UNITED STATES SECURITIES AND EXCHANGE COMMISSION Washington, D.C. 20549

SCHEDULE 14A

Proxy Statement Pursuant to Section 14(a) of the Securities Exchange Act of 1934 (Amendment No.

)

Filed by the Registrant \boxtimes

Filed by a Party other than the Registrant o

Check the appropriate box:

o Preliminary Proxy Statement

o Confidential, for Use of the Commission Only (as permitted by Rule 14a-6(e)(2))

☑ Definitive Proxy Statement

o Definitive Additional Materials

o Soliciting Material under §240.14a-12

Verastem, Inc.

(Name of Registrant as Specified In Its Charter)

(Name of Person(s) Filing Proxy Statement, if other than the Registrant)

Payment of Filing Fee (Check the appropriate box):

⊠ No fee required.

- o Fee computed on table below per Exchange Act Rules 14a-6(i)(1) and 0-11.
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- o Check box if any part of the fee is offset as provided by Exchange Act Rule 0-11(a)(2) and identify the filing for which the offsetting fee was paid previously. Identify the previous filing by registration statement number, or the Form or Schedule and the date of its filing.
 - (1) Amount Previously Paid:
 - (2) Form, Schedule or Registration Statement No.:
 - (3) Filing Party:
 - (4) Date Filed:

Verastem, Inc.

117 Kendrick Street, Suite 500 Needham, MA 02494

NOTICE OF ANNUAL MEETING OF STOCKHOLDERS

The 2015 Annual Meeting of Stockholders of Verastem, Inc. (the "Company" or "Verastem") will be held on May 8, 2015, at 9:00 a.m. local time, at the Company's offices, 117 Kendrick Street, Suite 500, Needham, MA 02494 for the following purposes:

1. To elect Robert Forrester, Henri Termeer and Dr. Christoph Westphal as Class III directors, each for a three-year term;

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, 2015; and

3. To consider and act upon any other matters that properly come before the Annual Meeting or any adjournment or postponement thereof.

Each outstanding share of the Company's common stock (NASDAQ: VSTM) entitles the holder of record at the close of business on March 26, 2015, to receive notice of and to vote at the Annual Meeting or any adjournment or postponement of the Annual Meeting.

WHETHER OR NOT YOU EXPECT TO ATTEND THE ANNUAL 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 ANNUAL MEETING, YOU MAY STILL VOTE YOUR SHARES IN PERSON, EVEN THOUGH YOU HAVE PREVIOUSLY VOTED OR RETURNED YOUR PROXY BY ANY OF THE METHODS DESCRIBED IN OUR PROXY STATEMENT. IF YOUR SHARES ARE HELD IN A BANK OR BROKERAGE ACCOUNT, PLEASE REFER TO THE MATERIALS PROVIDED BY YOUR BANK OR BROKER FOR VOTING INSTRUCTIONS.

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

By Order of the Board of Directors

Robert Forrester President and Chief Executive Officer April 7, 2015

Verastem, Inc. 117 Kendrick Street, Suite 500 Needham, MA 02494

PROXY STATEMENT FOR ANNUAL MEETING OF STOCKHOLDERS To Be Held On Friday, May 8, 2015 at 9:00 am EDT

GENERAL INFORMATION

When are this proxy statement and the accompanying material 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 sent to stockholders beginning on April 7, 2015.

Who is soliciting my vote?

The Board of Directors of the Company is soliciting your vote for the 2015 Annual Meeting of Stockholders.

When is the record date for the Annual Meeting?

The Company's Board of Directors has fixed the record date for the Annual Meeting as of the close of business on March 26, 2015.

How many votes can be cast by all stockholders?

A total of 35,955,110 shares of common stock of the Company were outstanding on March 26, 2015 and are entitled to be voted at the Annual Meeting. Each share of common stock is entitled to one vote on each matter.

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.** Access the website at www.proxyvote.com and follow the instructions on the enclosed proxy card. Your shares will be voted in accordance with your instructions. You must specify how you want your shares voted, or your Internet vote cannot be completed and you will receive an error message.
- **By Telephone.** Call 1-800-690-6903 toll-free and follow the instructions on the enclosed proxy card. Your shares will be voted in accordance with your instructions. You must specify how you want your shares voted, or your telephone vote cannot be completed.
- **By Mail.** Complete and mail the enclosed proxy card in the enclosed postage prepaid envelope to Vote Processing, c/o Broadridge. Your proxy will be voted in accordance with your instructions. If you sign and return the enclosed proxy but do not specify how you want your shares voted, they will be voted **FOR** the election as directors of the nominees named herein to the Company's Board of Directors, and **FOR** the ratification of Ernst & Young LLP as the Company's independent registered public accounting firm for the fiscal year ending December 31, 2015 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 Annual Meeting and at all adjournments and postponements thereof.



In Person at the Annual Meeting. If you attend the Annual Meeting, be sure to bring a form of personal picture identification with you, and you may deliver your completed proxy card in person, or you may vote by completing a ballot, which will be available at the Annual Meeting.

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

- **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 Annual Meeting.** If you attend the Annual Meeting, in addition to picture identification, you should both bring 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 Annual Meeting.

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

The Board of Directors recommends a vote:

Proposal 1: FOR election of each of the three Class III directors

Proposal 2: FOR ratification of selection of Ernst & Young LLP as the Company's independent registered public accounting firm for the fiscal year ending December 31, 2015

Who pays the cost for soliciting proxies?

Verastem 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. Verastem 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 my vote?

You may revoke your proxy at any time before it is voted by notifying the Secretary in writing, 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 Annual 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 your vote.

How is a quorum reached?

The presence, in person or by proxy, of holders of at least a majority of the total number of outstanding shares entitled to vote is necessary to constitute a quorum for the transaction of business at the Annual Meeting. Abstentions and "broker non-votes" (i.e., shares represented at the Annual Meeting held by brokers, bankers or other nominees as to which instructions have not been received from the beneficial owners or persons entitled to vote such shares and, with respect to one or more but not all issues, such brokers or nominees do not have discretionary voting power to vote such shares), if any, will be counted for purposes of determining whether a quorum is present for the transaction of business at the Annual Meeting.

What vote is required to approve each item?

Directors are elected by a plurality of votes cast (Proposal 1). A vote to abstain or a broker non-vote will have no direct effect on the outcome. A majority of votes cast is necessary for ratification of the selection of Ernst & Young LLP as the Company's independent registered public accounting firm for the fiscal year ending December 31, 2015 (Proposal 2). A vote to abstain will have no direct effect on the outcome.

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 Annual Meeting in order to solicit additional proxies in favor of the approval of such proposals. If the Annual Meeting is adjourned or postponed for any purpose, at any subsequent reconvening of the Annual Meeting, your proxy will be voted in the same manner as it would have been voted at the original convening of the Annual Meeting unless you withdraw or revoke your proxy.

Could other matters be decided at the Annual Meeting?

Verastem does not know of any other matters that may be presented for action at the Annual Meeting. Should any other business come before the Annual 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. 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 Annual Meeting unless they receive instructions from you with respect to such matter.

What happens if the Annual Meeting is postponed or adjourned?

Your proxy may be voted at the postponed or adjourned Annual 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.

Who should I call if I have any additional questions?

If you hold your shares directly, please call Monica Kleinman, Secretary of the Company, at (781) 292-4200. 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.

PROPOSAL NO. 1—ELECTION OF DIRECTORS

In accordance with the Company's certificate of incorporation and by-laws, the Board of Directors is divided into three classes of approximately equal size. The members of each class are elected to serve a three-year term with the term of office of each class ending in successive years. Robert Forrester, Henri Termeer and Christoph Westphal, M.D. are the Class III directors whose terms expire at the Annual Meeting. Each of Mr. Forrester, Mr. Termeer and Dr. Westphal has been nominated for and has agreed to stand for re-election to the Board of Directors to serve as a Class III director of the Company until the 2018 annual meeting of stockholders and until his or her successor is duly elected.

It is intended that, unless you give contrary instructions, shares represented by proxies will be voted for the election of the three nominees listed above as director nominees. Verastem 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 of Directors, or the Board of Directors may reduce the number of directors to be elected at the 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 Verastem, principal occupation and other biographical material is shown below.

THE BOARD OF DIRECTORS UNANIMOUSLY RECOMMENDS THAT YOU VOTE FOR EACH OF THESE NOMINEES FOR CLASS III DIRECTOR (PROPOSAL 1 ON YOUR PROXY CARD)

DIRECTOR BIOGRAPHIES

Below sets forth information concerning our directors as of April 1, 2015. The biographical description of each director includes the specific experience, qualifications, attributes and skills that the Board of Directors would expect to consider if it were making a conclusion currently as to whether such person should serve as a director.

CLASS III DIRECTOR NOMINEES

Robert Forrester, age 51, is a Class III director who has served as a member of our Board of Directors since July 2013. Mr. Forrester has served as our Chief Executive Officer since July 2013, as our Chief Operating Officer from March 2011 until July 2013 and our President since January 2013. Mr. Forrester has previously held executive level positions at both private and public life sciences companies. Prior to joining us, Mr. Forrester served as Chief Operating Officer of Forma Therapeutics, Inc. from 2010 until 2011. Previously he served as Interim President and Chief Executive Officer of CombinatoRx, Inc., from 2009 until 2010 and as its Executive Vice President and Chief Financial Officer from 2004 to 2009. Mr. Forrester served as Senior Vice President, Finance and Corporate Development at Coley Pharmaceuticals Group, Inc. from 2000 to 2003. Prior to his operating roles, Mr. Forrester was a managing director of the Proprietary Investment Group at MeesPierson, part of the Fortis Group, investing in life science companies. Prior to MeesPierson, Mr. Forrester worked for the investment banks, BZW (now Barclays Capital) and UBS, in the corporate finance groups undertaking M&A and public and private finance transactions. Mr. Forrester started his career as lawyer with Clifford Chance in London and Singapore. He earned his LL.B. from Bristol University in England. The Board of Directors believes that Mr. Forrester's qualifications to sit on the Board include his previous experience serving in leadership positions within the biopharmaceutical industry and his position as our President and Chief Executive Officer.

Henri Termeer, age 69, is a Class III director who has served as a member of our Board of Directors since June 2011 and as our Lead Director since March 2012. Mr. Termeer served as President and a member of the board of directors of Genzyme Corporation from 1983 until its acquisition by

Sanofi-Aventis U.S., LLC in 2011, as its Chief Executive Officer from 1985 to 2011 and the chairman of its board of directors from 1988 to 2011. He served on the Council of Economic Advisors to Massachusetts Governor Deval Patrick. Mr. Termeer is also chairman emeritus of the New England Healthcare Institute and a trustee for the Boston Museum of Science. Mr. Termeer serves on the boards of directors of ABIOMED Inc., Allergan Inc., AVEO Pharmaceuticals, Inc., ProQR Therapeutics, Massachusetts General Hospital, the Massachusetts Institute of Technology Corporation and Partners HealthCare, and, until December 31, 2011, served as chairman of the board of directors of the Federal Reserve Bank of Boston. Mr. Termeer also serves on the Board of Fellows of Harvard Medical School. He earned his M.B.A. from the Darden School at the University of Virginia. The Board of Directors believes that Mr. Termeer's qualifications to sit on the Board include his senior executive experience in developing and managing Genzyme Corporation over the course of many years, his service on the boards of directors of various life sciences companies and his deep life sciences industry experience and knowledge.

Christoph Westphal, M.D., Ph.D., age 46, is a Class III director who has served as a member of our Board of Directors since co-founding the Company in August 2010 and as the Chairman of our board of directors since March 2011. Dr. Westphal has served as our Executive Chairman since July 2013, as our Chief Executive Officer from September 2011 to July 2013 and as our President from September 2011 until January 2013. Dr. Westphal is currently the President and Chief Executive Officer of Flex Pharma, Inc. since April 2014. Dr. Westphal has been a partner of Longwood Fund, LP, a venture capital investment fund, since 2010. Dr. Westphal served as the President of SR One, the corporate venture capital arm of GlaxoSmithKline, from 2010 until 2011. Dr. Westphal has previously been involved in founding a number of biotechnology companies. Dr. Westphal co-founded Sirtris Pharmaceuticals, Inc., which was acquired by GlaxoSmithKline plc in 2008, and served as its Chief Executive Officer from 2004 to 2010. He also co-founded Alnara Pharmaceuticals, Inc., Concert Pharmaceuticals, Inc., Acceleron Pharma, Inc., serving as its Chief Executive Officer in 2003, Alnylam Pharmaceuticals, Inc., serving as its Chief Executive Officer in 2001. Dr. Westphal serves on the Board of Fellows of Harvard Medical School and the Board of Overseers for the Boston Symphony Orchestra and is a member of the Research Advisory Council at the Massachusetts General Hospital. He previously served on the Board of Directors of OvaScience, Inc. from July 2011 through May 2014. Dr. Westphal also serves as the Chairman of Course of Flex Pharma, Inc. He earned his M.D. from Harvard Medical School, his Ph.D. in genetics from Harvard University and his B.A. from Columbia University. He was recently appointed to the Biotechnology Industry Organization (BIO) Emerging Companies Section Governing Board. The Board of Directors of other life sciences companies.

DIRECTORS NOT STANDING FOR ELECTION AT THE ANNUAL MEETING

Timothy Barberich, age 67, is a Class II director who has served as a member of our Board of Directors since March 2014. Mr. Barberich is founder and former Chairman and Chief Executive Officer of Sepracor Inc., a publicly traded, research-based, pharmaceutical company based in Marlborough, Massachusetts, which was acquired by Dainippon Sumitomo Pharma Co., Ltd. in 2009. He founded Sepracor in 1984 and served as Chief Executive Officer from 1984 to May 2007 and as Chairman of the Board from 1990 to 2009. Mr. Barberich has been Chief Executive Officer and Chairman of BioNevia Pharmaceuticals since June 2008. He currently serves on the boards of directors of publicly traded HeartWare International, Inc., GI Dynamics and Tokai Pharmaceuticals, and on the boards of directors of the privately held company, Neurovance Inc. He has also served on the board of directors of BioSphere Medical, Inc. and GeminX Pharmaceuticals, two companies which were acquired in 2010. Mr. Barberich has also served on the board of trustees of Boston Medical Center and the

board of the Pharmaceutical Research and Manufacturers' Association (PhRMA). Prior to founding Sepracor, Mr. Barberich spent 10 years as a senior executive at Bedford, Massachusetts-based Millipore Corporation. Mr. Barberich is a graduate of Kings College and holds a Bachelors of Science degree in Chemistry. The Board of Directors believes that Mr. Barberich's qualifications to sit on the Board include his significant experience in the development and commercialization of pharmaceutical products, his leadership experience at other pharmaceutical companies and his service on other boards of directors.

Paul Friedman M.D., age 72, is a Class I director who has served as a member of our Board of Directors since May 2014. Dr. Friedman was the Chief Executive Officer of Incyte Corporation from November 2001 until his retirement in January 2014 and oversaw the development and commercialization of Jakafi®. Dr. Friedman joined Incyte from DuPont Pharmaceuticals Research Laboratories where he served as President. Previously, he served as President of Research and Development of The DuPont Merck Pharmaceutical Company, and Senior Vice President at Merck Research Laboratories. During his career, Dr. Friedman was involved in the discovery and/or development of a number of successful pharmaceutical products, including Jakafi®, Aggrastat®, Trusopt®, Crixivan®, Sustiva®, Pedvax®, Pneumovax®, Vaqta®, Varivax® Cozaar®/Hyzaar® and Fosamax®. Dr. Friedman earned his M.D. from Harvard Medical School where he subsequently became an Associate Professor of Medicine and Pharmacology and was a practicing physician at New York-Presbyterian Hospital, College of Physicians and Surgeons. Dr. Friedman serves on the Board of Directors at Incyte (INCY), Synta Pharmaceuticals Corp. (SNTA), Durata Therapeutics, Inc. (DRTX), Auxilium, Inc. (AUXL), Cerulean Pharma, Inc. (CERU) and Gliknik, Inc. Dr. Friedman currently serves as a diplomat of the American Board of Internal Medicine and a Member of the American Society of Clinical Investigation. He has authored or co-authored over 100 scientific publications. The Board of Directors believes that Dr. Friedman's qualifications to sit on the Board include his medical background, his significant experience in the development and commercialization of pharmaceutical products and his leadership experience at other pharmaceutical companies.

Michael Kauffman M.D., age 51, is a Class I director who has served as a member of our Board of Directors since November 2012. Dr. Kauffman has been the President and Chief Executive Officer of Karyopharm Therapeutics Inc., a publicly traded biotechnology company, since January 2011 and was a Science Advisor to Bessemer Venture Partners from 2008 to 2011. Dr. Kauffman was the Chief Medical Officer of Onyx Pharmaceuticals., a publicly traded biotechnology company, from January 2010 until December 2010. Dr. Kauffman was the Chief Medical Officer of Proteolix, Inc., a privately held pharmaceutical company, from April 2009 until November 2009, when it was acquired by Onyx. Dr. Kauffman was the President and Chief Executive Officer of EPIX Pharmaceuticals, Inc., a publicly traded biotechnology company that underwent liquidation proceedings in 2009, until July 2008. Dr. Kauffman joined Predix Pharmaceuticals, Inc., the predecessor to EPIX, in September 2002, as President and Chief Executive Officer. From 1997 to 2002, he held a number of senior medical and program leadership positions at Millennium Pharmaceuticals, Inc., then a publicly traded biotechnology company, including Vice President, Medicine and VELCADE Program Leader as well as co-founder and Vice President of Medicine at Millennium Predictive Medicine, a wholly-owned subsidiary of Millennium. Dr. Kauffman also served as Medical Director at Biogen Corporation (now Biogen Idec Inc., a publicly traded biotechnology company). Dr. Kauffman has served on the board of directors of Zalicus, Inc., a publicly traded biotechnology company, since June 2006 and on the board of directors of Karyopharm since January 2011. In the past five years, Dr. Kauffman has also served on the board of directors of EPIX. Dr. Kauffman received an M.D. and Ph.D. in molecular biology and biochemistry from Johns Hopkins University and holds a B.A. in biochemistry from Amherst College. Dr. Kauffman trained in Internal Medicine at Beth Israel Deaconess and Massachusetts General Hospitals. He is board certified in internal medicine. The Board of Directors believes that Dr. Kauffman's qualifications to sit on the Board include the combination of his significant business and leadership experience at public life sciences companies and his medical and scientific background.

Alison Lawton, age 53, is a Class II director who has served as a member of our Board of Directors since November 2012. Ms. Lawton has been Chief Operating Officer (COO) at Aura Biosciences since January 2015 and prior to this was Chief Operating Officer of OvaScience, Inc., a publicly traded life sciences company, until January 2014. From 1991 to 2013, Ms. Lawton worked at various positions of increasing responsibility at Genzyme Corporation, or Genzyme, and subsequently at Sanofi-Aventis, following its 2011 acquisition of Genzyme, each a global biopharmaceutical company. Ms. Lawton served as head of Genzyme Biosurgery, where she was responsible for Genzyme's global orthopedics, surgical and cell therapy and regenerative medicine businesses. Prior to that, Ms. Lawton oversaw Global Market Access at Genzyme, which included Regulatory Affairs, Global Health Outcomes and Strategic Pricing, Global Public Policy, and Global Product Safety & Risk Management. Before joining Genzyme, Ms. Lawton worked for seven years in the United Kingdom at Parke-Davis, a pharmaceutical company. Ms. Lawton serves on the board of directors of ProQR Therapeutics, a publicly traded biopharmaceutical company. She also served on the board of directors of Cubist Pharmaceuticals for three years until its acquisition by Merck &Co., Inc. in 2015. Ms Lawton also serves on the Scientific Advisory Board for the Massachusetts Life Science Center. She is past President and Chair of the Board of Regulatory Affairs Professional Society and past FDA Advisory Committee member for Cell and Gene Therapy Committee. The Board of Directors believes that Ms. Lawton's qualifications to sit on the Board include significant operational, international, regulatory and senior management experience within the pharmaceutical and biotechnology industries and her experience serving on a board of directors within the industry.

S. Louise Phanstiel, age 56, is a Class I director who has served as a member of our Board of Directors since September 2012. Ms. Phanstiel held several important positions at WellPoint, Inc. from 1996 to 2007, including President, Specialty Products (2003 to 2007), Senior Vice President, Chief of Staff and Corporate Planning in the Office of the Chairman (2000 to 2003), and Senior Vice President, Chief Accounting Officer, Controller, and Chief Financial Officer for all WellPoint, Inc. subsidiaries, including Blue Cross of California (1996 to 2000). Previously, Ms. Phanstiel was a partner at the international services firm of Coopers & Lybrand where she served clients in life and property/casualty insurance, high technology, and higher education. Ms. Phanstiel has served on the board of directors of Myriad Genetics since September 2009, and formerly served on the board of directors of Inveresk Research Group, Inc. and Charles River Laboratories, Inc. Ms. Phanstiel received a B.A. degree in Accounting from Golden Gate University and is a Certified Public Accountant. The Board of Directors believes that Ms. Phanstiel's qualifications to sit on the Board include her significant financial and investment expertise, as well as management expertise, from managing and serving as a director of publicly traded companies.

Stephen A. Sherwin, M.D., age 66, is a Class II director who has served as a member of our Board of Directors since March 2013. Dr. Sherwin also serves on the boards of directors of Biogen Idec, Neurocrine Biosciences, Rigel Pharmaceuticals and Vical Incorporated, each of which is a biotechnology company. Dr. Sherwin previously served as Chief Executive Officer of Cell Genesys, Inc, a cancer immunotherapy company, from 1990 until the company's merger with BioSante Pharmaceuticals in 2009 and also served as chairman of its board of directors from 1994 to 2009. He was also co-founder and chairman of the board of directors of Abgenix, Inc, an antibody company that was acquired by Amgen, Inc. in 2006, and co-founder and chairman of the board of directors of Ceregene, a gene therapy company that was acquired by Sangamo Biosciences in 2013. Dr. Sherwin also previously served on the board of the Biotechnology Industry Organization from 2002 until 2014 and as its Chairman from 2009 to 2011. From 1983 to 1990, Dr. Sherwin held various positions at Genentech most recently that of Vice President of Clinical Research. Dr. Sherwin holds a B.A. summa cum laude in Biology from Yale University and an M.D. from Harvard Medical School. He is board-certified in internal medicine and medical oncology and is currently a Clinical Professor of Medicine at University of California, San Francisco and a volunteer Attending Physician in the Hematology/Oncology Division at San Francisco General Hospital. He is a fellow of the American College of

Physicians and a member of the American Society of Clinical Oncology. The Board of Directors believes that Dr. Sherwin's qualifications to sit on the Board include the insight he has gained from founding and leading pharmaceutical companies as well as his medical background.

BOARD OF DIRECTORS AND ITS COMMITTEES

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

| Name | Governance and Nominating Committee | Compensation Committee | Audit Committee |
|---------------------------------|---|---------------------------|--------------------|
| Timothy Barberich | X | | X |
| Paul Friedman, MD | Х | | |
| Michael Kauffman, MD | | Х | Х |
| Alison Lawton. | | Х | |
| S. Louise Phanstiel | | | X(1) |
| Stephen Sherwin, M.D. | | X(1) | |
| Henri Termeer | X(1) | | |
| Christoph Westphal, M.D., Ph.D. | | | |
| Robert Forrester. | | | |
| | | | |

(1) Chair of the committee.

THE BOARD OF DIRECTORS AND ITS COMMITTEES

Director Independence

As required by the listing standards of the Nasdaq Global Market, or Nasdaq, the Board of Directors has affirmatively determined, upon the recommendation of the Nominating and Corporate Governance Committee, that each of our directors and nominees for director other than Christoph Westphal, M.D., Ph.D., our Executive Chairman, and Robert Forrester, our President and Chief Executive Officer, is independent. To make this determination, our Board of Directors reviews all relevant transactions or relationships between each director and Verastem, its senior management and its independent registered public accounting firm. During this review, the Board considers whether there are any transactions or relationships between directors or any member of their immediate family (or any entity of which a director or an immediate family member is an executive officer, general partner or significant equity holder) and members of our senior management or their affiliates. The Board consults with Verastem's outside corporate counsel to ensure that the Board's determinations are consistent with all relevant securities and other laws and regulations regarding the definition of "independent," including those set forth in pertinent Nasdaq listing standards, as in effect from time to time.

Board Meetings and Attendance

The Board of Directors held six meetings during the year ended December 31, 2014. Each of the directors attended at least 75% of the aggregate number of meetings of the Board of Directors and the committees of the Board of Directors on which he or she served during the year ended December 31, 2014 (in each case, which were held during the period for which he or she was a director and/or a member of the applicable committee). Mr. Forrester and Dr. Westphal attended our 2014 annual meeting of stockholders, to represent the Board at the meeting.

Board Committees

The Board of Directors has standing Audit, Compensation and Nominating and Corporate Governance Committees, each of which is comprised solely of independent directors, and is described more fully below. Each of the Audit, Compensation and Nominating and Corporate Governance Committees operate pursuant to a written charter and each committee reviews and assesses the adequacy of its charter. The charters for the Audit, Compensation and Nominating and Corporate Governance Committees are all available on our website (www.verastem.com) under "Investors" at "Corporate Governance."

Audit Committee

Ms. Phanstiel is the chair and Mr. Barberich and Dr. Kauffman are the other members of the Audit Committee. The Board of Directors has determined, upon the recommendation of the Nominating and Corporate Governance Committee, that each member of the Audit Committee is "independent" within the meaning of the rules and regulations of Nasdaq and the Securities and Exchange Commission, or the SEC. The Board of Directors has determined, upon the recommendation of the Nominating and Corporate Governance Committee, that Ms. Phanstiel is an "audit committee financial expert" within the meaning of the rules and regulations of the SEC.

The primary responsibilities of the Audit Committee include: (a) appointing, approving the compensation of and assessing the independence of our registered public accounting firm, (b) overseeing the work of our registered public accounting firm, including through the receipt and consideration of reports from such firm, (c) reviewing and discussing with management and the registered public accounting firm our annual and quarterly financial statements and related disclosures, (d) monitoring our internal control over financial reporting, disclosure controls and procedures and code of business conduct and ethics, (e) overseeing our risk assessment and risk management policies, (f) meeting independently with our registered public accounting firm and management, (g) reviewing and approving or ratifying any related person transactions, and (h) preparing the audit committee report required by Securities and Exchange Commission, or SEC, rules. All audit and non-audit services to be provided to us by our independent registered public accounting firm must be approved in advance by the Audit Committee.

During the year ended December 31, 2014, the Audit Committee met five times. The report of the Audit Committee is included in this Proxy Statement under "Report of the Audit Committee."

Compensation Committee

Dr. Sherwin is the chair and Dr. Kauffman and Ms. Lawton are the other members of the Compensation Committee. The Board of Directors has determined, upon the recommendation of the Nominating and Corporate Governance Committee, that each member of the Compensation Committee is "independent" within the meaning of the rules and regulations of Nasdaq and the SEC. In addition, each member qualifies as an "outside director" within the meaning of Section 162(m) of the Internal Revenue Code and is a "non-employee director" within the meaning of the rules of the SEC.

The primary responsibilities of the Compensation Committee include: (a) annually reviewing and approving corporate goals and objectives relevant to the compensation of our Chief Executive Officer, (b) reviewing and approving, or making recommendations to our Board with respect to, the compensation of our Chief Executive Officer and our other executive officers, (c) overseeing an evaluation of our senior executives, (d) overseeing and administering our cash and equity incentive plans, and (e) reviewing and making recommendations to our Board with respect to director compensation.

The Compensation Committee engaged Pearl Meyers LLP, an independent compensation consultant, to provide comparative data on executive compensation practices in our industry and to advise on our executive compensation program generally. Although the Board of Directors and Compensation Committee consider the advice and recommendation of any independent compensation consultants as to our executive compensation program, the Board of Directors and Compensation Committee ultimately make their own decisions about these matters.

During the year ended December 31, 2014, the Compensation Committee met seven times.

Nominating and Corporate Governance Committee

Mr. Termeer is the chair and Mr. Barberich and Dr. Friedman are the other members of the Nominating and Corporate Governance Committee. The Board of Directors has determined, upon the recommendation of the Nominating and Corporate Governance Committee, that each member of the Nominating and Corporate Governance Committee is "independent" within the meaning of the rules and regulations of Nasdaq.

The primary responsibilities of the Nominating and Corporate Governance Committee include: (a) identifying individuals qualified to become members of our Board, (b) recommending to our Board the persons to be nominated for election as directors and to each of our Board's committees, (c) reviewing and making recommendations to our Board with respect to our Board leadership structure, (d) reviewing and making recommendations to our Board with respect to management succession planning, (e) developing and recommending to our Board corporate governance principles, and (f) overseeing an annual self-evaluation by our Board.

The Nominating and Corporate Governance Committee does not set specific, minimum qualifications that nominees must meet in order to be recommended to the Board of Directors, but rather believes that each nominee should be evaluated based on his or her individual merits, taking into account the needs of Verastem and the composition of the Board of Directors. Additionally, neither the Nominating and Corporate Governance Committee nor the Board of Directors has a specific policy with regard to the consideration of diversity in identifying director nominees; however, both may consider the diversity of background and experience of a director nominee in the context of the overall composition of the Board of Directors at that time, such as diversity of knowledge, skills, experience, geographic location, age, gender, and ethnicity. Members of the Nominating and Corporate Governance Committee discuss and evaluate possible candidates in detail and suggest individuals to explore in more depth.

The Nominating and Corporate Governance Committee will consider candidates recommended by stockholders. Candidates recommended by stockholders are given appropriate consideration in the same manner as other candidates.

During the year ended December 31, 2014, the Nominating and Corporate Governance Committee met five times.

Board of Directors Leadership Structure

Dr. Westphal has served as the chairman of our Board of Directors since March 2011. He has served as our Executive Chairman since July 2013. Mr. Termeer, an independent member of our Board of Directors, has served as its Lead Director since March 2012. The independent members of the Board of Directors have periodically reviewed the Board's leadership structure and have determined that Verastem and our stockholders are well served with this structure.

The chairman of the Board of Directors provides leadership to the Board of Directors and works with the Board of Directors to define its activities and the calendar for fulfillment of its responsibilities. The chairman of the Board of Directors approves the meeting agendas after input from the Board of



Directors and management, facilitates communication among directors and presides at meetings of our Board of Directors and stockholders. The Lead Director presides over meetings of the independent directors.

The Board of Directors provides oversight of our management and affairs. Mr. Termeer, as the Lead Director and chair of the Nominating and Corporate Governance Committee, oversees the maintenance and improvement of governance practices that require and support high levels of performance by members of the Board of Directors. Mr. Termeer's leadership encourages open discussion and deliberation, with a thoughtful evaluation of risk, to support the Board's decision-making. Mr. Termeer's leadership also encourages communication among the directors, and between management and the Board of Directors, to facilitate productive working relationships.

The Board of Directors' Role in Risk Oversight

The Board of Directors plays an important role in risk oversight through direct decision-making authority with respect to significant matters as well as through the oversight of management by the Board of Directors and its committees. In particular, the Board of Directors administers its risk oversight function through (1) the review and discussion of regular periodic reports by the Board of Directors and its committees on topics relating to the risks that we face, (2) the required approval by the Board of Directors (or a committee of the Board of Directors) of significant transactions and other decisions, (3) the direct oversight of specific areas of our business by the Audit, Compensation and Nominating and Corporate Governance Committees, and (4) regular periodic reports from the auditors and other outside consultants regarding various areas of potential risk, including, among others, those relating to the our internal control over financial reporting. The Board of Directors also relies on management to bring significant matters impacting our company to the attention of the Board of Directors.

Pursuant to the Audit Committee's charter, the Audit Committee is responsible for reviewing and discussing with management and the independent registered public accounting firm, our system of internal controls, our critical accounting practices, and policies relating to risk assessment and management. As part of this process, the Audit Committee discusses our major financial risk exposures and steps that management has taken to monitor and control such exposure. In addition, the Audit Committee has established procedures for the receipt, retention and treatment of complaints received by the Company regarding accounting, internal accounting controls or auditing matters, and the confidential, anonymous submissions by employees of concerns regarding questionable accounting or accounting matters.

Because of the role of the Board of Directors and the Audit Committee in risk oversight, the Board of Directors believes that any leadership structure that it adopts must allow it to effectively oversee the management of the risks relating to our operations. The Board of Directors acknowledges that there are different leadership structures that could allow it to effectively oversee the management of the risks relating to the Company's operations and believes its current leadership structure enables it to effectively provide oversight with respect to such risks.

Non-Employee Director Compensation

In December 2014, the Compensation Committee approved a new non-employee director compensation policy. Under this policy, each non-employee director receives an annual base retainer of \$40,000. In addition, our non-employee directors receive the following cash compensation for Board services, as applicable:

the non-executive lead director of the Board of Directors receives an additional annual retainer of \$25,000;

- each chairperson of our Audit, Compensation and Nominating and Corporate Governance Committees receives an additional annual retainer of \$20,000, \$15,000 and \$10,000, respectively; and
- each member of our Audit, Compensation and Nominating and Corporate Governance Committees receives an additional retainer of \$8,000, \$6,000 and \$5,000, respectively.

All amounts shall be paid in quarterly installments.

In addition, newly appointed non-employee directors will receive a one-time initial award of options to purchase 50,000 shares of our common stock, which will vest monthly over a one-year period subject to the director's continued service on the Board of Directors. Thereafter, in the second quarter of each year, each non-employee director who was serving on the Board at the time of the prior year meeting at which the annual grants were made will receive an annual award of options to purchase shares of our common stock with an aggregate value of \$100,000 (the "annual grant"), which will vest monthly over a one-year period subject to the director's continued service on the Board of Directors. At such time, each non-employee director who has served twelve months on the Board and has not yet received an annual grant will also receive a pro-rated grant reflecting the time such director has served since their 12-month anniversary of joining the Board, which award will vest monthly over a one-year period, subject to the director's continued service on the Board of Directors.

Mr. Forrester, our President and Chief Executive Officer, and Dr. Westphal, our Executive Chairman, do not receive compensation for their service as a director. Mr. Forrester's compensation is described under the heading "Executive Compensation." Pursuant to the terms of his offer letter agreement and in connection with his service as our President and Chief Executive Officer, Dr. Westphal received a stock option grant for 625,000 shares of the Company's common stock, which is subject to time-based vesting conditions. The Company also granted Dr. Westphal two restricted stock unit awards representing (i) the right to receive 206,612 shares of common stock, which vests upon meeting certain time-based vesting conditions and (ii) the right to receive 103,306 shares of common stock, which vests upon meeting certain performance-based vesting conditions. The restricted stock units continued to vest through July 1, 2014, the date that was twelve months after Dr. Westphal no longer served as our President and Chief Executive Officer. Since Dr. Westphal was serving as our Executive Chairman at the end such twelve month period, fifty percent of his restricted stock units that would otherwise have vested on any subsequent vesting date shall vest on such date. Such vesting shall continue for twelve months after Dr. Westphal ceases to serve as our Executive Director or another successor position.

Director Compensation

The following table summarizes the compensation paid to or earned by our directors during the year ended December 31, 2014, other than Mr. Forrester and Dr. Westphal, who do not receive compensation for their service as a director.

| | or | Earned | | Option | m . 1 |
|------------------------|----|--------|----|------------|---------------|
| Name | | Cash | Aw | ards(1)(2) | Total |
| Timothy Barberich | \$ | 36,160 | \$ | 497,093 | \$ 533,253 |
| Paul Friedman, M.D | \$ | 24,863 | \$ | 265,406 | \$ 290,269 |
| Michael Kauffman, M.D. | \$ | 43,320 | \$ | 175,026 | \$ 218,346 |
| Alison Lawton | \$ | 40,275 | \$ | 175,026 | \$ 215,301 |
| S. Louise Phanstiel | \$ | 56,450 | \$ | 175,026 | \$ 231,476 |
| Stephen Sherwin, M.D. | \$ | 50,000 | \$ | 175,026 | \$ 225,026 |
| Henri Termeer | \$ | 64,675 | \$ | 175,026 | \$ 239,701 |
| | | | | | |

- (1) Amounts shown represent the aggregate full grant date fair value of stock option awards granted to the director and calculated in accordance with ASC 718, disregarding adjustments for forfeiture assumptions. For information regarding assumptions underlying the value of stock awards, see Note 7 to our financial statements and the discussion under Part II, Item 7 "Management's Discussion and Analysis of Financial Condition and Results of Operations—Critical Accounting Policies—Stock-Based Compensation," of our Annual Report on Form 10-K for the year ended December 31, 2014.
- (2) The number of stock options awarded to each non-employee director during 2014 was: Mr. Barberich—50,000, Dr. Friedman—50,000, Dr. Kauffman—25,000, Ms. Lawton—25,000, Ms. Phanstiel—25,000, Dr. Sherwin—25,000 and Mr. Termeer—25,000.

The following table sets forth as of December 31, 2014, the aggregate number of exercisable and unexercisable stock option awards held by our directors, other than Mr. Forrester and Dr. Westphal:

| | Option | Awards |
|------------------------|-----------------|-------------------|
| Name | Exercisable (#) | Unexercisable (#) |
| Timothy Barberich | 37,502 | 12,498 |
| Paul Friedman, M.D. | 29,169 | 20,831 |
| Michael Kauffman, M.D. | 56,509 | 12,498 |
| Alison Lawton | 56,509 | 12,498 |
| S. Louise Phanstiel | 58,872 | 12,498 |
| Stephen Sherwin, M.D. | 53,118 | 12,498 |
| Henri Termeer | 68,752 | 16,962 |

SECTION 16(a) BENEFICIAL OWNERSHIP REPORTING COMPLIANCE

Section 16(a) of the Exchange Act of 1934 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 2014, we believe that our executive officers and directors and persons who own more than 10% of a registered class of our equity securities have complied with all applicable filing requirements, except that Henri Termeer had a late Form 4 filing in December 2014, disclosing two transactions for the purchase of shares of our common stock.

AUDIT COMMITTEE REPORT

The Audit Committee has reviewed the Verastem audited financial statements for the year ended December 31, 2014 and has discussed these statements with management and Ernst & Young LLP, the Company's independent registered public accounting firm. Verastem 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. Ernst & Young LLP is responsible for expressing an opinion on the conformity of the audited financial statements with generally accepted accounting principles, their judgments as to the quality, not just the acceptability, of the Company's accounting principles and such other matters as are required to be discussed with the Audit Committee under generally accepted auditing standards. 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 LLP all communications required under the standards of the Public Company Accounting Oversight Board (the "PCAOB"), including the matters required to be discussed by Ernst & Young LLP with the Audit Committee.

Ernst & Young LLP also provided the Audit Committee with the written disclosures and the letter required under the PCAOB, which requires that independent registered public accounting firms 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 engage in a discussion of independence. The Audit Committee has reviewed this disclosure and has discussed with Ernst & Young their independence from Verastem.

Based on its discussions with management and our independent registered public accounting firm, 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 of Directors that the audited financial statements be included in the Verastem Annual Report on Form 10-K for the year ended December 31, 2014, for filing with the Securities and Exchange Commission.

Respectfully submitted by the Audit Committee,

S. Louise Phanstiel, Chair Timothy Barberich Michael Kauffman

EXECUTIVE COMPENSATION

Our named executive officers for the fiscal year ended December 31, 2014 were:

- Robert Forrester, our President and Chief Executive Officer;
- Daniel Paterson, our Chief Operating Officer; and
- Joanna Horobin, our Chief Medical Officer.

Executive Compensation

The following table presents summary information regarding the total compensation awarded to, earned by, or paid to our named executive officers for the years ended December 31, 2013 and 2014.

Summary Compensation Table

| Name and Principal Position | Year | Salary (\$) | Option Awards (\$)(1) | Non-Equity Incentive Plans (\$)(2) | All Other Compensation (\$)(3) | Total |
|---|--------------|--------------------|-----------------------------|---|--------------------------------------|----------------------|
| Robert Forrester | 2014 | 504,596 | 4,739,103 | 303,000 | 16,931 | 5,563,630 |
| Chief Executive Officer(4) | 2013 | 443,750 | 2,071,789 | 248,050 | 15,485 | 2,779,074 |
| Daniel Paterson Chief Operating Officer(5) | 2014 2013 | 363,058 314,654 | 1,895,641 513,013 | 140,000 150,434 | 12,474 12,491 | 2,411,173 990,592 |
| Joanna Horobin Chief Medical Officer | 2014 2013 | 388,923 350,000 | 947,821 — | 136,500 169,050 | 15,177 13,617 | 1,488,421 532,667 |

- (1) The amounts reflect the aggregate grant date fair value of option awards granted during the year computed in accordance with the provisions of ASC 718. For information regarding assumptions underlying the value of stock awards, see Note 7 to our financial statements and the discussion under Part II, Item 7 "Management's Discussion and Analysis of Financial Condition and Results of Operations—Critical Accounting Policies—Stock-Based Compensation," of our Annual Report on Form 10-K for the year ended December 31, 2014.
- (2) The figures shown for non-equity incentive plan compensation represents amounts earned for the fiscal years ended December 31, 2013 and 2014. The 2013 amounts were paid during 2014 and the 2014 amounts were paid in 2015.
- (3) The amounts shown represent the sum of Company 401(k) contributions and the dollar value of life insurance premiums we paid for the applicable named executive officer.
- (4) Mr. Forrester served as our President and Chief Operating Officer through July 2013, when he became our Chief Executive Officer. Accordingly, his compensation for 2013 includes compensation paid to him in his capacity as President and Chief Operating Officer for the period prior to July 2013.
- (5) Mr. Paterson served as our Chief Business Officer through December 12, 2014, when he became our Chief Operating Officer. Accordingly, his compensation for 2013 reflects compensation paid to him in his capacity as Chief Business Officer and his compensation for 2014 includes compensation paid to him in his capacity as Chief Business Officer through December 12, 2014 and as Chief Operating Officer for the period after December 12, 2014.

Outstanding Equity Awards at Fiscal Year-End

The following table provides information regarding equity awards held by each of our named executive officers that were outstanding as of December 31, 2014.

| | Option | Awards | | | | Stock Aw | vards |
|------------------|--|--|----|--------------------------------|------------------------------|--|--|
| Name | Number of Securities Underlying Unexercised Options (#) Exercisable | Number of Securities Underlying Unexercised Options (#) Unexercisable | E | Option xercise rice (\$) | Option Expiration Date | Number of Shares or Units of Stock That Have Not Vested (#) | Market Value of Shares or Units of Stock That Have Not Vested (\$)(1) |
| Robert Forrester | | | | | | 7,998(2) | 70,862 |
| | | | | | | 53,572(3) | 489,648 |
| | 109,375 | 140,625(4) | \$ | 9.85 | 1/15/2023 | | |
| | 15,625 | 34,375(5) | \$ | 14.18 | 9/17/2023 | | |
| | 93,750 | 156,250(6) | \$ | 13.59 | 1/7/2024 | | |
| | _ | 250,000(7) | \$ | 13.59 | 1/7/2024 | | |
| Daniel Paterson | | | | | | 42,857(3) | 391,713 |
| | 35,000 | 45,000(4) | \$ | 9.85 | 1/15/2023 | | |
| | 37,500 | 62,500(6) | \$ | 13.59 | 1/7/2024 | | |
| | _ | 100,000(7) | \$ | 13.59 | 1/7/2024 | | |
| Joanna Horobin | 100,000 | 100,000(8) | \$ | 7.93 | 11/1/2022 | | |
| | | 100,000(7) | \$ | 13.59 | 1/7/2024 | | |
| | | | | | | | |

(1) Represents the market value of the shares based on a closing price on December 31, 2014 of \$9.14 per share.

(2) The restricted stock was awarded on April 8, 2011. The restricted stock award vested as to 25% of the shares on March 3, 2012 and, thereafter, 1/36th of the remaining shares vest on each monthly anniversary.

- (3) The restricted stock unit was granted effective on February 1, 2012. The restricted stock units vests with respect to 25% of the shares on the first anniversary of the grant date and with respect to the remaining shares in approximately equal semi-annual installments through the fourth anniversary.
- (4) The option was granted on January 15, 2013. The option vests as to 25% on the first anniversary of the grant date and then an additional 6.25% of the shares at the end of each successive three month period following the first anniversary of the grant date until the fourth anniversary of the grant date.
- (5) The option was granted on September 17, 2013. The option vests as to 6.25% on October 1, 2013 and then an additional 6.25% of the shares at the end of each successive three month period thereafter until July 1, 2017.
- (6) The option was granted on January 7, 2014. The option vests as to 25% of the options to vest on July 1, 2014 and 6.25% of the options to vest on the last day of each calendar quarter after such date, through June 30, 2017.
- The option was granted on January 7, 2014. The option vests as to 25% of shares on the first anniversary of the grant date and, thereafter, 6.25% of the shares vest on the last day of each calendar quarter after such date, through December 31, 2017.

(8) The option was granted on November 1, 2012. The option vests as to 25% on October 23, 2013and then an additional 6.25% of the shares at the end of each successive three month period until October 23, 2016.

Pension Benefits and Deferred Compensation

We maintain a defined contribution employee retirement plan for our employees. Our 401(k) plan is intended to qualify as a tax-qualified plan under Section 401 of the Code. The employee contribution can be made pre-tax 401(k) or after-tax Roth 401(k). The 401(k) plan provides for employer matching contributions equal to (1) 100% of employee deferral contributions up to a deferral rate of 3% of compensation plus (2) 50% of employee deferral contributions up to a deferral rate of an additional 2% of compensation.

EMPLOYMENT AGREEMENTS

We have entered into an employment agreement with each of our named executive officers. In connection with becoming Chief Executive Officer, we entered into an amended and restated employment agreement with Mr. Forrester in November 2013. Each of the employment agreements provides that employment will continue for an indefinite period until either we or the employee provides written notice of termination in accordance with the terms of the agreement.

Robert Forrester

Pursuant to the terms of his amended and restated employment agreement, as of July 1, 2013, Mr. Forrester receives a base salary of \$490,000, which is subject to increase from time to time by the Board of Directors. Mr. Forrester's current annual base salary is \$525,000. Mr. Forrester is eligible to receive a bonus of 60% of his current annual base salary. Upon execution and effectiveness of a release of claims, Mr. Forrester will be entitled to severance payments if we terminate his employment without cause, as defined in the employment agreement, or Mr. Forrester terminates employment with us for good reason, as defined in the employment agreement.

If Mr. Forrester's employment terminates under these circumstances, absent a change in control, as defined in the employment agreement, we will be obligated for a period of 12 months following termination, (1) to pay Mr. Forrester his base salary, (2) to provide that any equity awards granted prior to the date of Mr. Forrester's amended and restated employment agreement, with respect to such portion of each award that would have vested during such 12 month period, will become fully vested and (3) to the extent allowed by applicable law and the applicable plan documents, continue to provide to Mr. Forrester all health and dental benefits that he was receiving at the time of termination (provided that such benefits shall end when Mr. Forrester becomes eligible to enroll in the health or dental plan of a new employer).

If Mr. Forrester's employment terminates under these circumstances, in each case within 90 days prior to, or within one year following, a change in control, we will be obligated (1) to pay Mr. Forrester a lump sum amount equal to two times his current annual base salary plus Mr. Forrester's target bonus, (2) accelerate in full the vesting of all outstanding equity awards and (3) to the extent allowed by applicable law and the applicable plan documents, continue to provide to Mr. Forrester, for a period of 24 months, all health and dental benefits that he was receiving at the time of termination (provided that such benefits shall end when Mr. Forrester becomes eligible to enroll in the health or dental plan of a new employer).

To the extent that any severance or compensation payment to Mr. Forrester pursuant to his employment agreement would be subject to the excise tax imposed under Section 4999 of the Internal Revenue Code, Mr. Forrester will be entitled to an additional cash payment equal to a portion of the amount of such tax owed by him and any interest or penalties thereon. In addition, Mr. Forrester's



employment agreement includes a cutback provision that provides Mr. Forrester with the full amount of the total payments payable in connection with a change in control or a reduced amount of the total payments payable in connection with a change in control, whichever results in the greater economic benefit for Mr. Forrester.

Daniel Paterson and Joanna Horobin

Pursuant to their employment agreements, Mr. Paterson and Ms. Horobin receive base salaries of \$300,000 and \$350,000, respectively, which is subject to increase from time to time by the Board of Directors. Their current annual base salary is \$377,000 for Mr. Paterson and \$400,000 for Ms. Horobin. Each of Mr. Paterson and Ms. Horobin are also eligible to receive a bonus of 35% of his/ her current annual base salary. Upon execution and effectiveness of a release of claims, Mr. Paterson and Ms. Horobin will be entitled to severance payments if we terminate the executive's employment without cause, as defined in the respective employment agreement, or the executive terminates employment with us for good reason, as defined in the respective employment agreement.

If Mr. Paterson's or Ms. Horobin's employment terminates under these circumstances, absent a change in control, as defined in the respective employment agreement, we will be obligated for a period of nine months following termination, (1) to pay the executive his/ her base salary, (2) to provide that any equity awards (in the case of Ms. Horobin) or any equity awards granted prior to the Company's initial public offering (in the case of Mr. Paterson), in each case with respect to such portion of each award that would have vested during such nine month period, will become fully vested and (3) to the extent allowed by applicable law and the applicable plan documents, continue to provide to the executive all health and dental benefits that he/ she was receiving at the time of termination (provided that such benefits shall end when the executive becomes eligible to enroll in the health or dental plan of a new employer).

If Mr. Paterson's or Ms. Horobin's employment terminates under these circumstances, in each case within 90 days prior to, or within 18 months following, a change in control, we will be obligated (1) to pay the executive a lump sum amount equal to his/ her current annual base salary for a period of 12 months, (2) accelerate in full the vesting of all outstanding equity awards and (3) to the extent allowed by applicable law and the applicable plan documents, continue to provide to the executive, for a period of 12 months, all health and dental benefits that he/ she was receiving at the time of termination (provided that such benefits shall end when the executive becomes eligible to enroll in the health or dental plan of a new employer).

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 as our independent registered public accounting firm for the fiscal year ending December 31, 2015. Although ratification is not required by our bylaws or otherwise, the Board of Directors 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. 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 committee determines that such a change would be in the best interests of the Company and our stockholders.

The board of directors first approved Ernst & Young as our independent registered public accounting firm in 2010, and Ernst & Young has audited our financial statements for each of the three years in the period ended December 31, 2014. Representatives of Ernst & Young are expected to be present at the Annual Meeting. They will be given an opportunity to make a statement at the Annual Meeting if they desire to do so, and they will be available to respond to appropriate questions.

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. All of the services described in the following fee table were approved in conformity with the Audit Committee's pre-approval process.

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, 2014 and 2013 for each of the following categories of services are as follows:

| Fee Category | 2013 | 2014 |
|--------------------|---------------|---------------|
| Audit Fees | \$ 264,558 | \$ 255,729 |
| Audit-Related Fees | \$ 94,098 | \$ 18,045 |
| Tax Fees | \$ _ | \$ — |
| All Other Fees | \$ _ | \$ _ |
| Total Fees | \$ 358,656 | \$ 273,774 |

Audit Fees. Consist of fees billed for professional services rendered for the audit of our annual financial statements, the review of interim financial statements and services provided in connection with our registration statements.

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

Tax Fees. Consist of fees billed for tax compliance, tax advice and tax planning and includes fees for tax return preparation.

All Other Fees. Consist of fees billed for products and services, other than those described above under Audit Fees, Audit-Related Fees and Tax Fees.

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 2 ON YOUR PROXY CARD)

BENEFICIAL OWNERSHIP OF COMMON STOCK

The following table sets forth certain information as of February 28, 2015 (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 above), and all directors and executive officers as a group.

Shares of common stock subject to options, restricted stock units or other rights to purchase which are now exercisable or are exercisable within 60 days after February 28, 2015 are to be considered outstanding for purposes of computing 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 percentage ownership of any other person. As of February 28, 2015, there were 35,955,110 shares of common stock outstanding.

| Name and address of beneficial owner | Number of shares beneficially owned | Percentage of shares beneficially owned |
|--|--|--|
| 5% stockholders: | | |
| CHP III, L.P.(1) | 2,329,121 | 6.5% |
| 230 Nassau Street | | |
| Princeton, NJ 08542 | | |
| FMR LLC(2) | 2,296,041 | 6.4% |
| 245 Summer Street | | |
| Boston, MA 02110 | | |
| Eastern Capital Limited(3) | 1,967,857 | 5.5% |
| 10 Market Street, #773 | | |
| Grand Cayman, KY-9006 Cayman Islands | | |
| Platinum Investment Management Limited(4) | 1,854,897 | 5.2% |
| Level 8, 7 Macquaire Place | | |
| Sydney NSW 2000, Australia | | |
| Directors and Executive Officers | | |
| Robert Forrester(5) | 538,209 | 1.5% |
| Daniel Paterson(6) | 169,516 | * |
| Joanna Horobin(7) | 144,500 | * |
| Timothy Barberich(8) | 89,462 | * |
| Paul Friedman, M.D.(9) | 48,834 | * |
| Michael Kauffman, M.D., Ph.D(10) | 67,841 | * |
| Alison Lawton(11). | 67,341 | * |
| S. Louise Phanstiel(12) | 93,704 | * |
| Stephen Sherwin, M.D.(13). | 63,950 | * |
| Henri Termeer(14) | 125,495 | * |
| Christoph Westphal, M.D., Ph.D.(15) | 2,658,782 | 7.3% |
| All executive officers and directors as a group (thirteen persons)(16) | 4,163,608 | 11.1% |

* Represents beneficial ownership of less than one percent of our outstanding common stock.

(1) Consists of 2,329,121 shares of common stock.

(2) Information is based on (i) a Schedule 13G filed with the SEC on February 13, 2015 by FMR LLC as of December 31, 2014, and (ii) shares purchased in the Company's January 2015 public offering. In the Schedule 13G, FMR LLC disclosed that it has sole dispositive power over 1,546,041 shares of common stock. The address of FMR LLC is listed in the Schedule 13G as 245 Summer Street, Boston, Massachusetts 02210.

- (3) Information is based on a Schedule 13G filed with the SEC on January 30, 2015 by Eastern Capital Limited as of January 28, 2015. Eastern Capital Limited has shared voting and dispositive power over 1,967,857 shares of common stock. The address of Eastern Capital Limited is listed in the Schedule 13G as William Sullivan, 10 Market Street, #773 Camana Bay Grand Cayman, KY1-9006 CAYMAN ISLANDS, 345-640-3330.
- (4) Information is based on a Schedule 13G filed with the SEC on February 13, 2015 by Platinum Investment Management Limited as of December 31, 2014. The address of Platinum Investment Management Limited is listed in the Schedule 13G as Level 8, 7 Macquarie Place, Sydney NSW 2000, Australia.
- (5) Consists of 188,209 shares of common stock held by Mr. Forrester and 350,000 shares of common stock issuable upon the exercise of stock options within 60 days of February 28, 2015.
- (6) Consists of 3,000 shares of common stock held by Mr. Paterson, 46,516 shares of common stock held by the 1996 Paterson Living Trust and 120,000 shares of common stock issuable upon the exercise of stock options within 60 days of February 28, 2015.
- (7) Consists of 750 shares of common stock held by Dr. Horobin and 143,750 shares of common stock issuable upon the exercise of stock options within 60 days of February 28, 2015.
- (8) Consists of 39,462 shares of common stock held by Mr. Barberich and 50,000 shares of common stock issuable upon the exercise of stock options within 60 days of February 28, 2015.
- (9) Consists of 3,000 shares of common stock held by Dr. Friedman and 45,834 shares of common stock issuable upon the exercise of stock options within 60 days of February 28, 2015.
- (10) Consists of 3,000 shares of common stock held by Dr. Kauffman and 64,841 shares of common stock issuable upon the exercise of stock options within 60 days of February 28, 2015.
- (11) Consists of 2,500 shares of common stock held by Ms. Lawton and 64,841 shares of common stock issuable upon the exercise of stock options within 60 days of February 28, 2015.
- (12) Consists of 16,500 shares of common stock held by Ms. Phanstiel, 10,000 shares of common stock held by The Phanstiel Trust and 67,204 shares of common stock issuable upon the exercise of stock options within 60 days of February 28, 2015.
- (13) Consists of 2,500 shares of common stock held by The Sherwin Family Trust and 61,450 shares of common stock issuable to Dr. Sherwin upon the exercise of stock options within 60 days of February 28, 2015.
- (14) Consists of 32,179 shares of common stock held by Mr. Termeer, 14,000 shares of common stock held by his wife and 79,316 shares of common stock issuable upon the exercise of stock options within 60 days of February 28, 2015.
- (15) Consists of (a) 631,948 shares of common stock held by Dr. Westphal, (b) 6,457 restricted stock units expected to vest within 60 days of February 28, 2014, (c) 125,714 shares of common stock held by The Fountain Irrevocable Trust of 2010, (d) 520,314 shares of common stock issuable upon exercise of stock options within 60 days of February 28, 2015, (e) 143,580 shares of common stock held by Longwood Fund, LP and Longwood Fund GP, LLC and (f) 1,230,769 shares of common stock held by Longwood Fund II, LP. The ultimate general partner of Longwood Fund, LP is Longwood Fund GP, LLC and the ultimate general partner of Longwood Fund II, LP is Longwood Fund II GP, LLC. Voting and investment power with respect to the shares held by Longwood Fund, LP and Longwood Fund II, LP are vested in Richard Aldrich, Michelle Dipp and

Dr. Westphal, the managers of Longwood Fund GP, LLC and Longwood Fund II GP, LLC.. The trustee of The Fountain Irrevocable Trust of 2010 is James Kittler and he exercises sole voting and investment power of the shares of record held by the trust.

(16) Includes shares of common stock issuable upon exercise of stock options and vesting of restricted stock units within 60 days of February 28, 2015.

POLICIES AND PROCEDURES FOR RELATED PERSON TRANSACTIONS

Our Board of Directors has adopted written policies and procedures for the review of any transaction, arrangement or relationship in which the Company is a participant, the amount involved exceeds \$120,000 and one of our executive officers, directors, director nominees or 5% stockholders, or their immediate family members, each of whom we refer to as a "related person," has a direct or indirect material interest.

Transactions with related persons

If a related person proposes to enter into such a transaction, arrangement or relationship, which we refer to as a "related person transaction," the related person must report the proposed related person transaction to our principal financial officer. The policy calls for the proposed related person transaction to be reviewed and, if deemed appropriate, approved by our Audit Committee. Whenever practicable, the reporting, review and approval will occur prior to entry into the transaction. If advance review and approval is not practicable, the Audit Committee will review, and, in its discretion, may ratify the related person transactions that arise between Audit Committee meetings, subject to ratification by the Audit Committee at its next meeting. Any related person transactions that are ongoing in nature will be reviewed annually.

A related person transaction reviewed under the policy will be considered approved or ratified if it is authorized by the Audit Committee after full disclosure of the related person's interest in the transaction. As appropriate for the circumstances, the Audit Committee will review and consider:

- the related person's interest in the related person transaction;
- the approximate dollar value of the amount involved in the related person transaction;
- the approximate dollar value of the amount of the related person's interest in the transaction without regard to the amount of any profit or loss;
- whether the transaction was undertaken in the ordinary course of our business;
- whether the terms of the transaction are no less favorable to us than terms that could have been reached with an unrelated third party;
- the purpose of, and the potential benefits to us of, the transaction; and
- any other information regarding the related person transaction or the related person in the context of the proposed transaction that would be material to investors in light of the circumstances of the particular transaction.

The Audit Committee may approve or ratify the transaction only if the Audit Committee determines that, under all of the circumstances, the transaction is in our best interests. The Audit Committee may impose any conditions on the related person transaction that it deems appropriate.

In addition to the transactions that are excluded by the instructions to the SEC's related person transaction disclosure rule, our Board of Directors has determined that the following transactions do

not create a material direct or indirect interest on behalf of related persons and, therefore, are not related person transactions for purposes of this policy:

- interests arising solely from the related person's position as an executive officer of another entity (whether or not the person is also a director of such entity) that is a participant in the transaction, where (a) the related person and all other related persons own in the aggregate less than a 10% equity interest in such entity, (b) the related person and his or her immediate family members are not involved in the negotiation of the terms of the transaction and do not receive any special benefits as a result of the transaction and (c) the amount involved in the transaction is less than the greater of \$200,000 or 5% of the annual gross revenues of the company receiving payment under the transaction; and
- a transaction that is specifically contemplated by provisions of our charter or bylaws.

The policy provides that transactions involving compensation of executive officers shall be reviewed and approved by the Compensation Committee in the manner specified in its charter.

GENERAL MATTERS

Code of Business Conduct and Ethics and Corporate Governance Guidelines

We have adopted a Code of Business Conduct and Ethics for our directors, officers and employees, including our Chief Executive Officer and Chief Financial Officer. A copy of the Code of Business Conduct and Ethics may be accessed free of charge by visiting our website at *www.verastem.com* and going to the "Investors—Corporate Governance" section or by requesting a copy in writing from Monica Kleinman, Secretary, at our Needham, Massachusetts office. We intend to post on our website amendments to, or waivers under, a provision of the Code of Business Conduct and Ethics that apply to certain of our executive officers within four business days following the date of such amendment or waiver.

A copy of the Corporate Governance Guidelines may also be accessed free of charge by visiting the website at *www.verastem.com* and going to the "Investors—Corporate Governance" section or by requesting a copy from Monica Kleinman, Secretary, at our Needham, Massachusetts office.

Availability of Certain Documents

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A copy of our 2014 Annual Report on Form 10-K has been posted on the Internet along with this Proxy Statement. We will mail without charge, upon written request, a copy of our 2014 Annual Report on Form 10-K excluding exhibits. Please send a written request to our Corporate Secretary at:

Verastem, Inc. 117 Kendrick Street, Suite 500 Needham, MA 02494 Attention: Secretary

Only one copy of 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 proxy statement was delivered. You may make a written or oral request by sending a written notification to our Secretary at the address above, providing your name, your shared address, and the address to which we should direct the additional copy of the proxy statement. Multiple stockholders sharing an address who have received one copy of the proxy statement and would prefer us to mail each stockholder a separate copy of future mailings should contact us at our principal executive offices. Additionally, if current stockholders with a shared address received multiple copies of the proxy statement and would prefer us to mail one copy of future mailings to

stockholders at the shared address, notification of that request may also be made through our principal executive offices.

Stockholder Proposals and Nominations

Requirements for Stockholder Proposals to be Considered for Inclusion in our Proxy Materials. To be considered for inclusion in next year's proxy statement, stockholder proposals must be received by our Secretary at our principal executive offices no later than the close of business on December 9, 2015.

Requirements for Stockholder Proposals to be Brought Before an Annual Meeting. Our bylaws provide that, for stockholder nominations to the Board of Directors or other proposals to be considered at an annual meeting, the stockholder must have given timely notice thereof in writing to the Secretary at Verastem, Inc., 117 Kendrick Street, Suite 500, Needham, MA 02494. To be timely for the 2016 annual meeting, the stockholder's notice must be delivered to or mailed and received by us not more than 120 days, and not less than 90 days, before the anniversary date of the preceding annual meeting, except that if the annual meeting is set for a date that is not within 20 days before or 60 days after such anniversary date, we must receive the notice not more than 120 days before such meeting and not later than the close of business on the later of the ninetieth day prior to such annual meeting is not so advanced or delayed, stockholders who wish to make a proposal at the 2016 annual meeting must notify us no earlier than January 9, 2016 and no later than February 8, 2016. Such notice must provide the information required by our bylaws with respect to each matter the stockholder proposes to bring before the 2016 annual meeting.

Communications with the Board of Directors

A stockholder may send general communications to our Board, any committee of our Board or any individual director by directing such communication to the General Counsel, Verastem, Inc., 117 Kendrick Street, Suite 500, Needham, Massachusetts 02494. All communications will be shared with the Lead Director, who will provide copies or summaries of such communications to the other directors as he considers appropriate.

Other Matters

As of the date of this Proxy Statement, the Board of Directors does not intend to present any matters other than those described herein at the Annual Meeting and is unaware of any matters to be presented by other parties. If other matters are properly brought before the Annual 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

Robert Forrester President and Chief Executive Officer April 7, 2015



VOTE BY INTERNET - www.proxyvote.com Use the internet to transmit your voting instructions and for electronic delivery of information up until 11:59 P.M. Eastern Time the day before the meeting date. Have your proxy card in hand when you access the web site and follow the instructions to obtain your records and to create an electronic voting instruction form.

VERASTEM, INC. 117 KENDRICK STREET, SUITE 500 NEEDHAM, MA 02494

VOTE BY PHONE - 1-800-690-6903 Use any touch-tone telephone to transmit your voting instructions up until 11:59 P.M. Eastern Time the day before the meeting date. Have your proxy card in hand when you call and then follow the instructions.

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

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

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| | THIS | PROXY | CARD | IS V | ALID C | NLY WHEN | SIGNED | AND | DATED. | PE PADI | | ing i on | |
| The Board of Directors recommends you FOR the following: 1. Election of Directors Nominees | vote | | For All | Withhol All | d For All Except | To withho individua Except" ar nominee(s) | l nominee d write t | (\$), # the num | ark "For ber(s) of | any All the | | _ | ٦ |
| 01 Robert Forrester 02 Her | iri Term | 001 | | 03 C | hristoph | Westphal M.D. | | | | | | | |
| The Board of Directors recommends you | vote FO | R the fol | lowing | proposa | d: | | | | | | For | Against | Abstain |
| To ratify the selection of Ernst & | Young | LLP as th | he Compa | ny's in | dependent | registered (| public acco | ounting | firm for | 2015. | 0 | 0 | 0 |
| NOTE: Such other business as may prope | rlv com | e before | the med | tina or | anv adio | urnment there | of. | | | | | | |
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| Please sign exactly as your name(s) ap attorney, executor, administrator, or title as such. Joint owners should eac sign. If a corporation or partnership, partnership name, by authorized office | other f | iduciary, personall | please | give t | /ull must | | | | | | | | |
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Important Notice Regarding the Availability of Proxy Materials for the Annual Meeting: The Form 10-K, Notice & Proxy Statement is/are available at www.proxyvote.com.

QuickLinks

GENERAL INFORMATION PROPOSAL NO. 1—ELECTION OF DIRECTORS EXECUTIVE COMPENSATION PROPOSAL NO. 2—RATIFICATION OF SELECTION OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM BENEFICIAL OWNERSHIP OF COMMON STOCK POLICIES AND PROCEDURES FOR RELATED PERSON TRANSACTIONS GENERAL MATTERS