



Rhythm Pharmaceuticals, Inc.
500 Boylston Street, 11th Floor
Boston, MA 02116

Dear Stockholder:

On behalf of the Board of Directors of Rhythm Pharmaceuticals, Inc. (the “Company”, “we” or “Rhythm”), I invite you to attend our 2018 Annual Meeting of Stockholders (the “2018 Annual Meeting”). The 2018 Annual Meeting will be held on Wednesday, June 6, 2018, at 2:30 p.m., Eastern Time, at the offices of Morgan, Lewis & Bockius LLP, One Federal Street, Boston, Massachusetts 02110.

The matters to be voted upon at the 2018 Annual Meeting are listed in the Notice of 2018 Annual Meeting and more fully described in the proxy statement accompanying this letter (the “Proxy Statement”).

We know that many of our Company’s stockholders (each, a “Stockholder”, and collectively, the “Stockholders”) will be unable to attend the 2018 Annual Meeting in person. We, therefore, are soliciting proxies so that each Stockholder has an opportunity to vote on the matters that are scheduled to come before the Stockholders at the 2018 Annual Meeting. You may vote over the Internet, by telephone, or, by signing, dating and returning your proxy card promptly in the enclosed postage-paid envelope. Submitting your vote via the Internet or by telephone or proxy card will not affect your right to vote in person if you decide to attend the 2018 Annual Meeting. You may revoke your proxy at any time prior to the time it is voted at the 2018 Annual Meeting. If your shares are held in street name (held for your account by a broker or other nominee), you will receive instructions from your broker or other nominee explaining how to vote your shares, and you will have the option to cast your vote by telephone or over the Internet if your voting instruction form from your broker or nominee includes instructions and a toll-free telephone number or Internet website to do so. Regardless of the number of Company shares you own, your presence in person or by proxy is important for quorum purposes and your vote is important for proper corporate action.

Thank you for your continuing interest in the Company. We look forward to seeing you at the 2018 Annual Meeting.

Sincerely,

/s/ KEITH M. GOTTESDIENER, MD

Keith M. Gottesdiener, MD
Chief Executive Officer, President, and Director
April 30, 2018



Rhythm Pharmaceuticals, Inc.
500 Boylston Street, 11th Floor
Boston, MA 02116

NOTICE OF 2018 ANNUAL MEETING OF STOCKHOLDERS

The 2018 Annual Meeting of Stockholders of Rhythm Pharmaceuticals, Inc. (the “Company”, “we” or “Rhythm”) will be held on Wednesday, June 6, 2018, at 2:30 p.m., Eastern Time, at the offices of Morgan, Lewis & Bockius LLP, One Federal Street, Boston, Massachusetts 02110 for the purpose of considering two company-sponsored proposals:

1. To elect Keith M. Gottesdiener and Christophe R. Jean as Class I members of the Board of Directors (each a “Class I director”), each to serve for a three-year term until the Company’s 2021 Annual Meeting of Stockholders and until their successors are duly elected and qualified; and
2. To ratify the appointment of Ernst & Young LLP as the independent registered public accounting firm for the Company for the fiscal year ending December 31, 2018.

We will also consider and act upon any other matters that properly come before the 2018 Annual Meeting or any adjournment or postponement thereof.

Our Board of Directors (the “Board”) recommends that you vote “**FOR**” each of the nominees for Class I director (Proposal No. 1) and “**FOR**” ratification of the proposed independent registered public accounting firm (Proposal No. 2).

The Board has fixed the close of business on April 16, 2018 as the record date for determining stockholders entitled to notice of and to vote at the 2018 Annual Meeting. Therefore, each outstanding share of Rhythm’s common stock (NASDAQ: RYTM) entitles the holder of record of such shares at the close of business on April 16, 2018 to receive notice of, and to vote at, the 2018 Annual Meeting or any adjournment or postponement of the 2018 Annual Meeting.

All stockholders as of the record date, or their duly appointed proxies, may attend the meeting. If you attend, you will be asked to present valid picture identification such as a driver’s license or passport. If your Rhythm stock is held in a brokerage account or by a bank or other nominee, you are considered the beneficial owner of shares held in street name, and this proxy statement is being forwarded to you by your broker or nominee. As a result, your name does not appear on our list of stockholders. If your stock is held in street name, in addition to picture identification, you should bring with you a letter or account statement showing that you were the beneficial owner of our stock on the record date, in order to be admitted to the meeting.

Whether or not you expect to attend the meeting, we urge you to vote your shares by Internet, telephone, or by signing, dating and returning the proxy card included in these materials. If you choose to attend the 2018 Annual Meeting, you may still vote your shares in person, even if you have previously voted or returned your proxy by any of the methods described in our Proxy Statement. If your shares are held in street name in a bank or brokerage account, please refer to the materials provided by your bank, broker or other nominee for voting instructions.

All stockholders are extended a cordial invitation to attend the meeting.

By Order of the Board of Directors,

/s/ KEITH M. GOTTESDIENER, MD

Keith M. Gottesdiener, MD
Chief Executive Officer, President, and Director
April 30, 2018

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Rhythm Pharmaceuticals, Inc.
500 Boylston Street, 11th Floor
Boston, MA 02116

PROXY STATEMENT FOR 2018 ANNUAL MEETING OF STOCKHOLDERS

To Be Held On Wednesday, June 6, 2018 at 2:30 p.m. EDT,
At the offices of Morgan, Lewis & Bockius LLP,
At One Federal Street, Boston, Massachusetts 02110

GENERAL INFORMATION

When are this proxy statement and the accompanying materials scheduled to be sent to stockholders?

This proxy statement and accompanying proxy card, or for shares held in street name (held for your account by a broker or other nominee), voting instruction form, are scheduled to be first sent to stockholders beginning on or about April 30, 2018.

Who is soliciting my vote?

The Board of Directors (the “Board”) of Rhythm Pharmaceuticals, Inc. (the “Company”, “we” or “Rhythm”) is soliciting your vote for the proposals proposed at the 2018 Annual Meeting of Stockholders (the “2018 Annual Meeting”).

When is the record date for the Annual Meeting?

Rhythm’s Board has fixed the record date for the 2018 Annual Meeting as of the close of business on April 16, 2018 for determining stockholders entitled to notice of and to vote at the 2018 Annual Meeting.

How many votes can be cast by all stockholders?

A total of 27,517,684 shares of common stock of Rhythm were outstanding on April 16, 2018 and are entitled to be voted at the 2018 Annual Meeting. Each share of common stock is entitled to one vote on each matter presented at the 2018 Annual Meeting. There is no cumulative voting.

How do I vote?

If you are a stockholder of record and your shares are registered directly in your name, you may vote:

- **By Internet.** You may vote by proxy via the Internet at www.investorvote.com/RYTM by following the instructions provided on the proxy card.
- **By Telephone.** If you live in the United States or Canada, you may vote by proxy by calling toll-free 1-800-652-VOTE (8683) and by following the instructions provided on the proxy card. You must have the control number that is included on the proxy card when voting.
- **By Mail.** Complete and mail your proxy card in the postage prepaid envelope you receive, and return the proxy card to Computershare Proxy Services, P.O. Box 505000, Louisville, KY, 40233. Your proxy will be voted in accordance with your instructions. If you sign and return the enclosed proxy but do not otherwise specify how you want your shares voted, they will be voted “**FOR**” the election of the Class I director nominees named herein to the Board, and “**FOR**” the ratification of Ernst & Young LLP as Rhythm’s independent registered public accounting firm for the fiscal year ending December 31, 2018 and will be voted according to the discretion

of the proxy holder named in the proxy card upon any other business that may properly be brought before the meeting and at all adjournments and postponements thereof.

- **In Person at the Meeting.** If you attend the meeting, you must bring a form of personal picture identification with you. You may deliver your completed proxy card in person, or you may vote by completing a ballot, which will be available at the meeting. Directions to the 2018 Annual Meeting are included on the form of Proxy Card included herein.

If your shares of common stock are held in street name (held for your account by a broker or other nominee), you may vote:

- **By Internet or By Telephone.** You will receive instructions from your broker or other nominee if you are permitted to vote by Internet or telephone.
- **By Mail.** You will receive instructions from your broker or other nominee explaining how to vote your shares.
- **In Person at the Meeting.** If you attend the meeting, in addition to picture identification, you should bring both an account statement or a letter from the record holder indicating that you owned the shares as of the record date, *and* contact the broker or other nominee who holds your shares to obtain a broker's proxy card and bring it with you to the meeting.

What are the Board's recommendations on how to vote my shares?

The Board recommends a vote:

- Proposal 1: **"FOR"** the election of each of Keith M. Gottesdiener and Christophe R. Jean as Class I members of the Board (the "Class I directors").
- Proposal 2: **"FOR"** ratification of Ernst & Young LLP as Rhythm's independent registered public accounting firm for the fiscal year ending December 31, 2018.

Who pays the cost for soliciting proxies?

Rhythm will bear the cost of solicitation of proxies. This includes the charges and expenses of brokerage firms and others for forwarding solicitation material to beneficial owners of our outstanding common stock. Rhythm may solicit proxies by mail, personal interview, telephone or via the Internet through its officers, directors and other management employees, who will receive no additional compensation for their services.

Can I change or revoke my vote?

You may revoke your proxy at any time before it is voted by notifying the Secretary of Rhythm in writing at the principal executive offices, by returning a signed proxy with a later date, by transmitting a subsequent vote over the Internet or by telephone prior to the close of the Internet voting facility or the telephone voting facility, or by attending the meeting and voting in person. If your stock is held in street name, you must contact your broker or nominee for instructions as to how to change or revoke your vote.

How is a quorum reached?

The presence, in person or by proxy, of holders of at least a majority of the issued and outstanding shares entitled to vote is necessary to constitute a quorum for the transaction of business at the 2018 Annual Meeting. Abstentions and "broker non-votes," if any, will be counted as present and entitled to vote for purposes of determining whether a quorum is present for the transaction of business at the meeting.

“Broker non-votes” are shares represented at the 2018 Annual Meeting held by brokers, bankers or other nominees (i.e., in “street name”) which do not vote on a particular proposal because the nominee does not have discretionary voting power with respect to that item and has not received instructions from the beneficial owner. Generally, brokerage firms may vote to ratify the selection of independent auditors and on other “discretionary” or “routine” items. In contrast, brokerage firms may not vote to elect directors, because those proposals are considered “non-discretionary” items. Accordingly, if you do not instruct your broker how to vote your shares on “non-discretionary” matters, your broker will not be permitted to vote your shares on these matters. This is a “broker non-vote.”

What vote is required to approve each item?

Required Vote—Election of Directors (Proposal No. 1). Directors shall be elected by a plurality of the votes cast, present in person or represented by proxy at the 2018 Annual Meeting and entitled to vote on the election of directors. This means that the two individuals receiving the highest number of “FOR” votes will be elected as directors. Abstentions and broker non-votes will not be treated as votes cast for this purpose and, therefore, will not affect the outcome of the election.

Required Vote—Ratification of the Selection of Independent Registered Public Accounting Firm (Proposal No. 2). The affirmative vote of a majority of shares of our common stock, present in person or represented by proxy at the 2018 Annual Meeting and entitled to vote, is required to ratify the selection of our independent auditors. An abstention is treated as present and entitled to vote and, therefore, has the effect of a vote “against” ratification of the independent auditors. Because the ratification of the independent auditors is a routine matter, a nominee holding shares in street name may vote on this proposal in the absence of instructions from the beneficial owner.

If there are insufficient votes to approve these proposals, your proxy may be voted by the persons named in the proxy card to adjourn the 2018 Annual Meeting in order to solicit additional proxies in favor of the approval of such proposals. If the 2018 Annual Meeting is adjourned or postponed for any purpose, at any subsequent reconvening of the meeting, your proxy will be voted in the same manner as it would have been voted at the original convening of the 2018 Annual Meeting unless you withdraw or revoke your proxy.

Could other matters be decided at the Annual Meeting?

Rhythm does not know of any other matters that may be presented for action at the 2018 Annual Meeting. Should any other business properly come before the meeting, the persons named on the enclosed proxy will have discretionary authority to vote the shares represented by such proxies in accordance with their best judgment to the same extent as the person signing the proxy would be entitled to vote. If you hold shares through a broker, bank or other nominee as described above, they will not be able to vote your shares on any other business that comes before the 2018 Annual Meeting unless they receive instructions from you with respect to such matter.

What happens if the meeting is postponed or adjourned?

Your proxy may be voted at the postponed or adjourned meeting. You will still be able to change your proxy until it is voted.

What does it mean if I receive more than one proxy card or voting instruction form?

It means that you have multiple accounts at the transfer agent or with brokers. Please complete and return all proxy cards or voting instruction forms to ensure that all of your shares are voted.

Where can I find the voting results of the meeting?

The preliminary voting results will be announced at the 2018 Annual Meeting. The final results will be disclosed in a Current Report on Form 8-K within four business days after the 2018 Annual Meeting date.

What are the implications of being an “emerging growth company?”

We are an “emerging growth company” as that term is used in the Jumpstart Our Business Startups (JOBS) Act of 2012 and, as such, have elected to comply with certain reduced public company reporting requirements. These reduced reporting requirements include reduced disclosure about Rhythm’s executive compensation arrangements and no non-binding advisory votes on executive compensation. We will remain an emerging growth company until the earlier of (1) the last day of the fiscal year (a) following the fifth anniversary of the completion of our initial public offering on October 10, 2017, (b) in which we have total annual gross revenue of at least \$1.0 billion, or (c) in which we are deemed to be a large accelerated filer, which means the market value of our common stock that is held by non-affiliates exceeds \$700 million as of the prior June 30th, and (2) the date on which we have issued more than \$1.0 billion in non-convertible debt during the prior three-year period.

Who should I call if I have any additional questions?

If you hold your shares directly, please call Hunter Smith, Chief Financial Officer of the Company, at (857) 264-4293. If your shares are held in street name, please contact the telephone number provided on your voting instruction form or contact your broker or nominee holder directly.

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

The Notice of 2018 Annual Meeting of Stockholders, this Proxy Statement and our Annual Report on Form 10-K for the fiscal year ended December 31, 2017 are available free of charge at www.edocumentview.com/RYTM or www.rhythmtx.com under “Investors & Media” at “SEC Filings.” Directions to the Annual Meeting are included on the form of Proxy Card included herein.

PROPOSAL NO. 1—ELECTION OF DIRECTORS

In accordance with Rhythm’s certificate of incorporation and bylaws, each as currently amended and in effect, the Board is divided into three classes of directors of approximately equal size. The members of each class of directors are elected to serve a three-year term with the term of office of each class ending in successive years. Keith M. Gottesdiener and Christophe R. Jean are the Class I directors whose terms expire at the 2018 Annual Meeting. Each of Keith M. Gottesdiener and Christophe R. Jean has been nominated for, and has agreed to stand for, re-election to the Board to serve as a Class I director of Rhythm for three years until the 2021 Annual Meeting and until their successors are duly elected and qualified or until their earlier death, resignation or removal.

It is intended that, unless you give contrary instructions, shares represented by proxies will be voted for the election of each of the two nominees listed above as director nominees. Rhythm has no reason to believe that any nominee will be unable to serve. In the event that one or more nominees is unexpectedly not available to serve, proxies may be voted for another person nominated as a substitute by the Board, or the Board may reduce the number of directors to be elected at the 2018 Annual Meeting. Information relating to each nominee for election as director and for each continuing director, including his or her period of service as a director of Rhythm, principal occupation and other biographical material, is included below.

A plurality of the votes cast at the meeting will be required for the election of the Class I director nominees. The two nominees for director with the highest number of affirmative votes will be elected as directors. Broker non-votes and abstentions will not be treated as votes cast for this purpose and, therefore, will not affect the outcome of the election.

**THE BOARD OF DIRECTORS UNANIMOUSLY RECOMMENDS THAT YOU VOTE “FOR”
EACH OF THESE NOMINEES FOR CLASS I DIRECTOR.**

(PROPOSAL NO. 1 ON YOUR PROXY CARD)

BOARD OF DIRECTORS

Board Composition and Structure

Our certificate of incorporation and bylaws, each as currently amended and in effect, state that our Board shall consist of a number of directors that shall be fixed exclusively by the Board from time to time in accordance with the bylaws of the Company. Each director holds office until his or her successor is duly elected and qualified or until his or her death, incapacity, resignation or removal. Our certificate of incorporation provides that our directors may be removed only for cause by the affirmative vote of the holders of at least 75% of the voting power of the outstanding shares of capital stock of Rhythm entitled to vote in the election of directors, voting together as a single class, at a meeting of the stockholders called for that purpose. Any vacancy in the Board, including a vacancy that results from an increase in the number of directors, may be filled only by the vote of a majority of the remaining directors then in office, although less than a quorum, or by the sole remaining director.

Our certificate of incorporation, as currently amended and in effect, provides that our Board is divided into three classes of directors, with the classes as nearly equal in number as possible. Each of our directors identified below serves in the class indicated. Subject to any earlier resignation or removal in accordance with the terms of our certificate of incorporation and bylaws, our current Class I directors will serve until the 2021 annual meeting of stockholders; our current Class II directors will serve until the 2019 annual meeting of stockholders; and our current Class III directors will serve until the 2020 annual meeting of stockholders. Any additional directorships resulting from an increase in the number of directors will be apportioned by our board among the three classes as equally as possible.

Our Board is currently comprised of seven members. Below is a list of the names, ages as of April 16, 2018 and classification of the individuals who currently serve as our directors.

Name	Age	Position(s)	Class
Keith M. Gottesdiener, M.D.	64	Chief Executive Officer, President and Director	I
Neil Exter(1)	59	Director	II
Todd Foley(1)	46	Director	II
Christophe R. Jean(2)	62	Director	I
Ed Mathers(3)	58	Director	II
David W. J. McGirr(2)(3)	63	Director	III
David P. Meeker(2)(3)	63	Director, Chairman of the Board	III

- (1) Member of the Compensation Committee.
- (2) Member of the Audit Committee.
- (3) Member of the Governance and Nominating Committee.

In consultation with the Governance and Nominating Committee, the Board has determined that the classified board structure is appropriate for the Company, particularly following its initial public offering. A classified board provides for stability, continuity and experience among our Board. Further, the Board believes that building a cohesive Board is an important goal. In our industry in particular, long-term focus is critical. The time horizon required for successful development of pharmaceuticals makes it vital that we have a board that understands the implications of this process and has the ability to develop and implement long-term strategies while benefiting from an in-depth knowledge of Rhythm’s business and operations. A classified board structure helps to ensure that there will be the continuity and stability of leadership required to navigate a challenging economic environment while resisting the pressure to focus on short-term results at the expense of the long-term value and success of the Company. The future success of Rhythm depends in significant part on the ability to attract and

retain capable and experienced directors. In this regard, we believe that longer terms for our directors will enhance director independence from both management and stockholder special interest groups.

Director Biographies

Information concerning our directors is set forth below. The biographical description of each director includes the specific experience, qualifications, attributes and skills that led the Board to conclude that such person should serve as a director.

Class I Directors (Nominees Standing for Re-Election)

Keith M. Gottesdiener, M.D.

Dr. Gottesdiener has been Chief Executive Officer and a member of the Board since October 2011 and was chairman of the Board from that date until April 2017. He has been President since August 2017. He joined Rhythm after 16 years at Merck Research Laboratories, or Merck. Dr. Gottesdiener joined Merck in 1995 and held positions of increasing responsibility, eventually leading Merck's early clinical development across all therapeutic areas from 2001 through early 2006. From 2006 to 2011, he was a leader of Merck's late clinical development organization, first overseeing the development of Merck's infectious diseases and vaccine products through pivotal trials, registration, and life cycle management, including Gardasil™ (HPV Vaccine), Rotateq™ (rotavirus vaccine), Zostavax™ (zoster vaccine) and Isentress™ (HIV integrase inhibitor), among others. In 2008, Dr. Gottesdiener was appointed Late Stage Therapeutic Group Leader, and in that role led Merck's late-stage clinical development efforts (from Phase 2 thru patent expiry) across all therapeutic areas. After Merck's merger with Schering Plough in 2009, he continued as co-head of late development. Dr. Gottesdiener received his B.A. from Harvard College and his M.D. from the University of Pennsylvania. He completed his residency and fellowship at the Brigham and Women's Hospital-Beth Israel Medical Center-Dana Farber Cancer Institute Children's Hospital programs. After his fellowship, Dr. Gottesdiener did postdoctoral research in the laboratory of Dr. Jack Strominger at Dana Farber Cancer Institute working on the molecular immunology of the T-cell receptor. In 1986, he joined the faculty as an assistant professor at Columbia University, started an independent research laboratory with NIH RO-1 funding, focusing on gene transcription, and was Associate Clinical Professor of Medicine at the time he left to join Merck in 1995. Dr. Gottesdiener was a director and the chief executive officer of Motus Therapeutics, Inc., with which the Company was previously affiliated ("Motus") until December 2016. Dr. Gottesdiener is currently a director of Intercept Pharmaceuticals and Rhythm Holding Company, LLC. We believe that Dr. Gottesdiener's detailed knowledge of our company, his extensive experience in the pharmaceutical industry as a senior executive, and his research work for both medical and academic institutions provide him with the qualifications to serve as director of our company.

Christophe R. Jean

Mr. Jean has served as a member of our Board since April 2015. He is Executive Vice President of Corporate Strategy, Business Development, Alliances and M&A for the Ipsen Group, a position he assumed in 2013 after serving for 11 years in the position of Executive Vice-President, Chief Operating Officer, with responsibility for all commercial operations and medical affairs worldwide as well as Ipsen's therapeutic area franchises. Prior to joining Ipsen, Mr. Jean was President and CEO for the pharmaceutical activities of the Pierre Fabre Group and President of Europe, Middle East, and Africa for Novartis' Pharmaceutical Division. Prior to the merger of Ciba-Geigy and Sandoz that formed Novartis, he held a number of marketing and management positions in Europe and Latin America for Ciba-Geigy, culminating as Head of Finance and IT Worldwide and Member of the Pharma Executive Committee. Mr. Jean is a member of the Ipsen Executive Leadership Team, the Supervisory Board of Keosys, and the European Biopharmaceutical Enterprises Board. He holds an MBA from Harvard

Business School. We believe that Mr. Jean's extensive experience in the life sciences industry as a senior executive provides him with the qualifications to serve as a director of our company.

Current Directors Not Standing for Re-Election at the Annual Meeting

Todd Foley

Mr. Foley has served as a member of our Board since July 2014. Mr. Foley is a managing director with MPM Capital, a venture capital firm, which he joined in 1999. Prior to joining MPM, Mr. Foley worked in business development at Genentech and in management consulting with Arthur D. Little. Mr. Foley currently serves as a member of the board of directors of Chiasma, Inc., Clinical Ink, Inc., Iconic Therapeutics, Inc., Repare Therapeutics Inc., Semma Therapeutics, Inc., Switch Bio, Inc. and Tetherex Pharmaceuticals, Inc. Mr. Foley received a B.S. in chemistry from the Massachusetts Institute of Technology and an MBA from Harvard Business School. We believe that Mr. Foley's broad experience in the life sciences industry as a venture capitalist, as well as his service on the boards of directors of numerous companies provide him with the qualifications to serve as a director of our company.

Ed Mathers

Mr. Mathers has served as a member of our Board since March 2013. He has been a Partner at New Enterprise Associates, or NEA, a venture capital firm, since August 2008. Mr. Mathers currently serves on the boards of directors of Amplyx Pharmaceuticals, Inc., Envisia Therapeutics Inc., Intarcia Therapeutics, Inc., Inozyme Pharma, Inc., Liquidia Technologies, Inc., Lumos Pharma, Inc., Lumena Pharmaceuticals, Inc., Mirna Therapeutics, Inc., ObsEva SA, Ra Pharmaceuticals, Inc., Satori Pharmaceuticals Incorporated, Senti Biosciences and Synlogic, LLC, all of which are biotechnology companies. In addition, Mr. Mathers is a member of the Biotechnology Industry Organization board, the Southeast BIO board and the North Carolina State Physical and Mathematical Sciences Foundation board. Prior to joining NEA, Mr. Mathers served in various corporate development roles at MedImmune, Inc., a biotechnology company that was acquired by AstraZeneca PLC in 2007, culminating in the position of Executive Vice President, Corporate Development and Venture. In this role, he also led the company's venture capital subsidiary, MedImmune Ventures, Inc., from 2002 to 2008. Mr. Mathers was a director of MedImmune, LLC, from 2007 to 2008. From 2000 to 2002, Mr. Mathers was Vice President, Marketing and Corporate Licensing and Acquisitions at Inhale Therapeutic Systems, Inc., a biopharmaceutical company, which is now known as Nektar Therapeutics, Inc. Previously, for 15 years, Mr. Mathers was at Glaxo Wellcome, Inc., where he held sales and marketing positions of increasing responsibility. Mr. Mathers received a B.S. in chemistry from North Carolina State University. We believe that Mr. Mather's extensive experience in the life sciences industry as a venture capitalist and senior executive, as well as his service on the boards of directors of numerous biotechnology companies provide him with the qualifications to serve as a director of our company.

Neil Exter

Mr. Exter has served as a member of our Board since April 2014. He is a partner at Third Rock Ventures, where he plays an integral role in the formation, development, business strategy, and business development efforts of portfolio companies. He has more than 20 years of business development and strategic experience, facilitating the successful development and implementation of operations and collaborations across the spectrum of newly emerging and established biotech companies. Mr. Exeter is currently the interim chief operating officer of Goldfinch Bio. Prior to joining Third Rock Ventures, Mr. Exter was CBO of Alantox Pharmaceuticals and led the sale of that company to Amgen. Previously, he served as Vice President of Business Development for Millennium Pharmaceuticals. Mr. Exter is a board member of CytomX Therapeutics, Cibiem, Lotus Tissue Repair, Coridea NC1,

Coridea NC2, Element Science, Goldfinch Bio, Pliant Therapeutics, Revolution Medicine, and Seventh Sense. He is a member of the Research Committee of Children's Hospital Boston, the investment committee of the Innovation Research Fund at Partners Healthcare, the board of directors of the New England Venture Capital Association, the Advisory Council of the Electrical and Computer Engineering Department at Cornell University, and the Board of Visitors of Columbia College. He holds an MBA as a Baker Scholar from Harvard Business School, an M.S. from Stanford University, and a B.S. from Cornell University. We believe that Mr. Exter's extensive experience in the life sciences industry as a venture capitalist and senior executive, as well as his service on the boards of directors of numerous biotechnology companies provide him with the qualifications to serve as a director of our company.

David P. Meeker

Dr. Meeker has served as a member of our Board since November 2015 and became Chairman of the Board in April 2017. Mr. Meeker currently serves as CEO of KSQ Therapeutics, Inc., a position he has held since October 2017. From October 2011 until June 2017, Dr. Meeker served as President and Chief Executive officer of Genzyme, a unit of Sanofi, a global biotechnology company. Dr. Meeker oversaw the company's two business units—Rare Diseases and Multiple Sclerosis. As an Executive Vice President of Sanofi, he was a member of Sanofi's Executive Committee. Dr. Meeker joined Genzyme in 1994 as Medical Director to work on the Cystic Fibrosis Gene Therapy program. Subsequently, as Vice President, Medical Affairs, he was responsible for the development of rare disease therapies that today represent transformative and life-saving advancements in medicine for patients. Prior to Genzyme's merger with Sanofi in 2011, Dr. Meeker was Genzyme's Chief Operating Officer, responsible for its commercial organization, overseeing its business units, country management organization and global market access functions. He played an important role in the integration with Sanofi. Prior to joining Genzyme, Dr. Meeker was the director of the Pulmonary Critical Care Fellowship at the Cleveland Clinic and an assistant professor of medicine at Ohio State University. Dr. Meeker is currently a member of the board of directors of MyoKardia, Inc. He has authored more than 40 articles and multiple book chapters. Dr. Meeker received his M.D. from the University of Vermont Medical School. He completed the Advanced Management Program at Harvard Business School in 2000. We believe that Dr. Meeker's deep experience as a senior executive at global pharmaceutical companies and involvement in the development and commercialization of pharmaceutical product candidates for the treatment of rare and ultra-rare diseases provide him with the qualifications to serve as a director of our company.

David W.J. McGirr

Mr. McGirr has served as a member of our Board since November 2015. Mr. McGirr serves as a director of Arsanis, Inc., a clinical-stage biopharmaceutical company focused on applying monoclonal antibody immunotherapies to address serious infectious diseases, Menlo Therapeutics, Inc., a late-stage biopharmaceutical company focused on an NK-1 receptor antagonist for the treatment of pruritus and for refractory chronic cough, and Insmed Incorporated, a pharmaceutical company devoted to the treatment of rare diseases. From March 2013 until June 2014, Mr. McGirr was Senior Advisor to the chief executive officer of Cubist Pharmaceuticals and from November 2002 to March 2013, Mr. McGirr was Senior Vice President and Chief Financial Officer of Cubist. Prior to joining Cubist in 2002, Mr. McGirr was the President and Chief Operating Officer of Hippo Inc., an internet technology, venture-financed company. Mr. McGirr served as a member of Hippo's board of directors from 1999 to 2003. From 1996 to 1999, he was the President of GAB Robins North America, Inc., a risk management company, serving also as Chief Executive Officer from 1997 to 1999. Mr. McGirr was a private equity investor from 1995 to 1996. From 1978 to 1995, Mr. McGirr served in various positions within the S.G. Warburg Group, ultimately as Chief Financial Officer, Chief Administrative Officer and Managing Director of S.G. Warburg & Co., Inc., a position he held from 1992 to 1995. Mr. McGirr received a B.Sc. in Civil Engineering from the University of Glasgow and received an M.B.A. from The Wharton School at the University of Pennsylvania. Mr. McGirr has been designated an audit committee financial expert as defined in applicable SEC rules. We believe that Mr. McGirr's senior-level executive experience in a variety of industries, including in the life sciences industry, provides him with the qualifications to serve as a director of our company.

CORPORATE GOVERNANCE

Director Independence

Under NASDAQ rules, a majority of a listed company's board of directors must be comprised of independent directors. In addition, NASDAQ rules require that, subject to specified exceptions, each member of a listed company's audit committee and compensation committee be independent and satisfy additional independence criteria set forth in Rules 10A-3 and 10C-1, respectively, under the Securities Exchange Act of 1934, as amended, (the "Exchange Act"). Under NASDAQ rules, a director will only qualify as an "independent director" if, in the opinion of that company's 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.

Based upon information requested from and provided by each director concerning their background, employment and affiliations, including family relationships, our Board has determined, upon the recommendation of our Governance and Nominating Committee, that each of our directors other than Keith M. Gottesdiener, our President and Chief Executive Officer, has no relationship that would interfere with the exercise of independent judgment in carrying out the responsibilities of a director and is independent within the meaning of the director independence standards of the NASDAQ rules and the SEC. Our Board has also determined that each of the current members of our Audit Committee and our Compensation Committee as set forth in the "Board Committees" section below satisfies the independence standards for such committee. In making such determination, our Board considered the relationships that each such non-employee director has with Rhythm and all other facts and circumstances deemed relevant in determining their independence, including Christophe R. Jean's role as executive vice president at Ipsen Pharma SAS, an entity with which we have an ongoing contractual relationship.

Certain members of our Board were elected in compliance with the provisions of a voting agreement among us and our major stockholders. The voting agreement terminated upon the closing of our initial public offering on October 10, 2017, and at present we do not have any contractual obligations regarding the election of our directors. See "Certain Relationships and Related Party Transactions." There are no family relationships among any of our directors or executive officers.

Board Meetings, Attendance and Executive Sessions

The Board held six meetings and took action by written consent twice during the year ended December 31, 2017. With the exception of Christophe R. Jean, all board members attended at least 75% of the meetings of the Board and the committees of the Board on which he served (in each case, which were held during the period for which he was a director and/or a member of the applicable committee). Christophe R. Jean attended 70% of the meetings of the Board and the committees of the Board on which he served (which were held during the period for which he was a director and/or a member of the applicable committee).

Executive sessions, or meetings of the outside (non-management) directors without management present, are held regularly. The non-management directors met in executive session during each of the regularly scheduled Board meetings during the year ended December 31, 2017.

Rhythm encourages its directors to attend the Annual Meeting of Stockholders.

Board of Directors Leadership Structure

The positions of chairman of the Board and chief executive officer are presently separated. Our Board recognizes the time, effort and energy that the chief executive officer is required to devote to his position in the current business environment, as well as the commitment required to serve as our chairman, particularly as the Board's oversight responsibilities continue to grow. Our Board believes

that having separate positions is the appropriate leadership structure for us at this time and demonstrates our commitment to good corporate governance.

The Board of Directors’ Role in Risk Oversight

The audit committee of the Board, or the Audit Committee, is primarily responsible for overseeing our risk management processes on behalf of the Board. The Audit Committee receives reports from management regarding our assessment of risks. In addition, the Audit Committee reports regularly to the Board, which also considers our risk profile. The Audit Committee and the Board focus on the most significant risks we face and our general risk management strategies. While the Board oversees our risk management, management is responsible for day-to-day risk management processes. Our Board expects management to consider risk and risk management in each business decision, to proactively develop and monitor risk management strategies and processes for day-to-day activities and to effectively implement risk management strategies adopted by the Audit Committee and the Board. We believe this division of responsibilities is the most effective approach for addressing the risks we face and that the leadership structure of our Board, which also emphasizes the independence of the Board in its oversight of its business and affairs, supports this approach.

Board Committees

Our Board has established the following committees: an Audit Committee, a Compensation Committee, and a Governance and Nominating Committee. The composition and responsibilities of each committee are described below. Members will serve on these committees until their resignation or until otherwise determined by our Board. Each of the Audit Committee, Compensation Committee, and Governance and Nominating Committee operates pursuant to a written charter and each committee reviews and assesses the adequacy of its charter annually and submits its charter to the Board for approval. The charters for the Audit Committee, Compensation Committee, and Governance and Nominating Committee are all available on our website at www.rhythmtx.com under “Investors & Media” at “Corporate Governance.”

The following table describes which directors serve on each of the Board committees.

<u>Name:</u>	<u>Governance and Nominating Committee</u>	<u>Compensation Committee</u>	<u>Audit Committee</u>
Neil Exter		X	
Todd Foley		X	
Christophe R. Jean			X
Ed Mathers	X		
David W. J. McGirr	X		X
David P. Meeker	X		X

Audit Committee

Our Audit Committee provides oversight of our accounting and financial reporting process, the audit of our financial statements and our internal control function. Among other matters, the Audit Committee is responsible for the following: assisting the Board in oversight of the independent auditors’ qualifications, independence and performance; the engagement, retention and compensation of the independent auditors; reviewing the scope of the annual audit; reviewing and discussing with management and the independent auditors the results of the annual audit and the review of our quarterly financial statements, including the disclosures in our annual and quarterly reports filed with the SEC; reviewing our risk assessment and risk management processes; establishing procedures for receiving, retaining and investigating complaints received by us regarding accounting, internal

accounting controls or audit matters; and approving audit and permissible non-audit services provided by our independent auditor.

The current members of our Audit Committee are David W.J. McGirr, who is the chair of the Audit Committee, Christophe R. Jean, and David P. Meeker. All members of our Audit Committee meet the requirements for financial literacy under the applicable rules and regulations of the SEC and NASDAQ. Our Board has determined that David W.J. McGirr is an audit committee financial expert as defined under the applicable rules of the SEC and has the requisite financial sophistication as defined under the applicable rules and regulations of NASDAQ. All of the members of our Audit Committee are independent directors as defined under the applicable rules and regulations of the SEC and NASDAQ.

During the year ended December 31, 2017, the Audit Committee met four times. The report of the Audit Committee is included in this Proxy Statement under “Report of the Audit Committee.”

Compensation Committee

Our Compensation Committee adopts and administers the compensation policies, plans and benefit programs for our executive officers and all other members of our executive team. Our Compensation Committee is also responsible for making recommendations regarding non-employee director compensation to the full Board. In addition, among other things, our Compensation Committee evaluates annually, in consultation with the Board, the performance of our chief executive officer, reviews and approves corporate goals and objectives relevant to compensation of our chief executive officer and other executives and evaluates the performance of these executives in light of those goals and objectives. Our Compensation Committee also adopts and administers our equity compensation plans. The current members of our Compensation Committee are Neil Exter, who is the chair of the Compensation Committee, and Todd Foley. All of the members of our Compensation Committee are independent under the applicable rules and regulations of the SEC and NASDAQ.

During the year ended December 31, 2017, the Compensation Committee met two times.

Governance and Nominating Committee

Our Governance and Nominating committee is responsible for, among other things, making recommendations regarding corporate governance, the composition of our Board, the identification, evaluation and nomination of director candidates and the structure and composition of committees of our Board. In addition, our Governance and Nominating committee oversees our corporate governance guidelines, approves our committee charters, oversees compliance with our code of business conduct and ethics, contributes to succession planning, reviews policies and procedures with respect to our related party transactions policy and oversees our board self-evaluation process. The current members of our Governance and Nominating committee are David P. Meeker, who is the chair of the Governance and Nominating Committee, Ed Mathers, and David W.J. McGirr. All of the members of our Governance and Nominating committee are independent under the applicable rules and regulations of NASDAQ.

During the year ended December 31, 2017, the Governance and Nominating committee did not meet.

Polices Governing Director Nominations

Director Nomination Process

Our Board is responsible for selecting its own members. The Board delegates the selection and nomination process to the Governance and Nominating Committee, with the expectation that other members of the Board and of management will be requested to take part in the process as appropriate.

The Governance and Nominating Committee makes recommendations to the Board regarding the size and composition of the Board. The Governance and Nominating Committee reviews annually with the Board the composition of the Board as a whole and recommends, if necessary, measures to be taken so that the Board reflects the appropriate balance of knowledge, experience, skills, expertise and diversity required for the Board as a whole and contains at least the minimum number of independent directors required by applicable laws and regulations. The Governance and Nominating Committee is responsible for ensuring that the composition of the Board accurately reflects the needs of Rhythm's business and, in furtherance of this goal, for proposing the addition of members and the necessary resignation of members for purposes of obtaining the appropriate members and skills. The Governance and Nominating Committee recommends, and the Board nominates, candidates to stand for election as directors.

Generally, our Governance and Nominating Committee identifies candidates for director nominees in consultation with management, through the use of search firms or other advisors, through the recommendations submitted by stockholders or through such other methods as the Governance and Nominating Committee deems to be helpful to identify candidates. Once candidates have been identified, our Governance and Nominating Committee confirms that the candidates meet all of the minimum qualifications for director nominees established by the Governance and Nominating Committee. The Governance and Nominating Committee may gather information about the candidates through interviews, detailed questionnaires, background checks or any other means that the Governance and Nominating Committee deems to be appropriate in the evaluation process. The Governance and Nominating Committee then meets as a group to discuss and evaluate the qualifications and skills of each candidate, both on an individual basis and taking into account the overall composition and needs of the Board. Based on the results of the evaluation process, the Governance and Nominating Committee recommends candidates as director nominees for election to the Board for the Board's approval.

Stockholders may also nominate persons to be elected as directors. The Governance and Nominating Committee will consider director candidates recommended by our stockholders, in accordance with Rhythm's bylaws. If a stockholder wishes to nominate a person for election as director, he or she must follow the procedures contained in our bylaws. In evaluating candidates recommended by our stockholders, the Governance and Nominating Committee applies the same criteria set forth below under "Minimum Qualifications." To nominate a person to stand for election as a director, a stockholder must provide our Secretary with timely notice of the nomination and the notice must include the information required by Section 2.12(b) of our bylaws.

Additional information regarding requirements for stockholder nominations for next year's annual meeting is described in this Proxy Statement under "General Matters—Stockholder Proposals and Nominations."

Minimum Qualifications

Our Governance and Nominating Committee will consider, among other things, the following qualifications, skills and attributes when recommending candidates for the Board's selection as nominees for the Board and as candidates for appointment to the Board's committees. The nominee shall have the highest personal and professional integrity, shall have demonstrated exceptional ability and judgment, and shall be most effective, in conjunction with the other nominees to the Board, in collectively serving the long-term interests of our stockholders. Board members should possess such attributes and experience as are necessary to provide a broad range of personal characteristics including diversity, management skills and business experience. Directors should be able to commit the requisite time for preparation and attendance at regularly scheduled Board and committee meetings, as well as be able to participate in other matters necessary to ensure that good corporate governance is practiced.

In evaluating proposed director candidates, our Governance and Nominating Committee may consider, in addition to the minimum qualifications and other criteria for board membership approved by the Board from time to time, all facts and circumstances that it deems appropriate or advisable, including, among other things, diversity, not limited to race, gender or national origin, the skills of the proposed director candidate, his or her depth and breadth of professional experience or other background characteristics, his or her independence and the needs of the Board. We have no formal policy regarding board diversity. Our Governance and Nominating Committee's priority in selecting Board members is the identification of persons who will further the interests of Rhythm through his or her established record of professional accomplishment, the ability to contribute positively to the collaborative culture among board members, and professional and personal experiences and expertise relevant to our growth strategy. The Governance and Nominating Committee will consider candidates recommended by stockholders. The policy adopted by the Governance and Nominating Committee provides that candidates recommended by stockholders are given appropriate consideration in the same manner as other candidates.

Communication with the Board of Directors

Stockholders wishing to communicate with our Board may do so by writing to the Board or to the non-employee members of the Board as a group, at:

Rhythm Pharmaceuticals, Inc.
500 Boylston Street, 11th Floor
Boston, MA 02116
Attention: Secretary

The communication must prominently display the legend "BOARD COMMUNICATION" in order to indicate to the Secretary that it is a communication for the Board. Upon receiving such a communication, the Secretary will promptly forward the communication to the relevant individual or group to which it is addressed. Certain items that are unrelated to the Board's duties and responsibilities may be excluded, such as spam, junk mail and mass mailings, resumes and other forms of job inquiries, surveys and business solicitations or advertisements. The Secretary will not forward any communication determined in his good faith belief to be frivolous, unduly hostile, threatening, illegal or similarly unsuitable.

Compensation Committee Interlocks and Insider Participation

During the last completed fiscal year Neil Exter and Todd Foley served on the Compensation Committee. None of the members of our Compensation Committee has at any time during the prior fiscal year been one of our officers or employees. None of the members of the Compensation Committee during the prior fiscal year were formerly one of our officers. None of our executive officers currently serves, or in the past fiscal year has served, as a member of the Board or Compensation Committee of any entity that has one or more executive officers serving on our Board or Compensation Committee. For a description of transactions between us and members of our Compensation Committee and affiliates of such members, please see "Certain Relationships and Related Party Transactions."

Board Observer Rights

In connection with our initial public offering, the Board invited Sara Brownstein of Baker Bros. Advisors LP to continue to attend all meetings of the Board in a nonvoting observer capacity. The Board may terminate the board observer rights in its sole discretion.

Code of Business Conduct and Ethics and Corporate Governance Guidelines

We have adopted a code of business conduct and ethics that applies to all of our employees, including our executive officers, and directors, and those employees responsible for financial reporting. The code of business conduct and ethics is available on our website. We expect that, to the extent required by law, any amendments to the code, or any waivers of its requirements, will be disclosed on our website at www.rhythmtx.com under “Investors & Media” at “Corporate Governance” or by requesting a copy, free of charge, in writing from our Secretary at Rhythm Pharmaceuticals, Inc., 500 Boylston Street, 11th Floor, Boston, MA 02116. We intend to post on our website any amendment to, or waiver under, a provision of the Code of Business Conduct and Ethics that applies to certain of our executive officers within four business days following the date of such amendment or waiver.

A copy of our corporate governance guidelines may also be accessed free of charge by visiting the website at www.rhythmtx.com under “Investors & Media” at “Corporate Governance” or by requesting a copy from our Secretary at our principal executive offices above.

EXECUTIVE OFFICERS

Below is a list of the names, ages as of April 16, 2018 and positions, and a brief account of the business experience of the individuals who serve as our executive officers.

<u>Name</u>	<u>Age</u>	<u>Position(s)</u>
Keith M. Gottesdiener, M.D.	64	Chief Executive Officer, President and Director
Hunter C. Smith	50	Chief Financial Officer and Treasurer
Nithya Desikan	39	Chief Commercial Officer
Lex H.T. Van der Ploeg, Ph.D.	63	Chief Scientific Officer
Fred T. Fiedorek, M.D.	63	Chief Medical Officer

Executive Officer Biographies

Keith M. Gottesdiener, M.D. | Chief Executive Officer and President

Please see Dr. Gottesdiener’s biographical information under Board of Directors—Director Biographies, of this proxy statement.

Hunter C. Smith | Chief Financial Officer and Treasurer

Mr. Smith has been Chief Financial Officer since July 2017 and Treasurer since August 2017. He has more than 25 years of global finance and management experience across multiple industries and financial disciplines, including expertise in business analysis and planning, mergers and acquisitions, capital raising and investor relations. Previously, he was Vice President, Finance and Chief Financial Officer of the Inflammation and Immunology Business Unit at Celgene Corporation from 2013 to July 2017. In this role, Mr. Smith provided finance leadership for the global launch of Otezla®, co-led the integration of Receptos, Inc. following its acquisition by Celgene, and led global business planning and analysis for commercial affiliates and clinical study activities in over 16 countries. Before joining Celgene, Mr. Smith worked in roles of increasing responsibility at Bunge Limited from 1999 to 2013, including Director of Investor Relations, Chief Financial Officer—Asia, Corporate Treasurer, and Chief Financial Officer of Bunge’s Sugar and Bioenergy Segment. Mr. Smith also serves as an Independent Director of Genessee & Wyoming Inc. and is a member of its compensation committee. Mr. Smith holds an MBA in Finance from New York University’s Stern School of Business and a B.A. in History, with honors, from Northwestern University.

Nithya Desikan | Chief Commercial Officer

Ms. Desikan has been Chief Commercial Officer since July 2017. She has over 15 years of experience commercializing new therapies in domestic and global markets. Previously, Ms. Desikan worked at Biogen Inc., where she served most recently as Vice President and Asset Executive, from September 2016 to July 2017, overseeing global profit and loss account for TECFIDERA® and supporting the product’s position as the #1 prescribed oral therapy in multiple sclerosis and from November 2015 to September 2016, building a team to support the Biogen pipeline for the clinical development of inflammatory bowel disease. Prior to that, Ms. Desikan held the role of Vice President and Program Executive from September 2014 to November 2015, where she led Biogen’s Hematology business, now the Biogen spin-off, Bioverativ, to drive the growth of ALPROLIX® and ELOCTATE® and the development of multiple preclinical assets. Before that, from February 2012 to September 2014, Ms. Desikan built the strategy to support the U.S. launch of ALPROLIX, Biogen’s first entrant into the orphan hemophilia market. Before joining Biogen Inc., Ms. Desikan spent 12 years at Johnson & Johnson in the United States and China, supporting brands including: XARELTO®, LEVAQUIN®, TOPAMAX®, ULTRACET®, NUCYNTA®, NUCYNTA®ER and VELCADE®. Ms. Desikan holds a B.S. in Material Science Engineering, with honors, from the University of Florida.

Lex H.T. Van der Ploeg, Ph.D. | Chief Scientific Officer

Dr. Van der Ploeg has been Chief Scientific Officer since October 2011. He has more than 25 years of drug development experience focused on obesity, metabolic disorders, oncology, and neurodegenerative diseases. Before joining Rhythm, he was Senior Vice President of Integrative Medicine and Translational Science at Abraxis Bioscience and Head of R&D at Abraxis Health; both companies were acquired by Celgene Corporation. Prior to that, he held R&D leadership roles at Merck directing drug development programs in metabolism, oncology, and neurodegenerative diseases as Vice President, Basic Research and Site Head, Merck Boston; Site Head, Merck San Diego; and Head, Obesity Research for Merck Rahway and Banyu, Japan. Previously, Dr. Van der Ploeg was an associate professor in the Department of Genetics and Development at Columbia University. He has received numerous awards and grants for his research and has published more than 200 peer-reviewed research papers. Dr. Van der Ploeg is a named inventor on more than 50 patents and patent applications. Dr. Van der Ploeg was the Chief Scientific Officer of Motus until December 2016. He received an M.S. in Biochemistry from the University of Amsterdam and a Ph.D. in Biochemistry/Enzymology/Genetics from the University of Amsterdam/Netherlands Cancer Institute.

Fred T. Fiedorek, M.D. | Chief Medical Officer

Dr. Fiedorek has been Chief Medical Officer since October 2014, joining us after nearly 14 years at Bristol-Myers Squibb, or BMS. He has extensive drug development experience across many therapeutic areas, ranging from early development through Phase 4 and commercial launch. Dr. Fiedorek has particular expertise in diabetes, metabolic disorders and cardiovascular disease, most recently serving as Senior Vice President, Head of Cardiovascular and Metabolic Development at BMS, where he led Phase 2 through Phase 4 global development for these therapeutic areas. Under his leadership, several new medicines achieved successful marketing authorization, including Onglyza® (saxagliptin), Farxiga™ (dapagliflozin), Eliquis® (apixaban), Myalept™ (metreleptin), Bydureon® Dual Chamber Pen, and Glucovance® (metformin/glyburide). While at BMS, Dr. Fiedorek also co-led exploratory development, helping to transition compounds from discovery stage to proof of concept patient trials. In addition, Dr. Fiedorek co-directed the Clinical Science Committee charged with providing scientific, regulatory, and biostatistical review of Phase 1 through Phase 4 clinical trials; he was a member of the Medical Review Group charged with oversight of potential emerging safety signals from marketed medicines or compounds in development; and he participated in joint development committees for BMS alliances with Astra-Zeneca, Pfizer, Otsuka, KAI Pharmaceuticals, Solvay, and Merck. Prior to joining BMS, Dr. Fiedorek held positions of increasing responsibility at Glaxo-Wellcome in Research Triangle Park, or RTP, and was International Project Leader for a Phase 3 metabolic drug development program prior to his move to BMS. Dr. Fiedorek was the Chief Medical Officer of Motus until December 2016. Dr. Fiedorek received his B.A. from Yale University and his M.D. from Harvard Medical School. He completed residency and fellowship training in Internal Medicine and Endocrinology & Metabolism at Washington University in St. Louis, including post-doctoral research on the genetics of animal models of diabetes and obesity. He also served on the faculties at Washington University School of Medicine in St. Louis and the University of North Carolina in Chapel Hill School of Medicine, including an adjunct clinical appointment while at Glaxo-Wellcome in RTP.

EXECUTIVE COMPENSATION

Overview

The following table sets forth information about compensation awarded or paid to our named executive officers for the 2016 and 2017 fiscal years.

Name and Principal Position	Year	Base Salary(1) (\$)	Bonus (\$)	Option Awards(2) (\$)	Non-Equity Incentive Plan Compensation(3) (\$)	All Other Compensation (\$)	Total (\$)
Keith M. Gottesdiener, M.D.,	2017	\$490,795	—	\$799,994	\$245,398	—	\$1,536,187
<i>President and Chief Executive Officer; Director</i>	2016	\$476,500	—	—	\$ 85,770	—	\$ 562,270
Hunter C. Smith(4),	2017	\$159,795	—	\$832,497	\$ 70,490	\$27,495	\$1,090,277
<i>Chief Financial Officer</i>							
Nithya Desikan(5),	2017	\$158,100	\$100,000	\$832,497	\$ 66,780	—	\$1,157,377
<i>Chief Commercial Officer</i>							

- (1) Salaries include amounts contributed by the named executive officer to our 401(k) plan.
- (2) Amounts shown reflect the grant date fair value of options awarded during each of fiscal year 2016 and 2017, determined in accordance with the Financial Accounting Standards Board, Accounting Standards Codification Topic 718, *Compensation—Stock Compensation*. These amounts exclude the value of estimated forfeitures. Note that the amounts reported in this column reflect the accounting cost for these stock options, and do not correspond to the actual economic value that may be received by the named executive officers from the options.
- (3) Amounts shown reflect the cash performance bonus amount paid to the named executive officer for fiscal years 2016 and 2017 that was earned based on Rhythm’s performance. Annual cash incentive compensation earned during the year is typically paid in the following year.
- (4) Mr. Smith’s first day of employment was July 31, 2017.
- (5) Ms. Desikan’s first day of employment was July 24, 2017.

Our executive compensation program is based on a pay-for-performance philosophy. The Compensation Committee designed our executive compensation program to achieve the following primary objectives: provide compensation and benefit levels that will attract, retain, motivate and reward a highly talented executive team within the context of responsible cost management; establish a direct link between our individual/team performance and results and our executives’ compensation; and align the interests and objectives of our executives with those of our stockholders by linking executive equity awards to stockholder value creation. The compensation program for our executive officers is composed primarily of the following three main components: base salary, annual cash incentives and long-term equity incentives.

Base Salary

The 2017 base salaries, effective January 1, 2017 for Mr. Gottesdiener, July 31, 2017 for Mr. Smith, and July 24, 2017 for Ms. Desikan, were determined for each named executive officer by

the Compensation Committee, which gives consideration to each officer’s experience, expertise and performance, as well as market compensation levels for similar positions.

<u>Name</u>	<u>2017 Base Salary (\$)</u>
Keith M. Gottesdiener, M.D., <i>President and Chief Executive Officer</i>	\$490,795
Hunter C. Smith, <i>Chief Financial Officer</i> (1)	\$380,000
Nithya Desikan, <i>Chief Commercial Officer</i> (2)	\$360,000

(1) Mr. Smith was hired on July 31, 2017 and his base salary was prorated to \$159,795.

(2) Ms. Desikan was hired on July 24, 2017 and her base salary was prorated to \$158,100.

Annual Performance-Based Incentive Opportunity

In addition to base salaries, our named executive officers are eligible to receive annual performance-based cash incentives, which are designed to motivate our executives to achieve defined annual corporate goals and to reward our executives for their contributions towards achievement of these goals. The annual performance-based incentive each named executive officer was eligible to receive in 2017 was generally based on the extent to which the officer contributed to the achievement of the corporate goals that the Compensation Committee established at the beginning of 2017. After the end of 2017, the Compensation Committee reviewed performance against each goal and determined the extent to which each goal was achieved.

The Compensation Committee generally considered each named executive officer’s individual contributions towards reaching the annual corporate goals but did not establish specific individual goals for each of them. Pursuant to the terms of their respective agreements governing their employment relationship, described below under “Employment Agreements,” Dr. Gottesdiener was eligible to receive a target bonus of up to 50% of his base salary, Mr. Smith was eligible to receive a target bonus of up to 35% of his base salary, and Ms. Desikan was eligible to receive a target bonus of up to 35% of her base salary. However, there is no minimum bonus percentage or amount established for the named executive officers and, as a result, the bonus amounts have varied from year to year based on corporate and individual performance.

In December 2017, the Compensation Committee reviewed the 2017 corporate goals and based on the Compensation Committee’s determination of achievement of the goals, the Compensation Committee awarded each of our named executive officers eligible for performance bonuses 100% of their target bonus opportunity for 2017. For 2017, Dr. Gottesdiener received a bonus of \$245,398, Mr. Smith received a prorated bonus of \$70,490, and Ms. Desikan received a prorated bonus of \$66,780.

Outstanding Equity Awards at End of 2017

The following table provides information about outstanding equity awards held by each of our named executive officers at December 31, 2017. All options were granted under our 2015 equity incentive plan.

Name	Option Awards(1)			
	Number of Securities Underlying Unexercised Options (#) Exercisable	Number of Securities Underlying Unexercised Options (#) Unexercisable	Option Exercise Price (\$)	Option Expiration Date
Keith M. Gottesdiener, M.D.	25,391(2)(3)	102,389	\$4.59	11/16/2025
	34,597(2)(3)	22,655	\$7.52	12/30/2025
	40,896(3)(4)	122,680	\$6.14	4/4/2027
	13,632(3)(4)	40,893	\$6.14	4/4/2027
Hunter C. Smith	—(5)	201,744	\$6.88	8/8/2027
Nithya Desikan	32,715(6)	169,029	\$6.88	8/8/2027

- (1) Upon an option holder's termination of employment on account of the option holder's death or disability, these options expire on the first anniversary of the option holder's termination. If an option holder's employment terminates for any other reason, these options expire three months after the option holder's termination.
- (2) These options vest in 48 equal monthly installments, starting on August 3, 2015, except that the last installment, if necessary, may be smaller.
- (3) If the option holder's employment is terminated within the three months preceding or the 12 months immediately following a change of control of us, 100% of the option holder's equity awards will become immediately exercisable.
- (4) These options vest in 48 equal monthly installments, starting on January 6, 2017, except that the last installment, if necessary, may be smaller.
- (5) 50,436 of these options vest on July 31, 2018, and the remaining options vest in 36 monthly installments, starting on August 31, 2018, except that the last installment, if necessary, may be smaller.
- (6) 42,257 of these options vest on July 24, 2018, and the remaining options vest in 36 monthly installments, starting on August 24, 2018, except that the last installment, if necessary, may be smaller.

Pension Benefits

Our named executive officers did not participate in, or otherwise receive any benefits under, any pension or retirement plan during 2017, other than pursuant to the 401(k) plan described under "401(k) Plan."

Nonqualified Defined contribution and Other Nonqualified Deferred Compensation

Our named executive officers did not participate in, or earn any benefits under, a nonqualified defined contribution or other nonqualified deferred compensation plan during 2017.

401(k) Plan

We maintain a tax-qualified retirement plan that provides eligible U.S. employees with an opportunity to save for retirement on a tax advantaged basis. Eligible employees are able to defer

eligible compensation up to certain Code limits, which are updated annually. We have the ability to make matching and discretionary contributions to the 401(k) plan but have not done so to date. Employee contributions are allocated to each participant's individual account and are then invested in selected investment alternatives according to the participants' directions. Employees are immediately and fully vested in their own contributions. The 401(k) plan is intended to be qualified under Section 401(a) of the Code, with the related trust intended to be tax exempt under Section 501(a) of the Code. As a tax-qualified retirement plan, contributions to the 401(k) plan are deductible by us when made, and contributions and earnings on those amounts are not taxable to the employees until withdrawn or distributed from the 401(k) plan.

Employment Agreements

Below are written descriptions of our employment agreements with each of our named executive officers.

Agreement with Dr. Gottesdiener. Under Dr. Gottesdiener's letter agreement, he is entitled to a base salary of \$490,795, subject to adjustment in the Compensation Committee's sole discretion, is eligible to receive an annual target performance bonus of up to 50% of his base salary, as determined by the Compensation Committee, and is entitled to certain severance benefits as described below.

Upon Termination without "cause" or for "good reason" within the three months immediately preceding or the 12 months immediately following a "change of control" as defined in the letter agreement, subject to customary conditions, including his execution and nonrevocation of an acceptable release, Dr. Gottesdiener, in lieu of the above benefits, will be entitled to receive a severance payment in an aggregate amount equal to 18 months of his base salary then in effect, paid in substantially equal installments over a period of 18 months, as applicable, in accordance with ordinary payroll practices, a payment equal to 100% of his annual target bonus for the year in which the termination occurs, and reimbursement of his COBRA premiums for up to 18 months. In addition, each unvested equity award held by Dr. Gottesdiener granted by both us or the LLC entity will immediately become fully vested.

Upon Termination without "cause" or for "good reason" unrelated to a "change of control" as defined in the letter agreement, subject to customary conditions, including his execution and nonrevocation of an acceptable release, Dr. Gottesdiener, in lieu of the above benefits, will be entitled to receive a severance payment in an aggregate amount equal to 12 months of his base salary then in effect, paid in substantially equal installments over a period of 12 months, as applicable, in accordance with ordinary payroll practices.

Agreement with Mr. Smith. Under Mr. Smith's letter agreement, he is entitled to a base salary of \$380,000, prorated for Mr. Smith's hire date of July 31, 2017 and subject to adjustment in the Compensation Committee's sole discretion, is eligible to receive an annual target performance bonus of up to 35% of his base salary, prorated for Mr. Smith's hire date of July 31, 2017, as determined by the Compensation Committee, and is entitled to certain severance benefits as described below.

Upon Termination without "cause" or for "good reason" within the three months immediately preceding or the 12 months immediately following a "change of control" as defined in the letter agreement, subject to customary conditions, including his execution and nonrevocation of an acceptable release, Mr. Smith, in lieu of the above benefits, will be entitled to receive a severance payment in an aggregate amount equal to 12 months of his base salary then in effect, paid in substantially equal installments over a period of 12 months, as applicable, in accordance with ordinary payroll practices, a payment equal to 100% of his annual target bonus for the year in which the termination occurs, and reimbursement of his COBRA premiums for up to 18 months. In addition, each unvested equity award held by Mr. Smith granted by us will immediately become fully vested.

Upon Termination without “cause” or for “good reason” unrelated to a “change of control” as defined in the letter agreement, subject to customary conditions, including his execution and nonrevocation of an acceptable release, Mr. Smith, in lieu of the above benefits, will be entitled to receive a severance payment in an aggregate amount equal to (i) 9 months of his base salary then in effect, paid in substantially equal installments over a period of 9 months, or (ii) 12 months of his base salary then in effect, paid in substantially equal installments over a period of 12 months, if such termination occurs prior to July 31, 2018, in each case as applicable, in accordance with ordinary payroll practices.

Agreement with Ms. Desikan. Under Ms. Desikan’s letter agreement, she is entitled to a base salary of \$360,000, subject to adjustment in the Compensation Committee’s sole discretion, is eligible to receive an annual target performance bonus of up to 35% of her base salary, as determined by the Compensation Committee, and is entitled to certain severance benefits as described below.

Upon Termination without “cause” or for “good reason”, within the three months immediately preceding or the 12 months immediately following a “change of control” as defined in the letter agreement, subject to customary conditions, including her execution and nonrevocation of an acceptable release, Ms. Desikan, in lieu of the above benefits, will be entitled to receive a severance payment in an aggregate amount equal to 12 months of her base salary then in effect, paid in substantially equal installments over a period of 12 months in accordance with ordinary payroll practices, and a payment equal to 100% of her annual target bonus for the year in which the termination occurs. In addition, each unvested equity award held by Ms. Desikan granted by us will immediately become fully vested.

Upon Termination without “cause” or for “good reason” unrelated to a “change of control” as defined in the letter agreement, subject to customary conditions, including her execution and nonrevocation of an acceptable release, Ms. Desikan, in lieu of the above benefits, will be entitled to receive a severance payment in an aggregate amount equal to (i) 9 months of her base salary then in effect, paid in substantially equal installments over a period of 9 months, or (ii) 12 months of her base salary then in effect, paid in substantially equal installments over a period of 12 months, if such termination occurs prior to July 24, 2018, in each case as applicable, in accordance with ordinary payroll practices.

Compensation Consultant

In connection with our executive compensation review, in 2017 our Compensation Committee engaged Radford, an Aon Hewitt company, or Radford, an independent executive compensation consultant, to provide our Compensation Committee guidance with respect to the development and implementation of our compensation programs.

Our Compensation Committee charter requires that its compensation consultant be independent of Rhythm management. During 2017, Radford did not provide services to us other than the services described in this Proxy Statement. Our Compensation Committee has determined that Radford is independent and that its work has not raised any conflict of interest.

DIRECTOR COMPENSATION

Under our director compensation program, we pay our non-employee directors retainers in cash. We do not pay any compensation to our President and Chief Executive Officer in connection with his service on our Board and, consequently, he is not included in the table. The compensation that we pay to our President and Chief Executive Officer is discussed in the “Executive Compensation” section of this Proxy Statement. Each non-employee director receives an annual retainer fee of \$35,000 paid in arrears. In addition, non-employee directors receive the following, as applicable:

<u>Non-Employee Director</u>	<u>Annual Fee</u>
Lead Director	\$25,000
Non-Executive Chair	\$30,000
Chairman of the Audit Committee	\$15,000
Member of the Audit Committee (other than chairman)	\$ 7,500
Chairman of the Compensation Committee	\$10,000
Member of the Compensation Committee (other than chairman)	\$ 5,000
Chairman of the Governance and Nominating committee	\$ 8,000
Member of the Governance and Nominating committee (other than chairman)	\$ 4,000

We also reimburse our non-employee directors for reasonable travel and out-of-pocket expenses incurred in connection with attending Board and committee meetings.

Under the non-employee director compensation policy, each individual who is initially appointed or elected to the Board is also eligible to receive an option to purchase up to 20,000 shares of our common stock under our 2017 Equity Incentive Plan, or the Plan, on the date he or she first becomes a nonemployee director. These option grants vest annually over a three-year period from the date of grant, subject to continued service as a non-employee director through that vesting date. In addition, on the date of the annual meeting of stockholders, each continuing non-employee director who has served on the Board for a minimum of six months is eligible to receive an option grant to purchase 10,000 shares of our common stock, which will vest in full upon the earlier of the first anniversary of the date of grant or the date of the next annual meeting of stockholders. The exercise price for each of these option grants will be equal to the fair market value of our common stock on the date of grant. These new director grants and annual grants will be subject to approval by our Board at the time of grant.

This policy is intended to provide a total compensation package that enables us to attract and retain qualified and experienced individuals to serve as directors and to align our directors’ interests with those of our stockholders.

Our current director compensation arrangements have been in effect since the time of our initial public offering in October 2017. Prior to that time, we did not have a formal non-employee director compensation policy. We reimbursed our non-employee directors for reasonable travel and out-of-pocket expenses incurred in connection with attending board of director and committee meetings.

The following table sets forth information regarding compensation earned by our non-employee directors during fiscal year 2017.

Name	Fees earned in cash (\$) (1)	Option Awards (\$) (2)(3)	Total (\$)
Neil Exter	\$11,250	—	\$ 11,250
Todd Foley	\$10,000	—	\$ 10,000
Christophe R. Jean	\$10,625	—	\$ 10,625
Ed Mathers	\$ 9,750	—	\$ 9,750
David W. J. McGirr	\$28,500	\$ 80,000	\$108,500
David P. Meeker	\$27,625	\$240,000	\$267,625
Jonathan T. Silverstein, J.D.(4)	—	—	—

- (1) Amounts represent annual cash compensation earned for services rendered by each member of the Board.
- (2) The options granted to our Board during fiscal year 2017 vest annually over 3 years. These grants have a weighted average exercise price of \$6.05 per option.
- (3) Amounts shown reflect the grant date fair value of options awarded during fiscal year 2017 determined in accordance with the Financial Accounting Standards Board, Accounting Standards Codification Topic 718, *Compensation—Stock Compensation*. These amounts exclude the value of estimated forfeitures.
- (4) Mr. Silverstein resigned from the Board in October 2017 concurrently with our initial public offering.

The following table sets forth, as of December 31, 2017, the aggregate number of exercisable and unexercisable option awards outstanding held by our non-employee directors at that time.

Name	Option Awards	
	Exercisable	Unexercisable
Neil Exter	—	—
Todd Foley	—	—
Christophe R. Jean	—	—
Ed Mathers	—	—
David W. J. McGirr	43,621	43,620
David P. Meeker	21,811	87,240
Jonathan T. Silverstein, J.D.(1)	—	—

- (1) Mr. Silverstein resigned from the Board in October 2017 concurrently with our initial public offering.

EQUITY COMPENSATION PLAN INFORMATION

<u>Plan Category</u>	<u>Number of securities to be issued upon exercise of outstanding options, warrants and rights</u>	<u>Weighted-average exercise price of outstanding options, warrants and rights</u>	<u>Number of securities remaining available for future issuance under equity compensation plans (excluding securities reflected in column (a))</u>
	(a)	(b)	(c)
Equity compensation plans approved by security holders	1,832,639	\$7.04	2,458,740
Equity compensation plans not approved by security holders	—	—	—
Total	1,832,639	\$7.04	2,458,740

AUDIT COMMITTEE REPORT

The report of the Audit Committee is not “soliciting material,” is not deemed “filed” with the SEC and is not to be incorporated by reference into any filing of the Company under the Securities Act of 1933 or the Securities Exchange Act of 1934, both as amended.

The Audit Committee has reviewed Rhythm’s audited consolidated financial statements for the year ended December 31, 2017 and has discussed these statements with management and Ernst & Young LLP, or Ernst & Young, the Company’s independent registered public accounting firm. Rhythm management is responsible for the preparation of the Company’s financial statements and for maintaining an adequate system of disclosure controls and procedures and internal control over financial reporting for that purpose. The independent registered public accounting firm audits the annual consolidated financial statements prepared by management, expresses an opinion as to whether those consolidated financial statements present fairly the consolidated financial position, results of operations and cash flows of Rhythm in conformity with U.S. generally accepted accounting principles and discusses any issues they believe should be raised with us. The Audit Committee is responsible for providing independent, objective oversight of the Company’s accounting functions and internal controls.

The Audit Committee also received from, and discussed with, Ernst & Young the written disclosures and other communications that the Company’s independent registered public accounting firm is required to provide to the Audit Committee, including the matters required to be discussed by Statement on Auditing Standards No. 1301, as amended (Communication with Audit Committees), as adopted by the Public Company Accounting Oversight Board, or PCAOB, in Rule 3200T.

Ernst & Young also provided the Audit Committee with the written disclosures and the letter required by the PCAOB requiring independent registered public accounting firms to annually disclose in writing all relationships that, in their professional opinion may reasonably be thought to bear on independence, to confirm their perceived independence and to engage in a discussion of independence. The Audit Committee has reviewed this disclosure and has discussed with Ernst & Young their independence from Rhythm.

Based on its discussions with management and our independent registered public accounting firm as outlined above, and its review of the representations and information provided by management and our independent registered public accounting firm, the Audit Committee recommended to the Board that the audited consolidated financial statements be included in the Rhythm Annual Report on Form 10-K for the year ended December 31, 2017, for filing with the Securities and Exchange Commission.

Respectfully submitted by the Audit Committee,

David W.J. McGirr, *Chair*
Christophe R. Jean
David P. Meeker

PROPOSAL NO. 2—RATIFICATION OF SELECTION OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

We are asking our stockholders to ratify the Audit Committee’s selection of Ernst & Young LLP or Ernst & Young, as our independent registered public accounting firm for the fiscal year ending December 31, 2018. Ernst & Young has served as our independent registered public accounting firm since 2015.

The Audit Committee annually reviews the independent registered public accounting firm’s independence, including reviewing all relationships between the independent registered public accounting firm and us and any disclosed relationships or services that may impact the objectivity and independence of the independent registered public accounting firm, and the independent registered public accounting firm’s performance.

Although stockholder ratification is not required by our bylaws or otherwise, the Board believes it is advisable to provide stockholders an opportunity to ratify this section and is submitting the selection of Ernst & Young to our stockholders for ratification as a matter of good corporate practice. If the selection is not ratified, the Audit Committee will consider whether it is appropriate to select another independent registered public accounting firm, but is not required to do so. Even if the selection is ratified, the Audit Committee in its discretion may select a different registered public accounting firm at any time during the year if the Audit Committee determines that such a change would be in the best interests of Rhythm and its stockholders.

We expect that a representative of Ernst & Young will attend the 2018 Annual Meeting and will have an opportunity to make a statement if he or she so chooses and will be available to respond to appropriate questions from stockholders.

Policy on Audit Committee Pre-Approval of Audit and Permissible Non-Audit Services of Independent Registered Public Accounting Firm

The Audit Committee pre-approves all auditing services, internal control related services and permitted non-audit services (including the fees and terms thereof) to be performed by Ernst & Young, subject to the de minimis exception for non-audit services that are approved by the Audit Committee prior to the completion of an audit. The Audit Committee may delegate pre-approval authority to one or more members of the Audit Committee consistent with applicable law and listing standards, provided that the decisions of such Audit Committee member or members must be presented to the full Audit Committee at its next scheduled meeting.

Principal Accountant Fees and Services

We regularly review the services and fees of our independent accountants. These services and fees are also reviewed by the Audit Committee on an annual basis. The aggregate fees billed for the fiscal years ended December 31, 2017 and 2016 for each of the following categories of services are as follows:

<u>Fee Category</u>	<u>2016</u>	<u>2017</u>
Audit Fees	\$525,000	\$823,330
Audited Related Fees	—	—
Tax Fees	\$ 11,000	\$ 20,000
All Other Fees	—	—
Total Fees	<u>\$536,000</u>	<u>\$843,330</u>

Audit Fees. Consist of aggregate fees for professional services provided in connection with the annual audit of our consolidated financial statements, the review of our quarterly condensed

consolidated financial statements, consultations on accounting matters directly related to the audit, and comfort letters, consents and assistance with and review of documents filed with the SEC.

Audit-Related Fees. Consist of aggregate fees for accounting consultations and other services that were reasonably related to the performance of audits or reviews of our consolidated financial statements and were not reported above under “Audit Fees.”

Tax Fees. Consist of aggregate fees for tax compliance, tax advice and tax planning services including the review and preparation of our federal and state income tax returns.

All Other Fees. Consist of aggregate fees billed for products and services provided by the independent registered public accounting firm other than those fees disclosed above.

The Audit Committee pre-approved all services performed since the pre-approval policy was adopted.

The affirmative vote of a majority of shares of our common stock, present in person or represented by proxy at the Annual Meeting and entitled to vote, is required to ratify the selection of our independent auditors.

THE BOARD OF DIRECTORS UNANIMOUSLY RECOMMENDS THAT YOU VOTE “FOR” THE RATIFICATION OF THE APPOINTMENT OF ERNST & YOUNG AS THE COMPANY’S INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM.

(PROPOSAL NO. 2 ON YOUR PROXY CARD)

BENEFICIAL OWNERSHIP OF COMMON STOCK

The following table sets forth certain information as of March 31, 2018 (unless otherwise specified), with respect to the beneficial ownership of our common stock by each person who is known to own beneficially more than 5% of the outstanding shares of common stock, each person currently serving as a director, each nominee for director, each named executive officer (as set forth in the Summary Compensation Table below), and all directors and executive officers as a group).

Shares of common stock subject to options or other rights to purchase which are now exercisable or are exercisable within 60 days after March 31, 2018, are to be considered outstanding for purposes of computing the number of shares beneficially owned and the percentage ownership of the persons holding these options or other rights, but are not to be considered outstanding for the purpose of computing the number of shares beneficially owned or the percentage ownership of any other person. As of March 31, 2018, there were 27,284,140 shares of common stock outstanding. Unless otherwise indicated, the address for each beneficial owner is c/o Rhythm Pharmaceuticals, Inc., 500 Boylston Street, 11th Floor, Boston, MA 02116.

<u>Name and Address of Beneficial Owner</u>	<u>Number of Shares Beneficially Owned</u> [†]	<u>Percentage of Shares Beneficially Owned</u>
5% Stockholders:		
New Enterprise Associates 13, L.P. and NEA Ventures 2009 Limited Partnership(1) 2855 Sand Hill Road Menlo Park, CA 94025	4,912,306	18.00%
Third Rock Ventures, L.P.(2) 29 Newbury Street Boston, MA 02116	3,981,437	14.59%
OrbiMed Private Investments V, LP(3) 601 Lexington Avenue, 54th Floor New York, NY 10022-4629	2,901,295	10.63%
MPM BioVentures V, L.P. and MPM Asset Management Investors BV5 LLC(4) 450 Kendall Street Cambridge, MA 02142	2,696,392	9.88%
667, L.P. and Baker Brothers Life Sciences, L.P.(5) 667 Madison Avenue, 21st Floor New York, NY 10065	2,049,020	7.51%
Pfizer Inc.(6) 235 East 42nd Street New York, NY 10017	1,427,639	5.23%
Directors and Named Executive Officers:		
Keith M. Gottesdiener(7)	766,617	2.79%
Hunter C. Smith(8)	3,812	*
Nithya Desikan(9)	36,527	*
Todd Foley	—	—
Ed Mathers	—	—
Neil Exter	—	—
Christophe R. Jean	—	—
David P. Meeker(10)	144,956	*
David W.J. McGirr(11)	50,891	*
All executive officers and directors as a group (11 persons)(12) . .	1,368,464	4.93%

* Represents beneficial ownership of less than 1%.

† None of the shares are pledged as security.

- (1) The shares held directly by NEA Ventures 2009, L.P., or NEA 2009, are indirectly held by Karen P. Welsh, the general partner of NEA 2009 and the shares held by New Enterprise Associates 13, L.P., or NEA 13, are indirectly held by NEA Partners 13, L.P., or Partners 13, which is the sole general partner of NEA 13; NEA 13 GP, LTD, or NEA 13 LTD, which is the sole general partner of Partners 13; and each of the individual directors of NEA 13 LTD. The individual Directors of NEA 13 LTD, or the NEA 13 Directors, are M. James Barrett, Peter J. Barris, Forest Baskett, Patrick J. Kerins, David M. Mott, Scott D. Sandell and Ravi Viswanathan. Karen P. Welsh holds voting and dispositive power with regard to the shares held by NEA 2009. NEA Partners 13, NEA 13 LTD, and the NEA 13 Directors share voting and dispositive power with regard to the shares owned directly by NEA 13. All indirect holders of the above referenced shares disclaim beneficial ownership of all applicable shares except to the extent of their actual pecuniary interest therein.
- (2) Based solely on a Schedule 13G filed on February 13, 2018, each of Third Rock Ventures GP, LP, or TRV GP, the general partner of Third Rock Ventures, L.P., or TRV LP, and Third Rock Ventures GP, LLC, TRV LLC, the general partner of TRV GP, and Mark Levin, Kevin Starr and Robert Tepper, the managers of TRV LLC, may be deemed to share voting and investment power over the shares held by TRV LP. Each of the reporting persons disclaims beneficial ownership of such shares, except to the extent of their proportionate pecuniary interest therein, if any.
- (3) Based solely on Amendment No. 1 to Schedule 13D filed on February 7, 2018, OrbiMed Capital GP V LLC, or GP V, is the sole general partner of OrbiMed Private Investments V, LP, or OPI V, and OrbiMed Advisors LLC, or Advisors, a registered adviser under the Investment Advisers Act of 1940, as amended, is the sole managing member of GP V. By virtue of such relationships, GP V and Advisors may be deemed to have voting and investment power with respect to the shares held by OPI V noted above and as a result may be deemed to have beneficial ownership over such shares. Advisors exercises this investment and voting power through a management committee comprised of Carl L. Gordon, Sven H. Borho and Jonathan T. Silverstein. Each of GP V, Advisors, Mr. Gordon, Mr. Borho, and Mr. Silverstein disclaims beneficial ownership of the shares held by OPI V, except to the extent of its or his pecuniary interest therein if any.
- (4) Based solely on a Schedule 13D filed on October 24, 2017, MPM BioVentures V LLC is the Managing Member of MPM BioVentures V GP LLC, which is the General Partner of MPM BioVentures V, L.P. MPM BioVentures V LLC is the Manager of MPM Asset Management Investors BV5 LLC. Todd Foley, one of our directors, is a Member of MPM BioVentures V LLC and shares the power to vote, hold and dispose of the shares held by MPM BioVentures V, L.P., and MPM Asset Management Investors BV5 LLC. Mr. Foley and each such other Member of MPM BioVentures V LLC disclaims beneficial ownership of the securities reported herein except to the extent of his respective pecuniary interest therein.
- (5) Based solely on a Schedule 13G filed on February 13, 2018, Baker Bros. Advisors LP, or Baker Bros. Advisors, is the investment adviser to 667, L.P., or 667 LP, and Baker Brothers Life Sciences, L.P., or Baker Brothers Life Sciences, and, pursuant to amended and restated management agreements between Baker Bros. Advisors, 667 LP and Baker Brothers Life Sciences and the respective general partners of 667 LP and Baker Brother Life Sciences, Baker Bros. Advisors has complete and unlimited discretion and authority with respect to the investments and voting power over investments of 667 LP and Baker Brothers Life Sciences. Baker Bros. Advisors disclaims beneficial ownership of all shares held by 667 LP and Baker Brothers Life Sciences except to the extent of any pecuniary interest therein.
- (6) As of March 31, 2018, the board of directors of Pfizer Inc. is comprised of the following individuals: Dennis A. Ausiello, Ronald E. Blaylock, Albert Bourla, W. Don Cornwell, Joseph J. Echevarria, Frances D. Fergusson, Helen H. Hobbs, James M. Kilts, Dan R. Littman, Shantanu Narayan, Suzanne Nora Johnson, Ian C. Read, Stephen W. Sanger and James C. Smith. Pfizer Inc. is a publicly-traded company.

- (7) Consists of (i) 585,539 shares of common stock and (ii) includes 181,078 shares of common stock underlying options that are exercisable within 60 days of March 31, 2018.
- (8) Includes 3,812 shares of common stock underlying options that are exercisable within 60 days of March 31, 2018.
- (9) Includes of 36,527 shares of common stock underlying options that are exercisable within 60 days of March 31, 2018.
- (10) Consists of (i) 101,335 shares of common stock and (ii) includes 43,621 shares of common stock underlying options that are exercisable within 60 days of March 31, 2018.
- (11) Includes 50,891 shares of common stock underlying options that are exercisable within 60 days of March 31, 2018.
- (12) Consists of (i) 883,112 shares of common stock and (ii) includes 485,352 shares of common stock underlying options that are exercisable within 60 days of March 31, 2018.

CERTAIN RELATIONSHIPS AND RELATED PARTY TRANSACTIONS

Related Party Transactions Policy

Our Board has adopted a policy that our executive officers, directors, nominees for election as a director, beneficial owners of more than 5% of any class of our common stock and any members of the immediate family of any of the foregoing persons are not permitted to enter into a related person transaction with us without the prior review and approval of our Governance and Nominating committee. Any request for us to enter into a transaction with an executive officer, director, nominee for election as a director, beneficial owner of more than 5% of any class of our common stock or any member of the immediate family of any of the foregoing persons in which the amount involved exceeds \$120,000 and such person would have a direct or indirect material interest must first be presented to our Governance and Nominating committee for review, consideration and approval. In approving or rejecting any such proposal, our Governance and Nominating committee is to consider the material facts of the transaction, including, but not limited to, whether the transaction is on terms no less favorable than terms generally available to an unaffiliated third party under the same or similar circumstances and the extent of the related person's interest in the transaction. We did not have a formal review and approval policy for related party transactions at the time of any of the transactions described above. However, the transactions described under "Certain Relationships and Related Party Transactions" were entered into after presentation, consideration and approval by our Board.

We describe below transactions and series of similar transactions, during 2017, to which we were a party or will be a party, in which:

- the amounts involved exceeded or will exceed \$120,000; and
- any of the directors, executive officers or holders of more than 5% of our voting equity, or any member of the immediate family of the foregoing persons, had or will have a direct or indirect material interest.

Compensation arrangements for our directors and named executive officers are described elsewhere in this Proxy Statement.

Series A Preferred Stock Financing

In January 2017 and August 2017, pursuant to the series A preferred stock purchase agreement we issued an aggregate of 40,949,999 shares of series A preferred stock, par value \$0.001 per share, at a purchase price of \$1.00 per share, resulting in aggregate gross proceeds of \$40.9 million to us.

Upon the expiration of the lock-up period, holders of our series A preferred stock will be entitled to certain registration rights with respect to the resale of such shares under the Securities Act, pursuant to the investors' rights agreement entered into between us and certain of our stockholders. See "Description of Capital Stock—Registration Rights."

The following table summarizes the participation in the series A preferred stock financing by our directors, executive officers, holders of more than 5% of our voting securities, or any member of the

immediate family of the foregoing persons. For further information on the ownership of securities of holders of more than 5% of our voting securities, see “Principal Stockholders.”

<u>Name</u>	<u>Shares of Series A Preferred Stock</u>	<u>Date(s) Purchased</u>
New Enterprise Associates 13, L.P.	5,067,162	January 6, 2017
Third Rock Ventures, L.P.	4,624,751	January 6, 2017
MPM BioVentures V, L.P. and MPM Asset Management Investors BV5 LLC	3,015,916	January 6, 2017
OrbiMed Private Investments V, LP	2,924,766	January 6, 2017
Pfizer Inc.	1,611,852	January 6, 2017
667 L.P. and Baker Brothers Life Sciences, L.P.	1,337,036	January 6, 2017
David P. Meeker	250,000	January 6, 2017
Keith M. Gottesdiener, M.D.	125,000	January 6, 2017
Bart Henderson	100,000	January 6, 2017
New Enterprise Associates 13, L.P.	5,067,162	August 18, 2017
Third Rock Ventures, L.P.	4,624,751	August 18, 2017
MPM BioVentures V, L.P. and MPM Asset Management Investors BV5 LLC	3,015,915	August 18, 2017
OrbiMed Private Investments V, LP	2,924,765	August 18, 2017
Pfizer Inc.	1,611,852	August 18, 2017
667 L.P. and Baker Brothers Life Sciences, L.P.	1,337,035	August 18, 2017
David P. Meeker	250,000	August 18, 2017
Keith M. Gottesdiener, M.D.	125,000	August 18, 2017
Bart Henderson	100,000	August 18, 2017

Consulting Agreement with Bart Henderson

Mr. Henderson resigned from employment with us as President in June 2017 and thereafter entered into a consulting agreement with us. Under the terms of Mr. Henderson’s consulting agreement, he was entitled to a consulting fee on an hourly basis, subject to adjustment by us. In consideration of Mr. Henderson’s prior service to us as a founder and former officer and employee, under the terms of Mr. Henderson’s consulting agreement with us, Mr. Henderson continued to vest in any unvested equity awards held by him, through and including December 31, 2017, with a right to exercise any vested equity through and including October 1, 2018.

SECTION 16(a) BENEFICIAL OWNERSHIP REPORTING COMPLIANCE

Section 16(a) of the Exchange Act requires our executive officers and directors and persons who own more than 10% of a registered class of our equity securities to file initial reports of ownership and reports of changes in ownership with the SEC. Such persons are required by regulation of the SEC to furnish us with copies of all Section 16(a) forms they file. Based solely on our review of the copies of such forms or written representations from certain reporting persons received by us with respect to fiscal year 2017, our directors, officers and stockholders who own more than 10% of a registered class of our equity securities complied with all applicable filing requirements during the fiscal year ended December 31, 2017.

GENERAL MATTERS

Availability of Certain Documents

A copy of our 2017 Annual Report on Form 10-K has been posted on our website along with this Proxy Statement at www.edocumentview.com/RYTM or www.rhythmtx.com under “Investors & Media” at “SEC Filings.” We will mail without charge, upon written request, a copy of our 2017 Annual Report on Form 10-K excluding exhibits. Please send a written request to our Secretary at:

Rhythm Pharmaceuticals, Inc.
500 Boylston Street, 11th Floor
Boston, MA 02116
Attention: Secretary

You may also find a copy of this Proxy Statement and our Annual Report (with exhibits) on the SEC website at www.sec.gov.

Stockholders Sharing an Address / Household

Only one copy of our Annual Report on Form 10-K and this Proxy Statement is being delivered to multiple stockholders sharing an address, unless we have received contrary instructions from one or more of the stockholders.

We will undertake to deliver promptly, upon written or oral request, a separate copy to a stockholder at a shared address to which a single copy of the Annual Report on Form 10-K and this Proxy Statement was delivered. To receive a separate copy of our Annual Report on Form 10-K or Proxy Statement, or to receive separate copies in the future, or if two stockholders sharing an address have received two copies of any of these documents and desire to only receive one, you may write the Secretary of Rhythm Pharmaceuticals, Inc. at our principal executive offices at 500 Boylston Street, 11th Floor, Boston, MA 02116 or call the Secretary at (617) 951-8901.

Stockholder Proposals and Nominations

Requirements for Stockholder Proposals to be Considered for Inclusion in our Proxy Materials. Under Rule 14a-8 of the Exchange Act, to submit a proposal for inclusion in our Proxy Statement for the 2019 Annual Meeting, stockholder proposals must be received no later than close of business on December 31, 2018, by our Secretary at our principal executive offices at 500 Boylston Street, 11th Floor, Boston, MA 02116.

Requirements for Stockholder to bring Business and Nominations Before an Annual Meeting. Our bylaws provide that, for stockholder nominations to the Board or other business to be considered at the 2019 Annual Meeting, the stockholder must have given timely notice thereof in writing to the Secretary at Rhythm Pharmaceuticals, Inc., 500 Boylston Street, 11th Floor, Boston, MA 02116 between February 6, 2019 and March 8, 2019 (assuming the date of our 2019 Annual Meeting is not so advanced or delayed as described in our bylaws). To be timely for the 2019 Annual Meeting, the stockholder’s notice must be delivered to or mailed and received by us not earlier than the close of business on the 120th day nor later than the close of business on the 90th day prior to the anniversary date of the previous year’s annual meeting, except that if the annual meeting is scheduled more than 30 days before or 60 days after such anniversary date, we must receive the notice not later than the close of business on the 10th day following the day on which we first provide notice or public disclosure of the date of the meeting. Such notice must provide the information required by Section 2.12 of the bylaws with respect to each nomination or matter the stockholder proposes to bring before the 2019 Annual Meeting.

Other Matters

As of the date of this Proxy Statement, the Board does not intend to present any matters other than those described herein at the 2018 Annual Meeting and is unaware of any matters to be presented by other parties. If other matters are properly brought before the meeting for action by the stockholders, proxies will be voted in accordance with the recommendation of the Board or, in the absence of such a recommendation, in accordance with the judgment of the proxy holder.

By Order of the Board of Directors

/s/ KEITH M. GOTTESDIENER

Keith M. Gottesdiener
Chief Executive Officer, President, and Director
April 30, 2018