

Moleculin Biotech, Inc.
2575 West Bellfort, Suite 333
Houston, TX, 77054
(713) 300-5160

To the Stockholders of Moleculin Biotech, Inc.:

You are cordially invited to attend the Annual Meeting of Stockholders of Moleculin Biotech, Inc. on June 6, 2018. The Annual Meeting will begin at 1:30 p.m. local time at the DoubleTree - Galleria, 5353 Westheimer Road, Houston, TX 77056.

Information regarding each of the matters to be voted on at the Annual Meeting is contained in the attached Proxy Statement and Notice of Annual Meeting of Stockholders. We urge you to read the proxy statement carefully. The proxy statement and proxy card are being mailed to all stockholders of record as of April 25, 2018.

Because it is important that your shares be voted at the Annual Meeting, we urge you to complete, date and sign the enclosed proxy card and return it as promptly as possible in the accompanying envelope, whether or not you plan to attend in person. Even after returning your proxy, if you are a stockholder of record and do attend the meeting and wish to vote your shares in person, you still may do so.

We look forward to seeing you on June 6, 2018.

Very truly yours,

MOLECULIN BIOTECH, INC.

By:



Walter V. Klemp
Chairman of the Board and Chief Executive
Officer

**Important Notice Regarding the Availability of Proxy Materials
for the Annual Shareholder Meeting to be Held on June 6, 2018:**

Electronic Copies of the Proxy Statement and our 2017 Annual Report on Form 10-K are available at
<https://materials.proxyvote.com/60855D>

2575 West Bellfort, Suite 333
Houston, TX, 77054
(713) 300-5160

NOTICE OF ANNUAL MEETING OF STOCKHOLDERS

To Be Held June 6, 2018

TO THE STOCKHOLDERS OF MOLECULIN BIOTECH, INC.:

NOTICE IS HEREBY GIVEN that the 2018 Annual Meeting of Stockholders of Moleculin Biotech, Inc. (the "Company") will be held at the DoubleTree - Galleria, 5353 Westheimer Road, Houston, TX 77056, on June 6, 2018 at 1:30 p.m., local time, for the following purposes, as described in the accompanying Proxy Statement:

1. To elect four Board nominees to the Board of Directors of the Company, each to serve until the 2019 annual meeting of stockholders of the Company or until such person's successor is qualified and elected.
2. To ratify the appointment of Grant Thornton, LLP as the Company's independent registered public accounting firm for the year ending December 31, 2018.
3. To approve an amendment to the Company's Certificate of Incorporation to effect a reverse stock split of the outstanding shares of the Company's common stock, at one of the following reverse stock split ratios, 1-for-2, 1-for-3, 1-for-4 or 1-for-5, as determined by the Board of Directors in its sole discretion, prior to the one-year anniversary of this Annual Meeting.
4. To authorize an adjournment of the Annual Meeting, if necessary, to solicit additional proxies if there are not sufficient votes in favor of Proposal 3.
5. To approve the Company's 2015 Stock Plan (the "2015 Plan"), as amended, to, among other things, increase the number of shares of common stock authorized for issuance under the 2015 Plan by 2,000,000 shares and to provide for the issuance of stock appreciation rights.
6. To transact any other business that is properly brought before the Annual Meeting or any adjournment or postponement thereof.

Only stockholders of record of the Company at the close of business on April 25, 2018 are entitled to notice of and to vote at the Annual Meeting or any adjournment or postponement thereof. A complete list of these stockholders will be open for the examination of any stockholder of record at the Company's principal executive offices located at 2575 West Bellfort, Suite 333, Houston, TX 77054 for a period of ten days prior to the Annual Meeting. The list will also be available for the examination of any stockholder of record present at the Annual Meeting. The Annual Meeting may be adjourned or postponed from time to time without notice other than by announcement at the meeting.

WHETHER OR NOT YOU PLAN TO ATTEND THE MEETING, PLEASE SIGN AND DATE THE ENCLOSED PROXY AND RETURN IT IN THE ENVELOPE PROVIDED.

By Order of the Board of Directors,

MOLECULIN BIOTECH, INC.



Houston, Texas
April 27, 2018

Walter V. Klemp
Chairman of the Board and Chief Executive Officer

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MOLECULIN BIOTECH, INC.
PROXY STATEMENT
FOR
ANNUAL MEETING OF STOCKHOLDERS
To Be Held June 6, 2018

INFORMATION ABOUT THE ANNUAL MEETING AND VOTING

WHY DID YOU SEND ME THIS PROXY STATEMENT?

This proxy statement and the enclosed proxy card are furnished in connection with the solicitation of proxies by the Board of Directors of Moleculin Biotech, Inc., a Delaware corporation, for use at the Annual Meeting of Moleculin Biotech stockholders to be held at the DoubleTree - Galleria, 5353 Westheimer Road, Houston, TX 77056, on June 6, 2018 at 1:30 p.m., local time, and at any adjournments or postponements of the Annual Meeting. This proxy statement summarizes the information you need to make an informed vote on the proposals to be considered at the Annual Meeting. However, you do not need to attend the Annual Meeting to vote your shares. Instead, you may simply complete, sign and return the enclosed proxy card using the envelope provided. The terms “Moleculin,” “Company,” “we,” or “our” refer to Moleculin Biotech, Inc.

WHAT PROPOSALS WILL BE ADDRESSED AT THE ANNUAL MEETING?

We will address the following proposals at the Annual Meeting:

1. To elect four Board nominees to the Board of Directors of the Company, each to serve until the 2019 annual meeting of stockholders of the Company or until such person’s successor is qualified and elected.
2. To ratify the appointment of Grant Thornton, LLP as the Company’s independent registered public accounting firm for the year ending December 31, 2018.
3. To approve an amendment to the Company’s Certificate of Incorporation to effect a reverse stock split of the outstanding shares of the Company’s common stock, at one of the following reverse stock split ratios, 1-for-2, 1-for-3, 1-for-4 or 1-for-5, as determined by the Board of Directors in its sole discretion, prior to the one-year anniversary of this Annual Meeting.
4. To authorize an adjournment of the Annual Meeting, if necessary, to solicit additional proxies if there are not sufficient votes in favor of Proposal 3.
5. To approve the Company’s 2015 Stock Plan (the “2015 Plan”), as amended, to, among other things, increase the number of shares of common stock authorized for issuance under the 2015 Plan by 2,000,000 shares and to provide for the issuance of stock appreciation rights.
6. To transact any other business that is properly brought before the Annual Meeting or any adjournment or postponement thereof.

WHO MAY VOTE ON THESE PROPOSALS?

We will send this proxy statement, the attached Notice of Annual Meeting and the enclosed proxy card on or about April 27, 2018 to all stockholders as of April 25, 2018 (the “Record Date”). Stockholders who owned shares of our common stock at the close of business on the Record Date are entitled to vote at the Annual Meeting on all matters properly brought before the Annual Meeting.

On the Record Date, we had 25,768,861 shares of issued and outstanding common stock entitled to vote at the Annual Meeting.

HOW MANY VOTES DO I HAVE?

Each share of common stock is entitled to one vote on each matter presented at the Annual Meeting. Cumulative voting is not permitted.

WHY WOULD THE ANNUAL MEETING BE POSTPONED?

The Annual Meeting will be postponed if a quorum is not present on June 6, 2018. The presence in person or by proxy of at least a majority of our common stock outstanding as of the Record Date will constitute a quorum and is required to transact business at the Annual Meeting. If a quorum is not present, the Annual Meeting may be adjourned until a quorum is obtained.

Abstentions and broker non-votes are treated as shares present or represented at the meeting, but are not counted as votes cast. Shares held by brokers who do not have discretionary authority to vote on a particular matter and who have not received voting instructions from their customers are not counted or deemed to be present or represented for the purpose of determining whether stockholders have approved that matter, but they are counted as present for the purposes of determining the existence of a quorum at the Annual Meeting.

HOW DO I VOTE BY PROXY?

Whether you plan to attend the Annual Meeting or not, we urge you to complete, sign and date the enclosed proxy card and return it promptly in the envelope provided. Returning the proxy card will not affect your right to attend the Annual Meeting and vote in person.

If you properly fill in your proxy card and send it to us in time to vote, your proxy (one of the individuals named on your proxy card) will vote your shares as you have directed. If you sign the proxy card but do not make specific choices, your proxy will vote your shares as recommended by the Board of Directors as follows:

1. FOR the election of the Board's four nominees to our Board of Directors.
2. FOR ratification of the appointment of Grant Thornton, LLP as our independent registered public accounting firm for the year ending December 31, 2018.
3. FOR approval of an amendment to the Company's Certificate of Incorporation to effect a reverse stock split of the outstanding shares of the Company's common stock, at one of the following reverse stock split ratios, 1-for-2, 1-for-3, 1-for-4 or 1-for-5, as determined by the Board of Directors in its sole discretion, prior to the one-year anniversary of this Annual Meeting.
4. FOR authorization of an adjournment of the Annual Meeting, if necessary, to solicit additional proxies if there are not sufficient votes in favor of Proposal 3.
5. FOR the approval of the 2015 Stock Plan, as amended, to, among other things, increase the number of shares of common stock authorized for issuance under the 2015 Plan by 2,000,000 shares and to provide for the issuance of stock appreciation rights.

If any other matters are presented, your proxy will vote in accordance with his or her best judgment. At the time this proxy statement was printed, we knew of no matters that needed to be acted on at the Annual Meeting other than those discussed in this proxy statement.

HOW DO I VOTE IN PERSON?

If you plan to attend the Annual Meeting and vote in person on June 6, 2018, or at a later date if the meeting is adjourned or postponed, we will give you a ballot when you arrive. However, if your shares are held in the name of your broker, bank or other nominee, you must bring a power of attorney executed by the broker, bank or other nominee that owns the shares of record for your benefit and authorizing you to vote the shares.

MAY I REVOKE MY PROXY?

If you give a proxy, you may revoke it at any time before it is exercised. You may revoke your proxy in three ways:

1. You may send in another proxy with a later date.
2. You may notify us in writing (or if the stockholder is a corporation, under its corporate seal, by an officer or attorney of the corporation) at our principal executive offices before the Annual Meeting that you are revoking your proxy.
3. You may vote in person at the Annual Meeting.

WHAT VOTE IS REQUIRED TO APPROVE EACH PROPOSAL?

Proposal 1: Election of Directors.

A plurality of the eligible votes cast is required to elect director nominees, and as such, the four nominees who receive the greatest number of “For” votes cast by stockholders, entitled to vote at the meeting, will be elected. A nominee who receives a plurality means he or she has received more “For” votes than any other nominee for the same director’s seat. Broker non-votes will have no effect on this proposal.

Proposal 2: Ratification of Appointment of Independent Registered Public Accounting Firm.

The approval of Proposal 2 requires the affirmative vote of a majority of the shares present in person or by proxy and entitled to vote on the matter. Broker non-votes will not be taken into account in determining the outcome of the proposal, and abstentions will be counted as votes against the proposal.

Proposal 3: Approval of an amendment to the Company’s Certificate of Incorporation to effect a reverse stock split as determined by the Board of Directors in its sole discretion.

The approval of Proposal 3 requires the affirmative vote of a majority of the Company’s outstanding shares entitled to vote on the matter. Broker non-votes and abstentions will be counted as votes against the proposal.

Proposal 4: Authorization of an adjournment of the Special Meeting.

The approval of Proposal 4 requires the affirmative vote of a majority of the shares present in person or by proxy and entitled to vote on the matter. Broker non-votes will not be taken into account in determining the outcome of the proposal, and abstentions will be counted as votes against the proposal.

Proposal 5: Approval of the amended 2015 Stock Plan.

The approval of Proposal 5 requires the affirmative vote of a majority of the shares present in person or by proxy and entitled to vote on the matter. Broker non-votes will not be taken into account in determining the outcome of the proposal, and abstentions will be counted as votes against the proposal.

If you do not give instructions to your bank or brokerage firm, it will nevertheless be entitled to vote your shares in its discretion on “routine matters.” However, absent your instructions, the record holder will not be permitted to vote your shares on a non-routine matter, which are referred to as “broker non-votes,” properly brought before the meeting. Broker non-votes (shares held by brokers that do not have discretionary authority to vote on the matter and have not received voting instructions from their clients) are not counted or deemed to be present or represented for the purpose of determining whether stockholders have approved that proposal, but will be counted in determining whether there is a quorum present.

ARE THERE ANY RIGHTS OF APPRAISAL?

The Board of Directors is not proposing any action for which the laws of the State of Delaware, our certificate of incorporation or our bylaws provide a right of a stockholder to obtain appraisal of or payment for such stockholder’s shares.

WHO BEARS THE COST OF SOLICITING PROXIES?

We will bear the cost of soliciting proxies in the accompanying form and will reimburse brokerage firms and others for expenses involved in forwarding proxy materials to beneficial owners or soliciting their execution.

WHERE ARE MOLECULIN'S PRINCIPAL EXECUTIVE OFFICES?

The principal executive offices of Moleculin are located at 2575 West Bellfort, Suite 333, Houston, TX 77054 and our telephone number is (713) 300-5160.

HOW CAN I OBTAIN ADDITIONAL INFORMATION ABOUT MOLECULIN?

We are subject to the informational requirements of the Securities Exchange Act of 1934, as amended, which requires that we file reports, proxy statements and other information with the SEC. The SEC maintains a website that contains reports, proxy and information statements and other information regarding companies, including Moleculin, that file electronically with the SEC. The SEC's website address is www.sec.gov. In addition, our filings may be inspected and copied at the public reference facilities of the SEC located at 100 F Street, N.E. Washington, DC 20549.

STOCK OWNERSHIP OF CERTAIN BENEFICIAL OWNERS AND MANAGEMENT

The following table sets forth information, as of April 25, 2018, regarding beneficial ownership of our common stock by:

- each of our directors;
- each of our executive officers;
- all directors and executive officers as a group; and
- each person, or group of affiliated persons, known by us to beneficially own more than five percent of our shares of common stock.

Beneficial ownership is determined according to the rules of the SEC, and generally means that person has beneficial ownership of a security if he or she possesses sole or shared voting or investment power of that security, and includes options that are currently exercisable or exercisable within 60 days. Each director or officer, as the case may be, has furnished us with information with respect to beneficial ownership. Except as otherwise indicated, we believe that the beneficial owners of common stock listed below, based on the information each of them has given to us, have sole investment and voting power with respect to their shares, except where community property laws may apply. Except as otherwise noted below, the address for each person or entity listed in the table is c/o Moleculin Biotech, Inc., 2575 West Bellfort, Suite 333, Houston, Texas 77054.

Name and Address of Beneficial Owner	Shares beneficially owned	Percent of Class (1)
Walter V. Klemp	2,392,724 (2)	9.3%
Donald Picker	1,098,635 (3)	4.3%
Jonathan P. Foster	110,000 (4)	Less than 1%
Robert George	7,667 (5)	Less than 1%
Michael Cannon	6,667 (6)	Less than 1%
John Climaco	—	—
Directors and Named Executive Officers as a Group (8 persons)	3,615,693 (7)	14.0%
5% or greater shareholders		
Waldemar Priebe	4,040,573 (8)	15.7%
AnnaMed, Inc.	1,425,000 (9)	5.5%

(1) Based on 25,768,861 shares of common stock outstanding as of April 25, 2018.

(2) Includes 1,425,000 shares held by AnnaMed, Inc. that have been included in the amount for Mr. Klemp. Mr. Klemp has voting and dispositive power over the shares held by AnnaMed, Inc.

(3) Of the amount in the table, 630,000 shares held by IntertechBio Corp. have been included in the amounts for Drs. Picker and Priebe. Drs. Picker and Priebe have voting and dispositive power over the shares held by IntertechBio Corp.

(4) Includes 100,000 shares underlying options exercisable within 60 days of the Record Date.

(5) Includes 6,667 shares underlying options exercisable within 60 days of the Record Date.

(6) Consists solely of shares underlying options exercisable within 60 days of the Record Date.

(7) Consists of the shares identified in footnotes (2)-(6).

(8) Of the amount in the table, 629,000 shares held by Houston Pharmaceuticals, Inc. have been included in the amount for Dr. Priebe. Dr. Priebe has voting and dispositive power over the shares held by Houston Pharmaceuticals, Inc. Of the amount in the table, 630,000 shares held by IntertechBio Corp. have been included in the amounts for Drs. Picker and Priebe. Drs. Picker and Priebe have voting and dispositive power over the shares held by IntertechBio Corp.

(9) Mr. Klemp has voting and dispositive power over the shares held by AnnaMed, Inc.

SECTION 16(A) BENEFICIAL OWNERSHIP REPORTING COMPLIANCE

Section 16(a) of the Securities Exchange Act of 1934, as amended, requires our executive officers and directors, and persons who own more than ten percent of our common stock, to file reports of ownership and changes in ownership of our common stock with the SEC. Officers, directors, and greater-than-ten-percent stockholders are required by the SEC's regulations to furnish us with copies of all Section 16(a) forms that they file. Based solely upon a review of the Section 16(a) forms furnished to us during the most recent fiscal year, we believe that all such forms required to be filed were timely filed, by the officers, directors, and security holders required to file the forms during the fiscal year ended December 31, 2017.

INFORMATION ABOUT DIRECTORS AND EXECUTIVE OFFICERS

Directors and Executive Officers

The following table sets forth the names and ages of all of our directors and executive officers as of April 25, 2018. Our officers are appointed by, and serve at the pleasure of, the Board of Directors.

Name	Age	Position
Walter V. Klemp	58	Chairman of the Board, President and Chief Executive Officer
Jonathan P. Foster	54	Chief Financial Officer and Executive Vice President
Donald Picker	72	Chief Scientific Officer
Robert Shepard	65	Chief Medical Officer
Sandra L. Silberman	63	Chief Medical Officer — New Products
Robert E. George	68	Director
Michael D. Cannon	72	Director
John Climaco	49	Director

Set forth below is biographical information about each of the individuals named in the tables above:

Walter V. Klemp - Chairman of the Board, President and Chief Executive Officer. Mr. Klemp is a co-founder of our company, and has served as our chairman of the board and chief executive officer since July 2015 and as president since August 2017. Since 2006, Mr. Klemp has served as the chairman, co-founder and part-time chief executive officer of Moleculin, LLC. Since November 2011, Mr. Klemp has also served as chief executive officer of Soliton, Inc., a medical device company focused on developing new technology for use in aesthetics, and as such, Mr. Klemp is currently devoting only part of his work time to us. Mr. Klemp served as president and chief executive officer of Zeno Corporation from 2004 to April 2011, where he developed and marketed dermatology devices and drugs from concept through FDA approval and market launch. From 1987 to

2000, Mr. Klemp served as chief executive officer and chairman of Drypers Corporation, a publicly traded multinational consumer products company that was listed as #1 on the INC 500 List of America's Fastest Growing Companies. We believe that Mr. Klemp's history with our company and background, coupled with his extensive experience in the medical field, provide him with the qualifications to serve as a Chairman of the Board and CEO.

Jonathan P. Foster - Chief Financial Officer and Executive Vice President. Mr. Foster has served as our chief financial officer and executive vice president since August 2016. Mr. Foster brings more than 30 years in financial experience holding a variety of executive and senior financial positions with public, private, start-up to large corporate and international companies. From February 2012 to August 2016, Mr. Foster served as Chief Financial Officer and Executive Vice President of InfuSystem Holdings, Inc., a national provider of infusion pumps and related services to the healthcare industry. From May 2011 to January 2012, Mr. Foster served as a consultant to the Chief Financial Officer of LSG Sky Chefs, USA, Inc., a subsidiary of Deutsche Lufthansa AG. Mr. Foster served on the Board of Financial Institutions for the State of South Carolina from 2006 to 2012. Mr. Foster is a Certified Public Accountant (South Carolina) and holds the designation of Chartered Global Management Accountant from the American Institute of Certified Public Accountants. He received his BS in Accounting from Clemson University in 1985.

Donald Picker, PhD - Chief Scientific Officer. Dr. Picker has served as our chief scientific officer since August 2017 after serving as our chief operating officer from July 2015 until August 2017 and as our president from January 2016 to August 2017. In 2007, Dr. Picker became the chief executive officer of IntertechBio. From 2006 through 2007, Dr. Picker was the President of Tapestry Pharmaceuticals. From 1998 to 2003, Dr. Picker was CEO of Synergy Pharmaceuticals. Synergy was merged into Callisto Pharmaceuticals where he was vice president of research and development until 2006. Dr. Picker led the development of carboplatin and cisplatin from concept to FDA approval. Dr. Picker serves on the board of directors of CNS Pharmaceuticals, Inc. Dr. Picker received his BS degree from Brooklyn Polytechnic University and his PhD from SUNY Albany in 1975. Dr. Picker is currently devoting only part of his work time to us, and provides services as needed to us.

Robert Shepard, MD, FACP, Chief Medical Officer. Dr. Shepard has served as our chief medical officer since June 2016. From 2013 until 2014, Dr. Shepard served as vice president of scientific and medical affairs for Accelovance. Shepard has extensive research credentials in hematology and oncology and is board certified in oncology, hematology and internal medicine. He has a wide array of experience in translational medicine and clinical research and has been actively involved in oncology research since 1970, responsible for the clinical development of several drugs and immune therapies for biopharmaceutical companies, including serving as the consulting Chief Medical Officer for six companies. Dr. Shepard is a Magna Cum Laude graduate of Harvard University in biochemical sciences and molecular biophysics and studied in the Harvard-M.I.T. Health Sciences program. He held fellowships in hematology and oncology at the Tufts-New England Medical Center where he conducted laboratory research in leukemias, myeloma and myelodysplasia, as well as fellowship in pharmacology and molecular genetics at the Dana-Farber Cancer Center and Harvard Medical School. Dr. Shepard holds academic appointments at Harvard University, Tufts University and the University of Virginia.

Sandra L. Silberman, MD PhD - Chief Medical Officer - New Products. Dr. Silberman has served as our chief medical officer for new products since November 2017. Dr. Silberman has served as chief medical officer of CNS Pharmaceuticals, Inc. since December 2017 on a part-time basis. Dr. Silberman has served as an Independent Consultant to the Biopharmaceutical Industry for the past four years. Dr. Silberman advanced several original, proprietary compounds into Phases I through III during her work with leading biopharmaceutical companies, including Bristol-Myers Squibb, AstraZeneca, Imclone and Roche. Dr. Silberman is a Hematologist/Oncologist who earned her B.A., Sc.M. and Ph.D. from the Johns Hopkins University School of Arts and Sciences, School of Public Health and School of Medicine, respectively, and her M.D. from Cornell University Medical College, and then completed both a clinical fellowship in Hematology/Oncology as well as a research fellowship in tumor immunology at the Brigham & Women's Hospital and the Dana Farber Cancer Institute in Boston, MA.

Robert E. George - Director. Mr. George joined our board of directors upon our IPO. He was a partner with the international accounting firm of PricewaterhouseCoopers (PWC) for 27 years until 2010, where his client service sectors included healthcare, among others. Mr. George currently serves as Chairman of the Audit Committee for The University of Texas Health Science Center at Houston and, since June 2011, has been a member of The University of Texas at Austin, McCombs Graduate School of Business accounting faculty. Mr. George graduated with accounting honors from the University of North Texas. We believe Mr. George's deep and broad level of expertise in financial accounting and reporting matters, particularly in the healthcare sector, as a former audit partner at PricewaterhouseCoopers provide him with the qualifications to serve as a director.

Michael D. Cannon - Director. Mr. Cannon joined our board of directors upon our IPO. Between 1997 and 2004, Mr. Cannon was the Chief Science Officer, EVP and a Director of SICOR, Inc., a U.S. public pharmaceutical company, until its

acquisition by Teva Pharmaceutical Industries, Inc. SICOR focused on generic finished dosage injectable pharmaceuticals, active pharmaceutical ingredients and generic biopharmaceuticals. While at SICOR, he oversaw the acquisition and development of the biological business, including initiation and management of international partnerships, as well as on the design, construction, and licensure of protein manufacturing facilities. From July 2005 to December 2009, Mr. Cannon was a member of the scientific advisory board of Trevi Health Ventures LP, a New York investment fund specializing in health care investments. From May 2005 until December 2011, Mr. Cannon was a partner in a private partnership formed to evaluate and perform preliminary development of intellectual property in the healthcare sector. Since 2005, Mr. Cannon has served as a board member for several private companies. Mr. Cannon currently serves on the boards of directors of Athenex, Inc. and of three privately held biotech companies. Mr. Cannon has a degree in chemistry from Fordham College. We believe Mr. Cannon's distinguished career in the biotechnology field, particularly as Chief Science Officer, EVP and a Director of SICOR, a publicly traded company, provide him with the qualifications to serve as a director.

John M. Climaco, Esq. - Director. Mr. Climaco joined our board of directors in July 2017. Mr. Climaco has served as the chief executive officer of CNS Pharmaceuticals, Inc. since September 2017. Mr. Climaco has served in leadership roles in a variety of healthcare companies. From 2014 until 2017, Mr. Climaco served as the Executive Vice-President of Perma-Fix Medical S.A. From 2002 until 2012, Mr. Climaco served as President and CEO of Axial Biotech, Inc., a DNA diagnostics company. Mr. Climaco currently serves as a director of Digirad, Inc., a leading national provider of imaging services, and Birner Dental Management Services, Inc., a provider of practice management services to the dental industry. Mr. Climaco previously served as a director of PDI, Inc., a provider of outsourced commercial services to pharma companies, and InfuSystem Holdings, Inc., the largest supplier of infusion services to oncologists in the United States. Mr. Climaco obtained his Juris Doctorate Degree from University of California Hastings College of Law, San Francisco, CA and a Bachelors of Philosophy from Middlebury College, Middlebury, VT. Mr. Climaco is active with the State Bar of Utah. We believe Mr. Climaco's vast experience with development stage companies and his legal background provides him with the qualifications to serve as a director.

No director is related to any other director or executive officer of our company or our subsidiaries, and, there are no arrangements or understandings between a director and any other person pursuant to which such person was elected as director.

GOVERNANCE OF THE COMPANY

Our Board of Directors

Our Board of Directors oversees the business affairs of Moleculin and monitors the performance of management. Pursuant to our Bylaws, the Board of Directors shall consist of no less than one director. Members of the Board of Directors discussed various business matters informally on numerous occasions throughout the year 2017. The Board held 16 meetings during 2017. Each incumbent director attended at least 75% of the total number of meetings of the Board of Directors and committee meetings of which such director was a member (held during the period for which such director was in office).

Director Independence

The rules of the Nasdaq Stock Market, or the Nasdaq Rules, require a majority of a listed company's board of directors to be composed of independent directors. In addition, the Nasdaq Rules require that, subject to specified exceptions, each member of a listed company's audit, compensation and nominating and governance committees be independent. Under the Nasdaq Rules, a director will only qualify as an independent director if, in the opinion of our board of directors, that person does not have a relationship that would interfere with the exercise of independent judgment in carrying out the responsibilities of a director. The Nasdaq Rules also require that audit committee members satisfy independence criteria set forth in Rule 10A-3 under the Securities Exchange Act of 1934, as amended, or the Exchange Act. In order to be considered independent for purposes of Rule 10A-3, a member of an audit committee of a listed company may not, other than in his or her capacity as a member of the audit committee, the board of directors, or any other board committee, accept, directly or indirectly, any consulting, advisory, or other compensatory fee from the listed company or any of its subsidiaries or otherwise be an affiliated person of the listed company or any of its subsidiaries. In considering the independence of compensation committee members, the Nasdaq Rules require that our board of directors must consider additional factors relevant to the duties of a compensation committee member, including the source of any compensation we pay to the director and any affiliations with our company.

Our board of directors undertook a review of the composition of our board of directors and its committees and the independence of each director. Based upon information requested from and provided by each director concerning his background, employment and affiliations, including family relationships, our board of directors has determined that each of our directors, with the exception of Mr. Klemp, are independent as defined under the Nasdaq Rules.

Board Committees

Upon the completion of our IPO in May 2016, we established a Nominating and Corporate Governance Committee, an Audit Committee and a Compensation Committee. Our Board of Directors has adopted and approved a charter for each of these standing committees. The charters, which include the functions and responsibilities of each of the committees, can be found in the “Investors - Corporate Governance” section on our web site at www.moleculin.com.

Audit Committee. The members of the Audit Committee are Robert George (Chairperson), Michael Cannon and John Climaco. Each member of the Audit Committee is independent as defined by the Nasdaq Rules. In addition, each member of the Audit Committee satisfies the additional requirements of the SEC and Nasdaq Rules for audit committee membership, including the additional independence requirements and the financial literacy requirements. The Board has determined that at least one member of the Audit Committee, Mr. George, is an “audit committee financial experts” as defined in the SEC’s rules and regulations. The primary purpose of the Audit Committee is to oversee the quality and integrity of our accounting and financial reporting processes and the audit of our financial statements. The Audit Committee is responsible for selecting, compensating, overseeing and terminating the selection of our independent registered public accounting firm.

Nominating and Corporate Governance Committee. The members of the Nominating and Corporate Governance Committee are Robert George (Chairperson), Michael Cannon and John Climaco. Each member of the Nominating and Corporate Governance Committee is independent as defined by Nasdaq Rules. The primary functions and responsibilities of the Nominating and Corporate Governance Committee are to: (a) determine the qualifications, qualities, skills, and other expertise required to be a director; (b) identify and screen individuals qualified to become members of the Board; (c) make recommendations to the Board regarding the selection and approval of the nominees for director; and (d) review and assess the adequacy of our corporate governance policies and procedures.

Compensation Committee. The members of the Compensation Committee are Michael Cannon (Chairperson), Robert George and John Climaco. Each member of the Compensation Committee is independent as defined by Nasdaq Rules.

The Compensation Committee is responsible for, among other things, reviewing and making recommendations to the Board of Directors with respect to the annual compensation for our Chief Executive Officer. The Compensation Committee also is responsible for reviewing and making recommendations to the Board of Directors the annual compensation and benefits for our other executive officers. The Compensation Committee also, among other things, reviews compensation of the Board, reviews and makes recommendations on all new executive compensation programs that are proposed for adoption, and administers the Company’s equity incentive plans. The Compensation Committee is responsible for reviewing director compensation for service on the Board and Board committees at least once a year and to recommend any changes to the Board.

Our Chief Executive Officer reviews the performance of our other executive officers (other than himself) and, based on that review, our Chief Executive Officer makes recommendations to the Compensation Committee about the compensation of executive officers (other than himself). Our Chief Executive Officer does not participate in any deliberations or approvals by the Board or the Compensation Committee with respect to his own compensation.

Board Member Attendance at Annual Meetings

We do not have a formal policy regarding Board attendance at our annual meetings, however, all of our directors are invited to the annual meeting and all of our directors at the time attended our prior annual meeting.

Board Leadership Structure and Role in Risk Oversight

Walter Klemp serves as both our Chief Executive Officer and Chairman of the Board. Our Board of Directors has no policy with regard to the separation of the offices of Chairman of the Board and Chief Executive Officer, and believes, given the size of our company, it is appropriate for Mr. Klemp to serve in both roles.

John Climaco serves as the Lead Independent Director of our Board. As Lead Independent Director, Mr. Climaco is responsible for, among other things,

- leading executive sessions of the Board’s independent directors;
- serving as the principal liaison between the Chairman and the independent directors; and
- approving all information sent to the Board of Directors and approving the agendas for all Board meetings.

Our Board believes that by maintaining a Lead Independent Director position, it has designed a governance structure that best advances Moleculin's objectives, while maintaining proper checks and balances on senior management, and providing the independent members of the Board with open and transparent communication regarding our strategic planning activities.

Our management is responsible for managing risks in our business, including developing processes to manage and monitor risks. The Board views its role as one of oversight. The Board focuses on understanding management's risk management systems, the effectiveness of those systems, and the way in which management proactively manages risks. In addition, the Board utilizes the Nominating and Corporate Governance Committee, the Audit Committee and the Compensation Committee to manage risks that arise under each committee's area of focus.

Nomination of Director Candidates

We receive suggestions for potential director nominees from many sources, including members of the Board, advisors, and stockholders. Any such nominations, together with appropriate biographical information, should be submitted to the Chairperson of the Nominating and Corporate Governance Committee in the manner discussed below. Any candidates submitted by a stockholder or stockholder group are reviewed and considered in the same manner as all other candidates.

Qualifications for consideration as a Board nominee may vary according to the particular areas of expertise being sought as a complement to the existing board composition. However, minimum qualifications include high level leadership experience in business activities, breadth of knowledge about issues affecting the Company, experience on other boards of directors, preferably public company boards, and time available for meetings and consultation on Company matters. Our Nominating and Corporate Governance Committee does not have a formal policy with regard to the consideration of diversity in identifying director candidates, but seeks a diverse group of candidates who possess the background, skills and expertise to make a significant contribution to the Board, to the Company and our stockholders. Candidates whose evaluations are favorable are recommended by our Nominating and Corporate Governance Committee to the full Board for consideration. The full Board selects and recommends candidates for nomination as directors for stockholders to consider and vote upon at the annual meeting.

A stockholder wishing to nominate a candidate for election to our Board of Directors at any annual meeting at which the Board of Directors has determined that one or more directors will be elected must submit a written notice of his or her nomination of a candidate to the Chairperson of the Nominating and Corporate Governance Committee (c/o the Corporate Secretary), providing the candidates name, biographical data and other relevant information together with a consent from the nominee. Pursuant to our Bylaws, the submission must be received at our principal executive offices 120 days prior to the anniversary date of the mailing date of our previous year's proxy statement so as to permit the Board of Directors time to evaluate the qualifications of the nominee.

We have not employed an executive search firm, or paid a fee to any other third party, to locate qualified candidates for director positions.

Stockholder Communications with Directors

Persons wishing to write to our Board of Directors, or to a specified director or committee of the Board, should send correspondence to the Corporate Secretary at 2575 West Bellfort, Suite 333, Houston, TX 77054. Electronic submissions of stockholder correspondence will not be accepted.

The Corporate Secretary will forward to the directors all communications that, in his or her judgment, are appropriate for consideration by the directors. Examples of communications that would not be appropriate for consideration by the directors include commercial solicitations and matters not relevant to the stockholders, to the functioning of the Board or to the affairs of Moleculin. Any correspondence received that is addressed generically to the Board of Directors will be forwarded to the Chairman of the Board.

Code of Ethics

We have adopted a written code of ethics that applies to our directors, principal executive officer, principal financial officer, principal accounting officer or controller and any persons performing similar functions. The code of ethics is on the "Investors - Corporate Governance - Governance Documents" section of our web site at www.moleculin.com. We intend to disclose any future amendments to, or waivers from, the code of ethics within four business days of the waiver or amendment through a website posting or by filing a Current Report on Form 8-K with the SEC.

COMPENSATION OF DIRECTORS AND EXECUTIVE OFFICERS

Executive Officer Compensation

Our named executive officers for the year ended December 31, 2017, which consist of our principal executive officer and our two other most highly compensated executive officers, are: (i) Walter V. Klemp, our chairman, president and chief executive officer; (ii) Jonathan P. Foster, our chief financial officer; and (ii) Donald Picker, our chief science officer.

Summary Compensation Table - 2017

Name and Principal Position	Year	Salary (\$)	Bonus (\$)	Option awards (\$ (1))	All other compensation (\$ (2))	Total (\$)
Walter V. Klemp, Chairman, President Chief Executive Officer (3)	2017	325,000	93,000	595,000	4,700	1,017,700
	2016	175,000	—	—	—	175,000
Donald Picker, Chief Scientific Officer	2017	225,000	50,000	105,000	25,000	405,000
	2016	131,250	—	—	—	131,250
Jonathan P. Foster, Chief Financial Officer (4)	2017	275,000	75,000	253,750	30,000	633,750
	2016	97,717	—	1,506,909	7,199	1,611,825

(1) Represents the full grant date fair value of the option grant calculated in accordance with FASB ASC Topic 718. These amounts do not necessarily correspond to the actual value that may be realized by the named executive officer. For a summary of the assumptions made in the valuation of the awards, please see Note 7 to our financial statements as of and for the period ended December 31, 2017 included in Form 10-K provided to you along with this proxy statement.

(2) Represents payments made for medical coverage.

(3) Mr. Klemp's employment agreement provided that Mr. Klemp would defer 50% of his salary for 12 months, or until June 1, 2017, which deferred salary will be payable upon Mr. Klemp's termination or on June 1, 2019. The amounts set forth in the table for 2016 consists of \$87,500 that was paid during the year and \$87,500 that represents the deferred portion of Mr. Klemp's salary. The amounts set forth in the table for 2017 consists of \$262,500 that was paid during the year and \$62,500 that represents the deferred portion of Mr. Klemp's salary.

(4) Mr. Foster became our chief financial officer in August 2016.

Explanation of Compensation Year; Base Salary and Nonequity Incentive Plan for 2018

During 2017, we established for compensation purposes a compensation year from June 1 until May 31 of each year. In addition, during 2017 we agreed to pay cash bonuses to our named executive officers as such officers had not received any bonus cash awards or nonequity incentive plan awards since our IPO in 2016. In the future, our compensation committee has determined to pay cash bonuses pursuant to nonequity incentive plans to be established each compensation year between our compensation committee and our executive officers.

During 2017, our compensation committee determined, effective July 1, 2017, to increase Mr. Klemp's base salary to \$350,000 for the compensation year ending May 30, 2018, that his targeted cash bonus for such year would be set at 50% of base compensation, and that his targeted option grant value for such compensation year would be set at \$800,000; provided that the cash bonus and option grants for the year are subject to Compensation Committee approval.

During 2017, our compensation committee determined, effective July 1, 2017, to increase Mr. Foster's base salary to \$300,000 for the compensation year ending May 30, 2018, that his targeted cash bonus for such year would be set at 43% of base compensation, and that his targeted option grant value for such year would be set at \$450,000; provided that the cash bonus and option grants for the year are subject to Compensation Committee approval.

During 2017, our compensation committee determined, effective July 1, 2017, that Dr. Picker's base salary would continue to be \$225,000 for the compensation year ending May 30, 2018, that his targeted cash bonus for such year would be set at 30% of base compensation, and that his targeted option grant value for such year would be set at \$100,000; provided that the cash bonus and option grants for the year are subject to Compensation Committee approval.

Equity Awards

The following table sets forth certain information concerning our outstanding options for our named executive officers at December 31, 2017.

Outstanding Equity Awards At Fiscal Year-End—2017

Name	Grant Date of Equity Award	Number of Securities Underlying Unexercised Options (#) Exercisable (1)	Number of Securities Underlying Unexercised Options (#) Unexercisable (1)	Option Exercise Price (\$)	Option Expiration Date
Walter V. Klemp	10/3/2017	—	340,000	2.49	10/3/2027
Donald Picker	10/3/2017	—	60,000	2.49	10/3/2027
Jonathan P. Foster	8/19/2016	100,000	300,000	5.85	8/19/2026
	10/3/2017	—	145,000	2.49	10/3/2027

(1) The shares underlying the options vest in equal annual installments over a four-year period (i.e., one-quarter of each grant vests on the first, second, third and fourth anniversary of the grant date).

Employment Agreements

Klemp Employment Agreement

On October 13, 2016, we entered into an employment agreement with Mr. Walter Klemp pursuant to which Mr. Klemp agreed to serve as our Chief Executive Officer commencing on such date. The agreement provided for an initial annual salary of \$300,000, provided that Mr. Klemp agreed to defer 50% of his salary for 12 months, which deferred salary will be payable upon Mr. Klemp's termination or on June 1, 2019. Effective July 2017, our compensation committee agreed to increase Mr. Klemp's base salary to \$350,000. If Mr. Klemp's employment is terminated at our election without "cause" (as defined in the agreement), which requires 30 days advanced notice, or by Mr. Klemp for "good reason" (as defined in the agreement), Mr. Klemp shall be entitled to receive severance payments equal to the greater of 12 months of Mr. Klemp's base salary or the base salary Mr. Klemp would have received had he remained employed through the third anniversary of the date of the agreement. Mr. Klemp has agreed not to compete with us for 12 months after the termination of his employment. If we determine to retain a new chief executive officer during the term of the agreement, we have the option, at our discretion, to convert Mr. Klemp into a consultant on the same terms as set forth above.

Foster Employment Agreement

On August 19, 2016, we entered into an employment agreement with Mr. Jonathan P. Foster pursuant to which Mr. Foster agreed to serve as our Chief Financial Officer and Executive Vice President commencing on such date for an initial term of three years, which will be automatically renewed for additional one-year terms unless either party chooses not to renew the agreement. The agreement provided for an initial annual salary of \$250,000. Effective July 2017, our compensation committee agreed to increase Mr. Foster's base salary to \$300,000. Mr. Foster may receive an annual bonus, provided that the final determination on the amount of the annual bonus, if any, will be made by the Compensation Committee of the Board of Directors, based on criteria established by the Compensation Committee.

Under the agreement, Mr. Foster was granted a ten-year option to purchase 400,000 shares at an exercise price per share equal to the closing price of our common stock on the date of execution of his employment agreement, which was \$5.85. The option vests in four equal installments (or 100,000 shares each installment) on each of the succeeding four anniversary dates of the execution of the agreement, provided Mr. Foster is Chief Financial Officer on such vesting date. In the event of a "change of control" (as defined in the agreement) prior to the final vesting of all of the options, all of the unvested options shall immediately vest; provided, however, in the event the acquiring party desires to replace the unvested options with a substitute grant of equal or greater value, such proposed substitution shall be submitted to the Compensation Committee, and the

Compensation Committee shall decide whether to allow the unvested options to vest or whether to cancel the unvested options and replace them with the substitute grant proposed by the acquiring party.

If Mr. Foster’s employment is terminated at our election without “cause” (as defined in the agreement), which requires 90 days advance notice, or by Mr. Foster for “good reason” (as defined in the agreement), Mr. Foster shall be entitled to receive severance payments equal to nine months of Mr. Foster’s base salary and a pro rata portion of the target bonus, if any, for the year in which such termination occurs. In addition, if Mr. Foster’s employment is terminated prior to the end of the term of the agreement by us without cause or by Mr. Foster for good reason, and such termination occurs within three months prior to a change in control, in contemplation of a change in control or within six months after a change in control, Mr. Foster shall be entitled to receive, in addition to the severance discussed above, an acceleration of the vesting of the option grant described in the prior paragraph. Mr. Foster agreed not to compete with us until nine months after the termination of his employment.

Director Compensation

In April 2018, our compensation committee engaged Pay Governance LLC, an independent compensation consultant, to advise them on matters relating to our non-employee director compensation program. Based on a review of a compensation study prepared by Pay Governance, our compensation committee recommended to our Board and our Board approved the following policy for compensating non-employee members of the Board:

- Each non-employee director shall receive annual cash compensation of \$35,000. In addition, the chairperson of the Audit Committee, Compensation Committee and Nominating and Governance Committee shall receive an annual compensation of \$15,000, \$10,000 and \$7,500, respectively; the other members of such committees shall receive an annual compensation of \$7,500, \$5,000 and \$3,750, respectively; and the Lead Independent Director shall receive an annual compensation of \$15,000. All payments will be made within 15 days after calendar quarter end.
- Upon the initial appointment (or election) of non-employee directors to the Board, the director will be issued a 10-year option to purchase 40,000 shares of our common stock, under our 2015 Stock Plan, with 3-year annual vesting and an exercise price equal the closing price of our common stock on the date of the appointment (or election). Prior to April 2018, the initial appointment option grant consisted of an option to purchase 20,000 shares of common stock. Consistent with the Pay Governance compensation study, the Committee determined that the increase from 20,000 shares to 40,000 shares approximates the median initial appointment award value provided by a representative peer group of publicly traded companies. Correspondingly, each of our current non-employee directors will receive an additional 20,000 share option grant on the date of the 2018 annual meeting to adhere to the new initial appointment policy.
- Annually, on the date of our annual meeting, each non-employee director that is re-elected at the annual meeting will be issued, upon a motion and approval of the Board of Directors, a 10-year option to purchase 15,000 shares of our common stock, under our 2015 Stock Plan, with 3-year annual vesting and an exercise price equal the closing price of our common stock on the date of the annual meeting.

The following table sets forth the total compensation earned by our non-employee directors in 2017 (Mr. Klemp did not earn additional compensation during 2017 for his services on the Board, and his compensation is fully reflected in the “-Summary Compensation Table” above):

Name	Fees earned or paid in cash (\$)	Option awards (\$) (1)	Total (\$)
Michael D. Cannon	50,110	19,410	69,520
Robert E. George	59,534	19,410	78,944
John Climaco (2)	28,798	25,880	54,678
Jacqueline Northcut (3)	51,110	18,120	69,230

(1) Represents the full grant date fair value of the option award our board approved and granted to each non-employee director, calculated in accordance with FASB ASC Topic 718. These amounts do not necessarily correspond to the actual value that may be realized by the director. For a summary of the assumptions made in the valuation of the awards, please see Note 7 to our financial statements as of and for the period ended December 31, 2017 included in Form 10-K provided to you along with this proxy statement. As of December 31, 2017, the aggregate number of shares outstanding under all options to purchase

our common stock held by our non-employee directors were: Mr. Cannon - 35,000 shares; Mr. George - 35,000 shares; and Mr. Climaco - 20,000 shares. None of our non-employee directors held stock awards other than options as of December 31, 2017.

(2) Mr. Climaco joined the Board in July 2017.

(3) Ms. Northcut resigned from the Board in July 2017. Fees earned include consulting fees earned during the 2017 after her resignation. As of December 31, 2017, Ms. Northcut held options to purchase 35,000 shares of common stock, and no other stock awards.

Scientific Advisory Board

Our executive team is supported by our scientific advisory board, the members of which include scientists experienced in the fields in which we pursue.

Dr. Waldemar Priebe, Ph.D, Chair of Scientific Advisory Board (SAB). Waldemar Priebe is a founder of and one of the founding scientists at Moloculin, LLC and serves as Chairman of our Scientific Advisory Board. Dr. Priebe is also a Professor of Medicinal Chemistry at the Department of Experimental Therapeutics at The University of Texas MD Anderson Cancer Center. Dr. Priebe led the discovery of the molecules that form the basis for our lead drug candidates. As a founder or founding scientist at a number of successful biotechnology firms such as Aronex Pharmaceuticals, Houston Pharmaceuticals, Reata Pharmaceuticals, and IntertechBio, Dr. Priebe has been integral in advancing several drugs through the pipeline, three of which are currently in clinical development. He has also developed several new small molecule compounds that have been licensed as potential drugs.

Dr. John Paul Waymack, M.D., ScD, SAB Member. Dr. Waymack has served as CMO of Kitov Pharmaceuticals since July 2013. Dr. Waymack brings over 20 years' experience in the biopharma field. A former academic transplant surgeon and FDA medical officer, he has over 20 years' experience as a drug development consultant for major pharmaceutical companies, including Pfizer, Roche, Pharmacia, Warner Lambert and Searle. During his 10-year academic career, Dr. Waymack published over 100 scientific essays, mainly in the fields of prostaglandins and immunology. In addition, he was commissioned and served as a Major in the US Army Medical Corps in the position of Chief of Surgical Research at the Institute for Surgical Research. Dr. Waymack was also an Associate Professor of Surgery at the University of Texas Medical Branch and at the University of Medicine and Dentistry of New Jersey.

Dr. Jorge Cortes, M.D., SAB Member. Dr. Cortes is deputy chair and professor of medicine in the Department of Leukemia at MD Anderson Cancer Center where he directs the CML and AML Programs. Dr. Cortes received his medical degree in 1986 from the Universidad Nacional Autonoma de Mexico, and has been at MD Anderson since 1991. Dr. Cortes, whose clinical interest focuses on new drug development and the management of patients with myelodysplastic syndromes, acute and chronic leukemias, and myeloproliferative disorders has authored over 900 peer-reviewed medical publications in top-tier journals including New England Journal of Medicine, Lancet Oncology, Lancet Hematology, Journal of Clinical Oncology, Leukemia, Blood and many others. He has authored several books and book chapters in prestigious publications such as Cancer Medicine and Harrison's Principles of Internal Medicine. He has received numerous awards including the Faculty Scholar Award from MD Anderson in 2003, the Annual Celgene Young Investigator Achievement Award for Clinical Research in Hematology in 2005, The Dr. John J. Kenny Award from The Leukemia & Lymphoma Society in 2007, the Otis W. and Pearl L. Walters Faculty Achievement Award in Clinical Research from MD Anderson in 2007, The Professor David Galton Lecture from the Imperial College of London Hammersmith Hospital in London, UK in 2011, the William Randolph Hearst Foundations Faculty Achievement Award in Education in 2013, and The Gerald P. Bodey Award for Excellence in Education in 2014.

Dr. Elihu Estey, M.D., SAB Member. Dr. Estey is a Professor of Medicine in the Division of Hematology at the University of Washington School of Medicine and a Full Member and Director of AML Clinical Research (non-transplant) Clinical Research Division, Fred Hutchinson Cancer Research Center. Dr. Estey has built a distinguished career in cancer research approaching 40 years of active clinical practice with Acute Myeloid Leukemia ("AML") patients, providing mentorships for many physicians that have risen to prominence in AML, lectured globally to professional audiences on cancer research and published more than 700 articles on hematologic malignancies, specifically on AML. Additionally, Dr. Estey serves on the European Leukemia Net (ELN) guidelines committee for AML and has served as an advisor for AML studies to the Oncology Drugs Advisory Committee ("ODAC") of the U.S. Food and Drug Administration. Dr. Estey's contribution to science include: developed ATRA and Arsenic without chemotherapy for APL newly diagnosed patients, at MD Anderson; subsequently found to be superior to chemotherapy +ATRA, and now the widely accepted treatment for the disease; the first to develop and use FLAG-IDA (fludarabine containing regimen) in AML; and extensive reviewer of AML publications (Blood and JCO) and current Associate Editor of Leukemia. Dr. Estey's education includes an A.B. in Mathematics from Yale University in 1968 and an M.D. from Johns Hopkins University, Baltimore, MD in 1972. Additionally, Dr. Estey's training includes an Intern in Medicine, New York University, Bellevue Medical Center,

New York, NY from 1972-73; a Resident in Medicine, New York University, Bellevue Medical Center, New York, NY from 1973-76; as a Chief Resident in Neurology, New York University, Bellevue Medical Center, New York, NY from 1976-78; and as a Fellow, Department of Developmental Therapeutics, University of Texas M.D. Anderson Hospital, Houston, TX from 1978-80.

We compensate the members of our Scientific Advisory Board, or SAB, based on our utilization of their time. As of the date hereof, we have entered into compensatory agreements with Drs. Waymack, Estey and Cortes pursuant to which we made a one-time grant of a 10-year option to purchase 10,000 shares of our common stock, under the Company's 2015 Stock Plan, with 3-year annual vesting and an exercise price equal the closing price of our common stock on the date of the grant. In addition, we agreed to pay Dr. Waymack a fee of \$4,000 per month. We currently do not have any compensatory arrangements with Dr. Priebe.

2015 Stock Plan

We have adopted a 2015 Stock Plan. The 2015 Plan is a stock-based compensation plan that provides for discretionary grants of stock options, stock awards and stock unit awards to key employees and non-employee directors. The purpose of the 2015 Plan is to recognize contributions made to our company and its subsidiaries by key employees and non-employee directors and to provide them with additional incentive to achieve the objectives of our company. A summary of the 2015 Plan is set forth in Proposal 5 below.

RELATED PARTY TRANSACTIONS

Prior to our IPO, we merged with Moleculin, LLC. Moleculin, LLC was the holder of the license agreement with MD Anderson covering our WP 1066 Portfolio. As a result of the merger, we issued the equity interests holders of Moleculin, LLC an aggregate of 999,931 shares of our common stock. Waldemar Priebe, Walter Klemp and Don Picker were members of Moleculin, LLC and received 6,046 shares, 22,795 shares and 6,046 shares, respectively, of our common stock as a result of the merger. In addition, Walter Klemp and Don Picker were members of the board of Moleculin, LLC.

In connection with the acquisition of Moleculin, LLC, we also negotiated on behalf of Moleculin, LLC two agreements with HPI. Waldemar Priebe and Don Picker are shareholders of HPI, and Dr. Priebe has the voting and dispositive power over our shares held by HPI. Under the first agreement, HPI's option to obtain an exclusive sublicense was terminated in exchange for a payment of \$100,000 and the issuance of 629,000 shares of our common stock, valued at \$6 per share. Under the second agreement (HPI Out-Licensing Agreement), HPI has received a non-exclusive technology rights and development sublicense under which it may continue its ongoing work to develop the WP1066 Portfolio related to treatment of non-skin cancer. Pursuant to this HPI Out-Licensing Agreement, we agreed to make payments to HPI totaling \$750,000 over a three-year period, of which \$300,000 was paid as of December 31, 2017. The Company expenses such costs as incurred as research and development expense, commencing after the IPO offering in exchange for HPI allowing us to access any data, information or know-how resulting from the research and development conducted by HPI. As of December 31, 2017, notwithstanding our obligation to make the foregoing payments, the HPI Out-Licensing Agreement does not obligate HPI to conduct any specific research or to meet any milestones. Pursuant to the HPI Out-Licensing Agreement, we have the right within three years of the effective date to buy-out from HPI all rights granted to HPI under the agreement for a payment of \$1.0 million. Upon our exercise of the buy-out we will no longer be obligated to make any payments to HPI remaining from the \$750,000 obligation discussed above. If we do not exercise the foregoing buy-out right within three years, the license granted to HPI shall convert into an exclusive license. As such, if we do not exercise the buy-out right for any reason, we will no longer have access to the non-skin cancer uses of the WP1066 Portfolio. As noted above, this will also potentially create risks for the development of skin cancer drugs. We do not intend to set aside and designate cash and cash equivalents in the amount of \$1 million to make the buy-out payment. If we ultimately decide to exercise the buy-out right from HPI, we will need to raise additional funds to make the buy-out payment. We cannot assure that such additional funding will be available on satisfactory terms, or at all.

We currently employ Lindsey Picker, the daughter of Don Picker, our president and chief operating officer, as a clinical research assistant on an at-will basis with an annual salary is \$75,000.

We have entered, and intend to continue to enter, into separate indemnification agreements with our directors and executive officers, in addition to the indemnification provided for in our amended and restated certificate of incorporation and bylaws. These agreements, among other things, require us to indemnify our directors and executive officers for certain expenses, including attorneys' fees, judgments, fines and settlement amounts incurred by a director or executive officer in any action or proceeding arising out of their services as one of our directors or executive officers or as a director or executive officer of any other company or enterprise to which the person provides services at our request. We believe that these charter provisions and indemnification agreements are necessary to attract and retain qualified persons as directors and officers.

The limitation of liability and indemnification provisions in our amended and restated certificate of incorporation and amended and restated bylaws may discourage stockholders from bringing a lawsuit against directors for breach of their fiduciary duties. They may also reduce the likelihood of derivative litigation against directors and officers, even though an action, if successful, might benefit us and our stockholders. A stockholder's investment may decline in value to the extent we pay the costs of settlement and damage awards against directors and officers pursuant to these indemnification provisions.

Policies and Procedures for Related Party Transactions

Our audit committee charter provides that our audit committee is responsible for reviewing and approving in advance any related party transaction. This will cover, with certain exceptions set forth in Item 404 of Regulation S-K under the Securities Act, any transaction, arrangement or relationship, or any series of similar transactions, arrangements or relationships in which we were or are to be a participant, where the amount involved exceeds \$120,000 and a related person had or will have a direct or indirect material interest, including, without limitation, purchases of goods or services by or from the related person or entities in which the related person has a material interest, indebtedness, guarantees of indebtedness and employment by us of a related person. All of the transactions described in this section occurred prior to the creation of our audit committee and the adoption of this policy.

PROPOSAL 1: ELECTION OF DIRECTORS

Our Board of Directors currently consists of four members: Walter V. Klemp, Robert George, John Climaco and Michael Cannon. The Nominating and Governance Committee nominated and the Board approved and recommended all of the current members of our Board for re-election. All nominees have consented to being named herein and have indicated their intention to serve as our directors, if elected. The Board has no reason to believe that any nominee would be unable or unwilling to serve if elected. Unless authority to do so is withheld, the persons named as proxies will vote the shares represented by such proxies for the election of the named director nominees. In case any of the nominees becomes unavailable for election to the Board the persons named as proxies will have full discretion and authority to vote or refrain from voting for any other nominees in accordance with their judgment. The Board nominees, if elected, will serve until the next annual meeting of shareholders or until each successor is duly elected and qualified.

Biographical information for our directors is provided above in the section entitled "Information About Directors and Executive Officers."

Vote Required and Recommendation of the Board of Directors

A plurality of the eligible votes cast is required to elect director nominees, and as such, the four nominees who receive the greatest number of votes cast by stockholders, entitled to vote at the meeting, will be elected. A nominee who receives a plurality means he or she has received more votes than any other nominee for the same director's seat. Broker non-votes will have no effect on this proposal. **The Board recommends that stockholders vote FOR each of the four nominees for election to our Board of Directors.**

PROPOSAL 2: TO RATIFY THE APPOINTMENT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

Our Audit Committee has selected Grant Thornton LLP as our independent registered public accounting firm to audit our financial statements for the fiscal year ending December 31, 2018. Our stockholders are being asked to ratify this appointment. In the event that ratification of this selection of auditors is not approved by the stockholders, we will reassess our selection of auditors. Representatives of Grant Thornton LLP are expected to be present at the Annual Meeting, will be available to respond to appropriate questions, and will have the opportunity to make a statement at the Annual Meeting.

Change in independent registered public accounting firm

On February 21, 2017, our Audit Committee dismissed GBH CPAs, PC ("GBH") as its independent registered public accounting firm, effective as of such date.

The report of GBH on the Company's financial statements as of December 31, 2015 and for the period from July 28, 2015 (inception) to December 31, 2015 and the financial statements of Moleculin, LLC as of and for the years ended December 31, 2015 and 2014 did not contain an adverse opinion or disclaimer of opinion, and was not qualified or modified as to uncertainty, audit scope, or accounting principles, other than an explanatory paragraph relating to the Company's ability to continue as a

going concern. During the year ended December 31, 2015 and through February 21, 2017 there were no: (1) disagreements (as defined in Item 304(a)(1)(iv) of Regulation S-K and the related instructions to Item 304 of Regulation S-K) with GBH on any matter of accounting principles or practices, financial statement disclosure, or auditing scope or procedures, which disagreements, if not resolved to the satisfaction of GBH, would have caused GBH to make reference to the matter in its report on the financial statements for such year.

We requested that GBH furnish us with a letter addressed to the SEC stating whether it agrees with the above statements. A copy of such letter, dated February 22, 2017, was filed as exhibit 16.1 to the current report on Form 8-K we filed with the SEC on February 22, 2017.

On February 21, 2017, our Audit Committee approved the appointment of Grant Thornton LLP as the Company's independent registered public accounting firm for the fiscal year ended December 31, 2016.

During the period from July 28, 2015 (inception) to December 31, 2015, and through February 21, 2017, neither the Company nor anyone on their behalf consulted with Grant Thornton LLP with respect to either (i) the application of accounting principles to a specific transaction, either completed or proposed, or the type of audit opinion that might be rendered on the Company's financial statements, and neither written nor oral advice was provided to the Company that Grant Thornton LLP concluded was an important factor considered by the Company in reaching a decision as to any accounting, auditing or financial reporting issue; (ii) any matter that was either the subject of disagreement (as defined in Item 304(a)(1)(iv) of Regulation S-K and the related instructions to Item 304 of Regulation S-K) or a reportable event (as described in Item 304(a)(1)(v) of Regulation S-K)..

Aggregate fees for professional services rendered by GBH CPAs, PC and Grant Thornton, LLP for their respective services for the fiscal years ended December 31, 2017 and 2016, respectively, were as follows (1):

	2017	2016	
Audit Fees	\$ 287,190	\$ 112,500	(1)
Audit-related fees	—	41,000	(2)
Tax fees	—	—	
All other fees	—	48,000	(3)
TOTAL	\$ 287,190	\$ 201,500	

(1) For the fiscal year ended December 31, 2016, \$112,500 of the fees in the table were paid to Grant Thornton LLP. In addition to the amounts listed in the table for the fiscal year ended December 31, 2016, we paid audit fees to GBH CPAs, PC of \$38,500.

(2) Represents audit-related fees for services performed by GBH CPAs, PC during 2016.

(3) Represents other fees related to the filing of Form S-1 registration statements during 2016.

Audit and Quarterly Review Fees

Audit fees represent the aggregate fees billed for professional services rendered by our independent accounting firm for the audit of our annual financial statements, review of financial statements included in our quarterly reports, review of registration statements or services that are normally provided in connection with statutory and regulatory filings or engagements for those fiscal years.

Audit-Related Fees

Audit-related fees represent the aggregate fees billed for assurance and related services that are reasonably related to the performance of the audit or review of our financial statements and are not reported under Audit Fees.

Tax Fees

Tax fees represent the aggregate fees billed for professional services rendered by our principal accountants for tax compliance, tax advice, and tax planning for such years.

All Other Fees

All other fees represent the aggregate fees billed for products and services other than the services reported in the other categories.

Audit Committee Pre-Approval Policies and Procedures

The Audit Committee on an annual basis reviews audit and non-audit services performed by the independent auditors. All audit and non-audit services are pre-approved by the Audit Committee, which considers, among other things, the possible effect of the performance of such services on the auditors' independence.

Vote Required and Recommendation of the Board of Directors

The approval of Proposal 2 requires the affirmative vote of a majority of the shares present in person or by proxy and entitled to vote on the matter. Broker non-votes will not be taken into account in determining the outcome of the proposal, and abstentions will be counted as votes against the proposal. **The Board recommends that stockholders vote FOR the ratification of the appointment of Grant Thornton, LLP as our independent registered public accounting firm for the fiscal year ending December 31, 2018.**

AUDIT COMMITTEE REPORT

The Audit Committee assists the Board of Directors with its oversight responsibilities regarding the Company's financial reporting process. The Company's management is responsible for the preparation, presentation and integrity of the Company's financial statements and the reporting process, including the Company's accounting policies, internal control over financial reporting and disclosure controls and procedures. Grant Thornton LLP, the Company's independent registered public accounting firm, is responsible for performing an audit of the Company's financial statements.

We have reviewed and discussed with management and Grant Thornton LLP the Company's audited financial statements. We discussed with Grant Thornton LLP the overall scope and plans of their audit. We met with Grant Thornton LLP, with and without management present, to discuss the results of its examinations, its evaluation of the Company's internal controls, and the overall quality of the Company's financial reporting.

With regard to the fiscal year ended December 31, 2017, the Audit Committee (i) reviewed and discussed with management the Company's audited financial statements as of December 31, 2017, and for the year then ended; (ii) discussed with Grant Thornton LLP the matters required by Public Company Accounting Oversight Board (PCAOB) AS Section 1301, *Communications with Audit Committees*; (iii) received the written disclosures and the letter from Grant Thornton LLP required by applicable requirements of the PCAOB regarding Grant Thornton LLP's communications with the Audit Committee regarding independence; and (iv) discussed with Grant Thornton LLP their independence.

Based on the review and discussions described above, the Audit Committee recommended to the Company's Board of Directors that the Company's audited financial statements be included in the Company's Annual Report on Form 10-K for the fiscal year ended December 31, 2017, for filing with the Securities and Exchange Commission.

Robert George (Chairperson)
Michael Cannon
John Climaco

PROPOSAL 3: APPROVAL OF AMENDMENT TO RESTATED CERTIFICATE OF INCORPORATION TO EFFECT REVERSE STOCK SPLIT OF THE COMPANY'S COMMON STOCK

General

Our Board is recommending that our stockholders approve a proposed amendment to our Amended and Restated Certificate of Incorporation in substantially the form attached hereto as Annex A, to effect a reverse stock split of our outstanding shares of common stock at one of the following reverse stock split ratios, 1-for-2, 1-for-3, 1-for-4 or 1-for-5, as determined by the Board of Directors in its sole discretion, at any time prior to the one-year anniversary of this Annual Meeting. If the stockholders approve and adopt the proposed amendment to effect the reverse stock split, and our Board decides to implement it, the reverse stock split will become effective on the date of the filing of the proposed amendment with the Secretary of State of the State of Delaware.

If implemented, the reverse stock split will be realized simultaneously for all outstanding common stock and the ratio determined by our Board will be the same for all outstanding shares of common stock. The reverse stock split will affect all holders of shares of our common stock uniformly and each stockholder will hold the same percentage of our common stock outstanding immediately following the reverse stock split as that stockholder held immediately prior to the reverse stock split, except for adjustments that may result from the treatment of fractional shares as described below. The proposed amendment will not reduce the number of authorized shares of common stock (which will remain at 75,000,000) or preferred stock (which will remain at 5,000,000) or change the par values of our common stock (which will remain at \$0.001 per share) or preferred stock (which will remain at \$0.001 per share).

Background

Our common stock is currently quoted on The NASDAQ Capital Market (“NASDAQ”), and we are therefore subject to its continued listing requirements, including requirements with respect to the market value of publicly-held shares, market value of listed shares, minimum bid price per share, and minimum stockholder's equity, among others, and requirements relating to board and committee independence. If we fail to satisfy one or more of the requirements, we may be delisted from NASDAQ.

The minimum closing bid price requirement set forth in NASDAQ Listing Rule 5550(a)(2) is \$1.00. If we fall below this threshold for a period of thirty consecutive business days, we will receive a notice from NASDAQ requiring we take actions to comply with the requirement within 180 days, by having the closing bid price of our common stock meet or exceed \$1.00 per share for at least ten consecutive business days. If we do not regain compliance, we would then be subject to delisting.

In May 2017, we received a notice that we were not in compliance with the \$1.00 minimum closing bid price requirement. On July 6, 2017, we received a letter from NASDAQ notifying us that we had regained compliance with the rule as a result of the closing bid price of our common stock being at \$1.00 per share or greater for the 10 consecutive business days from June 21, 2017 through July 5, 2017.

The closing price of our common stock on April 25, 2018 was \$1.83.

Purpose of the Proposed Reverse Stock Split

Our Board’s primary objective in proposing the reverse stock split is to raise the per share trading price of our common stock. In particular, this will help us to maintain the listing of our common stock on NASDAQ.

Delisting from NASDAQ may adversely affect our ability to raise additional financing through the public or private sale of equity securities, may significantly affect the ability of investors to trade our securities and may negatively affect the value and liquidity of our common stock. Delisting also could have other negative results, including the potential loss of employee confidence, the loss of institutional investors or interest in business development opportunities.

If we are delisted from NASDAQ and we are not able to list our common stock on another exchange, our common stock could be quoted on the OTC Bulletin Board or in the “pink sheets.” As a result, we could face significant adverse consequences including, among others:

- a limited availability of market quotations for our securities;
- a determination that our common stock is a “penny stock” which will require brokers trading in our common stock to adhere to more stringent rules and possibly result in a reduced level of trading activity in the secondary trading market for our securities;
- a limited amount of news and little or no analyst coverage for us;
- we would no longer qualify for exemptions from state securities registration requirements, which may require us to comply with applicable state securities laws; and
- a decreased ability to issue additional securities (including pursuant to short-form registration statements on Form S-3) or obtain additional financing in the future.

Although we are currently in compliance with NASDAQ listing requirements, our Board believes that the proposed reverse stock split is a potentially effective means for us to maintain compliance with the listing rules of NASDAQ and to avoid, or at

least mitigate, the likely adverse consequences of our common stock being delisted from the NASDAQ by producing the immediate effect of increasing the bid price of our common stock.

Increase the Market Price of our Common Stock to a Level More Appealing for Investors

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

We cannot assure you that all or any of the anticipated beneficial effects on the trading market for our common stock will occur. Our Board cannot predict with certainty what effect the reverse stock split will have on the market price of our common stock, particularly over the longer term. Some investors may view a reverse stock split negatively, which could result in a decrease in our market capitalization. Additionally, any improvement in liquidity due to increased institutional or brokerage interest or lower trading commissions may be offset by the lower number of outstanding shares. We cannot provide you with any assurance that our shares will continue to qualify for listing on NASDAQ. As a result, the trading liquidity of our common stock may not improve. In addition, investors might consider the increased proportion of unissued authorized shares to issued shares to have an anti-takeover effect under certain circumstances, since the proportion allows for dilutive issuances.

Determination of Ratio

The ratio of the reverse stock split, if approved and implemented, will be a ratio of 1-for-2, 1-for-3, 1-for-4 or 1-for-5, as determined by the Board of Directors in its sole discretion, prior to the one-year anniversary of this Annual Meeting. In determining the reverse stock split ratio, our Board will consider numerous factors, including:

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

The purpose of asking for authorization to amend the Amended and Restated Certificate of Incorporation to implement the reverse stock split at a ratio to be determined by the Board, as opposed to a ratio fixed in advance, is to give our Board the flexibility to take into account then-current market conditions and changes in price of our common stock and to respond to other developments that may be deemed relevant when considering the appropriate ratio.

Principal Effects of the Reverse Stock Split

A reverse stock split refers to a reduction in the number of outstanding shares of a class of a corporation's capital stock, which may be accomplished, as in this case, by reclassifying and combining all of our outstanding shares of common stock into a proportionately smaller number of shares. For example, if our Board decides to implement a 1-for-5 reverse stock split of our common stock, then a stockholder holding 10,000 shares of our common stock before the reverse stock split would instead hold 2,000 shares of our common stock immediately after the reverse stock split. The reverse stock split will affect all of our stockholders uniformly and will not affect any stockholder's percentage ownership interests in our company or proportionate voting power, except for minor adjustments due to the additional net share fraction that will need to be issued as a result of the treatment of fractional shares. No fractional shares will be issued in connection with the reverse stock split. Instead, we will issue one full share of the post-reverse stock split common stock to any stockholder who would have been entitled to receive a fractional share as a result of the process.

The principal effect of the reverse stock split will be that (i) the number of shares of common stock issued and outstanding will be reduced from 25,768,861 shares as of April 25, 2018 to a number of shares between and including one-half to one-fifth that amount, as the case may be based on the ratio for the reverse stock split as determined by our Board, and (ii) all outstanding

options and warrants entitling the holders thereof to purchase shares of common stock will enable such holders to purchase, upon exercise of their options or warrants, as applicable, between and including one-half to one-fifth of the number of shares of common stock which such holders would have been able to purchase upon exercise of their options or warrants, as applicable, immediately preceding the reverse stock split at an exercise price equal to between and including two to five times the exercise price specified before the reverse stock split, resulting in essentially the same aggregate price being required to be paid therefor upon exercise thereof immediately preceding the reverse stock split, as the case may be based on the ratio for the reverse stock split as determined by our Board.

The following table, which is for illustrative purposes only, illustrates the effects of the reverse stock split at certain exchange ratios within the foregoing range, without giving effect to any adjustments for fractional shares of common stock, on our outstanding shares of common stock and authorized shares of capital stock as of April 25, 2018.

	Before Reverse Stock Split	After Reverse Stock Split			
		1-for-2	1-for-3	1-for-4	1-for-5
Common Stock Authorized	75,000,000	75,000,000	75,000,000	75,000,000	75,000,000
Preferred Stock Authorized	5,000,000	5,000,000	5,000,000	5,000,000	5,000,000
Common Stock Issued and Outstanding	25,768,861	12,884,431	8,589,620	6,442,215	5,153,772
Common Stock Underlying Options and Warrants	4,387,822	2,193,911	1,462,607	1,096,956	877,564
Common Stock Available for Grant under 2015 Stock Equity Plan (1)	2,925,000	1,462,500	975,000	731,250	585,000
Total Common Stock Authorized but Unreserved	41,918,317	58,459,158	63,972,773	66,729,579	68,383,664

(1) Assumes amendment to the plan set forth in Proposal 5 is approved.

The amendment will not change the terms of our common stock. The shares of new common stock will have the same voting rights and rights to dividends and distributions and will be identical in all other respects to the common stock now authorized. The common stock issued pursuant to the reverse stock split will remain fully paid and non-assessable. The reverse stock split is not intended as, and will not have the effect of, a “going private transaction” covered by Rule 13e-3 under the Securities Exchange Act of 1934, as amended (the “Exchange Act”). We will continue to be subject to the periodic reporting requirements of the Exchange Act.

Accounting Matters

The reverse stock split will not affect the par value of our common stock. As a result, on the effective date of the reverse stock split, the stated capital on our balance sheet attributable to the common stock will be reduced to between and including one-half to one-fifth of its present amount, as the case may be based on the ratio for the reverse stock split as determined by our Board, and the additional paid-in capital account shall be credited with the amount by which the stated capital is reduced. The per share net loss and net book value of our common stock will be retroactively increased for each period because there will be fewer shares of our common stock outstanding.

Effect of Authorized but Unissued Shares

The reverse stock split will have the effect of significantly increasing the number of authorized but unissued shares of common stock. The number of authorized shares of common stock will not be decreased and will remain at 75,000,000. Because the number of outstanding shares will be reduced as a result of the reverse stock split, the number of shares available for issuance will be increased. See the table above under the caption “Principal Effects of the Reverse Stock Split” that shows the number of unreserved shares of common stock that would be available for issuance at various reverse stock split ratios.

Our Board believes that we will need to raise additional capital in the ordinary course of business. In addition, we may issue shares to acquire other companies or assets or engage in business combination transactions. As of the date of this Proxy Statement, we have no specific plans, arrangements or understandings, whether written or oral, with respect to the increase in shares available for issuance as a result of the reverse stock split.

Potential Anti-Takeover and Dilutive Effects

The purpose of the reverse stock split is not to establish any barriers to a change of control or acquisition of the Company. However, because the number of authorized shares of common stock will remain at 75,000,000, this proposal, if adopted and implemented, will result in a relative increase in the number of authorized but unissued shares of our common stock as compared to the outstanding shares of our common stock and could, under certain circumstances, have an anti-takeover effect. Shares of common stock that are authorized but unissued provide our Board with flexibility to effect, among other transactions, public or private financings, mergers, acquisitions, stock dividends, stock splits and the granting of equity incentive awards. However, these authorized but unissued shares may also be used by our Board, consistent with and subject to its fiduciary duties, to deter future attempts to gain control of us or make such actions more expensive and less desirable. After implementation of the proposed amendment, our Board will continue to have authority to issue additional shares from time to time without delay or further action by the stockholders except as may be required by applicable law or the NASDAQ listing standards, assuming the Company remains listed on NASDAQ. Our Board is not aware of any attempt to take control of our business and has not considered the reverse stock split to be a tool to be utilized as a type of anti-takeover device. We currently have no plans, proposals or arrangements to issue any shares of common stock that would become newly available for issuance as a result of the reverse stock split.

In addition, if we do issue additional shares of our common stock, the issuance could have a dilutive effect on earnings per share and the book or market value of the outstanding common stock, depending on the circumstances, and would likely dilute a stockholder's percentage voting power in the Company. Holders of common stock are not entitled to preemptive rights or other protections against dilution. Our Board intends to take these factors into account before authorizing any new issuance of shares.

Certain Risks Associated with the Reverse Stock Split

Before voting on this proposal, you should consider the following risks associated with the implementation of the reverse stock split:

- Although we expect that the reverse stock split will result in an increase in the market price of our common stock, we cannot assure you that the reverse stock split, if implemented, will increase the market price of our common stock in proportion to the reduction in the number of shares of common stock outstanding or result in a permanent increase in the market price. The effect the reverse stock split may have upon the market price of our common stock cannot be predicted with any certainty, and the history of similar reverse stock splits for companies in similar circumstances to ours is varied. The market price of our common stock is dependent on many factors, including our business and financial performance, general market conditions, prospects for future success and other factors detailed from time to time in the reports we file with the SEC. Accordingly, the total market capitalization of our common stock after the proposed reverse stock split may be lower than the total market capitalization before the proposed reverse stock split and, in the future, the market price of our common stock following the reverse stock split may not exceed or remain higher than the market price prior to the proposed reverse stock split.
- The reverse stock split may result in some stockholders owning "odd lots" of less than 100 shares of our common stock on a post-split basis. These odd lots may be more difficult to sell, or require greater transaction costs per share to sell, than shares in "round lots" of even multiples of 100 shares.
- While our Board believes that a higher stock price may help generate investor interest, there can be no assurance that the reverse stock split will result in a per share price that will attract institutional investors or investment funds or that such share price will satisfy the investing guidelines of institutional investors or investment funds. As a result, the trading liquidity of our common stock may not necessarily improve.

Procedure for Effecting Reverse Stock Split and Exchange of Stock Certificates

If the reverse stock split is approved by our stockholders, the reverse stock split would become effective at such time prior to the one-year anniversary of this Annual Meeting as it is deemed by our Board to be in the best interests of the Company and its stockholders and we file the amendment to our Amended and Restated Certificate of Incorporation with the Secretary of State of the State of Delaware. Even if the reverse stock split is approved by our stockholders, our Board has discretion not to carry out or to delay in carrying out the reverse stock split. Upon the filing of the amendment, all the old common stock will be converted into new common stock as set forth in the amendment.

As soon as practicable after the effective time of the reverse stock split, stockholders will be notified that the reverse stock split has been effected. If you hold shares of common stock in a book-entry form, you will receive a transmittal letter from our transfer agent as soon as practicable after the effective time of the reverse stock split with instructions on how to exchange your shares. After you submit your completed transmittal letter, a transaction statement will be sent to your address of record as soon as practicable after the effective date of the reverse stock split indicating the number of post-reverse stock split shares of common stock you hold.

Some stockholders hold their shares of common stock in certificate form or a combination of certificate and book-entry form. Our transfer agent will act as exchange agent for purposes of implementing the exchange of stock certificates, if applicable. If you are a stockholder holding pre-split shares in certificate form, you will receive a transmittal letter from our transfer agent as soon as practicable after the effective time of the reverse stock split. The transmittal letter will be accompanied by instructions specifying how you can exchange your certificate representing the pre-split shares of our common stock for a statement of holding. When you submit your certificate representing the pre-split shares of our common stock, your post-split shares of our common stock will be held electronically in book-entry form in the Direct Registration System. This means that, instead of receiving a new stock certificate, you will receive a statement of holding that indicates the number of post-split shares you own in book-entry form. We will no longer issue physical stock certificates unless you make a specific request for a share certificate representing your post-split ownership interest.

Stockholders should not destroy any stock certificate(s) and should not submit any certificate(s) until requested to do so.

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

Fractional Shares

No fractional shares will be issued in connection with the reverse stock split. Instead, we will issue one full share of the post-reverse stock split common stock to any stockholder who would have been entitled to receive a fractional share as a result of the process. Each common stockholder will hold the same percentage of the outstanding common stock immediately following the reverse stock split as that stockholder did immediately prior to the reverse stock split, except for minor adjustment due to the additional net share fraction that will need to be issued as a result of the treatment of fractional shares.

No Dissenter's Rights

Under the Delaware General Corporation Law, our stockholders are not entitled to dissenter's rights with respect to the reverse stock split or the corresponding amendment to our Amended and Restated Certificate of Incorporation to effect the reverse stock split and we will not independently provide our stockholders with any such right.

Federal Income Tax Consequences of the Reverse Stock Split

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

Generally, a reverse stock split will not result in the recognition of gain or loss for federal income tax purposes. The adjusted basis of the new shares of common stock will be the same as the adjusted basis of the common stock exchanged for such new shares. The holding period of the new, post-reverse stock split shares of the common stock resulting from implementation of the reverse stock split will include the stockholder's respective holding periods for the pre-reverse stock split shares. Stockholders who acquired their shares of our common stock on different dates or at different prices should consult their tax advisors regarding the allocation of the tax basis of such shares. Additional information about the effects of the reverse stock split on the basis of holders of our common stock will be included in Internal Revenue Service Form 8937, Report of Organizational Actions Affecting Basis of Securities, which we will post to our website on or before the 45th day following the effective date of the reverse stock split, if effected.

The foregoing views are not binding on the Internal Revenue Service or the courts. Accordingly, each stockholder should consult with his or her own tax advisor with respect to all of the potential tax consequences to him or her of the reverse stock split.

Vote Required and Recommendation of the Board of Directors

The approval of Proposal 3 requires the affirmative vote of a majority of our outstanding shares of common stock. Broker non-votes and abstentions will be counted as votes against the proposal. **The Board recommends that stockholders vote FOR the approval of the amendment to our Amended and Restated Certificate of Incorporation to effect a reverse stock split of our outstanding shares of common stock at one of the following reverse stock split ratios, 1-for-2, 1-for-3, 1-for-4 or 1-for-5, as determined by the Board of Directors in its sole discretion, prior to the one-year anniversary of this Annual Meeting.**

PROPOSAL 4: AUTHORIZATION TO ADJOURN THE ANNUAL MEETING

If the Annual Meeting is convened and a quorum is present, but there are not sufficient votes to approve Proposal 3, one or more of our proxy holders may move to adjourn the Annual Meeting at that time in order to enable our Board to solicit additional proxies.

In this proposal, we are asking our stockholders to authorize one or more of our proxy holders to adjourn the Annual Meeting to another time and place, if necessary, to solicit additional proxies in the event that there are not sufficient votes to approve Proposal 3. If our stockholders approve this proposal, one or more of our proxy holders can adjourn the Annual Meeting and any adjourned session of the Annual Meeting to allow for additional time to solicit additional proxies, including the solicitation of proxies from our stockholders that have previously voted. Among other things, approval of this proposal could mean that, even if we had received proxies representing a sufficient number of votes to defeat Proposal 3, we could adjourn the Annual Meeting without a vote on such proposals and seek to convince our stockholders to change their votes in favor of such proposals.

If it is necessary to adjourn the Annual Meeting, no notice of the adjourned meeting is required to be given to our stockholders, other than an announcement at the Annual Meeting of the time and place to which the Annual Meeting is adjourned, so long as the meeting is adjourned for 30 days or less and no new record date is fixed for the adjourned meeting. At the adjourned meeting, we may transact any business which might have been transacted at the original meeting.

Vote Required and Recommendation of the Board of Directors

The approval of Proposal 4 requires the affirmative vote of a majority of the shares present in person or by proxy and entitled to vote on the matter. Broker non-votes will not be taken into account in determining the outcome of the proposal, and abstentions will be counted as votes against the proposal. **The Board recommends that stockholders vote FOR the approval to authorize the adjournment of the Annual Meeting.**

PROPOSAL 5: TO APPROVE THE COMPANY'S 2015 STOCK PLAN, AS AMENDED

Subject to stockholder approval, the compensation committee of the Board approved an amendment to the Moleculin Biotech, Inc. 2015 Stock Plan. The 2015 Plan was originally adopted by our Board and stockholders in connection with our initial public offering and became effective in December 2015. In this Proposal 5, our stockholders are being asked to approve the 2015 Plan as amended and restated. The amendments include the following material changes to the 2015 Plan, as described in more detail under "Description of the 2015 Plan" below:

- to increase the number of shares of common stock authorized for issuance under the 2015 Plan by 2,000,000 shares;
- to permit the issuance of stock appreciation rights; and
- to add a limit on the total annual compensation that may be paid or granted to any non-employee director with respect to such service.

Overview

Equity awards have been historically and, we believe, will continue to be, an integral component of our overall compensation program for our employees, directors and consultants. Approval of the 2015 Plan, as amended, will allow us to continue to grant equity awards at levels we determine to be appropriate in order to attract new employees and directors, retain our existing employees and directors and to provide incentives for such persons to exert maximum efforts for our success. The 2015 Plan, as amended, allows us to continue to utilize a broad array of equity incentives with flexibility in designing equity incentives, including stock option grants, stock appreciation rights, stock awards, and stock unit awards.

We believe it is critical for our long-term success that the interests of our employees and directors are tied to our success as “owners” of our business. The equity incentive programs we have in place are intended to build stockholder value by attracting and retaining talented employees and directors. We believe we must continue to offer competitive equity compensation packages in order to retain and motivate the talent necessary for our continued growth and success. We carefully monitor the equity compensation and equity holdings of our employees, directors and consultants as well as the type of equity awards we grant to ensure these awards continue to provide incentives for the recipients to work towards our success. To date, stock options have been the sole component of our equity program. The potential value of stock options is realized only if our share price increases, and so stock options provide a strong incentive for individuals to work to build stockholder value.

As of the Record Date, we had 925,000 shares remaining available for grant under the 2015 Plan. There are a total of 1,575,000 stock awards outstanding with a weighted average exercise price of \$3.25 per share. We have and we expect to continue to experience growth in personnel as we progress our business and advance our drug candidates through clinical trials. If our stockholders do not approve the 2015 Plan, as amended, we believe that we will be unable to successfully use equity as part of our compensation program, as most of our competitors in the industry do, putting us at a significant disadvantage. Therefore, we believe that approval of this request is in the best interest of our stockholders and our company.

Key Features Designed to Protect Stockholders’ Interests

The design of the 2015 Plan, as amended, reflects our commitment to corporate governance and the desire to preserve stockholder value as demonstrated by the following features of the plan:

- Independent administrator. The compensation committee of the board of directors, which is comprised solely of non-employee directors, administers the 2015 Plan.
- No evergreen feature. The maximum number of shares available for issuance under the 2015 Plan is fixed and cannot be increased without stockholder approval.
- Repricing prohibited. Stockholder approval is required for any repricing of any stock options or stock appreciation rights.
- Limitations on Dividend Payments on Awards. Dividends and dividend equivalents may not be paid on awards subject to vesting conditions unless and until such conditions are met.
- No discount awards; maximum term specified. Stock options and stock appreciation rights must have an exercise price or base price no less than the fair market value on the date the award is granted and a term no longer than ten years’ duration.
- Award design flexibility. Different kinds of awards may be granted under the 2015 Plan, giving us the flexibility to design our equity incentives to compliment the other elements of compensation and to support the attainment of our strategic goals.
- Share counting. The number of shares available for grant under the 2015 Plan is reduced by the gross number of shares subject to awards, and shares withheld for taxes in connection with awards or tendered in payment of an option’s exercise price cannot be used for future grants.
- Non-employee director limits. The 2015 Plan contains a limit on the compensation that may be paid to any non-employee member of our Board in any calendar year.
- No tax gross-ups. The 2015 Plan does not provide for tax gross-ups.
- Fixed term. The 2015 Plan has a fixed term of ten years from its initial effective date, or December 1, 2025.

Description of the 2015 Plan

The 2015 Plan is a stock-based compensation plan that provides for discretionary grants of stock options, stock awards, stock unit awards and stock appreciation rights to key employees, non-employee directors and consultants. The material features of the 2015 Plan, as amended, are outlined below. The following description of the 2015 Plan, as amended, is a summary only and

is qualified in its entirety by reference to the complete text of the 2015 Plan, as amended. Stockholders are urged to read the actual text of the 2015 Plan, as amended, in its entirety, which is appended to this Proxy Statement as Annex B.

Administration. The 2015 Plan is administered by our compensation committee of the board of directors (we refer to the body administering the 2015 Plan as the “Committee”). The Committee has full authority to select the individuals who will receive awards under the 2015 Plan, determine the form and amount of each of the awards to be granted and establish the terms and conditions of awards.

Limit on Non-Employee Director Compensation. Under the 2015 Plan, the following limits will apply to non-employee directors. The aggregate value of all compensation granted or paid, as applicable, to any individual for service as a non-employee director with respect to any calendar year, including awards granted under the 2015 Plan and cash fees paid to such non-employee director, will not exceed \$300,000 in total value. For purposes of these limitations, the value of awards is calculated based on the grant date fair value of such awards for financial reporting purposes.

Number of Shares of Common Stock. As of the Record Date, 925,000 shares remain available for issuance under the 2015 Plan, which initially provided for up to 2,500,000 shares to be issued. If this proposal is approved, the number of shares of the common stock that may be issued under the 2015 Plan will be 4,500,000 (this includes the 2,000,000 share increase being requested in this proxy statement), of which 2,925,000 shares will be available for future issuance. Shares issuable under the 2015 Plan may be authorized but unissued shares or treasury shares. If there is a lapse, forfeiture, expiration, termination or cancellation of any award made under the Amended 2015 Plan for any reason, the shares subject to the award will again be available for issuance. Any shares subject to an award that are delivered to us by a participant, or withheld by us on behalf of a participant, as payment for an award or payment of withholding taxes due in connection with an award will not again be available for issuance, and all such shares will count toward the number of shares issued under the 2015 Plan. The number of shares of common stock issuable under the 2015 Plan is subject to adjustment, in the event of any reorganization, recapitalization, stock split, stock distribution, merger, consolidation, split-up, spin-off, combination, subdivision, consolidation or exchange of shares, any change in the capital structure of the company or any similar corporate transaction. In each case, the Committee has the discretion to make adjustments it deems necessary to preserve the intended benefits under the 2015 Plan. No award granted under the 2015 Plan may be transferred, except by will, the laws of descent and distribution.

Eligibility. All employees designated as key employees for purposes of the 2015 Plan, all non-employee directors and consultants are eligible to receive awards under the 2015 Plan. As of March 31, 2018, twelve employees and all non-employee directors were eligible to participate in the 2015 Plan.

Awards to Participants. The 2015 Plan provides for discretionary awards of stock options, stock awards, stock unit awards and stock appreciation rights to participants. Each award made under the 2015 Plan will be evidenced by a written award agreement specifying the terms and conditions of the award as determined by the Committee in its sole discretion, consistent with the terms of the 2015 Plan.

Stock Options. The Committee has the discretion to grant non-qualified stock options or incentive stock options to participants and to set the terms and conditions applicable to the options, including the type of option, the number of shares subject to the option and the vesting schedule; provided that the exercise price of each stock option will be the closing price of the common stock on the date on which the option is granted (“fair market value”), each option will expire ten years from the date of grant and no dividend equivalents may be paid with respect to stock options.

In addition, an incentive stock option granted to a key employee is subject to the following rules: (i) the aggregate fair market value (determined at the time the option is granted) of the shares of common stock with respect to which incentive stock options are exercisable for the first time by a key employee during any calendar year (under all incentive stock option plans of the company and its subsidiaries) cannot exceed \$100,000, and if this limitation is exceeded, that portion of the incentive stock option that does not exceed the applicable dollar limit will be an incentive stock option and the remainder will be a non-qualified stock option; (ii) if an incentive stock option is granted to a key employee who owns stock possessing more than 10% of the total combined voting power of all class of stock of the company, the exercise price of the incentive stock option will be 110% of the closing price of the common stock on the date of grant and the incentive stock option will expire no later than five years from the date of grant; and (iii) no incentive stock option can be granted after ten years from the date the Amended 2015 Plan was adopted.

Stock Appreciation Rights. The Committee has the discretion to grant stock appreciation rights to participants. The Committee determines the exercise price for a stock appreciation right, which cannot be less than 100% of the fair market value of our common stock on the date of grant. Upon the exercise of a stock appreciation right, we will pay the participant in common stock or in cash, at our discretion, an amount equal to the product of (1) the excess of the per share fair market value of our

common stock on the date of exercise over the exercise price, multiplied by (2) the number of shares of common stock with respect to which the stock appreciation right is exercised. The Committee has the discretion to set the terms and conditions applicable to the award, including the number of shares subject to the stock appreciation right and the vesting schedule, provided that each stock appreciation right will expire not more than ten years from the date of grant and no dividends or dividend equivalents shall be paid with respect to any stock appreciation right prior to the exercise of the stock appreciation right.

Stock Awards. The Committee has the discretion to grant stock awards to participants. Stock awards will consist of shares of common stock granted without any consideration from the participant or shares sold to the participant for appropriate consideration as determined by the Board. The number of shares awarded to each participant, and the restrictions, terms and conditions of the award, will be at the discretion of the Committee. Subject to the restrictions, a participant will be a shareholder with respect to the shares awarded to him or her and will have the rights of a shareholder with respect to the shares, including the right to vote the shares and receive dividends on the shares; provided that dividends otherwise payable on any stock award subject to restrictions will be held by us and will be paid to the holder of the stock award only to the extent the restrictions on such stock award lapse.

Stock Units. The Committee has the discretion to grant stock unit awards to participants. Each stock unit entitles the participant to receive, on a specified date or event set forth in the award agreement, one share of common stock or cash equal to the fair market value of one share on such date or event, as provided in the award agreement. The number of stock units awarded to each participant, and the terms and conditions of the award, will be at the discretion of the Committee. Unless otherwise specified in the award agreement, a participant will not be a shareholder with respect to the stock units awarded to him prior to the date they are settled in shares of common stock. The award agreement may provide that until the restrictions on the stock units lapse, the participant will be paid an amount equal to the dividends that would have been paid had the stock units been actual shares; provided that such dividend equivalents will be held by us and paid only to the extent the restrictions lapse.

Payment for Stock Options and Withholding Taxes. The Committee may make one or more of the following methods available for payment of any award, including the exercise price of a stock option, and for payment of the tax obligation associated with an award: (i) cash; (ii) cash received from a broker-dealer to whom the holder has submitted an exercise notice together with irrevocable instructions to deliver promptly to us the amount of sales proceeds from the sale of the shares subject to the award to pay the exercise price or withholding tax; (iii) by directing us to withhold shares of common stock otherwise issuable in connection with the award having a fair market value equal to the amount required to be withheld; and (iv) by delivery of previously acquired shares of common stock that are acceptable to the Committee and that have an aggregate fair market value on the date of exercise equal to the exercise price or withholding tax, or certification of ownership by attestation of such previously acquired shares.

Provisions Relating to a "Change in Control" of the Company. Notwithstanding any other provision of the 2015 Plan or any award agreement, in the event of a "Change in Control" of the company, the Committee has the discretion to provide that all outstanding awards will become fully exercisable, all restrictions applicable to all awards will terminate or lapse, and performance goals applicable to any stock awards will be deemed satisfied at the target level. In addition, upon such Change in Control, the Committee has sole discretion to provide for the purchase of any outstanding stock option for cash equal to the difference between the exercise price and the then fair market value of the common stock subject to the option had the option been currently exercisable, make such adjustment to any award then outstanding as the Committee deems appropriate to reflect such Change in Control and cause any such award then outstanding to be assumed by the acquiring or surviving corporation after such Change in Control.

Amendment of Award Agreements; Amendment and Termination of the Amended 2015 Plan; Term of the 2015 Plan. The Committee may amend any award agreement at any time, provided that no amendment may adversely affect the right of any participant under any agreement in any material way without the written consent of the participant, unless such amendment is required by applicable law, regulation or stock exchange rule.

The Board may terminate, suspend or amend the 2015 Plan, in whole or in part, from time to time, without the approval of the stockholders, unless such approval is required by applicable law, regulation or stock exchange rule, and provided that no amendment may adversely affect the right of any participant under any outstanding award in any material way without the written consent of the participant, unless such amendment is required by applicable law, regulation or rule of any stock exchange on which the shares are listed.

Notwithstanding the foregoing, neither the 2015 Plan nor any outstanding award agreement can be amended in a way that results in the repricing of a stock option. Repricing is broadly defined to include reducing the exercise price of a stock option or stock appreciation right or cancelling a stock option or stock appreciation right in exchange for cash, other stock options or

stock appreciation rights with a lower exercise price or other stock awards. (This prohibition on repricing without stockholder approval does not apply in case of an equitable adjustment to the awards to reflect changes in the capital structure of the company or similar events.)

No awards may be granted under the 2015 Plan on or after the tenth anniversary of the initial effective date of the 2015 Plan, or December 1, 2025.

U.S. Federal Income Tax Consequences

The information set forth below is a summary only and does not purport to be complete. The information is based upon current U.S. federal income tax rules and therefore is subject to change when those rules change. Because the tax consequences to any recipient of an award may depend on his or her particular situation, each recipient should consult the recipient's tax adviser regarding the federal, state, local, and other tax consequences of the grant or exercise of an award or the disposition of shares acquired as a result of an award. The 2015 Plan will not be qualified under the provisions of section 401(a) of the Code and will not be subject to any of the provisions of the Employee Retirement Income Security Act of 1974, as amended.

Non-Qualified Stock Options. A participant will not recognize any income at the time of grant. On the date the participant exercises the non-qualified stock option, the participant will recognize ordinary income in an amount equal to the excess of the fair market value of the shares on the date of exercise over the exercise price. The participant will be responsible for remitting to us the withholding tax obligation that arises at the time the option is exercised. We generally will receive a tax deduction for the same amount of ordinary income recognized by the participant. When the participant sells these shares, any gain or loss recognized by the participant is treated as either short-term or long-term capital gain or loss depending on whether the participant has held the shares more than one year.

Incentive Stock Options. A participant will not recognize any income at the time of grant. If the participant is issued shares pursuant to the exercise of an incentive stock option, and if the participant does not make a disqualifying disposition of the shares within one year after the date of exercise or within two years after the date of grant, the participant will not recognize any income, for federal income tax purposes, at the time of the exercise. When the participant sells the shares issued pursuant to the incentive stock option, the participant will be taxed, for federal income tax purposes, as a long-term capital gain on any amount recognized by the participant in excess of the exercise price, and any loss sustained by the participant will be a long-term capital loss. No deduction will be allowed to us for federal income tax purposes. If, however, the participant sells the shares before the expiration of the holding periods, the participant will recognize ordinary income on the difference between the exercise price and the fair market value at exercise, and we generally will receive a tax deduction in the same amount. Upon exercise of an incentive stock option, the excess of the fair market value over the exercise price is an item of tax preference to the participant for purposes of determining the alternative minimum tax.

In order to qualify as an incentive stock option, the option must be exercised within three months after the participant's termination of employment for any reason other than death or disability and within one year after termination of the participant's employment due to disability. If the option is not exercised within this time period, it will be treated as a non-qualified stock option and taxed accordingly.

Stock Awards/Stock Units. If a participant receives a stock award, the participant will recognize ordinary income upon becoming entitled to transfer the shares at the end of the restriction period without forfeiture. A participant generally will recognize ordinary income when he receives cash or shares pursuant to the settlement of stock units, provided that if the shares are subject to any further restrictions on transfer, the participant will recognize ordinary income upon becoming entitled to transfer the shares at the end of the restriction period without forfeiture. The amount of income the participant recognizes will be equal to the fair market value of the shares on such date, or the amount of cash received less the amount paid by the participant for the shares. This amount will also be the participant's tax basis for the shares. The participant will be responsible for remitting to us the withholding tax obligation that arises at the time the ordinary income is recognized. In addition, the holding period begins on the day the restrictions lapse, or the date the shares are received if not subject to any restrictions, for purposes of determining whether the participant has long-term or short-term capital gain or loss on a subsequent sale of the shares. We generally will be entitled to a deduction with respect to the ordinary income recognized by the participant.

If a participant who receives a stock award subject to restrictions makes an election under Section 83(b) of the Code within 30 days after the date of the grant, the participant will have ordinary income equal to the fair market value on the date of grant, less the amount paid by the participant for the shares, and the participant will recognize no additional income until the participant subsequently sells the shares. The participant will be responsible for remitting to us the withholding tax obligation that arises at the time the ordinary income is recognized. When the participant sells the shares, the tax basis will be equal to the fair market value on the date of grant and the holding period for capital gains purposes begins on the date of the grant. If the

participant forfeits the shares subject to the Section 83(b) election, the participant will not be entitled to any deduction, refund, or loss for tax purposes (other than a capital loss with respect to the amount previously paid by the participant), and we will have to include the amount that was previously deducted from our gross income in the taxable year of the forfeiture.

Stock Appreciation Rights. A participant will not recognize any income at the time of the grant of a stock appreciation right. Upon exercise of the stock appreciation right, the participant will recognize ordinary income equal to the amount received upon exercise. The participant will be responsible for remitting to us the withholding tax obligation that arises at the time the ordinary income is recognized. We generally will be entitled to a deduction with respect to the ordinary income recognized by the participant.

Awards Granted Under the 2015 Plan

It is not possible at this time to determine the specific awards that will be made in 2018 and future years under the 2015 Plan. On April 25, 2018, the last reported sales price for the common stock was \$1.83 per share.

Vote Required and Recommendation of the Board of Directors

The approval of Proposal 5 requires the affirmative vote of a majority of the shares present in person or by proxy and entitled to vote on the matter. Broker non-votes will not be taken into account in determining the outcome of the proposal, and abstentions will be counted as votes against the proposal. **The Board recommends that stockholders vote FOR the approval of the Company's 2015 Stock Plan, as amended.**

Securities Authorized for Issuance under Equity Compensation Plans

The following table sets forth information regarding our equity compensation plans at December 31, 2017:

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 (by class) remaining available for future issuance under equity compensation plans (excluding securities reflected in column (a)) (c)
Equity compensation plans approved by security holders (1)	1,345,000	\$ 3.50	1,155,000
Equity compensation plans not approved by security holders (2)	107,802	\$ 7.50	0
Equity compensation plans not approved by security holders (3)	150,000	\$ 2.61	0
Total	1,602,802		1,155,000

- (1) Represents shares of common stock issuable upon exercise of outstanding stock options under our current 2015 Stock Plan. Our 2015 Stock Plan has been approved by our stockholders.
- (2) Consists of a five-year warrant issued to the underwriters in our initial public offering.
- (3) Consists of warrants issued to a consultant for services.

AVAILABILITY OF ANNUAL REPORT ON FORM 10-K

A copy of our 2017 Annual Report on Form 10-K has been mailed concurrently with this proxy statement to stockholders entitled to notice of and to vote at the Annual Meeting, provided that we have not included the exhibits to the Form 10-K. We will provide copies of these exhibits without cost upon request by eligible stockholders. Requests for copies of such exhibits should be mailed to Moleculin Biotech, Inc., 2575 West Bellfort, Suite 333, Houston, TX 77054, Attention: Corporate Secretary.

OTHER PROPOSED ACTION

Our Board of Directors does not intend to bring any other matters before the Annual Meeting, nor does it know of any matters which other persons intend to bring before the Annual Meeting. If, however, other matters not mentioned in this proxy statement properly come before the Annual Meeting, the persons named in the accompanying form of proxy will vote thereon in accordance with the recommendation of the Board of Directors.

HOUSEHOLDING OF PROXY MATERIALS

The SEC has adopted rules that permit companies and intermediaries (e.g., brokers) to satisfy the delivery requirements for proxy materials with respect to two or more stockholders sharing the same address by delivering a single proxy statement addressed to those stockholders. This process, which is commonly referred to as “householding,” potentially means extra convenience for stockholders and cost savings for companies.

This year, a number of brokers with account holders who are the Company’s stockholders may be “householding” our proxy materials. A single copy of the proxy materials may be delivered to multiple stockholders sharing an address unless contrary instructions have been received from the affected stockholders. Once you have received notice from your broker that they will be householding communications to your address, householding will continue until you are notified otherwise or until you revoke your consent. If, at any time, you no longer wish to participate in householding and would prefer to receive a separate copy of the proxy materials, please (1) notify your broker, or (2) direct your written request to Moleculin Biotech, Inc., 2575 West Bellfort, Suite 333, Houston, TX 77054, Attention: Corporate Secretary. Stockholders who currently receive multiple copies of the proxy materials at their address and would like to request householding of their communications should contact their brokers. In addition, upon written request to the address set forth above, we will promptly deliver a separate copy of the proxy materials to any stockholder at a shared address to which a single copy of the documents was delivered.

STOCKHOLDER PROPOSALS AND SUBMISSIONS

In order to be eligible for inclusion in our proxy statement and form of proxy for our 2019 Annual Meeting, a proposal of a stockholder, including the submission of a stockholder nominee for election to our Board of Directors, must be received at our principal executive offices located in Houston, Texas no later than December 29, 2018 (the “Deadline”). For any proposal that a stockholder wishes to propose for consideration at the 2018 Annual Meeting but does not wish to include in the proxy materials for that meeting, our Amended and Restated Bylaws require a notice of the proposal to be delivered not less than 120 days prior to the anniversary of the mailing date of our proxy materials for the preceding annual meeting of stockholders. The notice of the proposal also must comply with the content requirements for such notices set forth in our Amended and Restated Bylaws

Whether or not you expect to be present at the Annual Meeting, please sign and return the enclosed proxy promptly. Your vote is important. If you are a stockholder of record and attend the Annual Meeting and wish to vote in person, you may withdraw your proxy at any time prior to the vote.

By Order of the Board of Directors
MOLECULIN BIOTECH, INC.

/s/ WALTER V. KLEMP

Walter V. Klempe

Chairman of the Board, President and Chief Executive Officer

Houston, Texas
April 27, 2018

Annex A

STATE OF DELAWARE
CERTIFICATE OF AMENDMENT
OF THE AMENDED AND RESTATED CERTIFICATE OF INCORPORATION OF
MOLECULIN BIOTECH, INC.

Moleculin Biotech, Inc., a corporation organized and existing under the laws of the State of Delaware (the “Corporation”) for the purpose of amending its Amended and Restated Certificate of Incorporation in accordance with the General Corporation Law of the State of Delaware, does hereby make and execute this Certificate of Amendment to the Amended and Restated Certificate of Incorporation, as amended, and does hereby certify that:

1. The Board of Directors of the Corporation (the “Board”), acting in accordance with the provisions of Sections 141 and 242 of the General Corporation Law of the State of Delaware, adopted resolutions amending its Amended and Restated Certificate of Incorporation (the “Certificate of Incorporation”), so that effective upon the effective time of this Certificate of Amendment to the Certificate of Incorporation with the Secretary of State of the State of Delaware, every [2], [3], [4], [5] shares of the Corporation’s common stock, par value \$0.001 per share (hereinafter the “Common Stock”), issued and outstanding shall, automatically and without any action on the part of the respective holders thereof, be combined and converted into one share of Common Stock without increasing or decreasing the par value of each share of Common Stock (the “Reverse Stock split”) and without increasing or decreasing the authorized number of shares of Common Stock or the Corporation’s preferred stock, par value \$0.001 per share (hereinafter the “Preferred Stock”); provided, however, no fractional shares of Common Stock shall be issued in connection with the Reverse Stock Split, and instead, the Corporation shall issue one full share of post-Reverse Stock Split Common Stock to any stockholder who would have been entitled to receive a fractional share of Common Stock as a result of the Reverse Stock Split. The Reverse Stock Split shall occur whether or not the certificates representing such shares of Common Stock are surrendered to the Corporation or its transfer agent.

2. Thereafter, pursuant to a resolution of the Board, a meeting of the stockholders of the Corporation was duly called and held upon notice in accordance with Section 222 of the General Corporation Law of the State of Delaware at which meeting the necessary number of shares as required by statute were voted in favor of the foregoing amendment.

3. The foregoing amendment has been duly adopted in accordance with the provisions of Section 242 of the General Corporation law of the State of Delaware by the vote of a majority of each class of outstanding stock of the Corporation entitled to vote thereon.

4. This amendment shall be effective as of 5:00 p.m., Eastern Time, on the date of filing of this Certificate of Amendment with the Secretary of State of the State of Delaware.

IN WITNESS WHEREOF, I have signed this Certificate this _____ day of _____, 201__.

Walter V. Klemp
Chief Executive Officer

MOLECULIN BIOTECH, INC.
2015 STOCK PLAN
(Amended and Restated)

Section 1. Establishment and Purpose.

1.1 The Board of Directors of Moleculin Biotech, Inc. (the “Company”) established the Moleculin Biotech, Inc. 2015 Stock Plan (the “Plan”) effective as of December 1, 2015. The Plan was amended effective as of April 19, 2016 and is hereby further amended and restated effective as of April 6, 2018, subject to approval by the Company’s stockholders at the Company’s annual meeting on June 6, 2018. Awards granted prior to the effective date of the Plan’s amendment and restatement shall be governed by the terms of the Plan as in effect on the grant date of the Award.

1.2 The purpose of the Plan is to attract and retain outstanding individuals as Key Employees, Directors and Consultants of the Company and its Subsidiaries, to recognize the contributions made to the Company and its Subsidiaries by Key Employees, Directors and Consultants, and to provide such Key Employees, Directors and Consultants with additional incentive to expand and improve the profits and achieve the objectives of the Company and its Subsidiaries, by providing such Key Employees, Directors and Consultants with the opportunity to acquire or increase their proprietary interest in the Company through receipt of Awards.

Section 2. Definitions.

As used in the Plan, the following terms shall have the meanings set forth below:

2.1 “Award” means any award or benefit granted under the Plan, which shall be a Stock Option, a Stock Award, a Stock Unit Award or an SAR.

2.2 “Award Agreement” means, as applicable, a Stock Option Agreement, Stock Award Agreement, Stock Unit Award Agreement or SAR Agreement evidencing an Award granted under the Plan.

2.3 “Board” means the Board of Directors of the Company.

2.4 “Change in Control” has the meaning set forth in Section 8.2 of the Plan.

2.5 “Code” means the Internal Revenue Code of 1986, as amended from time to time.

2.6 “Committee” means the Compensation Committee of the Board or such other committee as may be designated by the Board from time to time to administer the Plan, or, if no such committee has been designated at the time of any grants, it shall mean the Board.

2.7 “Common Stock” means the Common Stock, par value \$0.001 per share, of the Company.

2.8 “Company” means Moleculin Biotech, Inc., a Delaware corporation.

2.9 “Consultant” means any person, including an advisor, who is engaged by the Company or an affiliate to render consulting or advisory services and is compensated for such services. However, service solely as a Director, or payment of a fee for such service, will not cause a Director to be considered a “Consultant” for purposes of the Plan. Notwithstanding the foregoing, a person is treated as a Consultant under this Plan only if a Form S-8 Registration Statement under the Securities Act is available to register either the offer or the sale of the Company’s securities to such person.

2.10 “Director” means a director of the Company who is not an employee of the Company or a Subsidiary.

2.11 “Exchange Act” means the Securities Exchange Act of 1934, as amended from time to time.

2.12 “Fair Market Value” means as of any date, the closing price of a share of Common Stock on the national securities exchange on which the Common Stock is listed, or, if the Common Stock is not listed on a national securities exchange, the over-

the-counter market on which the Common Stock trades, or, if the Common Stock is not listed on a national securities exchange or an over-the-counter market, as determined by the Board as of such date, or, if no trading occurred on such date, as of the trading day immediately preceding such date.

2.13 “Incentive Stock Option” or “ISO” means a Stock Option granted under Section 5 of the Plan that meets the requirements of Section 422(b) of the Code or any successor provision.

2.14 “Key Employee” means an employee of the Company or any Subsidiary selected to participate in the Plan in accordance with Section 3. A Key Employee may also include a person who is granted an Award (other than an Incentive Stock Option) in connection with the hiring of the person prior to the date the person becomes an employee of the Company or any Subsidiary, provided that such Award shall not vest prior to the commencement of employment.

2.15 “Non-Qualified Stock Option” or “NSO” means a Stock Option granted under Section 5 of the Plan that is not an Incentive Stock Option.

2.16 “Participant” means a Key Employee, Director or Consultant selected to receive an Award under the Plan.

2.17 “Plan” means the Moleculin Biotech, Inc. 2015 Stock Plan.

2.18 “Stock Appreciation Right” or “SAR” means a grant of a right to receive shares of Common Stock or cash under Section 8 of the Plan.

2.19 “Stock Award” means a grant of shares of Common Stock under Section 6 of the Plan.

2.20 “Stock Option” means an Incentive Stock Option or a Non-Qualified Stock Option granted under Section 5 of the Plan.

2.21 “Stock Unit Award” means a grant of a right to receive shares of Common Stock or cash under Section 7 of the Plan.

2.22 “Subsidiary” means an entity of which the Company is the direct or indirect beneficial owner of not less than 50% of all issued and outstanding equity interest of such entity.

Section 3. Administration.

3.1 The Board.

The Plan shall be administered by the Committee, which shall be comprised of at least two members of the Board who satisfy the “non-employee director” definition set forth in Rule 16b-3 under the Exchange Act, unless the Board otherwise determines.

3.2 Authority of the Committee.

(a) The Committee, in its sole discretion, shall determine the Key Employees and Directors to whom, and the time or times at which Awards will be granted, the form and amount of each Award, the expiration date of each Award, the time or times within which the Awards may be exercised, the cancellation of the Awards and the other limitations, restrictions, terms and conditions applicable to the grant of the Awards. The terms and conditions of the Awards need not be the same with respect to each Participant or with respect to each Award.

(b) To the extent permitted by applicable law, regulation, and rules of a stock exchange on which the Common Stock is listed or traded, the Committee may delegate its authority to grant Awards to Key Employees and to determine the terms and conditions thereof to such officer of the Company as it may determine in its discretion, on such terms and conditions as it may impose, except with respect to Awards to officers subject to Section 16 of the Exchange Act.

(c) The Committee may, subject to the provisions of the Plan, establish such rules and regulations as it deems necessary or advisable for the proper administration of the Plan, and may make determinations and may take such other action in connection with or in relation to the Plan as it deems necessary or advisable. Each determination or other

action made or taken pursuant to the Plan, including interpretation of the Plan and the specific terms and conditions of the Awards granted hereunder, shall be final and conclusive for all purposes and upon all persons.

(d) No member of the Board or the Committee shall be liable for any action taken or determination made hereunder in good faith. Service on the Committee shall constitute service as a Director so that the members of the Committee shall be entitled to indemnification and reimbursement as Directors of the Company pursuant to the Company's Certificate of Incorporation and By-Laws.

3.3 Award Agreements.

(a) Each Award shall be evidenced by a written Award Agreement specifying the terms and conditions of the Award. In the sole discretion of the Committee, the Award Agreement may condition the grant of an Award upon the Participant's entering into one or more of the following agreements with the Company: (i) an agreement not to compete with the Company and its Subsidiaries which shall become effective as of the date of the grant of the Award and remain in effect for a specified period of time following termination of the Participant's employment with the Company; (ii) an agreement to cancel any employment agreement, fringe benefit or compensation arrangement in effect between the Company and the Participant; and (iii) an agreement to retain the confidentiality of certain information. Such agreements may contain such other terms and conditions as the Committee shall determine. If the Participant shall fail to enter into any such agreement at the request of the Committee, then the Award granted or to be granted to such Participant shall be forfeited and cancelled.

Section 4. Shares of Common Stock Subject to Plan.

4.1 Total Number of Shares.

(a) The total number of shares of Common Stock that may be issued under the Plan shall be 4,500,000 (which reflects the 2,500,000 shares previously authorized under the Plan and 2,000,000 shares to be issued under the Plan pursuant to this amendment and restatement). Such shares may be either authorized but unissued shares or treasury shares, and shall be adjusted in accordance with the provisions of Section 4.3 of the Plan.

(b) The number of shares of Common Stock delivered by a Participant or withheld by the Company on behalf of any such Participant as full or partial payment of an Award, including the exercise price of a Stock Option or of any required withholding taxes, shall not again be available for issuance pursuant to subsequent Awards, and shall count towards the aggregate number of shares of Common Stock that may be issued under the Plan. Any shares of Common Stock purchased by the Company with proceeds from a Stock Option exercise shall not again be available for issuance pursuant to subsequent Awards, shall count against the aggregate number of shares that may be issued under the Plan and shall not increase the number of shares available under the Plan.

(c) If there is a lapse, forfeiture, expiration, termination or cancellation of any Award for any reason (including for reasons described in Section 3.3), or if shares of Common Stock are issued under such Award and thereafter are reacquired by the Company pursuant to rights reserved by the Company upon issuance thereof, the shares of Common Stock subject to such Award or reacquired by the Company shall again be available for issuance pursuant to subsequent Awards, and shall not count towards the aggregate number of shares of Common Stock that may be issued under the Plan.

4.2 Shares Under Awards.

Of the shares of Common Stock authorized for issuance under the Plan pursuant to Section 4.1:

(a) The maximum number of shares of Common Stock as to which a Key Employee may receive Stock Options or SARs in any calendar year is 500,000, except that the maximum number of shares of Common Stock as to which a Key Employee may receive Stock Options or SARs in the calendar year in which such Key Employee begins employment with the Company or its Subsidiaries is 500,000.

(b) The maximum number of shares of Common Stock that may be subject to Stock Options (ISOs and/or NSOs) is 4,500,000.

(c) The maximum number of shares of Common Stock that may be used for Stock Awards and/or Stock Unit Awards that may be granted to any Key Employee in any calendar year is 500,000, or, in the event the Award is settled in cash, an amount equal to the Fair Market Value of such number of shares on the date on which the Award is settled.

(d) The maximum number of shares of Common Stock subject to Awards granted under the Plan or otherwise during any one calendar year to any Director, taken together with any cash fees paid by the Company to such Director during such calendar year for service on the Board, will not exceed \$300,000 in total value (calculating the value of any such Awards based on the grant date fair value of such Awards for financial reporting purposes).

The numbers of shares described herein shall be as adjusted in accordance with Section 4.3 of the Plan.

4.3 Adjustment.

In the event of any reorganization, recapitalization, stock split, stock distribution, merger, consolidation, split-up, spin-off, combination, subdivision, consolidation or exchange of shares, any change in the capital structure of the Company or any similar corporate transaction, the Committee shall make such adjustments as it deems appropriate, in its sole discretion, to preserve the benefits or intended benefits of the Plan and Awards granted under the Plan. Such adjustments may include: (a) adjustment in the number and kind of shares reserved for issuance under the Plan; (b) adjustment in the number and kind of shares covered by outstanding Awards; (c) adjustment in the exercise price of outstanding Stock Options or SARs or the price of Stock Awards or Stock Unit Awards under the Plan; (d) adjustments to any of the shares limitations set forth in Section 4.1 or 4.2 of the Plan; and (e) any other changes that the Committee determines to be equitable under the circumstances.

Section 5. Grants of Stock Options.

5.1 Grant.

Subject to the terms of the Plan, the Committee may from time to time grant Stock Options to Participants. Unless otherwise expressly provided at the time of the grant, Stock Options granted under the Plan to Key Employees will be NSOs. Stock Options granted under the Plan to Directors who are not employees of the Company or any Subsidiary will be NSOs.

5.2 Stock Option Agreement.

The grant of each Stock Option shall be evidenced by a written Stock Option Agreement specifying the type of Stock Option granted, the exercise period, the exercise price, the terms for payment of the exercise price, the expiration date of the Stock Option, the number of shares of Common Stock to be subject to each Stock Option and such other terms and conditions established by the Committee, in its sole discretion, not inconsistent with the Plan.

5.3 Exercise Price and Exercise Period.

With respect to each Stock Option granted to a Participant:

(a) The per share exercise price of each Stock Option shall be the Fair Market Value of the Common Stock subject to the Stock Option on the date on which the Stock Option is granted.

(b) Each Stock Option shall become exercisable as provided in the Stock Option Agreement; provided that the Committee shall have the discretion to accelerate the date as of which any Stock Option shall become exercisable in the event of the Participant's termination of employment with the Company, or service on the Board, without cause (as determined by the Board in its sole discretion).

(c) No dividends or dividend equivalents shall be paid with respect to any shares subject to a Stock Option prior to the exercise of the Stock Option.

(d) Each Stock Option shall expire, and all rights to purchase shares of Common Stock thereunder shall expire, on the date ten years after the date of grant.

5.4 Required Terms and Conditions of ISOs.

In addition to the foregoing, each ISO granted to a Key Employee shall be subject to the following specific rules:

(a) The aggregate Fair Market Value (determined with respect to each ISO at the time such Option is granted) of the shares of Common Stock with respect to which ISOs are exercisable for the first time by a Key Employee during any calendar year (under all incentive stock option plans of the Company and its Subsidiaries) shall not exceed \$100,000. If the aggregate Fair Market Value (determined at the time of grant) of the Common Stock subject to an ISO which first becomes exercisable in any calendar year exceeds the limitation of this Section 5.4(a), so much of the ISO that does not exceed the applicable dollar limit shall be an ISO and the remainder shall be a NSO; but in all other respects, the original Stock Option Agreement shall remain in full force and effect.

(b) Notwithstanding anything herein to the contrary, if an ISO is granted to a Key Employee who owns stock possessing more than 10% of the total combined voting power of all classes of stock of the Company (or its parent or subsidiaries within the meaning of Section 422(b)(6) of the Code): (i) the purchase price of each share of Common Stock subject to the ISO shall be not less than 110% of the Fair Market Value of the Common Stock on the date the ISO is granted; and (ii) the ISO shall expire, and all rights to purchase shares of Common Stock thereunder shall expire, no later than the fifth anniversary of the date the ISO was granted.

(c) No ISOs shall be granted under the Plan after ten years from the earlier of the date the Plan is adopted or approved by shareholders of the Company.

5.5 Exercise of Stock Options.

(a) A Participant entitled to exercise a Stock Option may do so by delivering written notice to that effect specifying the number of shares of Common Stock with respect to which the Stock Option is being exercised and any other information the Committee may prescribe. All notices or requests provided for herein shall be delivered to the Chief Financial Officer of the Company.

(b) The Committee in its sole discretion may make available one or more of the following alternatives for the payment of the Stock Option exercise price: (i) in cash; (ii) in cash received from a broker-dealer to whom the Participant has submitted an exercise notice together with irrevocable instructions to deliver promptly to the Company the amount of sales proceeds from the sale of the shares subject to the Stock Option to pay the exercise price; (iii) by directing the Company to withhold such number of shares of Common Stock otherwise issuable in connection with the exercise of the Stock Option having an aggregate Fair Market Value equal to the exercise price; (iv) by delivering previously acquired shares of Common Stock that are acceptable to the Committee and that have an aggregate Fair Market Value on the date of exercise equal to the Stock Option exercise price; or (v) by certifying to ownership by attestation of such previously acquired shares of Common Stock.

The Committee shall have the sole discretion to establish the terms and conditions applicable to any alternative made available for payment of the Stock Option exercise price.

Section 6. Stock Awards.

6.1 Grant.

The Committee may, in its discretion, (a) grant shares of Common Stock under the Plan to any Participant without consideration from such Participant or (b) sell shares of Common Stock under the Plan to any Participant for such amount of cash, Common Stock or other consideration as the Committee deems appropriate.

6.2 Stock Award Agreement.

Each share of Common Stock granted or sold hereunder shall be subject to such restrictions, conditions and other terms as the Board may determine at the time of grant or sale, the general provisions of the Plan, the restrictions, terms and conditions of the related Stock Award Agreement, and the following specific rules:

(a) The Award Agreement shall specify whether the shares of Common Stock are granted or sold to the Participant and such other provisions, not inconsistent with the terms and conditions of the Plan, as the Committee shall determine.

(b) The restrictions to which the shares of Common Stock awarded hereunder are subject shall lapse as provided in Stock Award Agreement; provided that the Committee shall have the discretion to accelerate the date as of which the restrictions lapse with respect to any Award held by a Participant in the event of the Participant's termination of

employment with the Company, or service on the Board, without cause (as determined by the Committee in its sole discretion).

(c) Except as provided in this subsection (c) and unless otherwise set forth in the related Stock Award Agreement, the Participant receiving a grant of or purchasing Common Stock shall thereupon be a stockholder with respect to such shares and shall have the rights of a stockholder with respect to such shares, including the right to vote such shares and to receive dividends and other distributions paid with respect to such shares; provided that any dividends or other distributions payable with respect to the Stock Award shall be accumulated and held by the Company and paid to the Participant only upon, and to the extent, the restrictions lapse in accordance with the terms of the applicable Stock Award Agreement. Any such dividends or other distributions held by the Company attributable to the portion of a Stock Award that is forfeited shall also be forfeited.

Section 7. Stock Unit Awards.

7.1 Grant.

The Committee may, in its discretion, grant Stock Unit Awards to any Participant. Each Stock Unit subject to the Award shall entitle the Participant to receive, on the date or the occurrence of an event (including the attainment of performance goals) as described in the Stock Unit Award Agreement, a share of Common Stock or cash equal to the Fair Market Value of a share of Common Stock on the date of such event as provided in the Stock Unit Award Agreement.

7.2 Stock Unit Agreement.

Each Stock Unit Award shall be subject to such restrictions, conditions and other terms as the Committee may determine at the time of grant, the general provisions of the Plan, the restrictions, terms and conditions of the related Stock Unit Award Agreement and the following specific rules:

(a) The Stock Unit Agreement shall specify such provisions, not inconsistent with the terms and conditions of the Plan, as the Committee shall determine.

(b) The restrictions to which the shares of Stock Units awarded hereunder are subject shall lapse as provided in Stock Unit Agreement; provided that the Committee shall have the discretion to accelerate the date as of which the restrictions lapse with respect to any Award held by a Participant in the event of the Participant's termination of employment with the Company, or service on the Board, without cause (as determined by the Board in its sole discretion).

(c) Except as provided in this subsection (c) and unless otherwise set forth in the Stock Unit Agreement, the Participant receiving a Stock Unit Award shall have no rights of a stockholder, including voting or dividends or other distributions rights, with respect to any Stock Units prior to the date they are settled in shares of Common Stock; provided that a Stock Unit Award Agreement may provide that until the Stock Units are settled in shares or cash, the Participant shall be entitled to receive on each dividend or distribution payment date applicable to the Common Stock an amount equal to the dividends or other distributions that the Participant would have received had the Stock Units held by the Participant as of the related record date been actual shares of Common Stock. Such amounts shall be accumulated and held by the Company and paid to the Participant only upon, and to the extent, the restrictions lapse in accordance with the terms of the applicable Stock Unit Award Agreement. Such amounts held by the Company attributable to the portion of the Stock Unit Award that is forfeited shall also be forfeited.

Section 8. SARs.

8.1 Grant.

The Committee may grant SARs to Participants. Upon exercise, an SAR entitles the Participant to receive from the Company the number of shares of Common Stock having an aggregate Fair Market Value equal to the excess of the Fair Market Value of one share as of the date on which the SAR is exercised over the exercise price, multiplied by the number of shares with respect to which the SAR is being exercised. The Committee, in its discretion, shall be entitled to cause the Company to elect to settle any part or all of its obligations arising out of the exercise of an SAR by the payment of cash in lieu of all or part of the shares it would otherwise be obligated to deliver in an amount equal to the Fair Market Value of such shares on the date of exercise. Cash shall be delivered in lieu of any fractional shares. The terms and conditions of any such Award shall be determined at the time of grant.

8.2 SAR Agreement.

(a) Each SAR shall be evidenced by a written SAR Agreement specifying the terms and conditions of the SAR as the Committee may determine, including the SAR exercise price, expiration date of the SAR, the number of shares of Common Stock to which the SAR pertains, the form of settlement and such other terms and conditions established by the Committee, in its sole discretion, not inconsistent with the Plan.

(b) The per Share exercise price of each SAR shall not be less than 100% of the Fair Market Value of a Share on the date the SAR is granted.

(c) Each SAR shall expire and all rights thereunder shall cease on the date fixed by the Committee in the related SAR Agreement, which shall not be later than the ten years after the date of grant; provided however, if a Participant is unable to exercise an SAR because trading in the Common Stock is prohibited by law or the Company's insider-trading policy, the SAR exercise date shall be extended to the date that is 30 days after the expiration of the trading prohibition.

(d) Each SAR shall become exercisable as provided in the related SAR Agreement; provided that notwithstanding any other Plan provision, the Committee shall have the discretion to accelerate the date as of which any SAR shall become exercisable in the event of the Participant's termination of employment, or service on the Board, without cause (as determined by the Committee in its sole discretion).

(e) No dividends or dividend equivalents shall be paid with respect to any SAR prior to the exercise of the SAR.

(f) A person entitled to exercise an SAR may do so by delivery of a written notice in accordance with procedures established by the Committee specifying the number of shares of Common Stock with respect to which the SAR is being exercised and any other information the Committee may prescribe. As soon as reasonably practicable after the exercise of an SAR, the Company shall (i) issue the total number of full shares of Common Stock to which the Participant is entitled and cash in an amount equal to the Fair Market Value, as of the date of exercise, of any resulting fractional share, and (ii) if the Committee causes the Company to elect to settle all or part of its obligations arising out of the exercise of the SAR in cash, deliver to the Participant an amount in cash equal to the Fair Market Value, as of the date of exercise, of the shares it would otherwise be obligated to deliver.

Section 9. Change in Control.

9.1 Effect of a Change in Control.

(a) Notwithstanding any of the provisions of the Plan or any outstanding Award Agreement, upon a Change in Control of the Company (as defined in Section 9.2), the Board is authorized and has sole discretion to provide that (i) all outstanding Awards shall become fully exercisable, (ii) all restrictions applicable to all Awards shall terminate or lapse and (iii) performance goals applicable to any Awards shall be deemed satisfied at the highest level, as applicable, in order that Participants may realize the benefits thereunder.

(b) In addition to the Board's authority set forth in Section 3, upon such Change in Control of the Company, the Board is authorized and has sole discretion as to any Award, either at the time such Award is granted hereunder or any time thereafter, to take any one or more of the following actions: (i) provide for the purchase of any outstanding Stock Option, for an amount of cash equal to the difference between the exercise price and the then Fair Market Value of the Common Stock covered thereby had such Stock Option been currently exercisable; (ii) make such adjustment to any such Award then outstanding as the Board deems appropriate to reflect such Change in Control; and (iii) cause any such Award then outstanding to be assumed by the acquiring or surviving corporation after such Change in Control.

9.2 Definition of Change in Control.

"Change in Control" of the Company shall be deemed to have occurred if at any time during the term of an Award granted under the Plan any of the following events occurs:

(a) any Person (other than the Company, a trustee or other fiduciary holding securities under an employee benefit plan of the Company, or a corporation owned directly or indirectly by the shareholders of the Company in substantially the same proportions as their ownership of shares of Common Stock of the Company) is or becomes the Beneficial Owner, directly or indirectly, of securities of the Company representing 30% or more of the combined voting

power of the Company's then outstanding securities entitled to vote generally in the election of directors ("Person" and "Beneficial Owner" being defined in Rule 13d-3 of the General Rules and Regulations of the Exchange Act);

(b) the Company is party to a merger, consolidation, reorganization or other similar transaction with another corporation or other Person unless, following such transaction, more than 50% of the combined voting power of the outstanding securities of the surviving, resulting or acquiring corporation or Person or its parent entity entitled to vote generally in the election of directors (or Persons performing similar functions) is then beneficially owned, directly or indirectly, by all or substantially all of the individuals and entities who were the beneficial owners of the Company's outstanding securities entitled to vote generally in the election of directors immediately prior to such transaction, in substantially the same proportions as their ownership, immediately prior to such transaction, of the Company's outstanding securities entitled to vote generally in the election of directors;

(c) the election to the Board, without the recommendation or approval of two-thirds of the incumbent Board, of the lesser of: (i) three Directors; or (ii) Directors constituting a majority of the number of Directors of the Company then in office; provided, however, that Directors whose initial assumption of office is in connection with an actual or threatened election contest, including but not limited to a consent solicitation, relating to the election of Directors of the Company will not be considered as incumbent members of the Board for purposes of this Section; or

(d) there is a complete liquidation or dissolution of the Company, or the Company sells all or substantially all of its business and/or assets to another corporation or other Person unless, following such sale, more than 50% of the combined voting power of the outstanding securities of the acquiring corporation or Person or its parent entity entitled to vote generally in the election of directors (or Persons performing similar functions) is then beneficially owned, directly or indirectly, by all or substantially all of the individuals and entities who were the beneficial owners of the Company's outstanding securities entitled to vote generally in the election of directors immediately prior to such sale, in substantially the same proportions as their ownership, immediately prior to such sale, of the Company's outstanding securities entitled to vote generally in the election of directors.

In no event, however, shall a Change in Control be deemed to have occurred, with respect to a Participant, if that Participant is part of a purchasing group which consummates the Change in Control transaction. A Participant shall be deemed "part of a purchasing group" for purposes of the preceding sentence if the Participant is an equity participant or has agreed to become an equity participant in the purchasing company or group (except for (a) passive ownership of less than 3% of the shares of the purchasing company; or (b) ownership of equity participation in the purchasing company or group which is otherwise not deemed to be significant, as determined prior to the Change in Control by a majority of the disinterested Directors).

Section 10. Payment of Taxes.

(a) In connection with any Award, and as a condition to the issuance or delivery of any shares of Common Stock to the Participant in connection therewith, the Company shall require the Participant to pay the Company the minimum amount of federal, state, local or foreign taxes required to be withheld, and in the Company's sole discretion, the Company may permit the Participant to pay the Company up to the maximum individual statutory rate of applicable withholding.

(b) The Company in its sole discretion may make available one or more of the following alternatives for the payment of such taxes: (i) in cash; (ii) in cash received from a broker-dealer to whom the Participant has submitted notice together with irrevocable instructions to deliver promptly to the Company the amount of sales proceeds from the sale of the shares subject to the Award to pay the withholding taxes; (iii) by directing the Company to withhold such number of shares of Common Stock otherwise issuable in connection with the Award having an aggregate Fair Market Value equal to the minimum amount of tax required to be withheld; (iv) by delivering previously acquired shares of Common Stock of the Company that are acceptable to the Board that have an aggregate Fair Market Value equal to the amount required to be withheld; or (v) by certifying to ownership by attestation of such previously acquired shares of Common Stock.

The Committee shall have the sole discretion to establish the terms and conditions applicable to any alternative made available for payment of the required withholding taxes.

Section 11. Postponement.

The Committee may postpone any grant or settlement of an Award or exercise of a Stock Option or SAR for such time as the Board in its sole discretion may deem necessary in order to permit the Company:

(a) to effect, amend or maintain any necessary registration of the Plan or the shares of Common Stock issuable pursuant to an Award, including upon the exercise of a Stock Option or SAR, under the Securities Act of 1933, as amended, or the securities laws of any applicable jurisdiction;

(b) to permit any action to be taken in order to (i) list such shares of Common Stock on a stock exchange if shares of Common Stock are then listed on such exchange or (ii) comply with restrictions or regulations incident to the maintenance of a public market for its shares of Common Stock, including any rules or regulations of any stock exchange on which the shares of Common Stock are listed; or

(c) to determine that such shares of Common Stock and the Plan are exempt from such registration or that no action of the kind referred to in (b)(ii) above needs to be taken; and the Company shall not be obligated by virtue of any terms and conditions of any Award or any provision of the Plan to sell or issue shares of Common Stock in violation of the Securities Act of 1933 or the law of any government having jurisdiction thereof.

Any such postponement shall not extend the term of an Award and neither the Company nor its Directors or officers shall have any obligation or liability to a Participant, the Participant's successor or any other person with respect to any shares of Common Stock as to which the Award shall lapse because of such postponement.

Section 12. Nontransferability.

Awards granted under the Plan, and any rights and privileges pertaining thereto, may not be transferred, assigned, pledged or hypothecated in any manner, or be subject to execution, attachment or similar process, by operation of law or otherwise, other than by will or by the laws of descent and distribution.

Section 13. Delivery of Shares.

Shares of Common Stock issued pursuant to a Stock Award, the exercise of a Stock or SAR or the settlement of a Stock Unit Award shall be represented by stock certificates or on a non-certificated basis, with the ownership of such shares by the Participant evidenced solely by book entry in the records of the Company's transfer agent; provided, however, that upon the written request of the Participant, the Company shall issue, in the name of the Participant, stock certificates representing such shares of Common Stock. Notwithstanding the foregoing, shares granted pursuant to a Stock Award shall be held by the Secretary of the Company until such time as the shares are forfeited or settled.

Section 14. Termination or Amendment of Plan and Award Agreements.

14.1 Termination or Amendment of Plan.

(a) Except as described in Section 14.3 below, the Board may terminate, suspend, or amend the Plan, in whole or in part, from time to time, without the approval of the stockholders of the Company, unless such approval is required by applicable law, regulation or rule of any stock exchange on which the shares of Common Stock are listed. No amendment or termination of the Plan shall adversely affect the right of any Participant under any outstanding Award in any material way without the written consent of the Participant, unless such amendment or termination is required by applicable law, regulation or rule of any stock exchange on which the shares of Common Stock are listed. Subject to the foregoing, the Committee may correct any defect or supply an omission or reconcile any inconsistency in the Plan or in any Award granted hereunder in the manner and to the extent it shall deem desirable, in its sole discretion, to effectuate the Plan.

(b) The Board shall have the authority to amend the Plan to the extent necessary or appropriate to comply with applicable law, regulation or accounting rules in order to permit Participants who are located outside of the United States to participate in the Plan.

14.2 Amendment of Award Agreements.

The Committee shall have the authority to amend any Award Agreement at any time; provided however, that no such amendment shall adversely affect the right of any Participant under any outstanding Award Agreement in any material way without the written consent of the Participant, unless such amendment is required by applicable law, regulation or rule of any stock exchange on which the shares of Common Stock are listed.

14.3 No Repricing of Stock Options.

Notwithstanding the foregoing, and except as described in Section 4.3, there shall be no amendment to the Plan or any outstanding Stock Option Agreement or SAR Agreement that results in the repricing of Stock Options or SARs without stockholder approval. For this purpose, repricing includes (i) a reduction in the exercise price of the Stock Option or SARs or (ii) the cancellation of a Stock Option in exchange for cash, Stock Options or SARs with an exercise price less than the exercise price of the cancelled Options or SARs, other Awards or any other consideration provided by the Company, but does not include any adjustment described in Section 4.3.

Section 15. No Contract of Employment.

Neither the adoption of the Plan nor the grant of any Award under the Plan shall be deemed to obligate the Company or any Subsidiary to continue the employment of any Participant for any particular period, nor shall the granting of an Award constitute a request or consent to postpone the retirement date of any Participant.

Section 16. Applicable Law.

All questions pertaining to the validity, construction and administration of the Plan and all Awards granted under the Plan shall be determined in conformity with the laws of the State of Delaware, without regard to the conflict of law provisions of any state, and, in the case of Incentive Stock Options, Section 422 of the Code and regulations issued thereunder.

Section 17. Effective Date and Term of Plan.

17.1 Effective Date.

(a) The Plan as amended and restated has been adopted by the Board, and is effective, as of April 6, 2018, subject to the approval of the Plan by the stockholders of the Company.

(b) In the event the Plan is not approved by stockholders of the Company within 12 months of the date hereof, the Plan as amended and restated shall have no effect, and the Plan as in effect prior to April 6, 2018 shall continue.

17.2 Term of Plan.

Notwithstanding anything to the contrary contained herein, no Awards shall be granted on or after December 1, 2025.

MOLECULIN BIOTECH, INC.
THIS PROXY IS SOLICITED BY THE BOARD OF DIRECTORS
FOR THE ANNUAL MEETING OF STOCKHOLDERS TO BE HELD ON
JUNE 6, 2018

The undersigned stockholder acknowledges receipt of the Notice of Annual Meeting of Stockholders and the Proxy Statement, each dated April 27, 2018, and hereby appoints Walter V. Klemp and Jonathan P. Foster, or either of them, proxies for the undersigned, each with full power of substitution, to vote all of the undersigned's shares of common stock of Moleculin Biotech, Inc. (the "Company") at the Annual Meeting of Stockholders of the Company to be held at the DoubleTree - Galleria, 5353 Westheimer Road, Houston, TX 77056, on June 6, 2018 at 1:30 pm, local time, and at any adjournments or postponements thereof.

1. For All
 Withhold All
 For All Except _____
The Board of Directors has nominated the following four persons for election as directors of the Company: Walter V. Klemp, Robert George, Michael Cannon and John Climaco. Their term will expire at the 2019 Annual Meeting of Stockholders, or until their successors are duly elected and qualified.
2. For Against Abstain
To ratify the appointment of Grant Thornton, LLP as the Company's independent registered public accounting firm for the year ending December 31, 2018.
3. For Against Abstain
To approve the amendment to the Company's Amended and Restated Certificate of Incorporation to effect a reverse stock split at one of the following reverse stock split ratios, 1-for-2, 1-for-3, 1-for-4 or 1-for-5, as determined by the Board of Directors in its sole discretion, prior to the one-year anniversary of this Annual Meeting.
4. For Against Abstain
To authorize an adjournment of the Annual Meeting, if necessary, to solicit additional proxies if there are not sufficient votes in favor of Proposal 3.
5. For Against Abstain
To approve the Company's 2015 Stock Plan, as amended, to, among other things, increase the number of shares of common stock authorized for issuance under the 2015 Plan by 2,000,000 shares and to provide for the issuance of stock appreciation rights.
6. _____
In their discretion, upon such other matters as may properly come before the meeting.

The board of directors recommends a vote FOR the nominees and proposals above and if no specification is made, the shares will be voted for such nominees and proposals.

Dated _____ 2018

Stockholder's Signature

Stockholder's Signature

Signature should agree with name printed hereon. If stock is held in the name of more than one person, EACH joint owner should sign. Executors, administrators, trustees, guardians, and attorneys should indicate the capacity in which they sign. Attorneys should submit powers of attorney.

PLEASE SIGN, DATE AND RETURN THE PROXY IN THE ENVELOPE ENCLOSED. THIS PROXY WILL BE VOTED IN THE MANNER DIRECTED HEREIN BY THE UNDERSIGNED STOCKHOLDER. IF NO DIRECTION IS MADE, THIS PROXY WILL BE VOTED FOR THE NOMINEES SET FORTH IN PROPOSAL 1, FOR THE PROPOSALS SET FORTH IN ITEM 2, 3, 4 AND 5 AND WILL GRANT DISCRETIONARY AUTHORITY PURSUANT TO ITEM 6. THIS PROXY WILL REVOKE ALL PRIOR PROXIES SIGNED BY YOU.

