Conrad attended the 2016 Annual Meeting of Stockholders.

Director Independence

Our common stock is listed on the NYSE MKT. Our board of directors undertook a review of its composition, the composition of its committees and the independence of each director. Based on information requested from and provided by each of our directors, our board of directors has determined that Messrs. Herbert Conrad, Eric Ende, Stefano Ferrari and James Scibetta are “independent directors” as such term is defined in the rules of The NYSE MKT’s corporate governance requirements and Rule 10A-3 promulgated under the Securities Exchange Act of 1934, as amended.

There are no family relationships among any of our directors or executive officers.

Board Committees

Our board of directors has three standing committees — an Audit Committee, a Compensation Committee and a Nominating and Corporate Governance Committee.

Audit Committee. The Audit Committee oversees and monitors our financial reporting process and internal control system, review and evaluate the audit performed by our registered independent public accountants and report to the Board any substantive issues found during the audit. The Audit Committee is directly responsible for the appointment, compensation and oversight of the work of our registered independent public accountants. The Audit Committee reviews and approves all transactions with affiliated parties. The Board adopted a written charter for the Audit Committee, which is available on our website. James Scibetta, Herbert Conrad, Eric Ende and Stefano Ferrari currently serve as members of the Audit Committee with James Scibetta, serving as its chairman. All of the members of the Audit Committee have been determined to be financially literate and are considered independent directors as defined under The NYSE MKT’S listing standards and applicable SEC rules and regulations. Mr. Scibetta qualifies as an audit committee “financial expert” as that term is defined by Commission regulations. The Audit Committee met four times during 2016. Our Board has adopted an Audit Committee Charter, which is available for viewing at www.matinasbiopharma.com.

Compensation Committee. The Compensation Committee provides advice and makes recommendations to the Board in the areas of employee salaries, benefit programs and director compensation. The Compensation Committee also reviews the compensation of our executive officers, including our chief executive officer, and makes recommendations in that regard to the Board as a whole. The Board adopted a written charter for the Compensation Committee, which is available on our website. Stefano Ferrari, Herbert Conrad, Eric Ende and James Scibetta currently serve as members of the Compensation Committee, with Stefano Ferrari serving as its chairman. All of the members of the Compensation Committee are considered independent directors as defined under The NYSE MKT’s listing standards. The Compensation Committee met four times during 2016. Our Board has adopted a Compensation Committee Charter, which is available for viewing at www.matinasbiopharma.com.

Nominating and Corporate Governance Committee. The Nominating and Corporate Governance Committee nominates individuals to be elected to the full Board by our stockholders. The Nominating and Corporate Governance Committee considers recommendations from stockholders if submitted in a timely manner in accordance with the procedures set forth in our Bylaws and applies the same criteria to all persons being considered. The Board adopted a written charter for the Nominating and Corporate Governance Committee, which is available on our website. Herbert Conrad, Eric Ende, Stefano Ferrari and James Scibetta currently serve as members of the Nominating and Corporate Governance Committee, with Herbert Conrad serving as its chairman. All of the members of the Nominating and Corporate Governance Committee are considered independent directors as defined under The NYSE MKT’s listing standards. The Nominating and Corporate Governance Committee met four times during 2016. Our Board has adopted a Nominating and Corporate Governance Charter, which is available for viewing at www.matinasbiopharma.com.

Stockholder nominations for directorships

Stockholders may recommend individuals to the Nominating and Corporate Governance Committee for consideration as potential director candidates by submitting their names and background to the Secretary of the Company at the address set forth below under “Stockholder Communications.” All such recommendations will be forwarded to the Nominating and Corporate Governance Committee, which will review and only consider such recommendations if appropriate biographical and other information is provided, as described below, on a timely basis. All security holder recommendations for director candidates must be received by the Company in the timeframe(s) set forth under the heading “Stockholder Proposals” below.

- the name and address of record of the security holder;
- a representation that the security holder is a record holder of the Company’s securities, or if the security holder is not a record holder, evidence of ownership in accordance with Rule 14a-8(b)(2) of the Securities Exchange Act of 1934;
- the name, age, business and residential address, educational background, current principal occupation or employment, and principal occupation or employment for the preceding five (5) full fiscal years of the proposed director candidate;
- a description of the qualifications and background of the proposed director candidate and a representation that the proposed director candidate meets applicable independence requirements;
- a description of any arrangements or understandings between the security holder and the proposed director candidate; and
- the consent of the proposed director candidate to be named in the proxy statement relating to the Company’s annual meeting of stockholders and to serve as a director if elected at such annual meeting.

Assuming that appropriate information is provided for candidates recommended by stockholders, the Nominating and Corporate Governance Committee will evaluate those candidates by following substantially the same process, and applying substantially the same criteria, as for candidates submitted by members of the Board or other persons, as described above and as set forth in its written charter.

Board Leadership Structure and Role in Risk Oversight

The positions of our chairman of the board and chief executive officer are separated. Separating these positions allows our chief executive officer to focus on our day-to-day business, while allowing the chairman of the board to lead the board of directors in its fundamental role of providing advice to and independent oversight of management. Our board of directors recognizes the time, effort and energy that the chief executive officer must devote to his position in the current business environment, as well as the commitment required to serve as our chairman, particularly as the board of directors’ oversight responsibilities continue to grow. Our board of directors also believes that this structure ensures a greater role for the independent directors in the oversight of our company and active participation of the independent directors in setting agendas and establishing priorities and procedures for the work of our board of directors. Our board of directors believes its administration of its risk oversight function has not affected its leadership structure.

Although our bylaws do not require our chairman and chief executive officer positions to be separate, our board of directors believes that having separate positions is the appropriate leadership structure for us at this time and demonstrates our commitment to good corporate governance.

Risk is inherent with every business, and how well a business manages risk can ultimately determine its success. Our board of directors is actively involved in oversight of risks that could affect us. This oversight is conducted primarily by our full board of directors, which has responsibility for general oversight of risks, and our standing board committees.

Our board of directors satisfies this responsibility through full reports by each committee chair regarding the committee’s considerations and actions, as well as through regular reports directly from officers responsible for oversight of particular risks within our company. Our board of directors believes that full and open communication between management and the board of directors is essential for effective risk management and oversight.

Stockholder Communications

The Board will give appropriate attention to written communications that are submitted by stockholders, and will respond if and as appropriate. Absent unusual circumstances or as contemplated by committee charters, and subject to advice from legal counsel, the Secretary of the Company is primarily responsible for monitoring communications from stockholders and for providing copies or summaries of such communications to the Board as he considers appropriate.

Communications from stockholders will be forwarded to all directors if they relate to important substantive matters or if they include suggestions or comments that the Secretary considers to be important for the Board to know. Communication relating to corporate governance and corporate strategy are more likely to be forwarded to the Board than communications regarding personal grievances, ordinary business matters, and matters as to which the Company tends to receive repetitive or duplicative communications.

Stockholders who wish to send communications to the Board should address such communications to: The Board of Directors, Matinas BioPharma Holdings, Inc., 1545 Route 206 South, Suite 302, Bedminster, NJ 07921, Attention: Secretary.

Code of Business Conduct and Ethics

We have adopted a written code of business conduct and ethics that applies to our directors, officers and employees, including our principal executive officer, principal financial and accounting officer, or persons performing similar functions. A copy of the code is posted on the corporate governance section of our website, which is located at www.matinasbiopharma.com. If we make any substantive amendments to, or grant waivers from, the code of business conduct and ethics for any officer or director, we will disclose the nature of such amendment or waiver on our website.

Executive Officers

The following table sets forth certain information regarding our current executive officers:

| Name | Age | Position(s) | Served as an Officer Since |
|--------------------------|------------|---|-----------------------------------|
| Roelof Rongen | 52 | Chief Executive Officer and Director | 2013 |
| Jerome Jabbour | 43 | President | 2013 |
| Dominick M. DiPaolo | 41 | Senior Vice President of Quality and Regulatory Compliance | 2017 |
| Abdel Fawzy, Ph.D | 66 | Executive Vice President, Pharmaceutical Development and Supply Chain | 2013 |
| Gary Gaglione, CPA | 65 | Vice President of Finance and Accounting and Acting Chief Financial Officer | 2013 |
| Douglas F. Kling | 44 | Senior Vice President for Clinical Development and Project Management | 2015 |
| Raphael J. Mannino, Ph.D | 70 | Senior Vice President, Chief Technology Officer | 2015 |

Our executive officers are elected by, and serve at the discretion of, our board of directors. The business experience for the past five years, and in some instances, for prior years, of each of our executive officers is as follows:

Roelof Rongen has served as our Chief Executive Officer and one of our directors since July 2013 and as President, Chief Executive Officer a co-founder and a director of Matinas BioPharma since April 2012. He was also the Founder and Chairman of Essential Fatty Acid Therapeutics LLC, a biotech company focused on the development of innovative fatty acid derivatives. Prior to Matinas BioPharma, Mr. Rongen was Executive Vice President North American Operations for Trygg Pharma AS (subsequently named EPAX AS) (2009-2012) and Vice President of Life Cycle Management and Intellectual Property at Reliant Pharmaceuticals, Inc., or Reliant (2000-2008). While at Reliant, Mr. Rongen held various earlier positions, including head of the Omacor®/Lovaza® launch team, Executive Director of Marketing for Lescol® and Executive Director of Business Development. Prior to Reliant, Mr. Rongen was also Global Product Director for Humira® at BASF Pharma (1998-2000), later acquired by Abbott Laboratories; a consultant at The Wilkerson Group in New York (1995-1998) and Arthur D. Little in Amsterdam (1990-1993), and a Research Fellow in biochemistry at Baylor University in Texas (1989-1990). Mr. Rongen earned an MBA from Kellogg GSM at Northwestern University in Evanston, Illinois, and a graduate degree in Molecular Sciences from Wageningen University in the Netherlands.

Jerome D. Jabbour, JD became our President during March 2016. Prior to that he served as our Executive Vice President, Chief Business Officer, General Counsel and Secretary since October 2013 and as one of our directors from April 2012 until November 2013. Mr. Jabbour is also a Co-founder of Matinas BioPharma. Prior to joining our management team, he was the Executive Vice President and General Counsel of MediMedia USA, or MediMedia, from 2012 to October 2013, a privately held diversified health care services company. Prior to MediMedia, he was the Senior Vice President, Head of Global Legal Affairs of Wockhardt Limited (2008-2012) and Senior Counsel and Assistant Secretary at Reliant (2004-2008). Earlier in his career, he held positions as Commercial Counsel at Alpharma, Inc. (2003-2004) and as a Corporate Associate at Lowenstein Sandler LLP (1999-2003). Mr. Jabbour earned his J.D. from Seton Hall University School of Law in New Jersey and a B.A. in Psychology from Loyola University in Baltimore.

Dominick M. DiPaolo has served as our Senior Vice President of Quality and Regulatory Compliance since April 18, 2017. Previously from October 2015 until April 2017, Mr. DiPaolo served as Senior Vice President of Quality, Compliance and Regulatory Affairs at Cyalume Technologies Holdings, Inc. (OTCQB: CYLU), a diversified pharmaceutical and medical device company. Prior to Cyalume, from August 2011 until July 2015, Mr. DiPaolo served as Senior Vice President, Quality, Compliance and Regulatory Affairs at Tris Pharma, a specialty pharmaceutical company of both branded and generic products. Prior to Tris Pharma, Mr. DiPaolo served as Vice President of Quality and Regulatory for G&W Laboratories, Inc., a niche pharmaceutical company. Earlier in his career, he held various senior quality positions at Barr Laboratories, Pfizer Inc., Novartis, Hoffmann-La Roche and Johnson & Johnson. Mr. DiPaolo is both a Certified Quality Engineer (“CQE”) as well as a Certified Quality Auditor (“CQA”) from the American Society for Quality. Mr. DiPaolo earned his B.S. in Biotechnology and Microbiology from Rutgers University in New Brunswick, New Jersey and completed his graduate course work in Microbiology at Seton Hall University in South Orange, New Jersey.

Abdel A. Fawzy, PhD has served as our Executive Vice President for Pharmaceutical and Supply Chain Development since July 2013 and as Executive Vice President for Pharmaceutical and Supply Chain Development of Matinas BioPharma since August 2011. Dr. Fawzy is a Co-Founder of Matinas BioPharma. Prior to Matinas BioPharma, Dr. Fawzy was a founder of expert consulting firm DeMelle BioPharma (2008-2012) and Executive Director Pharmaceutical Development at Reliant, from 2000 to 2008. Earlier in his career, Dr. Fawzy held pharmaceutical development positions at Ascent Pharmaceuticals, Inc. (1994-2000), DuPont (1990-1994) and Squibb Marsam Pharmaceuticals (1989-1990). He is the inventor on 15 published patents and patent applications all related to the health and pharmaceutical development and manufacturing processes. Dr. Fawzy received his Ph.D. in Pharmaceutical Technology from Tuebingen University in Germany, a Pharmacy degree from Temple University in Philadelphia, Pennsylvania, and a MS in Pharmaceutical Technology from the Cairo School of Pharmacy in Egypt.

Gary Gaglione, CPA has served as our Acting Chief Financial Officer, Vice President of Finance & Accounting since April 2013. Prior to joining us as a full time employee, Mr. Gaglione was President of MCM Consulting LLC from 2011 until October 2013. Prior to MCM Consulting, Mr. Gaglione was Senior Director of Finance at Shionogi USA, Inc. (2011). In 2009 and 2010, he was Vice President of Finance and Controller for Phytomedics, Inc. Prior to Phytomedics, he was Controller for ProStrakan Inc.’s U.S. operations. From 2001 to 2008, Mr. Gaglione was an Executive Director at Reliant, initially as head of Planning, Budgets and Analysis, then, from 2006 on, as head of Internal Audit and Sarbanes Oxley Compliance in preparation for a potential Reliant initial public offering. Before Reliant, he held numerous finance positions of increasing responsibility at the U.S. subsidiary of Hoffmann-La Roche Inc. (1976-2001), including Vice President of R&D Finance (1997-2001). He started his finance career at KPMG LLP (1974-1976). Mr. Gaglione earned a B.S. degree in Business Administration with a major in Accounting from Villanova University and an MBA in Finance from Seton Hall University.

Douglas F. Kling has served as our Senior Vice President for Clinical Development since March 12, 2015. Prior to Matinas, Mr. Kling held various positions at Omthera Pharmaceuticals, Inc. (acquired by AstraZeneca PLC in 2013) from August 2010 to December 2014, most recently as Senior Vice President of Clinical Development and Project Management. Prior to that, Mr. Kling served as Senior Director, Project Management at Shionogi USA Inc. (July 2009 to July 2010), as Senior Director, Program Management at The Medicines Company (April 2008 to July 2009) and in a variety of positions at Reliant (November 2000 to March 2008), most recently as Director, R&D Project Management. Mr. Kling earned his B.S. in biological sciences from Duke University and his M.B.A. from Rutgers Business School.

Raphael J. Mannino has served as our Senior Vice President and Chief Scientific Officer since September 2015. From 1990 until August 2015, Dr. Mannino was an Associate Professor of Pathology and Laboratory Medicine at Rutgers University, New Jersey Medical School. Dr. Mannino founded BioDelivery Sciences, Inc., and served as its President, Chief Executive Officer and Chief Scientific Officer and a member of its Board of Directors from 1995 to 2000, when it was acquired by BioDelivery Sciences International, Inc. (NASDAQ: BDSI). Dr. Mannino served as BDSI’s Executive Vice President and Chief Scientific Officer from 2001 to 2009 and a member of its Board of Directors from 2000 to 2007. Dr. Mannino’s previous experience includes positions as Assistant, then Associate Professor, Albany Medical College (1980 to 1990), and Instructor then Assistant Professor, Rutgers Medical School (1977 to 1980). His postdoctoral training was from 1973 to 1976 at the Biocenter in Basel, Switzerland. Dr. Mannino received his Ph.D. in Biological Chemistry in 1973 from the Johns Hopkins University, School of Medicine.

EXECUTIVE COMPENSATION

Summary Compensation Table – 2016

The following table presents information regarding the total compensation awarded to, earned by, or paid to our chief executive officer and the two most highly-compensated executive officers (other than the chief executive officer) who were serving as executive officers as of December 31, 2016 for services rendered in all capacities to us for the years ended December 31, 2016 and December 31, 2015. These individuals are our named executive officers for 2016.

| Name and Principal Position | Year | Salary (\$) | Bonus (\$) | Option Awards ⁽¹⁾ (\$) | All Other Compensation (\$) | Total (\$) |
|---|------|----------------|---------------|---|-----------------------------------|---------------|
| Roelof Rongen | 2016 | 283,750 | 160,000 | 116,250 | — | 560,000 |
| <i>Chief Executive Officer</i> | 2015 | 300,000 | 132,000 | 101,638 | — | 533,638 |
| Douglas F. Kling | 2016 | 236,458 | 100,000 | 62,000 | — | 398,458 |
| <i>Senior Vice President, Clinical Development & Project Management</i> | 2015 | 198,840 | — | 145,602 | — | 344,442 |
| Jerome D. Jabbour, <i>President</i> | 2016 | 282,804 | 90,000 | 108,500 | — | 481,304 |
| | 2015 | 293,000 | 90,750 | 59,289 | — | 443,039 |

(1) Amounts reflect the grant date fair value of option awards granted in 2016 and 2015 in accordance with Accounting Standards Codification Topic 718. These amounts do not correspond to the actual value that will be recognized by the named executive officers.

Narrative Disclosure to Summary Compensation Table

Employment Agreements with Our Named Executive Officers

Rongen

On July 30, 2013 we entered into an employment agreement with Mr. Rongen for a period of three years. Under the terms of Mr. Rongen's employment agreement, he received a signing bonus of \$150,000 and will receive a base salary of \$300,000 per year. In addition, Mr. Rongen will also be eligible to receive an annual bonus, which is targeted at 40% of his base salary but which may be adjusted by our Compensation Committee based on his individual performance and our performance as a whole. Mr. Rongen may also be eligible to receive option grants at the discretion of our Compensation Committee. In October 2013, Mr. Rongen received a grant of 350,000 options at an exercise price of \$0.94 per share. The options vest in equal monthly installments over three years from August 1, 2013. If we terminate Mr. Rongen's employment without cause or Mr. Rongen resigns with good reason, we are required to pay him a severance of up to twelve months of his base salary plus benefits. In addition, the vesting of his outstanding options will be accelerated by six months upon such termination. If we terminate Mr. Rongen's employment without cause during the 24 month period immediately following a change of control or Mr. Rongen resigns with good reason during the 24 month period immediately following a change of control, we are required to pay him a severance of up to eighteen months of his base salary and his target annual bonus plus benefits. In addition, his outstanding options would vest in full upon such termination. Mr. Rongen's employment agreement provides for an increase in base salary of \$50,000 annually, upon a future closing of an additional round of financing of at least \$15 million and the initiation of the first Phase III study of MAT9001. Mr. Rongen will also be subject to a customary non-disclosure agreement, pursuant to which Mr. Rongen has agreed to be subject to a non-compete during the term of his employment and for a period of eighteen months following termination of his employment. As part of our cost reduction measures, we have entered into a letter agreement with Mr. Rongen effective as of April 1, 2016 that provides for, among other things, a 10% reduction in base salary through December 31, 2016 and a requirement that the executive contribute 20% of the applicable premium cost for healthcare coverage under the Company's group health plan. The letter agreement also provides that for purposes of calculating any severance payments, the base salary will be the base salary prior to such temporary reduction and therefore the temporary reduction in base salary will not impact the amounts that would be paid to the executive if his employment was terminated. Effective October 1, 2016, the Board restated Mr. Rongen's salary to its level prior to the 10% reduction.

On February 21, 2017, the Compensation Committee of the Board approved for Mr. Rongen an annual salary of \$400,000 effective March 1, 2017 and target bonus of 50%. On March 27, 2017, Matinas BioPharma Holdings, Inc. (the "Company") entered into a new employment agreement with its chief executive officer, Roelof Rongen, with the terms effective as of March 1, 2017. Under the terms of Mr. Rongen's employment agreement, he will receive a base salary of \$400,000 per year, subject to periodic adjustments as determined by our Board or Compensation Committee. In addition, Mr. Rongen will also be eligible to receive an annual bonus, which is targeted at 50% of his base salary based on his individual performance and our performance as a whole, however the achievement of the performance criteria will be determined by our Board or Compensation Committee. Mr. Rongen received an annual bonus of \$160,000 for his performance during fiscal 2016. Mr. Rongen may also be eligible to receive option grants or other equity awards at the discretion of our Compensation Committee. In February 2017, Mr. Rongen received a grant of 600,000 options to purchase shares of our common stock at an exercise price of \$3.32 per share. The options vest in equal monthly installments over three years. If we terminate Mr. Rongen's employment without cause or Mr. Rongen resigns with good reason,

subject to Mr. Rongen's execution and non-revocation of a release and compliance with any post-termination obligations owed to us, we are required to pay him a severance of up to twelve months of his base salary, in effect on the date of termination, plus COBRA payments for twelve months. In addition, the vesting of his outstanding options, and any other outstanding equity held by him at the time of his termination, will be accelerated by six months upon such termination. If we terminate Mr. Rongen's employment without cause during the 24 month period immediately following a change of control or Mr. Rongen resigns with good reason during the 24 month period immediately following a change of control, subject to Mr. Rongen's execution and non-revocation of a release and compliance with any post-termination obligations owed to us, we are required to pay him a severance of up to eighteen months of his base salary, in effect on the date of termination, and his target annual bonus for the year in which the termination occurs plus COBRA payments for eighteen months. In addition, his outstanding options and any other outstanding equity held by him at the time of his termination, would vest in full upon such termination. Mr. Rongen is also subject to a customary non-disclosure agreement, pursuant to which Mr. Rongen has agreed to be subject to a non-compete and non-solicit covenant during the term of his employment and for a period of eighteen months following termination of his employment.

Kling

On March 12, 2015 we entered into an employment agreement with Mr. Kling for a period of three years. Under the terms of Mr. Kling's employment agreement, upon signing the agreement he received a grant of 350,000 options and he will receive a base salary of \$250,000 per year. In addition, Mr. Kling will also be eligible to receive an annual bonus, which is targeted at 30% of his base salary but which may be adjusted by our Compensation Committee based on his individual performance and our performance as a whole. Mr. Kling will also be eligible to receive option grants at the discretion of our Compensation Committee. In February 2016, Mr. Kling received a grant of 200,000 options at an exercise price of \$0.43 per share. The options vest in equal monthly installments over three years from February 2016. If we terminate Mr. Kling's employment without cause or Mr. Kling resigns with good reason, we are required to pay him a severance of up to nine months of his base salary plus benefits. In addition, the vesting of his outstanding options will be accelerated by six months upon such termination. If we terminate Mr. Kling's employment without cause during the 24 month period immediately following a change of control or Mr. Kling resigns with good reason during the 24 month period immediately following a change of control, we are required to pay him a severance of up to eighteen months of his base salary and his target annual bonus plus benefits. In addition, his outstanding options would vest in full upon such termination. Mr. Kling will also be subject to a customary non-disclosure agreement, pursuant to which Mr. Kling has agreed to be subject to a non-compete during the term of his employment and for a period of eighteen months following termination of his employment. As part of our cost reduction measures, we have entered into a letter agreement with Mr. Kling effective as of April 1, 2016 that provides for, among other things, a 10% reduction in base salary through December 31, 2016 and a requirement that the executive contribute 20% of the applicable premium cost for healthcare coverage under the Company's group health plan. The letter agreement also provides that for purposes of calculating any severance payments, the base salary will be the base salary prior to such temporary reduction and therefore the temporary reduction in base salary will not impact the amounts that would be paid to the executive if his employment was terminated. Effective October 1, 2016, the Board restated Mr. Kling's salary to its level prior to the 10% reduction.

On February 21, 2017, the Compensation Committee of the Board approved for Mr. Kling an annual salary of \$ 290,000 effective March 1, 2017 and target bonus of 30%.

Jabbour

On September 3, 2013, we entered into an employment agreement with Mr. Jabbour for a period of three years, which was effective as of October 4, 2013. Under the terms of Mr. Jabbour's employment agreement, Mr. Jabbour received a signing bonus of \$75,000 and will receive a base salary of \$275,000 per year. In addition, Mr. Jabbour will also be eligible to receive an annual bonus, which is targeted at 30% of his base salary but which may be adjusted by our Compensation Committee based on his individual performance and our performance as a whole. Mr. Jabbour will also be eligible to receive option grants at the discretion of our Compensation Committee. On October 4, 2013, Mr. Jabbour received a grant of 200,000 options at an exercise of \$0.94 per share. The options will vest in equal monthly installments over three years from the date of grant. Mr. Jabbour also received a grant of 150,000 at an exercise price of \$0.94 per share, which vests in equal monthly installments over three years beginning on August 1, 2013. If we terminate Mr. Jabbour's employment without cause or Mr. Jabbour resigns with good reason, we are required to pay him a severance of up to nine months of his base salary plus benefits. In addition, the vesting of his outstanding options will be accelerated by six months upon such termination. If we terminate Mr. Jabbour's employment without cause during the 24 month period immediately following a change of control or Mr. Jabbour resigns with good reason during the 24 month period immediately following a change of control, we are required to pay him a severance of up to eighteen months of his base salary and his target annual bonus plus benefits. In addition, his outstanding options would vest in full upon such termination. Mr. Jabbour's employment agreement provides for an increase in base salary of \$50,000 annually, upon the closing of an additional round of financing of at least \$15 million and the initiation of the first Phase III study of MAT9001. Mr. Jabbour will also be subject to a customary non-disclosure agreement, pursuant to which Mr. Jabbour has agreed to be subject to a non-compete during the term of his employment and for a period of eighteen months following termination of his employment. As part of our cost reduction measures, we have entered into a letter agreement with Mr. Jabbour effective as of April 1, 2016 that provides for, among other things, a 10% reduction in base salary through December 31, 2016 and a requirement that the executive contribute 20% of the applicable premium cost for healthcare coverage under the Company's group health plan. The letter agreement also provides that for purposes of calculating any severance payments, the base

salary will be the base salary prior to such temporary reduction and therefore the temporary reduction in base salary will not impact the amounts that would be paid to the executive if his employment was terminated. Effective October 1, 2016, the Board restated Mr. Jabbour's salary to its level prior to the 10% salary reduction.

Outstanding Equity Awards at Fiscal Year-End Table – 2016

The following table summarizes, for each of the named executive officers, the number of shares of common stock underlying outstanding stock options held as of December 31, 2016.

| Name | Option Awards | | | | |
|-------------------|---|---|----|----------------------------|------------------------|
| | Number of securities underlying unexercised options (#) exercisable | Number of securities underlying unexercised options (#) unexercisable | | Option exercise price (\$) | Option expiration date |
| Roelof Rongen | 114,593 | 260,408 | \$ | 0.43 | Feb. 14, 2026 |
| | 200,016 | 99,984 | | 0.41 | Jan. 27, 2025 |
| | 350,000 | 0 | \$ | 1.28 | July 20, 2024 |
| | 350,000 | 0 | \$ | 0.94 | October 2, 2023 |
| Doug Kling | 61,116 | 138,884 | \$ | 0.43 | Feb. 14, 2026 |
| | 213,906 | 136,094 | \$ | .52 | Mar. 11, 2025 |
| Jerome D. Jabbour | 106,953 | 243,047 | \$ | 0.43 | Feb. 14, 2026 |
| | 116,676 | 58,324 | | 0.41 | Jan. 27, 2025 |
| | 350,000 | 0 | \$ | 1.28 | July 20, 2024 |
| | 350,000 | 0 | \$ | 0.94 | October 3, 2023 |

2013 Equity Compensation Plan

General

On August 2, 2013, our Board of Directors adopted the 2013 Equity Compensation Plan pursuant to the terms described herein. The 2013 Equity Compensation Plan was approved by the stockholders on August 7, 2013. Effective May 8, 2014, upon the approval of our Board of Directors and our stockholders, we amended and restated our 2013 Equity Compensation Plan, primarily to include “evergreen” provisions, which state provide that number of shares of common stock available for issuance under the Plan is subject to an automatic annual increase on January 1 of each year beginning in 2015 equal to 4% of the number of shares of common stock outstanding on December 31 of the preceding calendar year or a lesser number of shares of common stock determined by the Board of Directors; to amend the definition of “fair market value”; and to increase the limits on awards under the Plan. The 2013 Equity Compensation Plan, as amended and restated, is referred to herein as the “2013 Plan.”

The general purpose of the 2013 Plan is to provide an incentive to our employees, directors, consultants and advisors by enabling them to share in the future growth of our business. Our Board of Directors believes that the granting of stock options, restricted stock awards, unrestricted stock awards and similar kinds of equity-based compensation promotes continuity of management and increases incentive and personal interest in the welfare of our Company by those who are primarily responsible for shaping and carrying out our long range plans and securing our growth and financial success.

Our Board of Directors believes that the 2013 Plan will advance our interests by enhancing our ability to (a) attract and retain employees, consultants, directors and advisors who are in a position to make significant contributions to our success; (b) reward our employees, consultants, directors and advisors for these contributions; and (c) encourage employees, consultants, directors and advisors to take into account our long-term interests through ownership of our shares.

Description of the 2013 Equity Compensation Plan

The following description of the principal terms of the 2013 Plan is a summary and is qualified in its entirety by the full text of the 2013 Plan, which is filed as Exhibit 10.5 to our annual report on Form 10-K for the year that ended December 31, 2016.

Administration. The 2013 Plan will be administered by the Compensation Committee of our Board of Directors, provided that the entire Board of Directors may act in lieu of the Compensation Committee on any matter, subject to certain requirements set forth in the 2013 Plan. The Compensation Committee may grant options to purchase shares of our common stock, stock appreciation rights, stock units, restricted shares of our common stock, performance shares, performance units, incentive bonus awards, other cash-based awards and other stock-based awards. The Compensation Committee also has broad authority to determine the terms and

conditions of each option or other kind of award, and adopt, amend and rescind rules and regulations for the administration of the 2013 Plan. Subject to applicable law, the Compensation Committee may authorize one or more reporting persons (as defined in the 2013 Plan) or other officers to make awards (other than awards to reporting persons, or other officers whom the Compensation Committee has specifically authorized to make awards). No awards may be granted under the 2013 Plan on or after the ten year anniversary of the adoption of the 2013 Plan by our Board of Directors, but awards granted prior to such tenth anniversary may extend beyond that date.

Eligibility. Awards may be granted under the 2013 Plan to any person who is an employee, officer, director, consultant, advisor or other individual service provider of the Company or any subsidiary, or any person who is determined by the Compensation Committee to be a prospective employee, officer, director, consultant, advisor or other individual service provider of the Company or any subsidiary.

Shares Subject to the 2013 Plan. As of March 22, 2017 the aggregate number of shares of common stock available for issuance in connection with awards granted under the 2013 Plan is 14,155,292 shares, subject to customary adjustments for stock splits, stock dividends or similar transactions (the "Initial Limit"). Incentive Stock Options may be granted under the 2013 Plan with respect to all of those shares. The number of shares of common stock available for issuance under the 2013 Plan will automatically increase on January 1st of each year for a period of ten years, commencing on January 1, 2015, in an amount equal to four percent (4%) of the total number of shares of common stock outstanding on December 31st of the preceding calendar year (the "Annual Increase"). Notwithstanding the foregoing, the Board of Directors may act prior to the first day of any calendar year, to provide that there shall be no increase in the share reserve for such calendar year or that the Annual Increase in the share reserve for such calendar year shall be a lesser number of shares of common stock than would otherwise occur pursuant to the preceding sentence. The number of shares of common stock which may be issued in respect of Incentive Stock Options is equal to the Current Limit, and will be increased on each January 1, by the Annual Increase for such calendar year.

To the extent that any award under the 2013 Plan payable in shares of common stock is forfeited, cancelled, returned to the Company for failure to satisfy vesting requirements or upon the occurrence of other forfeiture events, or otherwise terminates without payment being made thereunder, the shares of common stock covered thereby will be available for future grants under the 2013 Plan. Shares of common stock that otherwise would have been issued upon the exercise of a stock option or in payment with respect to any other form of award, that are surrendered in payment or partial payment of taxes required to be withheld with respect to the exercise of such stock option or the making of such payment, will also be available for future grants under the 2013 Plan.

Terms and Conditions of Options. Options granted under the 2013 Plan may be either "incentive stock options" that are intended to meet the requirements of Section 422 of the Internal Revenue Code of 1986, as amended (the "Code") or "nonqualified stock options" that do not meet the requirements of Section 422 of the Code. The Compensation Committee will determine the exercise price of options granted under the 2013 Plan. The exercise price of stock options may not be less than the fair market value, on the date of grant, per share of our common stock issuable upon exercise of the option (or 110% of fair market value in the case of incentive options granted to a ten-percent stockholder).

If on the date of grant the common stock is listed on a stock exchange or national market system, the fair market value shall generally be the closing sale price as of such date, or if there were no trades recorded on such date, then the most recent date preceding such date on which trades were recorded. If on the date of grant the common stock is traded in an over-the-counter market, the fair market value will generally be the average of the closing bid and asked prices for the shares of common stock as of such date, or, if there are no closing bid and asked prices for the shares of common stock on such date, then the average of the bid and asked prices for the shares of common stock on the most recent date preceding such date on which such closing bid and asked prices are available. If the common stock is not listed on a national securities exchange or national market system or traded in an over-the-counter market, the fair market value shall be determined by the Compensation Committee in a manner consistent with Section 409A of the Internal Revenue Code of 1986, as amended. Notwithstanding the foregoing, if on the date of grant the common stock is listed on a stock exchange or is quoted on a national market system, or is traded in an over-the-counter market, then solely for purposes of determining the exercise price of any grant of a stock option or the base price of any grant of a stock appreciation right, the Compensation Committee may, in its discretion, base fair market value on the last sale before or the first sale after the grant, the closing price on the trading day before or the trading day of the grant, the arithmetic mean of the high and low prices on the trading day before or the trading day of the grant, or any other reasonable method using actual transactions of the common stock as reported by the exchange or market on which the common stock is traded. In addition, the determination of fair market value also may be made using any other method permitted under Treasury Regulation section 1.409A-1(b)(5) (iv).

No option may be exercisable for more than ten years from the date of grant (five years in the case of an incentive stock option granted to a ten-percent stockholder). Options granted under the 2013 Plan will be exercisable at such time or times as the Compensation Committee prescribes at the time of grant. No employee may receive incentive stock options that first become exercisable in any calendar year in an amount exceeding \$100,000. The Compensation Committee may, in its discretion, permit a holder of a nonqualified stock option to exercise the option before it has otherwise become exercisable, in which case the shares of our common stock issued to the recipient will continue to be subject to the vesting requirements that applied to the option before exercise.

Generally, the option price may be paid in cash or by bank check, or such other means as the Compensation Committee may accept. As set forth in an award agreement or otherwise determined by the Compensation Committee, in its sole discretion, at or after grant, payment in full or part of the exercise price of an option may be made (a) in the form of shares of common stock that have been held by the participant for such period as the Compensation Committee may deem appropriate for accounting purposes or otherwise, valued at the fair market value of such shares on the date of exercise; (ii) by surrendering to the Company shares of common stock otherwise receivable on exercise of the option; (iii) by a cashless exercise program implemented by the Compensation Committee in connection with the 2013 Plan; and/or (iv) by such other method as may be approved by the Compensation Committee and set forth in an award agreement.

No option may be transferred other than by will or by the laws of descent and distribution, and during a recipient's lifetime an option may be exercised only by the recipient or the recipient's guardian or legal representative. However, the Compensation Committee may permit the transfer of a nonqualified stock option, share-settled stock appreciation right, restricted stock award, performance share or share-settled other stock-based award either (a) by instrument to the participant's immediate family (as defined in the 2013 Plan), (b) by instrument to an inter vivos or testamentary trust (or other entity) in which the award is to be passed to the participant's designated beneficiaries, or (c) by gift to charitable institutions. The Compensation Committee will determine the extent to which a holder of a stock option may exercise the option following termination of service.

Stock Appreciation Rights. The Compensation Committee may grant stock appreciation rights independent of or in connection with an option. The Compensation Committee will determine the terms applicable to stock appreciation rights. The base price of a stock appreciation right will be determined by the Compensation Committee, but will not be less than 100% of the fair market value of a share of our common stock with respect to the date of grant of such stock appreciation right. The maximum term of any SAR granted under the 2013 Plan is ten years from the date of grant. Generally, each SAR stock appreciation right will entitle a participant upon exercise to an amount equal to:

- the excess of the fair market value of a share of common stock on the date of exercise of the stock appreciation right over the base price of such stock appreciation right, multiplied by
- the number of shares as to which such stock appreciation right is exercised.

Payment may be made in shares of our common stock, in cash, or partly in common stock and partly in cash, all as determined by the Compensation Committee.

Restricted Stock and Stock Units. The Compensation Committee may award restricted common stock and/or stock units under the 2013 Plan. Restricted stock awards consist of shares of stock that are transferred to a participant subject to restrictions that may result in forfeiture if specified conditions are not satisfied. Stock units confer the right to receive shares of our common stock, cash, or a combination of shares and cash, at a future date upon or following the attainment of certain conditions specified by the Compensation Committee. The Compensation Committee will determine the restrictions and conditions applicable to each award of restricted stock or stock units, which may include performance-based conditions. Dividends with respect to restricted stock may be paid to the holder of the shares as and when dividends are paid to stockholders or at the times of vesting or other payment of the restricted stock award. Stock unit awards may be granted with dividend equivalent rights, which may be accumulated and may be deemed reinvested in additional stock units, as determined by the Compensation Committee in its discretion. If any dividend equivalents are paid while a stock unit award is subject to restrictions, the dividend equivalents shall be subject to the same restrictions on transferability as the underlying stock units, unless otherwise set forth in an award agreement. Unless the Compensation Committee determines otherwise, holders of restricted stock will have the right to vote the shares.

Performance Shares and Performance Units. The Compensation Committee may award performance shares and/or performance units under the 2013 Plan. Performance shares and performance units are awards which are earned during a specified performance period subject to the attainment of performance criteria, as established by the Compensation Committee. The Compensation Committee will determine the restrictions and conditions applicable to each award of performance shares and performance units.

Incentive Bonus Awards. The Compensation Committee may award Incentive Bonus Awards under the 2013 Plan. Incentive Bonus Awards may be based upon the attainment of specified levels of Company or subsidiary performance as measured by pre-established, objective performance criteria determined at the discretion of the Compensation Committee. Incentive Bonus Awards will be paid in cash or common stock, as set forth in an award agreement.

Other Stock-Based and Cash-Based Awards. The Compensation Committee may award other types of equity-based or cash-based awards under the 2013 Plan, including the grant or offer for sale of unrestricted shares of our common stock and payment in cash or otherwise of amounts based on the value of shares of common stock.

Section 162(m) Compliance. If stock or cash-based awards are intended to satisfy the conditions for deductibility under Section 162(m) of the Code as "performance-based compensation," the performance criteria will be selected from among the following, which may be applied to our Company as a whole, any subsidiary or any division or operating unit thereof: (a) pre-tax

income; (b) after-tax income; (c) net income; (d) operating income or profit; (e) cash flow, free cash flow, cash flow return on investment, net cash provided by operations, or cash flow in excess of cost of capital; (f) earnings per share; (g) return on equity; (h) return on sales or revenues; (i) return on invested capital or assets; (j) cash, funds or earnings available for distribution; (k) appreciation in the fair market value of the common stock; (l) operating expenses; (m) implementation or completion of critical projects or processes; (n) return on investment; (o) total return to stockholders; (p) dividends paid; (q) net earnings growth; (r) related return ratios; (s) increase in revenues; (t) the Company's published ranking against its peer group of pharmaceutical companies based on total stockholder return; (u) net earnings; (v) changes (or the absence of changes) in the per share or aggregate market price of the common stock; (w) number of securities sold; (x) earnings before or after any one or more of the following items: interest, taxes, depreciation or amortization, as reflected in the Company's financial reports for the applicable period; (y) total revenue growth; (z) economic value created; (aa) operating margin or profit margin; (bb) share price or total shareholder return; (cc) cost targets, reductions and savings, productivity and efficiencies; (dd) strategic business criteria, consisting of one or more objectives based on meeting objectively determinable criteria: specified market penetration, geographic business expansion, progress with research and development activities, investor satisfaction, employee satisfaction, human resources management, supervision of litigation, information technology, and goals relating to acquisitions, divestitures, joint ventures and similar transactions, and budget comparisons; (ee) objectively determinable personal or professional objectives, including any of the following performance goals: the implementation of policies and plans, the negotiation of transactions, the development of long term business goals, formation of joint ventures, research or development collaborations, and the completion of other corporate transactions, and (ff) any combination of, or a specified increase or improvement in, any of the foregoing.

At the end of the performance period established in connection with any award, the Compensation Committee will determine the extent to which the performance goal or goals established for such award have been attained, and shall determine, on that basis, the number of performance shares or performance units included in such award that have been earned and as to which payment will be made. The Compensation Committee will certify in writing the extent to which it has determined that the performance goal or goals established by it for such award have been attained.

With respect to awards intended to be performance-based compensation under Section 162(m) of the Code, no participant of the 2013 Plan may receive in any one fiscal year (a) options or stock appreciation rights relating to more than 2,500,000 shares of our common stock, and (b) stock units, restricted shares, performance shares, performance units or other stock-based awards that are denominated in shares of common stock relating to more than 2,500,000 shares of our common stock in the aggregate. The maximum dollar value payable to any participant for a fiscal year of the Company with respect to any awards under the 2013 Plan payable in cash is \$2,500,000.

Effect of Certain Corporate Transactions. The Compensation Committee may, at the time of the grant of an award, provide for the effect of a change in control (as defined in the 2013 Plan) on any award, including (i) accelerating or extending the time periods for exercising, vesting in, or realizing gain from any award, (ii) eliminating or modifying the performance or other conditions of an award, (iii) providing for the cash settlement of an award for an equivalent cash value, as determined by the Compensation Committee, or (iv) such other modification or adjustment to an award as the Compensation Committee deems appropriate to maintain and protect the rights and interests of participants upon or following a change in control. The Compensation Committee may, in its discretion and without the need for the consent of any recipient of an award, also take one or more of the following actions contingent upon the occurrence of a change in control: (a) cause any or all outstanding options and stock appreciation rights to become immediately exercisable, in whole or in part; (b) cause any other awards to become non-forfeitable, in whole or in part; (c) cancel any option or stock appreciation right in exchange for a substitute option; (d) cancel any award of restricted stock, stock units, performance shares or performance units in exchange for a similar award of the capital stock of any successor corporation; (e) redeem any restricted stock, stock unit, performance share or performance unit for cash and/or other substitute consideration with a value equal to the fair market value of an unrestricted share of our common stock on the date of the change in control; (f) cancel any option or stock appreciation right in exchange for cash and/or other substitute consideration based on the value of our common stock on the date of the change in control, and cancel any option or stock appreciation right without any payment if its exercise price exceeds the value of our common stock on the date of the change in control; (g) cancel any stock unit or performance unit held by a participant affected by the change in control in exchange for cash and/or other substitute consideration with a value equal to the fair market value per share of common stock on the date of the change in control, or (h) make such other modifications, adjustments or amendments to outstanding awards as the Compensation Committee deems necessary or appropriate.

Amendment, Termination. The Compensation Committee may amend the terms of awards in any manner not inconsistent with the 2013 Plan, provided that no amendment shall adversely affect the rights of a participant with respect to an outstanding award without the participant's consent. In addition, our board of directors may at any time amend, suspend, or terminate the 2013 Plan, provided that (i) no such amendment, suspension or termination shall materially and adversely affect the rights of any participant under any outstanding award without the consent of such participant and (ii) to the extent necessary and desirable to comply with any applicable law, regulation, or stock exchange rule, the 2013 Plan requires us to obtain stockholder consent. Stockholder approval is required for any plan amendment that increases the number of shares of common stock available for issuance under the 2013 Plan or changes the persons or classes of persons eligible to receive awards.

Tax Withholding

The Company has the power and right to deduct or withhold, or require a participant to remit to the Company, the minimum statutory amount to satisfy federal, state, and local taxes, domestic or foreign, required by law or regulations to be withheld.

Director Compensation

In October 2013, we adopted a compensation policy pursuant to which our non-employee directors receive annualized compensation of \$20,000 per year, with an additional \$10,000 per year for the Chairman of the Board and the Chair of the Audit Committee, as well as an additional \$5,000 per year for the Chairs of the Compensation and Nomination & Governance Committees. In addition, our independent board members will receive an option grant of 150,000 options, with the exception of the Chairman of the Board, who will be granted 200,000 options. In August 2014, we revised our compensation policy to provide that directors will receive restricted stock in lieu of cash fees.

Director Compensation Table – 2016

The following table summarizes the annual compensation for our non-employee directors during 2016.

| Name | Stock Awards (\$) ⁽¹⁾ | Option Awards (\$) ⁽¹⁾ | Total (\$) |
|-------------------|-------------------------------------|--------------------------------------|---------------|
| Herbert Conrad | 72,500 | 10,850 | 83,350 |
| Stefano Ferrari | 45,000 | 6,975 | 51,975 |
| James S. Scibetta | 50,000 | 6,975 | 56,975 |
| Adam Stern | 35,000 | 6,820 | 41,820 |

(1) Amounts reflect the grant date fair value of stock awards and option awards granted in 2016 in accordance with Accounting Standards Codification Topic 718. These amounts do not correspond to the actual value that will be recognized by the directors

On February 21, 2017, non-employee directors were awarded stock awards as compensation for 2017. The dollar amounts were \$65,000 for Mr. Conrad, \$56,250 for Mr. Ferrari, \$58,750 for Mr. Scibetta and \$35,000 for Mr. Stern. These stock awards vest on a quarterly basis based on service during 2017.

REPORT OF THE AUDIT COMMITTEE*

The undersigned members of the Audit Committee of the Board of Directors of Matinas BioPharma Holdings, Inc. (the “Company”) submit this report in connection with the committee’s review of the financial reports for the fiscal year ended December 31, 2016 as follows:

1. The Audit Committee has reviewed and discussed with management the audited financial statements for the Company for the fiscal year ended December 31, 2016.
2. The Audit Committee has discussed with representatives of EisnerAmper LLP, the independent public accounting firm, the matters which are required to be discussed with them under the provisions of Auditing Standard No. 1301, *Communications with Audit Committees*.
3. The Audit Committee has discussed with EisnerAmper LLP, the independent public accounting firm, the auditors’ independence from management and the Company has received the written disclosures and the letter from the independent auditors required by applicable requirements of the Public Company Accounting Oversight Board.

In addition, the Audit Committee considered whether the provision of non-audit services by EisnerAmper LLP is compatible with maintaining its independence. In reliance on the reviews and discussions referred to above, the Audit Committee recommended to the Board of Directors (and the Board of Directors has approved) that the audited financial statements be included in the Company’s Annual Report on Form 10-K for the fiscal year ended December 31, 2016 for filing with the Securities and Exchange Commission.

Audit Committee,

James Scibetta, Chairman
Herbert Conrad
Stefano Ferraro
Eric Ende

* The foregoing report of the Audit Committee is not to be deemed “soliciting material” or deemed to be “filed” with the Securities and Exchange Commission (irrespective of any general incorporation language in any document filed with the Securities and Exchange Commission) or subject to Regulation 14A of the Securities Exchange Act of 1934, as amended, or to the liabilities of Section 18 of the Securities Exchange Act of 1934, except to the extent we specifically incorporate it by reference into a document filed with the Securities and Exchange Commission.

Security Ownership of Certain Beneficial Owners and Management

The following table sets forth the number of shares of common stock beneficially owned as of September 7, 2017 by:

- each of our stockholders who is known by us to beneficially own 5% or more of our common stock;
- each of our 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 Commission. 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 92,601,330 shares outstanding as of September 7, 2017. 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, September 7, 2017. 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 |
|--|-------------------------------------|---|
| <i>5% Stockholders</i> | | |
| Jennifer Lorenzo ⁽¹⁾ | 6,986,576 | 7.2% |
| <i>Directors and Executive Officers</i> | | |
| Roelof Rongen ⁽²⁾ | 4,921,971 | 5.2% |
| Herbert Conrad ⁽³⁾ | 4,703,031 | 5.0% |
| Stefano Ferrari ⁽⁴⁾ | 1,295,163 | 1.4% |
| James Scibetta ⁽⁵⁾ | 850,536 | * |
| Adam Stern ⁽⁶⁾ | 8,968,401 | 9.4% |
| Abdel A. Fawzy, Ph.D. ⁽⁷⁾ | 2,613,257 | 2.8% |
| Gary Gaglione ⁽⁸⁾ | 338,063 | * |
| Jerome Jabbour ⁽⁹⁾ | 1,959,414 | 2.1% |
| Douglas King ⁽¹⁰⁾ | 620,321 | * |
| Raphael Mannino ⁽¹¹⁾ | 1,756,258 | 1.9% |
| Eric Ende ⁽¹²⁾ | 45,537 | * |
| Dominic DiPaolo ⁽¹³⁾ | 77,784 | * |
| Directors and Executive Officers as a group (12 persons) ⁽¹⁴⁾ | 28,149,736 | 27.7% |

* Less than 1%

(1) Based on information contained in a Schedule 13G filed on July 3, 2017. Includes 4,900,000 shares of common stock underlying shares of Series A Preferred Stock held by GJG Life Sciences, LLC. GJG Capital, LLC is the Managing Member of GJG Life Sciences, LLC, a limited liability company. Ms. Lorenzo is the Managing Member of GJG Capital, LLC and, as a result, Ms. Lorenzo and GJG Capital, LLC may be deemed to be indirect beneficial owners. The address for reporting persons is c/o GJG Capital, LLC 107 Circle Road, Staten Island, NY 10304.

(2) Includes 1,387,555 shares of common stock issuable upon exercise of options that are exercisable within sixty days of September 7, 2017. Does not include 587,445 shares of common stock underlying options that are not exercisable within sixty days of September 7, 2017. Does not include 5,000 shares of common stock purchased on September 8, 2017.

(3) Includes (i) 20,000 convertible preferred shares if converted to 200,000 common shares (ii) 623,431 shares of common stock issuable upon exercise of options that are exercisable within sixty days of September 7, 2017. Does not include 39,902 shares of common stock underlying options that are not exercisable within sixty days of September 7, 2017.

(4) Includes (i) 246,000 shares of common stock issuable upon exercise of outstanding Warrants that are exercisable within sixty days of September 7, 2017 (ii) 493,616 shares of common stock issuable upon exercise of options that are exercisable within sixty days of September 7, 2017. Does not include 28,884 shares of common stock underlying options that are not exercisable within sixty days of September 7, 2017.

(5) Includes 432,227 shares of common stock issuable upon exercise of options that are exercisable within sixty days of September 7, 2017. Does not include 30,273 shares of common stock underlying options that are not exercisable within sixty days of September 7, 2017.

- (6) Includes (i) 1,702,676 shares of common stock issuable upon exercise of outstanding Warrants that are exercisable within sixty days of September 7, 2017, (ii) 432,250 shares of common stock issuable upon exercise of options that are exercisable within sixty days of September 7, 2017, (iii) 300,000 shares of common stock that are owned by Pavilion Capital Partners, LLC, which is wholly-owned by Mr. Stern, (iv) 300,000 shares of common stock that are owned by Piper Ventures Partners, LLC, which is wholly-owned by Mr. Stern, (v) 6000,000 shares of common stock that are owned by SternAegis Ventures LLC, which is wholly-owned by Mr. Stern, (vi) 1,000,000 shares held by AKS Family Foundation and (vii) 3,639,483 shares of common stock held by AKS Family Partners. Does not include 30,250 shares of common stock underlying options that are not exercisable within sixty days of September 7, 2017. Does not include 50,000 shares of common stock purchased on September 8, 2017.
- (7) Includes 893,071 shares of common stock issuable upon exercise of options that are exercisable within sixty days of September 7, 2017. Does not include 131,929 shares of common stock underlying options that are not exercisable within sixty days of September 7, 2017.
- (8) Includes 298,063 shares of common stock issuable upon exercise of options that are exercisable within sixty days of September 7, 2017. Does not include 106,937 shares of common stock underlying options that are not exercisable within sixty days of September 7, 2017.
- (9) Includes 1,200,040 shares of common stock issuable upon exercise of options that are exercisable within 60 days of September 7, 2017. Does not include 424,960 shares of common stock underlying options that are not exercisable within sixty days of September 7, 2017.
- (10) Includes 540,321 shares of common stock issuable upon exercise of options that are exercisable within sixty days of September 7, 2017. Does not include 359,679 shares of common stock underlying options that are not exercisable within sixty days of September 7, 2017.
- (11) Includes 336,693 shares of common stock issuable upon exercise of options that are exercisable within 60 days of September 7, 2017. Does not include 198,307 shares of common stock underlying options that are not exercisable within sixty days of September 7, 2017.
- (12) Includes 33,336 shares of common stock issuable upon exercise of options that are exercisable within sixty days of September 7, 2017. Does not include 116,664 shares of common stock underlying options that are not exercisable within sixty days of September 7, 2017.
- (13) Includes 77,784 shares of common stock issuable upon exercise of options that are exercisable within sixty days of September 7, 2017. Does not include 272,216 shares of common stock underlying options that are not exercisable within sixty days of September 7, 2017.
- (14) See notes (2) through (13).

Securities Authorized for Issuance Under Equity Compensation Plans

The following table provides information with respect to our compensation plans under which equity compensation was authorized as of December 31, 2016.

| Plan category | Number of securities to be issued upon exercise of outstanding options, warrants and rights (a) | Weighted average exercise price of outstanding options, warrants and rights (b) | Number of securities remaining available for future issuance under equity compensation plans (excluding securities reflected in column a) (c) ⁽²⁾ |
|---|--|---|---|
| Equity compensation plans approved by security holders ⁽¹⁾ | 9,325,393 | \$ 0.85 | 2,503,519 |

(1) The amounts shown in this row include securities under the Matinas BioPharma Holdings, Inc. Amended and Restated 2013 Equity Incentive Plan (the "2013 Plan").

(2) In accordance with the "evergreen" provision in our 2013 Plan, an additional 2,326,380 shares were automatically made available for issuance on the first trading day of 2017, which represents 4% of the number of shares outstanding on December 31, 2016; these shares are excluded from this calculation.

Section 16(a) Beneficial Ownership Reporting Compliance

During the year ended December 31, 2016, our common stock was not registered under Section 12 of the Exchange Act, and therefore our directors and executive officers and persons who beneficially own more than 10% of our common stock were not required to file with the SEC various reports as to their ownership of and activities relating to our common stock.

Certain Relationships and Related Party Transactions

Other than compensation arrangements for our named executive officers and directors, we describe below each transaction or series of similar transactions, since January 1, 2014, to which we were a party or will be a party, in which:

- the amounts involved exceeded or will exceed \$100,000; and
- any of our directors, executive officers or holders of more than 5% of our capital stock, or any member of the immediate family of the foregoing persons, had or will have a direct or indirect material interest.

Consulting Agreement

We also entered into a consulting agreement with the Placement Agent in July 2013. The consulting agreement had a term of 12 months pursuant to which we paid the Placement Agent \$20,000 per month. Under the terms of the consulting agreement, the Placement Agent agreed to provide customary financial advisory services as reasonably requested by us, including consulting services for financing and capital markets activity, mergers, acquisitions, joint ventures and licensing agreements. This consulting agreement terminated on July 30, 2014.

Warrant Tender Offer

In January 2017, we completed a warrant tender offer. We had filed a Schedule TO pursuant to which it offered, or the Offer to Amend and Exercise to amend certain outstanding warrants, or the Original Warrants to purchase an aggregate of 36,728,612 shares of common stock to: (i) reduce the exercise price of the Original Warrants to \$0.50 per share of common stock in cash, (ii) shorten the exercise period of the Original Warrants so that they expire concurrently with the expiration of the Offer to Amend and Exercise at 5:00 p.m. (Eastern Time) on January 13, 2017, as may be extended by the Company in its sole discretion, or the Expiration Date, (iii) restrict the ability of the holder of shares issuable upon exercise of the Amended Warrants to sell, make any short sale of, loan, grant any option for the purchase of, or otherwise dispose of any of such shares without the prior written consent of the Company for a period of six months after the Expiration Date, or the Lock-Up Period; and (iv) provide that a holder, acting alone or with others, will agree not to effect any purchases or sales of any securities of the Company in any "short sales" as defined in Rule 200 promulgated under Regulation SHO under the Securities Exchange Act of 1934, as amended, or any type of direct and indirect stock pledges, forward sale contracts, options, puts, calls, short sales, swaps, "put equivalent positions" (as defined in Rule 16a-1(h) under the Exchange Act) or similar arrangements, or sales or other transactions through non-U.S. broker dealers or foreign regulated brokers through the expiration of the Lock-Up Period.

The Offer to Amend and Exercise expired at 5:00 p.m. Eastern Time on January 13, 2017. Pursuant to the Offer to Amend and Exercise, an aggregate of 30,966,350 Original Warrants were tendered by their holders and were amended and exercised in connection therewith for an aggregate exercise price of approximately \$15.5 million, including the following: 3,750,000 Formation Warrants; 754,000 Merger Warrants; 7,243,750 2013 Investor Warrants; 500,000 Private Placement Warrants; 14,750,831 2015 Investor Warrants; 722,925 \$2.00 PA Warrants (of which 721,987 were exercised on a cashless basis); 1,426,687 \$1.00 PA Warrants (of which 1,424,812 were exercised on a cashless basis); and 1,818,157 \$0.75 PA Warrants (of which 1,774,017 were exercised on a cashless basis). The gross cash proceeds from such exercises were approximately \$13.5 million and the net cash proceeds after deducting warrant solicitation agent fees and other estimated offering expenses were approximately \$12.7 million. Prior to the Offer to Amend and Exercise, the Company had 58,159,495 shares of common stock outstanding and warrants to purchase an aggregate of 40,255,234 shares of common stock. Following the Offer to Amend and Exercise, the Company had 87,310,154 shares of common stock outstanding and warrants to purchase an aggregate of 9,288,884 shares of common stock.

Certain of our officers, directors and holders of more than 5% of our capital stock participated in the Offer to Amend and Exercise as set forth below.

| Name | Number of Shares Purchased in Offer to Amend and Exercise | Aggregate Purchase Price Paid |
|------------------------------------|--|-------------------------------------|
| GJG Life Sciences, LLC | 3,516,711 | \$ 1,758,356 |
| Roelof Rongen | 50,000 | 25,000 |
| Herbert Conrad | 1,875,000 | 937,500 |
| Adam Stern and affiliated entities | 4,216,492 ⁽¹⁾ | 1,025,000 |
| Stefano Ferrari | 4,000 | 2,000 |
| James Scibetta | 100,000 | 50,000 |
| Gary Gaglione | 20,000 | 10,000 |
| Douglas Kling | 40,000 | 20,000 |

(1) Includes 2,166,492 placement agent warrants which were exercised on a "cashless basis".

We retained Aegis Capital Corp. to act as its Warrant Agent for the Offer to Amend and Exercise pursuant to a Warrant Agent Agreement. Aegis Capital received a fee equal to 5% of the cash exercise prices paid by holders of the Original Warrants (excluding the placement agent warrants) who participated in the Offer to Amend and Exercise. In addition, we agreed to reimburse Aegis Capital for its reasonable out-of-pocket expenses and attorney's fees, including a \$35,000 non-accountable expense allowance.

2015 Private Placement

In March and April 2015, we completed a private placement, or the 2015 Private Placement, pursuant to which we sold to accredited investors an aggregate of 20,000,000 units at a price of \$0.50 per unit, with each unit consisting of: (i) one share of our common stock, and (ii) a five-year warrant to purchase one share of common stock at an exercise price of \$0.75 per share (the “2015 Investor Warrants”). The gross proceeds to us from the 2015 Private Placement were \$10.0 million. Certain of our officers, directors and holders of more than 5% of our capital stock purchased units in the 2015 Private Placement as set forth below.

| Name | Number of Units Purchased | Aggregate Purchase Price Paid |
|---|---------------------------------|-------------------------------------|
| GJG Life Sciences, LLC | 3,935,880 | \$ 1,967,940 |
| Laurence G. Allen and affiliated entities | 1,200,000 | 600,000 |
| Herbert Conrad | 1,000,000 | 500,000 |
| Adam Stern and affiliated entities | 800,000 | 400,000 |
| James Scibetta | 100,000 | 50,000 |
| Roelof Rongen | 50,000 | 25,000 |
| Douglas Kling | 40,000 | 20,000 |
| Gary Gaglione | 20,000 | 10,000 |

We entered into a Placement Agency Agreement with Aegis Capital Corp. pursuant to which Aegis acted as our exclusive placement agent for the 2015 Private Placement. Immediately prior to the 2015 Private Placement, the Placement Agent and its affiliates beneficially owned an aggregate of more than 10% of our outstanding equity securities. In addition, Adam Stern, Head of Private Equity Banking at Aegis, is a member of our board of directors. Pursuant to the terms of the Placement Agency Agreement, in connection with the 2015 Private Placement, we paid the Placement Agent an aggregate cash fee of \$1,000,000 and non-accountable expense allowance of \$300,000 and have issued to the Placement Agent warrants (substantially similar to the 2015 Investor Warrants) to purchase 2,000,000 shares of common stock at \$0.50 per share and additional warrants to purchase 2,000,000 shares of common stock at \$0.75 per share. In addition, we agreed to engage the Placement Agent as our warrant solicitation agent in the event the 2015 Investor Warrants are called for redemption and shall pay a warrant solicitation fee to the Placement Agent equal to five (5%) percent of the amount of funds solicited by the Placement Agent upon the exercise of the 2015 Investor Warrants following such redemption.

2016 Private Placement

In the third quarter, we completed a private placement, or the 2016 Private Placement, pursuant to which we sold to accredited investors an aggregate of 1,600,000 Series A Preferred Stock at a purchase price of \$5.00 per share, for aggregate gross proceeds to us of \$8.0 million. Certain of our officers, directors and holders of more than 5% of our capital stock purchased shares of Series A Preferred Stock in the 2016 Private Placement as set forth below.

| Name | Number of Series A Preferred Shares Purchased | Aggregate Purchase Price Paid |
|---|--|-------------------------------------|
| GJG Life Sciences, LLC | 490,000 | \$ 2,450,000 |
| Laurence G. Allen and affiliated entities | 30,000 | 150,000 |
| Herbert Conrad | 20,000 | 100,000 |
| Adam Stern and affiliated entities | 20,000 | 100,000 |

We entered into a Placement Agency Agreement with Aegis Capital Corp. pursuant to which Aegis acted as our exclusive placement agent for the 2016 Private Placement. Immediately prior to the 2016 Private Placement, the Placement Agent and its affiliates beneficially owned an aggregate of more than 10% of our outstanding equity securities. In addition, Adam Stern, Head of Private Equity Banking at Aegis, is a member of our board of directors. Pursuant to the terms of the Placement Agency Agreement, in connection with the 2016 Private Placement, we paid the Placement Agent an aggregate cash fee of \$800,000 and non-accountable expense allowance of \$240,000 and have issued to the Placement Agent warrants to purchase 1,600,000 shares of common stock at \$0.50 per share. The warrants provide for a cashless exercise feature and are exercisable for a period of five years from the date of closing. We have also agreed to pay the Placement Agent similar cash and warrant compensation with respect to, and based on, any individual or entity that the Placement Agent solicits interest from in connection with this Offering, excluding our existing stockholders and certain other specified investors, who subsequently invests in us at any time prior to the date that is twelve (12) months following the final Closing of this Offering. In addition, we entered into a three year, non-exclusive finder's fee agreement with the Placement Agent providing that if the Placement Agent shall introduce us to a third party that consummates certain types of transactions with our Company, such as business combinations, joint ventures and licensing arrangements, then the Placement Agent will be paid a finder's fee, payable in cash at the closing of such transaction, equal to (a) 5% of the first \$1,000,000 of the consideration paid in such transaction; plus (b) 4% of the next \$1,000,000 of the consideration paid in such transaction; plus (c) 3% of the next \$5,000,000 of the consideration paid in the such transaction; plus (d) 2.5% of any consideration paid in such transaction in

excess of \$7,000,000. Further, we have granted the Placement Agent the irrevocable preferential right of first refusal to act as co-manager for any proposed public or private offering of our securities where we utilize a third party placement agent or underwriter, which right of first refusal expired September 12, 2017.

Voting Agreement

In connection with the initial closing of the 2013 Private Placement, the stockholders of Matinas BioPharma, Inc. (“Matinas BioPharma”) prior to the 2013 Merger (as defined below) and the 2013 Private Placement (the “Matinas Stockholders”) and the stockholders of the Company prior to the Merger (the “Company Stockholders”), entered into a Voting Agreement (the “Voting Agreement”). Pursuant to the terms of the Voting Agreement, (i) the Matinas Stockholders have the right to nominate four (4) members to our Board (the “Matinas Stockholders’ Nominees”), (ii) the Company Stockholders will vote in favor of the election and removal of the Matinas Stockholders’ Nominees and (iii) the Company Stockholders shall nominate the Aegis Nominee to our Board and (iv) the Matinas Stockholders shall vote in favor of the election and removal of the Aegis Nominee. The Voting Agreement expired on July 11, 2016.

Vendor Agreement

Since January 1, 2011, we have submitted orders for the purchase of an omega-3 fatty acid concentrate from KD-Pharma Bexbach GmbH, or KD Pharma. For the years ended December 31, 2014, December 31, 2015 and December 31, 2016, these orders totaled \$258 thousand, \$46 thousand and \$0 respectively. Mr. Ferrari, a member of our board, is the brother of a part owner of the holding company that owns KD Pharma.

Indemnification Agreements

We entered into indemnification agreements with our directors and executive officers. The indemnification agreements provide for indemnification against expenses, judgments, fines and penalties actually and reasonably incurred by an indemnitee in connection with threatened, pending or completed actions, suits or other proceedings, subject to certain limitations. The indemnification agreements also provide for the advancement of expenses in connection with a proceeding prior to a final, nonappealable judgment or other adjudication, provided that the indemnitee provides an undertaking to repay to us any amounts advanced if the indemnitee is ultimately found not to be entitled to indemnification by us. The indemnification agreement set forth procedures for making and responding to a request for indemnification or advancement of expenses, as well as dispute resolution procedures that apply to any dispute between us and an indemnitee arising under the Indemnification Agreements.

Policies and Procedures for Related Party Transactions

We have adopted a policy that our executive officers, directors, nominees for election as a director, beneficial owners of more than 5% of any class of our common stock, any members of the immediate family of any of the foregoing persons and any firms, corporations or other entities in which any of the foregoing persons is employed or is a partner or principal or in a similar position or in which such person has a 5% or greater beneficial ownership interest, which we refer to collectively as related parties, are not permitted to enter into a transaction with us without the prior consent of our board of directors acting through the audit committee or, in certain circumstances, the chairman of the audit committee. Any request for us to enter into a transaction with a related party, in which the amount involved exceeds \$100,000 and such related party would have a direct or indirect interest must first be presented to our audit committee, or in certain circumstances the chairman of our audit committee, for review, consideration and approval. In approving or rejecting any such proposal, our audit committee, or the chairman of our audit committee, is to consider the material facts of the transaction, including, but not limited to, whether the transaction is on terms no less favorable than terms generally available to an unaffiliated third party under the same or similar circumstances, the extent of the benefits to us, the availability of other sources of comparable products or services and the extent of the related party’s interest in the transaction.

PROPOSAL 2: RATIFY THE APPOINTMENT OF EISNERAMPER LLP AS OUR INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM FOR THE YEAR ENDING DECEMBER 31, 2017

The Audit Committee has reappointed EisnerAmper LLP as our independent registered public accounting firm to audit the financial statements of the Company for the fiscal year ending December 31, 2017, and has further directed that management submit their selection of independent registered public accounting firm for ratification by our stockholders at the Annual Meeting. Neither the accounting firm nor any of its members has any direct or indirect financial interest in or any connection with us in any capacity other than as public registered accounting firm.

Principal Accountant Fees and Services

The following table represents aggregate fees billed to the Company for the fiscal years ended December 31, 2016 and December 31, 2015, by EisnerAmper LLP, the Company's independent registered public accounting firm.

| | Year Ended December 31, | |
|------------|-------------------------|---------------|
| | 2016 | 2015 |
| | (in thousands) | |
| Audit Fees | \$ 90 | \$ 100 |
| Tax Fees | 8 | 9 |
| Total Fees | <u>\$ 98</u> | <u>\$ 109</u> |

Audit Fees consist of fees for professional services and expenses relating to the audit of our annual financial statements, the audit of our internal control over financial reporting and the review of our quarterly financial information.

Tax Fees are for tax-related services related primarily to tax consulting and tax planning.

The Audit Committee pre-approves all auditing services and any non-audit services that the independent registered public accounting firm is permitted to render under Section 10A (h) of the Exchange Act. The Audit Committee may delegate the pre-approval to one of its members, provided that if such delegation is made, the full Audit Committee must be presented at its next regularly scheduled meeting with any pre-approval decision made by that member.

The Audit Committee has considered whether the provision of Tax Fees as described above is compatible with maintaining EisnerAmper, LLP's independence and has determined that such services for fiscal year 2016 were compatible. All such services were approved by the Audit Committee pursuant to Rule 2-01 of Regulation S-X under the Exchange Act to the extent that rule was applicable.

The Audit Committee is responsible for reviewing and discussing the audit financial statements with management, discussing with the independent registered public accountants the matters required in Auditing Standard No. 1301, receiving written disclosures from the independent registered public accountants required by the applicable requirements of the Public Company Accounting Oversight Board regarding the independent registered public accountants' communications with the Audit Committee concerning independence and discussing with the independent registered public accountants their independence, and recommending to the Board of Directors that the audit financial statements be included in our annual report on Form 10-K.

Attendance at Annual Meeting

Representatives of EisnerAmper LLP are expected to be present at the Annual Meeting and available to respond to appropriate questions from stockholders.

Vote Required

The affirmative vote of a majority of the total votes cast is required to approve this proposal. As a result, abstentions and broker non-votes, if any, will not affect the outcome of the vote on these proposals.

THE BOARD OF DIRECTORS RECOMMENDS THAT THE STOCKHOLDERS VOTE FOR THE RATIFICATION OF THE INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM.

STOCKHOLDER PROPOSALS

Stockholder Proposals for 2018 Annual Meeting

Any stockholder proposals submitted for inclusion in the Company's proxy statement and form of proxy for our 2018 Annual Meeting of Stockholders must be received by the Company no later than June 25, 2018 in order to be considered for inclusion in our proxy statement and form of proxy. Such proposal 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. Any such proposal shall be mailed to: Matinas BioPharma Holdings, Inc., 1545 Route 206 South, Suite 302, Bedminster, New Jersey 07921 Attn.: Secretary.

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. For our 2018 Annual Meeting of Stockholders, a stockholder's notice shall be timely received by the Company at our principal executive office no later than July 25, 2018 no earlier than June 25, 2018; 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 by the Company 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 the Company. 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.

ANNUAL REPORT

Copies of our Annual Report on Form 10-K (including audited financial statements), as amended, filed with the SEC may be obtained without charge by writing to Matinas BioPharma Holdings, Inc., 1545 Route 206 South, Suite 302, Bedminster, New Jersey 07921, Attn.: Corporate Secretary. A request for a copy of our Annual Report on Form 10-K must set forth a good-faith representation that the requesting party was either a holder of record or a beneficial owner of our common stock on September 7, 2017. Exhibits to the Form 10-K will be mailed upon similar request and payment of specified fees to cover the costs of copying and mailing such materials.

Our audited financial statements for the fiscal year ended December 31, 2016 and certain other related financial and business information are contained in our 2016 Annual Report to Stockholders, which is being made available to our stockholders along with this proxy statement, but which is not deemed a part of the proxy soliciting material.

HOUSEHOLDING OF ANNUAL 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 Annual 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/ Roelof Rongen
Roelof Rongen,
Chief Executive Officer

September 15, 2017
Bedminster, New Jersey

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

VOTE BY INTERNET - 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 the day before the cut-off date or meeting date. 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.

ELECTRONIC DELIVERY OF FUTURE PROXY MATERIALS

If you would like to reduce the costs incurred by our company in mailing proxy materials, you can consent to receiving all future proxy statements, proxy cards and annual reports electronically via e-mail or the Internet. To sign up for electronic delivery, please follow the instructions above to vote using the Internet and, when prompted, indicate that you agree to receive or access proxy materials electronically in future years.

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 the day before the cut-off date or meeting date. 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:

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

THIS PROXY CARD IS VALID ONLY WHEN SIGNED AND DATED.

| | | | | |
|--|--------------------------|--------------------------|--------------------------|---|
| The Board of Directors recommends you vote FOR the following: | For All | Withhold All | For All Except | To withhold authority to vote for any individual nominee(s), mark "For All Except" and write the number(s) of the nominee(s) on the line below. |
| 1. Election of Directors | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | _____ |

Nominees

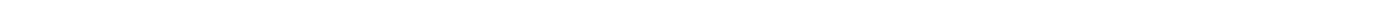
| | | | | |
|-------------------|------------------|--------------|--------------------|-------------------|
| 01 Herbert Conrad | 02 Roelof Rongen | 03 Eric Ende | 04 Stefano Ferrari | 05 James Scibetta |
| 06 Adam Stern | | | | |

| | | | |
|---|--------------------------|--------------------------|--------------------------|
| The Board of Directors recommends you vote FOR the following proposal: | For | Against | Abstain |
| 2. To ratify the appointment of EisnerAmper LLP as our independent registered public accounting firm for the year ending December 31, 2017. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

NOTE: To consider any other matters that may properly come before the Annual Meeting. 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.

| | |
|------------------------------------|------|
| | |
| Signature [PLEASE SIGN WITHIN BOX] | Date |

| | |
|--------------------------|------|
| | |
| Signature (Joint Owners) | Date |



Important Notice Regarding the Availability of Proxy Materials for the Annual Meeting:The Notice & Proxy Statement, Form 10-K is/are available at www.proxyvote.com.

**MATINAS BIOPHARMA HOLDINGS INC.
Annual Meeting of Stockholders
October 25, 2017 9:00 AM
This proxy is solicited by the Board of Directors**

The stockholder hereby appoints Roelof Rongen and Jerome Jabbour, 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 Annual Meeting of stockholder to be held at 09:00 AM, EDT on October 25, 2017, at the offices of Lowenstein Sandler LLP, located at One Lowenstein Drive, Roseland, NJ 07068, 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
