



April 27, 2020

Dear Stockholder:

You are cordially invited to attend the 2020 Annual Meeting of Stockholders of bluebird bio, Inc. (the "Company"). We intend to hold our annual meeting in person on June 18, 2020 at 8.30 a.m. EDT at the offices of the Company, located at 60 Binney Street, Cambridge, Massachusetts. However, we are actively monitoring the coronavirus (COVID-19) situation; we are sensitive to the public health and travel concerns our shareholders may have and the protocols that federal, state, and local governments may impose. In the event it is not possible or advisable to hold our annual meeting in person, we are planning for the possibility that the meeting may be held solely by means of remote communication. If we take this step, we will announce the decision to do so in advance, and details on how to participate will be available on our annual meeting website at [www.bluebirdbio.com](http://www.bluebirdbio.com). As always, we encourage you to vote your shares prior to the annual meeting.

Details regarding admission to the meeting and the business to be conducted are more fully described in the accompanying Notice of Annual Meeting and Proxy Statement.

At this Annual Meeting, the agenda includes the election of three Class I directors for three-year terms, the approval of executive compensation by a non-binding advisory vote, and the ratification of the appointment of Ernst & Young LLP as the Company's independent registered public accounting firm for the fiscal year ending December 31, 2020.

Under Securities and Exchange Commission rules, the Company is providing access to the proxy materials for the Annual Meeting to stockholders via the Internet. Accordingly, you can access the proxy materials and vote at [www.proxyvote.com](http://www.proxyvote.com). Instructions for accessing the proxy materials and voting are described below and in the Notice of Annual Meeting that you received in the mail. Your vote is very important. Whether or not you plan to attend the meeting, please carefully review the enclosed proxy statement and then cast your vote, regardless of the number of shares you hold. If you are a stockholder of record, you may vote over the Internet, by telephone, or, if you request to receive a printed set of the proxy materials, by completing, signing, dating and mailing the accompanying proxy card in the return 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 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. In any event, to be sure that your vote will be received in time, please cast your vote by your choice of available means at your earliest convenience.

We hope that you will join us on June 18, 2020. Your continuing interest in bluebird is very much appreciated.

Sincerely,

A handwritten signature in black ink that reads "Nick Leschly".

Nick Leschly  
President & Chief Executive Officer





## NOTICE OF 2020 ANNUAL MEETING OF STOCKHOLDERS

- Time** 8:30 a.m., Eastern Time
- Date** June 18, 2020
- Place** The Company's offices at 60 Binney Street, Cambridge, Massachusetts 02142 (1)
- Purpose** To elect Nick Leschly, Douglas A. Melton, Ph.D. and Mark Vachon as Class I members of the Board of Directors, to serve until the Company's 2023 Annual Meeting of Stockholders and until their successors are duly elected and qualified;
- To hold a non-binding advisory vote on the compensation paid to the Company's named executive officers;
- To ratify the selection of Ernst & Young LLP as the Company's independent registered public accounting firm for the fiscal year ending December 31, 2020; and
- To transact any other business that may properly come before the meeting or any adjournment thereof.
- Record Date** The Board of Directors has fixed the close of business on April 23, 2020 as the record date for determining stockholders entitled to notice of and to vote at the meeting.
- Meeting Admission** 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 bluebird 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 the stock on the record date, in order to be admitted to the meeting.
- Voting by Proxy** If you are a stockholder of record, please vote via the Internet or, for shares held in street name, please submit the voting instruction form you receive from your broker or nominee, as soon as possible so your shares can be voted at the meeting. You may submit your voting instruction form by mail. If you are a stockholder of record, you may also vote by telephone or by submitting a proxy card by mail. If your shares are held in street name, you will receive instructions from your broker or other nominee explaining how to vote your shares, and you may also have the choice of instructing the record holder as to the voting of your shares over the Internet or by telephone. Follow the instructions on the voting instruction form you received from your broker or nominee.

By order of the Board of Directors,

A handwritten signature in black ink, appearing to read "J. F. Cole".

Jason F. Cole, Secretary

Cambridge, Massachusetts  
April 27, 2020

**Important Notice Regarding the Availability of Proxy Materials for the bluebird 2020 Annual Meeting of Stockholders to Be Held on June 18, 2020: The Notice of 2020 Annual Meeting of Stockholders, proxy statement and our Annual Report on Form 10-K for the fiscal year ended December 31, 2019, are available at [www.bluebirdbio.com](http://www.bluebirdbio.com) by following the link for "Investors & Media." To obtain directions to our offices in order to attend the Annual Meeting in person, please visit the "Investors & Media –Events and Presentations" section of our website at [www.bluebirdbio.com](http://www.bluebirdbio.com) or contact Investor Relations at (339) 499-9300.**

- (1) As part of our precautions regarding the coronavirus, we are planning for the possibility that we might hold a "virtual annual meeting," where participation would be via remote communication. If we take this step, we will announce the decision, including details on how to participate, in a press release available at [www.bluebirdbio.com](http://www.bluebirdbio.com) as soon as practicable before our annual meeting.

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**BLUEBIRD BIO, INC.  
60 BINNEY STREET  
CAMBRIDGE, MASSACHUSETTS 02142**

**PROXY STATEMENT  
FOR THE 2020 ANNUAL MEETING OF STOCKHOLDERS  
TO BE HELD ON JUNE 18, 2020  
AT 8:30 AM EDT**

**GENERAL INFORMATION**

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

We have elected to provide access to our proxy materials to our stockholders via the Internet. Accordingly, on or about April 27, 2020, we will begin mailing a Notice of Internet Availability of Proxy Materials, or Notice of Internet Availability, and the proxy materials, including the Notice of 2020 Annual Meeting of 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, and the Annual Report on Form 10-K for the year ended December 31, 2019 will be made available to stockholders on the Internet on the same date.

**Why did I receive a Notice of Internet Availability of Proxy Materials instead of a full set of proxy materials?**

Pursuant to rules adopted by the Securities and Exchange Commission, or the SEC, we are providing access to our proxy materials over the Internet rather than printing and mailing the proxy materials. We believe electronic delivery will expedite the receipt of materials and will help lower our costs and reduce the environmental impact of our annual meeting materials. Therefore, a Notice of Internet Availability will be mailed to holders of record and beneficial owners of our common stock starting on or around April 27, 2020. The Notice of Internet Availability will provide instructions as to how stockholders may access and review the proxy materials, including the Notice of Annual Meeting, proxy statement, proxy card and Annual Report on Form 10-K, on the website referred to in the Notice of Internet Availability or, alternatively, how to request that a copy of the proxy materials, including a proxy card, be sent to them by mail. The Notice of Internet Availability will also provide voting instructions. In addition, stockholders of record may request to receive the proxy materials in printed form by mail or electronically by e-mail on an ongoing basis for future stockholder meetings. Please note that, while our proxy materials are available at the website referenced in the Notice of Internet Availability, and our Notice of Annual Meeting, proxy statement and Annual Report on Form 10-K are available on our website, no other information contained on either website is incorporated by reference in or considered to be a part of this document.

**Who is soliciting my vote?**

The Board of Directors of bluebird bio, Inc. (the “Company” or “bluebird”) is soliciting your vote for the 2020 Annual Meeting of Stockholders.

**When is the record date for the Annual Meeting?**

The Board of Directors has fixed the record date for the Annual Meeting as of the close of business on April 23, 2020.

**How many votes can be cast by all stockholders?**

A total of 55,637,466 shares of common stock of the Company were outstanding on April 23, 2020, and entitled to be voted at the 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 of the Company’s tabulator, Broadridge, at: [www.proxyvote.com](http://www.proxyvote.com), using the voter control number printed on the furnished 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. If you vote on the Internet, you may also request electronic delivery of future proxy materials.

- **By Telephone.** Call 1-800-690-6903 toll-free from the U.S., U.S. territories and Canada, 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 a proxy card in the enclosed postage prepaid envelope to 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 director nominees named herein to the Company's Board of Directors, **FOR** the non-binding advisory resolution approving the compensation of the named executive officers, and **FOR** the ratification of Ernst & Young LLP as the Company's independent registered public accounting firm for the fiscal year ending December 31, 2020 and will be voted according to the discretion of the proxy holder upon any other business that may properly be brought before the meeting and at all adjournments and postponements thereof. If you are mailed or otherwise receive or obtain a proxy card or voting instruction form, and you choose to vote by telephone or by Internet, you do not have to return your proxy card or voting instruction form.
- **In Person at the Meeting.** If you attend the 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 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 Meeting.** If you attend the 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 meeting.

### **What are the Board of Director's recommendations on how to vote my shares?**

The Board of Directors recommends a vote:

Proposal 1: **FOR** election of the three Class I director nominees (page 5)

Proposal 2: **FOR** the non-binding advisory resolution approving the compensation of the Company's named executive officers (page 17)

Proposal 3: **FOR** ratification of the selection of Ernst & Young LLP as the Company's independent registered public accounting firm (page 50)

### **Who pays the cost for soliciting proxies?**

bluebird will pay the cost for the solicitation of proxies by the Board of Directors. The solicitation of proxies will be made primarily by mail and through Internet access to materials. Proxies may also be solicited personally, by telephone, fax or e-mail by employees of bluebird without any remuneration to such individuals other than their regular compensation. bluebird will also reimburse brokers, banks, custodians, other nominees and fiduciaries for forwarding these materials to their principals to obtain the authorization for the execution of proxies.

### **Will my shares be voted if I do not return my proxy?**

If your shares are registered directly in your name, your shares will not be voted if you do not vote over the Internet, by telephone, by returning your proxy or by ballot at the Annual Meeting. If your shares are held in street name, your bank, broker or other nominee may under certain circumstances vote your shares if you do not timely return your proxy. Banks, brokers and other nominees can vote customers' unvoted shares on routine matters, but cannot vote such shares on non-routine matters. If you do not timely return a proxy to your bank, broker or other nominee to vote your shares, your bank, broker or

other nominee may, on routine matters, either vote your shares or leave your shares unvoted. Your bank, broker or other nominee cannot vote your shares on any non-routine matter. The election of directors (Proposal 1) and the non-binding advisory vote on executive compensation (Proposal 2) are non-routine matters. The ratification of the appointment of our independent registered public accounting firm (Proposal 3) is a routine matter. We encourage you to provide voting instructions to your bank, broker or other nominee by giving your proxy to them. This ensures that your shares will be voted at the Annual Meeting according to your instructions. You should receive directions from your bank, broker or other nominee about how to submit your proxy to them at the time you receive this proxy statement.

### **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 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. Shares held of record by stockholders or brokers, bankers or other nominees who do not return a signed and dated proxy or attend the Annual Meeting in person will not be considered present or represented at the Annual Meeting and will not be counted in determining the presence of a quorum. Abstentions and broker non-votes, if any, will be counted for purposes of determining whether a quorum is present for the transaction of business at the meeting.

### **What vote is required to approve each item and how are votes counted?**

Votes cast by proxy or in person at the Annual Meeting will be counted by the persons appointed by bluebird to act as tabulators for the meeting. The tabulators will count all votes FOR and AGAINST, abstentions and broker non-votes, as applicable, for each matter to be voted on at the Annual Meeting. Abstentions and broker non-votes are not counted as votes cast and, therefore, do not have the effect of votes in opposition to such proposals. A broker non-vote occurs when a nominee holding shares for a beneficial owner does 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.

#### ***Proposal 1 – Election of three Class I director nominees***

For the election of the three Class I director nominees, each director nominee presented must be elected by a majority of the votes cast in person or by proxy at the Annual Meeting. Director nominees are elected by a majority vote for non-contested director elections. Because the number of director nominees properly nominated for the Annual Meeting does not exceed the number of positions on the Board of Directors to be filled by election at the Annual Meeting, this election of directors is non-contested. To elect a director nominee to the Board of Directors, the votes cast FOR the director nominee must exceed the votes cast AGAINST. Only FOR and AGAINST votes will affect the outcome. Abstentions will have no effect on the voting of Proposal 1. **Proposal 1 is a non-routine matter.** Therefore, if your shares are held by your bank, broker or other nominee in street name and you do not vote your shares, your bank, broker or other nominee cannot vote your shares on Proposal 1. Shares held in street name by banks, brokers or nominees who indicate on their proxies that they do not have authority to vote the shares on Proposal 1 will not be counted as votes FOR or AGAINST any director nominee and will be treated as broker non-votes. As a result, broker non-votes will have no effect on the voting of Proposal 1.

#### ***Proposal 2 – Non-binding advisory vote on executive compensation***

For the non-binding advisory vote on executive compensation, the votes cast FOR must exceed the votes cast AGAINST to approve, on a non-binding advisory basis, the compensation of our named executive officers. Only FOR and AGAINST votes will affect the outcome. Abstentions will have no effect on the voting of Proposal 2. **Proposal 2 is a non-routine matter.** Therefore, if your shares are held by your bank, broker or other nominee in street name and you do not vote your shares, your bank, broker or other nominee cannot vote your shares on Proposal 2. Shares held in street name by banks, brokers or nominees who indicate on their proxies that they do not have authority to vote the shares on Proposal 2 will not be counted as votes FOR or AGAINST the proposal and will be treated as broker non-votes. As a result, broker non-votes will have no effect on the voting of Proposal 2.

### ***Proposal 3 – Ratification of selection of Ernst & Young LLP as our independent registered public accounting firm***

For the ratification of the selection of Ernst & Young LLP as our independent registered public accounting firm for our 2020 fiscal year, the votes cast FOR must exceed the votes cast AGAINST. Only FOR and AGAINST votes will affect the outcome. Abstentions will have no effect on the voting of Proposal 3. **Proposal 3 is a routine matter.** Therefore, if your shares are held by your bank, broker or other nominee in street name and you do not vote your shares, your bank, broker or other nominee may vote your shares on Proposal 3.

If there are insufficient votes to approve Proposal(s) 1, 2, or 3, your proxy may be voted by the persons named in the proxy to adjourn the Annual Meeting in order to solicit additional proxies in favor of the approval of such proposal. If the 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 Annual Meeting unless you withdraw or revoke your proxy. Your proxy may be voted in this manner even though it may have been voted on the same or on any other matter at a previous session of the Annual Meeting.

#### **Could other matters be decided at the Annual Meeting?**

bluebird does not know of any other matters that may be presented for action at the Annual Meeting. Should any other business 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. 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 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.

#### **Could the Coronavirus affect our ability to hold an in-person Annual Meeting?**

Yes. We are monitoring the coronavirus situation closely and if we determine that holding an in-person Annual Meeting could pose a risk to the health and safety of our stockholders, employees, and directors, the Company may decide to instead hold a virtual annual meeting, where participation would be via remote communication.

#### **How can I find out the results of the voting at the Annual Meeting?**

Preliminary voting results will be announced at the Annual Meeting. Final voting results will be published in a Current Report on Form 8-K, or Form 8-K, that we expect to file with the SEC within four business days after the Annual Meeting. If final voting results are not available to us in time to file a Form 8-K within four business days after the Annual Meeting, we intend to file a Form 8-K to publish preliminary results and, within four business days after the final results are known to us, file an additional Form 8-K to publish the final results.

#### **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 Jason F. Cole, Secretary of the Company, at (339) 499-9300. 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 1: ELECTION OF DIRECTORS**

In accordance with Delaware law and our 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. Nick Leschly, Douglas A. Melton, Ph.D. and Mark Vachon are the directors whose terms expire at this Annual Meeting. Each of Nick Leschly, Douglas A. Melton, Ph.D. and Mark Vachon has been nominated for and has agreed to stand for re-election to the Board of Directors to serve as a Class I director of the Company until the 2023 Annual Meeting and until his or her successor is duly elected.

Our By-laws provide for a majority voting standard for the election of directors in uncontested elections, which provides that to be elected, a director nominee must receive a greater number of votes FOR his or her election than votes AGAINST such election. The number of votes cast with respect to that director's election excludes abstentions and broker non-votes with respect to that director's election. In contested elections where the number of director nominees exceeds the number of directors to be elected, the voting standard will be a plurality of the shares present in person or by proxy and entitled to vote. If a director nominee who already serves as a director is not elected and no successor is elected, the resignation policy in our Corporate Governance Guidelines provides that such director will offer to tender his or her resignation to the Board of Directors. Our Nominating and Corporate Governance Committee will make a recommendation to the Board of Directors on whether to accept or reject the resignation, or whether to take some other action. The Board of Directors will act on the Nominating and Corporate Governance Committee's recommendation and publicly disclose its decision within 90 days from the date of the certification of the election results.

It is intended that, unless you give contrary instructions, shares represented by proxies solicited by the Board of Directors will be voted for the election of the three director nominees listed below. We have no reason to believe that any director nominee will be unavailable for election at the Annual Meeting. In the event that one or more director 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 director nominee and for each continuing director, including his or her period of service as a director of bluebird, principal occupation and other biographical material is shown below. Pursuant to the By-laws, the Board of Directors has fixed the number of directors at nine as of the date of this year's Annual Meeting of Stockholders. We currently have a vacancy on the Board of Directors. Vacancies on the Board of Directors are filled exclusively by the affirmative vote of a majority of the remaining directors, even if less than a quorum is present, and not by the stockholders. Your proxy cannot be voted for a greater number of persons than the number of director nominees named in this proxy statement.

**THE BOARD OF DIRECTORS UNANIMOUSLY RECOMMENDS THAT YOU VOTE**

**FOR**

**EACH OF THESE DIRECTOR NOMINEES FOR CLASS I DIRECTOR:**

**NICK LESCHLY**

**DOUGLAS A. MELTON, PH.D.**

**MARK VACHON**

**(PROPOSAL 1 ON YOUR PROXY CARD)**

## DIRECTOR BIOGRAPHIES

The following table sets forth information concerning our directors as of April 23, 2020. 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.

| <u>CLASS I DIRECTOR NOMINEES</u>  | <u>AGE</u> | <u>DIRECTOR SINCE</u> |
|---|------------|-----------------------|
| <p><i>Nick Leschly</i> – Mr. Leschly is a Class I director who has served as our President and Chief Executive Officer since September 2010. Previously, he served as our Interim Chief Executive Officer from March 2010 to September 2010. Formerly a partner of Third Rock Ventures, L.P. since its founding in 2007, Mr. Leschly played an integral role in the overall formation, development and business strategy of several of Third Rock’s portfolio companies, including Agios Pharmaceuticals, Inc. and Edimer Pharmaceuticals, Inc. Prior to joining Third Rock, he worked at Millennium Pharmaceuticals, Inc. (now a subsidiary of Takeda), leading several early-stage drug development programs and served as the product and alliance leader for VELCADE. Mr. Leschly also founded and served as Chief Executive Officer of MedXtend Corporation. Mr. Leschly currently serves on the Board of Directors of Synlogic, Inc. (NASDAQ: SYBX) and formerly served on the Board of Directors of Proclara Biosciences, Inc. He received his B.S. in molecular biology from Princeton University and his M.B.A. from The Wharton School of the University of Pennsylvania. We believe that Mr. Leschly’s operating and historical experience with our Company gained from serving as our President, Chief Executive Officer and member of the Board of Directors, combined with his experience in the venture capital industry and drug research and development qualify him to serve as a member of our Board of Directors.</p> | 47         | March 2010            |
| <p><i>Douglas A. Melton, Ph.D.</i> – Dr. Melton is a Class I director who has served as a member of our Board of Directors since June 2017. Dr. Melton is the Xander University Professor at Harvard University, where he has been a professor for over 30 years. He has served as the Co-Director of the Harvard Stem Cell Institute since 2004, and also as the Co-Chair of the Department of Stem Cell and Regenerative Biology since 2007. Since 1994, Dr. Melton has been an Investigator of the Howard Hughes Medical Institute. He is a scientific co-founder of Gilead Sciences, Inc., Curis, Inc. and Semma Therapeutics, Inc. Dr. Melton received a B.S. in Biology from the University of Illinois, a B.A. in History and Philosophy of Science at Cambridge University, and received his Ph.D. in molecular biology at Trinity College at Cambridge and the MRC Laboratory of Molecular Biology. We believe that Dr. Melton’s extensive experience in stem cell research and early development and his experience as the founder of a number of biotechnology companies qualify him to serve as a member of our Board of Directors.</p>   | 66         | June 2017             |
| <p><i>Mark Vachon</i> – Mr. Vachon is a Class I director who has served as a member of our Board of Directors since July 2014. Mr. Vachon served as an Executive Vice President Sales, Integration and Operations at Change Healthcare Holdings, Inc. from November 2016 to April 2018. For over 30 years, Mr. Vachon held a variety of leadership positions across the General Electric organization, and was a company officer beginning in 1999 and a member of GE’s Corporate Executive Council. Mr. Vachon was President and CEO of GE Healthcare Americas from 2009 to 2010, and prior to that he was President and CEO of Global Diagnostics Imaging, GE Healthcare, between 2006 and 2009. Between 2003 and 2006, Mr. Vachon was Executive Vice President and CFO of GE Healthcare. Mr. Vachon is currently a member of the D’Amore McKim Business School Dean’s Executive Council and serves on the Board of Directors of Numotion, Klöckner Pentaplast, and the Charitable Health and Retirement Trust. Mr. Vachon holds a B.S. in Finance from Northeastern University and an M.A. from Boston College. We believe that Mr. Vachon’s experience in financial and executive operating roles and in the healthcare field on a global basis qualify him to serve as a member of our Board of Directors.</p>   | 61         | July 2014             |

**CURRENT DIRECTORS NOT STANDING FOR  
ELECTION AT THE ANNUAL MEETING**

**AGE**      **DIRECTOR SINCE**

*John O. Agwunobi, M.D.* – Dr. Agwunobi is a Class II director who has served as a member of our Board of Directors since June 2017. Since February 2016, Dr. Agwunobi has served as Chief Health and Nutrition Officer at Herbalife Nutrition Institute (NASDAQ: HLF), responsible for training, education, science strategy and product development. He has also served as Co-President of Herbalife since May 2018. Prior to joining Herbalife, Dr. Agwunobi was an independent consultant, advising a number of privately-held health-related companies, including serving as an advisory board member of Shopko Stores Operating Co., LLC on behalf of the private equity firm Sun Capital Partners. From September 2007 to April 2014, Dr. Agwunobi served as Senior Vice President and President of Health and Wellness for Wal-Mart (NYSE: WMT) in the United States where he grew the business and provided insight and advice on the company's health reform position. From December 2005 to September 2007, he served as the Assistant Secretary of Health for the U.S. Department of Health and Human Services, where he was responsible for disease prevention and health promotion. His responsibilities included the oversight of the Centers for Disease Control, National Institute of Health, the U.S. Food and Drug Administration, the Office of the U.S. Surgeon General, and numerous other public health offices and programs. Dr. Agwunobi has served on numerous boards, including currently as a director at Magellan Health Inc. (NASDAQ: MGLN) and at the U.S. African Development Foundation. Dr. Agwunobi is a licensed physician in Florida, Maryland and Washington, D.C. He received his medical training at the University of Jos and completed his pediatric residency at Howard University. He also holds a Master's Degree in Public Health from Johns Hopkins University and Master's in Business Administration from Georgetown University. We believe that Dr. Agwunobi's experience as a senior executive and board member of public companies in the health and wellness field, in addition to his prior service and experience with the U.S. government, qualify him to serve as a member of our Board of Directors.

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June 2017

*Wendy L. Dixon, Ph.D.* – Dr. Dixon is a Class III director who has served as a member of our Board of Directors since April 2013. In 2012, Dr. Dixon served as Senior Advisor at The Monitor Group. Dr. Dixon serves as a member of the board of directors for a number of biopharmaceutical companies, including Alkermes PLC (NASDAQ: ALKS), Incyte Corporation (NASDAQ: INCY), Sesen Bio, Inc. (formerly known as Eleven Biotherapeutics, Inc.) (NASDAQ: SESN) and Voyager Therapeutics, Inc. (NASDAQ: VYGR), and formerly for Orexigen Therapeutics Inc. (NASDAQ: OREX), Furiex Pharmaceuticals, Inc. (NASDAQ: FURX), which was sold to Forest Laboratories, LLC as a subsidiary of Allergan in 2014, Ardea Biosciences, Inc. (NASDAQ: RDEA), which was sold to AstraZeneca PLC in 2012, and Dentsply International Inc. (NASDAQ: XRAY), as well as a private company, Edimer Pharmaceuticals, Inc. Dr. Dixon also served as Chief Marketing Officer and President of Global Marketing for Bristol-Myers Squibb Company ("BMS") and as a member of the CEO's Executive Committee from 2001 to 2009. She has had an over 30-year career in the pharmaceutical and biotechnology business, combining a technical background and experience in drug development and regulatory affairs with commercial responsibilities in building and leading organizations and launching and growing more than 20 pharmaceutical products including Tagamet, Fosamax, Singulair, Plavix, Abilify, Reyataz and Baraclude. From 1996 to 2001, she was Senior Vice President, Marketing at Merck and prior to that she held executive management positions at West Pharmaceuticals, Osteotech and Centocor, and various positions at SmithKline and French (now GlaxoSmithKline) in marketing, regulatory affairs, project management and as a biochemist. Dr. Dixon received her B.Sc., M.Sc. and Ph.D. from the University of Cambridge (UK). We believe that, among other experience, qualifications, attributes and skills, Dr. Dixon's technical background in drug development, commercialization, marketing and regulatory affairs qualify her to serve as a member of our Board of Directors.

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April 2013

**CURRENT DIRECTORS NOT STANDING FOR  
ELECTION AT THE ANNUAL MEETING**

|  | <u>AGE</u> | <u>DIRECTOR SINCE</u> |
|--|------------|-----------------------|
| <p><i>Daniel S. Lynch</i> – Mr. Lynch is a Class II director who has served as Chairman of our Board of Directors since May 2011. Since October 2007, Mr. Lynch has advised and served as Executive Chair or member of the Board of Directors for a number of private biopharmaceutical companies, which include Stromedix, Inc. (until its acquisition by Biogen Idec in February 2012), Avila Therapeutics, Inc. (until its acquisition by Celgene Corporation in February 2012), Edimer Pharmaceuticals, Ember Therapeutics, Inc., Nimbus Therapeutics (formerly known as Nimbus Discovery, LLC), and Proclara Biosciences, Inc. He currently serves as Chair or member of the Board of Directors of Blueprint Medicines Corporation (NASDAQ: BPMC), Sesen Bio, Inc. (formerly known as Eleven Biotherapeutics, Inc.) (NASDAQ: SESN), Surface Oncology, Inc. (NASDAQ: SURF), Translate Bio, Inc. (NASDAQ: TBIO), SpringWorks Therapeutics (NASDAQ: SWTX), and formerly for BIND Biosciences, Inc. (NASDAQ: BIND). Mr. Lynch joined Third Rock Ventures, L.P., or Third Rock, as an entrepreneur-in-residence in May 2011, and became a Venture Partner in May 2013, and now he is a Senior Advisor. Previously, Mr. Lynch served as Chief Executive and Chief Financial Officer of ImClone Systems Corporation, or ImClone. As ImClone’s Chief Executive Officer, he led ImClone through a significant turnaround, helping to restore the company’s reputation and to secure FDA approval of ERBITUX (Cetuximab), a novel cancer treatment. As its Chief Financial Officer, Mr. Lynch led negotiations to form the major partnership between ImClone and BMS. Earlier in his career, he served in various financial positions at BMS over a 15-year tenure. He served on the Board of Directors and the Audit Committee of U.S. Oncology, Inc. for five years until December 2010, when it was acquired by McKesson. Mr. Lynch received his B.A. in mathematics from Wesleyan University and his M.B.A. from the Darden Graduate School of Business Administration at the University of Virginia. We believe that Mr. Lynch’s experience as Chief Executive Officer and Chief Financial Officer of a public pharmaceutical company and as Executive Chairman and Director for many other life science companies qualify him to serve as a member of our Board of Directors.</p> | 62         | May 2011              |
| <p><i>David P. Schenkein, M.D.</i> – Dr. Schenkein is a Class III director who has served as a member of our Board of Directors since April 2013. Since February 2019, Dr. Schenkein has served as a general partner for life sciences at Google Ventures. From August 2009 to January 2019, Dr. Schenkein served as the Chief Executive Officer and a member of the board of directors of Agios Pharmaceuticals, Inc. (NASDAQ: AGIO), when he assumed the role of Executive Chairman of the Board. From April 2006 to July 2009, Dr. Schenkein served as Senior Vice President of Oncology Development of Genentech. Dr. Schenkein serves as a member of the Board of Directors of Denali Therapeutics (NASDAQ: DNLI) and served on the Board of Directors of Foundation Medicine, Inc. (NASDAQ: FMI) from April 2010 to April 2017. Dr. Schenkein received his B.A. in chemistry from Wesleyan University and his M.D. from Upstate Medical School. We believe that Dr. Schenkein’s experience as Chief Executive Officer of Agios Pharmaceuticals and as a member of the Board of Directors of a number of biopharmaceutical companies qualify him to serve as a member of our Board of Directors.</p>  | 62         | April 2013            |
| <p><i>William R. Sellers, M.D.</i> – Dr. Sellers is a Class II director who has served as a member of our Board of Directors since September 2019. Since 2017, Dr. Sellers has served as a Core Institute Member at the Broad Institute and a Professor of Medicine at the Dana-Farber Institute and Harvard Medical School where he is responsible for running a research group focused on translating genomic discoveries into new therapeutics. In 2019, Dr. Sellers co-founded Civetta Therapeutics where he serves as a member of the board of directors. Dr. Sellers also serves as a member of the scientific advisory board for several biopharmaceutical companies, including Ideaya Biosciences (NASDAQ: IDYA), Epidarex Capital, Servier Pharmaceuticals, and Astex Pharmaceuticals. Furthermore, he served as a member of the board of directors for Peloton Therapeutics from 2017 to 2019. Dr. Sellers previously served as Vice President / Global Head of Oncology at Novartis Institutes for BioMedical Research from 2005 to 2016 where he led preclinical drug discovery and early clinical development. Appointed by President Barack Obama, he also served as a member of the National Cancer Advisory Board from 2011 to 2016. He previously was an Associate Professor of Medicine at the Dana-Farber Cancer Institute and Harvard Medical School and an Associate Member of the Broad Institute. Dr. Sellers received his B.S. in biology from Georgetown University in 1982 and M.D. from the University of Massachusetts Medical School in 1986. He completed his internship and residency in internal medicine at the University of California San Francisco in 1989 and trained in medical oncology at the Dana-Farber Cancer Institute. We believe that Dr. Seller’s extensive business experience in oncology research and in the area of drug discovery and development qualify him to serve as a member of our Board of Directors.</p>   | 59         | September 2019        |

The following table sets forth information regarding our executive officers, as of April 23, 2020:

| <u>Name</u>                 | <u>Age</u> | <u>Position(s)</u>  |
|-----------------------------|------------|---|
| <b>Executive Officers:</b>  |            |   |
| Nick Leschly (1)            | 47         | President, Chief Executive Officer and Director (Principal Executive Officer) |
| William D. Baird, III       | 48         | Chief Financial Officer (Principal Financial Officer)                         |
| David Davidson, M.D.        | 56         | Chief Medical Officer   |
| Alison C. Finger            | 56         | Chief Commercial Officer  |
| Philip Gregory, D. Phil.    | 49         | Chief Scientific Officer  |
| Jason F. Cole, Esq.         | 47         | Chief Operating and Legal Officer and Secretary                               |
| Joanne Smith-Farrell, Ph.D. | 50         | Chief Business Officer  |
| Kory J. Wentworth           | 41         | Vice President, Finance and Treasurer (Principal Accounting Officer)          |

(1) Nick Leschly is also a director of the Company and his biographical information appears on page 6.

*William D. Baird, III* – Mr. Baird has served as our Chief Financial Officer since February 2019 and our Principal Financial Officer since March 2019. Mr. Baird served as Chief Financial Officer of Amicus Therapeutics, Inc. from April 2012 until December 2018. From April 2005 until April 2012, Mr. Baird served as Chief Financial Officer of PTC Therapeutics, Inc. (“PTC”). Before that, Mr. Baird held various positions of increasing responsibility with PTC from 2002 to 2005. Mr. Baird previously worked in the life science practice at L.E.K. Consulting, a strategy consulting firm, from 1999 to 2002, and at First Union National Bank as a corporate underwriter from 1994 to 1997. Since June 2018, Mr. Baird has served on the Board of Directors of Axcella Health, a biotechnology company. Mr. Baird received a B.S. from Georgetown University’s Edmund A. Walsh School of Foreign Service, and an M.B.A. from The Wharton School of the University of Pennsylvania.

*David Davidson, M.D.* – Dr. Davidson has served as our Chief Medical Officer since February 2012. Prior to joining us, Dr. Davidson served as a senior medical director at Genzyme Corporation, where he led clinical research for programs in Phases I through IV across a wide range of therapeutic areas for more than a decade. Most recently, Dr. Davidson was the medical leader for Genzyme’s gene therapy and Pompe disease enzyme replacement therapy programs. In addition to Dr. Davidson’s translational medicine experience, he has also worked on a number of commercial products, including Fabrazyme and Myozyme/Lumizyme, and was integral in crafting the new drug application that resulted in the approval of Welchol. Prior to Genzyme, Dr. Davidson was a medical director at GelTex Pharmaceuticals Inc. Previously, he completed clinical and research fellowships in infectious diseases at the Harvard Longwood Combined Infectious Diseases Program. Dr. Davidson received his B.A. from Columbia University and his M.D. from New York University School of Medicine. In addition, he completed an internal medicine internship, residency training and an endocrinology research fellowship at the University of Chicago Hospitals.

*Alison C. Finger* – Ms. Finger has served as our Chief Commercial Officer since February 2018. Prior to this role, she served as our Senior Vice President, Marketing and Product Launch since August 2015. Prior to joining the Company, Ms. Finger served in roles with increasing responsibility at BMS, beginning her career in consumer medicines before progressing to global leadership roles where she was responsible for launching global, regional and national brands in hematology/oncology, neurodegenerative diseases, hepatitis, HIV/AIDS, diabetes, rheumatoid arthritis and migraine/pain. At BMS, she served as Vice President, Global Commercialization Virology from July 2004 to June 2007, Managing Director, Australia & New Zealand from July 2007 to May 2009, VP Global Commercialization, Alzheimer’s/Neuroscience from May 2009 to December 2012, and VP Global Commercialization, Hematology from December 2012 to May 2014. Ms. Finger received her B.A. in English Writing from St. Lawrence University and her M.B.A. from the Fuqua School of Business at Duke University.

*Philip Gregory, D. Phil.* – Dr. Gregory has served as our Chief Scientific Officer since June 2015. Prior to joining us, Dr. Gregory was formerly with Sangamo BioSciences, where he held multiple leadership positions over a nearly fifteen-year tenure, most recently serving as Chief Scientific Officer and Senior Vice President, Research. In this role, he was responsible for the scientific direction and strategic research planning for the company. Dr. Gregory played an integral role in Sangamo’s partnerships and drove early discovery and development for several product candidates in multiple therapeutic areas. Prior to joining Sangamo, he was a postdoctoral fellow at Ludwig-Maximilians-Universität in Munich, Germany. Dr. Gregory holds a D. Phil in biochemistry from Oxford University, Keble College and a B.Sc. in microbiology from Sheffield University.

*Jason F. Cole, Esq.* – Mr. Cole has served as our Chief Operating and Legal Officer and Secretary since February 2019. Prior to this role, Mr. Cole served as our Chief Legal Officer and Secretary since March 2016 and also previously served

as our Senior Vice President, General Counsel and Secretary from March 2014 to March 2016. Prior to joining us, Mr. Cole served as Executive Vice President, Corporate Development and General Counsel at Zalicus Inc. from September 2011 through March 2014, and as Senior Vice President, General Counsel of Zalicus and its predecessor company CombinatoRx, Incorporated from January 2006 to September 2011. From 1999 to 2006, Mr. Cole was a corporate and securities attorney at Ropes & Gray LLP. Mr. Cole received an A.B. in Government from Dartmouth College and a J.D. from Columbia University School of Law.

*Joanne Smith-Farrell, Ph.D.* – Dr. Smith-Farrell has served as our Chief Business Officer since April 2019, and as our oncology franchise leader since September 2017. Prior to this role, Dr. Smith-Farrell served as our Senior Vice President, Corporate Development and Strategy since April 2017. From January 2014 to March 2017, Dr. Smith-Farrell served as Vice President, Business Development Transactions at Merck & Co., Inc. where she led the team that structured, negotiated, and executed business development transactions supporting Merck Research Labs. From September 2007 to January 2014, Dr. Smith-Farrell served as Vice President of Strategic Transactions at Pfizer, Inc. Dr. Smith-Farrell holds a Ph.D. in Physics from the Catholic University of America, and a B.S. in Physics and Mathematics from Vanderbilt University. She was also a Fellow in Biomedical & Chemical Engineering at The Harvard-MIT Division for Health Science & Technology (Dr. Robert Langer’s Lab) where she received the NIH National Service Award in Research.

*Kory J. Wentworth* – Mr. Wentworth has served as our Vice President, Finance and Principal Accounting Officer since December 2017 and our Treasurer since March 2018. Prior to joining us, Mr. Wentworth held positions of increasing responsibility overseeing finance and accounting teams from December 2008 to December 2017 at Alexion Pharmaceuticals, Inc. (“Alexion”), most recently as Executive Director and Corporate Controller from November 2017 to December 2017. Prior to his time at Alexion, Mr. Wentworth held positions at PricewaterhouseCoopers LLP of increasing responsibility for audit engagements from October 2002 to December 2008. Mr. Wentworth received his B.S. in Accounting from Susquehanna University and is a Certified Public Accountant in the state of Connecticut.

## CORPORATE GOVERNANCE

### Board Composition

We currently have eight directors and the terms of office of the directors are divided into three classes:

- Class I, whose term will expire at the Annual Meeting of Stockholders to be held in 2023;
- Class II, whose term will expire at the Annual Meeting of Stockholders to be held in 2021; and
- Class III, whose term will expire at the Annual Meeting of Stockholders to be held in 2022.

Class I consists of Mr. Leschly, Dr. Melton and Mr. Vachon, Class II consists of Dr. Agwunobi, Mr. Lynch, and Dr. Sellers, and Class III consists of Dr. Dixon and Dr. Schenkein. At each Annual Meeting of Stockholders, the successors to directors whose terms will then expire shall serve from the time of election and qualification until the third Annual Meeting following election and until their successors are duly elected and qualified. A resolution of the Board of Directors may change the authorized number of directors. Any additional directorships resulting from an increase in the number of directors will be distributed among the three classes so that, as nearly as possible, each class will consist of one-third of the directors. This classification of the Board of Directors may have the effect of delaying or preventing changes in control or management of our Company.

### Board Independence

Our Board of Directors has determined, upon the recommendation of our Nominating and Corporate Governance Committee, that each of our directors, except for Nick Leschly, who serves as 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 Stock Market, or NASDAQ, rules and the SEC. At least annually, our Board of Directors will evaluate all relationships between us and each director in light of relevant facts and circumstances for the purposes of determining whether a material relationship exists that might signal a potential conflict of interest or otherwise interfere with such director's ability to satisfy his or her responsibilities as an independent director. Based on this evaluation, our Board of Directors will make an annual determination of whether each director is independent within the meaning of NASDAQ, and the SEC independence standards.

### Board Meetings and Attendance

Our Board of Directors held six meetings during the fiscal year ended December 31, 2019. Each of the directors attended at least 75% of the meetings of the Board of Directors and the committees of the Board of Directors, on which he or she served during the fiscal year ended December 31, 2019 (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). bluebird encourages its directors to attend the Annual Meeting of Stockholders. Of the seven members of bluebird's Board of Directors at the time of last year's Annual Meeting of Stockholders, all seven attended the meeting.

### Board Committees

Our Board of Directors has established three standing committees: the Audit Committee, the Compensation Committee and the Nominating and Corporate Governance Committee, each of which is comprised solely of independent directors, and is described more fully below. Each of the Audit Committee, Compensation Committee and Nominating and Corporate Governance Committee operates pursuant to a written charter and each committee reviews and assesses the adequacy of its charter and submits its charter to the Board of Directors for approval on an annual basis. The charters for the Audit Committee, Compensation Committee and Nominating and Corporate Governance Committee are all available on our website ([www.bluebirdbio.com](http://www.bluebirdbio.com)) under "Investors & Media" at "Corporate Governance." Our Board of Directors may establish other committees from time to time.

### ***Audit Committee***

Our Audit Committee is currently composed of Dr. Dixon, Mr. Lynch, and Mr. Vachon, with Mr. Vachon serving as chair of the committee. Our Board of Directors has determined that each member of the Audit Committee meets the independence requirements of Rule 10A-3 under the Securities Exchange Act of 1934, as amended (the “Exchange Act”) and the applicable listing standards of NASDAQ. Our Board of Directors has determined that Mr. Lynch and Mr. Vachon are “audit committee financial experts” within the meaning of the SEC regulations and applicable listing standards of NASDAQ. During the fiscal year ended December 31, 2019, the Audit Committee met four times. The report of the Audit Committee is included in this Proxy Statement under “Report of the Audit Committee.” The Audit Committee’s responsibilities include:

- appointing, approving the compensation of, and assessing the independence of our independent registered public accounting firm;
- approving audit and permissible non-audit services, and the terms of such services, to be provided by our independent registered public accounting firm;
- reviewing the audit plan (both internal and external) with the independent registered public accounting firm and members of management responsible for performing our internal audit and preparing our financial statements;
- reviewing and discussing with management and the independent registered public accounting firm our annual and quarterly financial statements and related disclosures, including critical audit matters as well as critical accounting policies and practices used by us;
- reviewing the adequacy of our internal control over financial reporting;
- overseeing the qualifications, independence and performance of our internal audit function;
- establishing policies and procedures for the receipt and retention of accounting-related complaints and concerns;
- recommending, based upon the Audit Committee’s review and discussions with management and the independent registered public accounting firm, whether our audited financial statements shall be included in our Annual Report on Form 10-K;
- monitoring the integrity of our financial statements and our compliance with legal and regulatory requirements as they relate to our financial statements and accounting matters;
- preparing the Audit Committee report required by the rules of the SEC to be included in our annual proxy statement;
- reviewing all related party transactions for potential conflict of interest situations and approving all such transactions;
- monitoring compliance with our investment policy;
- overseeing our enterprise risk assessment program; and
- reviewing quarterly earnings releases.

### ***Compensation Committee***

Our Compensation Committee is currently composed of Dr. Dixon, Mr. Lynch and Dr. Schenkein, with Mr. Lynch serving as chair of the committee. Our Board of Directors has determined each member of the Compensation Committee is “independent” as defined under the applicable listing standards of NASDAQ. In addition, each member qualifies as an “outside director” within the meaning of Section 162(m) of the Internal Revenue Code of 1986, as amended (the “Code”), and as a non-employee director, as defined in Rule 16b-3 of the Exchange Act. During the fiscal year ended December 31, 2019, the Compensation Committee met five times. The Compensation Committee’s responsibilities include:

- annually reviewing and approving corporate goals and objectives relevant to the compensation of our Chief Executive Officer;
- evaluating the performance of our Chief Executive Officer in light of such corporate goals and objectives and determining the compensation of our Chief Executive Officer;
- reviewing and approving the compensation of our other executive officers and certain other members of senior management;



- appointing, compensating and overseeing the work of any compensation consultant, legal counsel or other advisor retained by the Compensation Committee;
- conducting the independence assessment outlined in NASDAQ rules with respect to any compensation consultant, legal counsel or other advisor retained by the Compensation Committee;
- annually reviewing and reassessing the adequacy of the committee charter in its compliance with the listing requirements of NASDAQ;
- reviewing and establishing our overall management compensation, philosophy and policy;
- overseeing and administering our compensation and similar plans;
- reviewing and approving our policies and procedures for the grant of equity-based awards;
- reviewing and making recommendations to the Board of Directors with respect to director compensation;
- reviewing and discussing with management the compensation discussion and analysis to be included in our annual proxy statement or Annual Report on Form 10-K; and
- reviewing and discussing with the Board of Directors corporate succession plans for our Chief Executive Officer and other key officers.

Historically, our Compensation Committee has made most of the significant adjustments to annual compensation, determined cash incentive and equity awards and established new performance objectives at one or more meetings held during the first and last quarters of the year. However, our Compensation Committee also considers matters related to individual compensation, such as compensation for new executive hires, as well as high-level strategic issues, such as the efficacy of our compensation strategy, potential modifications to that strategy and new trends, plans or approaches to compensation, at various meetings throughout the year. Generally, the Compensation Committee’s process consists of two related elements: the determination of compensation levels and the establishment of performance objectives for the current year. For executives other than our Chief Executive Officer, our Compensation Committee solicits and considers evaluations and recommendations submitted to the Compensation Committee by our Chief Executive Officer. In the case of our Chief Executive Officer, the evaluation of his performance is conducted by the Compensation Committee, which determines any adjustments to his compensation as well as awards to be granted. For all executives and directors as part of its deliberations, the Compensation Committee may review and consider, as appropriate, materials such as financial reports and projections, operational data, tax and accounting information, tally sheets that set forth the total compensation that may become payable to executives in various hypothetical scenarios, executive and director stock ownership information, company stock performance data, analyses of historical executive compensation levels and current Company-wide compensation levels and recommendations of our Chief People Officer, including analyses of executive and director compensation paid at a peer group of other companies approved by our Compensation Committee. The Compensation Committee may delegate its authority to grant certain equity awards to certain individuals to our Chief Executive Officer and in 2019, has delegated such authority to Mr. Leschly. For more information, see “Executive Officer and Director Compensation—Compensation Discussion and Analysis—Stock Option Granting Practices—Delegation to Our Chief Executive Officer” below.

### ***Nominating and Corporate Governance Committee***

Our Nominating and Corporate Governance Committee is composed of Dr. Agwunobi, Dr. Melton, and Dr. Schenkein, with Dr. Schenkein serving as chair of the committee. Our Board of Directors has determined that each member of the Nominating and Corporate Governance Committee is “independent” as defined under the applicable listing standards of NASDAQ. During fiscal year ended December 31, 2019, the Nominating and Corporate Governance Committee met four times. The Nominating and Corporate Governance Committee’s responsibilities include:

- developing and recommending to the Board of Directors for its approval criteria for membership of the Board of Directors and committees;
- establishing procedures for identifying and evaluating Board of Directors candidates, including candidates recommended by stockholders;
- identifying individuals qualified to become members of the Board of Directors;
- recommending to the Board of Directors the persons to be nominated for election as directors and to each of the committees of the Board of Directors;

- developing and recommending to the Board of Directors a set of corporate governance guidelines and Code of Conduct and Business Ethics; and
- overseeing the evaluation of the Board of Directors.

The Nominating and Corporate Governance Committee oversees an annual self-evaluation process of the Board and its committees with the assistance of an external advisor specializing in strategic planning and organizational development. The results of the self-evaluation are presented to the Nominating and Corporate Governance Committee, which determines what actions, if any, to present to the Board and the other committees to further enhance the performance and effectiveness of the Board and its committees.

### ***Identifying and Evaluating Director Nominees***

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

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

### ***Director Qualifications and Diversity***

Our Nominating and Corporate Governance Committee will consider, among other things, the following qualifications, skills and attributes when recommending candidates for the Board's selection as director nominees for the Board and as candidates for appointment to the Board's committees: a director 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 director nominees to the Board, in collectively serving the long-term interests of the stockholders.

In evaluating proposed director candidates, our Nominating and Corporate Governance 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 considerations, 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. Our corporate governance guidelines also provide that diversity on the Board should be considered by our Nominating and Corporate Governance Committee in the director evaluation and nomination process. While we do not have a formal policy with respect to diversity, our Nominating and Corporate Governance Committee believes that it is essential that the members of the Board represent diverse viewpoints. Our Nominating and Corporate Governance Committee believes that the backgrounds and qualifications of our directors, considered as a group, should provide a composite mix of experience, knowledge and abilities that will allow our Board to promote our strategic objectives and fulfill its responsibilities to our stockholders, and considers diversity of gender, race, national origin, education, professional experience, and differences in viewpoints and skills when evaluating proposed director candidates.

Our Nominating and Corporate Governance Committee's priority in selecting board members is identification of persons who will further the interests of our company 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 Nominating and Corporate Governance Committee will consider candidates recommended by stockholders. The policy adopted by the Nominating and Corporate Governance Committee provides that candidates recommended by stockholders are given appropriate consideration in the same manner as other candidates.

### ***Non-Management Director Meetings***

In addition to the meetings of the committees of the Board of Directors described above, in connection with the Board of Directors meetings, the non-management directors met four times in executive session during the fiscal year ended December 31, 2019. The Chairman of the Board of Directors presides at these executive sessions. The Audit Committee and the Board of Directors have established a procedure whereby interested parties may make their concerns known to non-management directors, which is described on our website.

### **Leadership Structure and Risk Oversight**

Our Board of Directors is currently chaired by Mr. Lynch. As a general policy, our Board of Directors believes that separation of the positions of chairman and chief executive officer reinforces the independence of the Board of Directors from management, creates an environment that encourages objective oversight of management's performance and enhances the effectiveness of the Board of Directors as a whole. As such, Mr. Leschly serves as our President and Chief Executive Officer while Mr. Lynch serves as our Chairman of the Board of Directors but is not an officer.

We face a number of risks in our business, including risks related to clinical research and development of our programs in severe genetic disease and oncology; manufacturing and supply chain; regulatory reviews and approvals; commercial operations and our ability to obtain reimbursement for our products if, and when, they gain marketing approval; growth and capability expansion in the United States and Europe; intellectual property filings, prosecution, maintenance and challenges; the establishment and maintenance of strategic alliances; competition; litigation and government investigations; and the ability to access additional funding for our business; among other risks. Our management is responsible for the day-to-day management of the risks that we face, while our Board of Directors, as a whole and through its committees, has responsibility for the oversight of risk management.

Our Board of Directors performs its oversight role by using several different levels of review. Our Chairman meets regularly with our Chief Executive Officer and other executive officers to discuss strategy and risks facing the Company. Members of senior management attend the quarterly Board meetings, present on strategic matters involving our business, and are available to address any questions or concerns raised by the Board on risk management-related issues and any other matters. Our Board of Directors reviews the risks, including any environmental or social governance risks, associated with our Company's business strategies periodically throughout the year as part of its consideration of undertaking any such business strategies.

Each of the committees of our Board of Directors also oversees the management of our Company's risk that falls within the committee's areas of responsibility. In performing this function, each committee has full access to management, as well as the ability to engage advisors. The Audit Committee oversees our enterprise risk management program as it relates to our operations by identifying the primary risks associated with our operations and corporate functions, receiving periodic updates on activities to manage such risks, and providing reports to the Board regarding such activities. In carrying out its responsibilities for the oversight of operational risk management, members of the Audit Committee regularly discuss with management our risk exposures in the areas of financial reporting, internal controls, information security, and our legal and regulatory compliance programs, and the steps we take to manage them. Our Chief Financial Officer, our Chief Operating and Legal Officer, our Chief Compliance Officer, and our Principal Accounting Officer all periodically provide reports to the Audit Committee and are responsible for identifying, evaluating and implementing risk management controls and methodologies to address any identified risks. Our Audit Committee also meets privately with representatives from our independent registered public accounting firm as part of its oversight of the Company's risk management. The Compensation Committee assists the Board in fulfilling its oversight responsibilities with respect to the management of risks arising from our compensation policies and programs and succession planning for our executive officers, and evaluates potential risks associated with independent director compensation for consideration by the full Board. The Nominating and Corporate Governance Committee assists the Board in fulfilling its oversight responsibilities with respect to the management of risks associated with Board organization, membership and structure, succession planning for our directors, and corporate governance.

### **Compensation Committee Interlocks and Insider Participation**

Dr. Dixon, Mr. Lynch, and Dr. Schenkein served as members of our Compensation Committee during the year ended December 31, 2019. None of the members of our Compensation Committee have at any time been one of our officers or employees. None of our executive officers currently serves, or in the past fiscal year has served, as a member of the board of directors or on a compensation committee of any entity that has one or more executive officers serving on our Board of Directors 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."

## **Code of Business Conduct and Ethics and Corporate Governance Guidelines**

bluebird has adopted a Code of Business Conduct and Ethics for our directors, officers and employees, including our President and Chief Executive Officer, Principal Financial Officer, Principal Accounting Officer, and Controller (or persons performing an equivalent function). A copy of our Code of Business Conduct and Ethics may be accessed free of charge by visiting the Company's website at [www.bluebirdbio.com](http://www.bluebirdbio.com) and going to the "Investors & Media—Corporate Governance" section or by requesting a copy in writing from Jason F. Cole, Secretary, at our Cambridge, Massachusetts office. bluebird intends to post on its website any amendment to, or waiver under, a provision of the Code of Business Conduct and Ethics that applies to our President and Chief Executive Officer, Principal Financial Officer, Principal Accounting Officer, or Controller (or persons performing an equivalent function) 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.bluebirdbio.com](http://www.bluebirdbio.com) and going to the "Investors & Media—Corporate Governance" section or by requesting a copy from Jason F. Cole, Secretary, at our Cambridge, Massachusetts office.

## **Our Environmental Sustainability and Social Responsibility Efforts**

For patients and society to benefit from the therapies we develop, we believe they must be available to those who will benefit from them. To enable access to our approved and potential future products following commercial launch, we are continuing to engage in discussions with stakeholders across the healthcare system, including public and private payers, patient advocates and organizations, professional societies, and healthcare providers. These discussions are part of a broader ongoing dialogue exploring pathways for bringing our product and potential future products to patients at a sustainable cost. In early 2019, we proposed novel payment models that incorporate concepts such as value-based payments over time based on patients' outcomes, to assist with realizing the value and sharing the risk of a potentially curative, one-time treatment. In early 2020, we began entering into agreements with payers in Germany reflecting these principles of outcomes-based payments over time.

In addition, as a leading gene therapy company, the way we operate, the work we do, and the support we provide to our local communities is tied to our desire to extend and improve the lives of our patients. We are committed to patient advocacy and community endeavors that promote and improve the understanding of severe genetic disease and cancer. Our company participates in charitable activities relevant to our business and linked to our mission, vision and values. For example, we provide, support and sponsor diversity and inclusion efforts both within our company and in our communities. We support educational and cultural institutions in our communities, and we also encourage employee volunteerism, partnering with community service organizations to provide opportunities for employees to donate time and talents to assist neighbors in need. On top of our commitments to patient access and social responsibility, we believe that we have a responsibility to monitor and control our ecological impact and adopt best practices on environmental and social issues that may have a material effect on corporate strategy, risks, opportunities or performance.

We view our employees as our most valuable asset and we believe that by creating a positive culture together we can drive positive business and patient impact. We demonstrate this by providing a comprehensive benefits package, including health and wellness benefits, commuting stipend, paid sabbatical and parental leave. In addition, we believe in helping our employees to continue to grow at bluebird through one-on-one coaching, leadership development, and Employee Resource Groups. We also offer an employee stock purchase plan to promote employee ownership of our shares and to allow employees to share in our success.

## **PROPOSAL 2: NON-BINDING ADVISORY VOTE ON EXECUTIVE COMPENSATION**

Our Board of Directors is committed to excellence in governance. As part of that commitment, and as required by Section 14A(a)(1) of the Exchange Act, our Board of Directors is providing the stockholders with an opportunity to approve, on a non-binding advisory basis, the compensation of the Company's named executive officers.

As described below under "Executive Officer and Director Compensation—Compensation Discussion and Analysis," we have developed a compensation policy that is designed to attract and retain key executives responsible for our success and motivate management to enhance long-term stockholder value. We believe our compensation policy strikes an appropriate balance between the implementation of responsible, measured compensation practices and the effective provision of incentives for our named executive officers to exert their best efforts for our success.

For the reasons discussed above, the Board of Directors unanimously recommends that stockholders vote in favor of the following resolution:

"RESOLVED, that the Company's stockholders hereby approve, on a non-binding advisory basis, the compensation of the named executive officers, as disclosed in the Company's proxy statement for the 2020 Annual Meeting of Stockholders pursuant to the compensation disclosure rules of the Securities and Exchange Commission, including the Compensation Discussion and Analysis, Summary Compensation Table and the other compensation related tables and disclosure."

The resolution will be approved, on a non-binding advisory basis, if the votes cast FOR exceed the votes cast AGAINST the proposal. Abstentions and broker non-votes will have no effect on the voting of this proposal. As this vote is advisory, it will not be binding upon the Board of Directors or the Compensation Committee and neither our Board of Directors nor the Compensation Committee will be required to take any action as a result of the outcome of this vote. However, our Board of Directors and the Compensation Committee value the opinions of our stockholders, and the Compensation Committee will carefully consider the outcome of this vote when considering future executive compensation policies. We will hold a non-binding advisory vote to approve the compensation of our named executive officers annually until the next non-binding advisory vote on the frequency of such non-binding advisory votes, which will occur at our 2021 Annual Meeting of Stockholders.

**THE BOARD OF DIRECTORS UNANIMOUSLY RECOMMENDS THAT YOU VOTE**

**FOR**

**THE NON-BINDING ADVISORY RESOLUTION APPROVING THE COMPENSATION OF THE COMPANY'S  
NAMED EXECUTIVE OFFICERS**

**(PROPOSAL 2 ON YOUR PROXY CARD)**

## EXECUTIVE OFFICER AND DIRECTOR COMPENSATION

### Compensation Discussion and Analysis

Our Compensation Committee is responsible for overseeing the total compensation of our senior management team, which consists of our executive officers and certain other senior managers. In this capacity, our Compensation Committee designs, implements, reviews and approves all compensation for our Chief Executive Officer and our other executive officers. This section discusses the principles underlying our policies and decisions with respect to the compensation of our named executive officers, and all material factors relevant to an analysis of these policies and decisions. Our named executive officers for the fiscal year ended on December 31, 2019, were:

- Nick Leschly, our Chief Executive Officer and Principal Executive Officer;
- William D. Baird, III, our Chief Financial Officer and Principal Financial Officer since February 2019;
- David Davidson, M.D., our Chief Medical Officer;
- Philip Gregory, D. Phil., our Chief Scientific Officer;
- Jason F. Cole, Esq., our Chief Operating and Legal Officer; and
- Jeffrey T. Walsh, our former Chief Strategy Officer who served as our Principal Financial Officer until March 2019.

### *Management Changes During 2019 and Since the End of our Last Completed Fiscal Year*

Mr. Walsh served as our Chief Financial and Strategy Officer until February 11, 2019, when Mr. Baird joined us as our Chief Financial Officer and Mr. Walsh transitioned to the position of Chief Strategy Officer. Mr. Walsh served as our Principal Financial Officer until March 5, 2019, when Mr. Baird was appointed our Principal Financial Officer. On January 6, 2020, Mr. Walsh resigned as our Chief Strategy Officer.

### *Company Background and Select Business Highlights for 2019*

We are a biotechnology company committed to researching, developing, and commercializing potentially transformative gene therapies for severe genetic diseases and cancer. We have built an integrated product platform with broad therapeutic potential in a variety of indications based on our lentiviral gene addition platform, gene editing and cancer immunotherapy capabilities. We had a landmark year in 2019, with the most significant achievement being our first conditional marketing approval from the European Commission for LentiGlobin gene therapy for  $\beta$ -thalassemia as a treatment for adult and adolescent patients with transfusion-dependent  $\beta$ -thalassemia, or TDT, who do not have a  $\beta^0/\beta^0$  genotype. In Europe, LentiGlobin for  $\beta$ -thalassemia is being marketed as Zynteglo™ gene therapy (autologous CD34+ cells encoding  $\beta^{A-T87Q}$ -globin gene), and we expect to treat our first patients in the commercial setting in the second half of 2020.

In 2019, we also presented follow-up data from our ongoing HGB-206 clinical study of LentiGlobin gene therapy for sickle cell disease, or SCD. As of the data cut-off of August 26, 2019, we continued to observe in Group C of the HGB-206 clinical study: robust production of HbA<sup>T87Q</sup>, substantial reductions of sickle hemoglobin, as well as improvement in key markers of hemolysis. Most importantly as of the data cut-off date, patients in Group C had not experienced any episodes of acute chest syndrome or serious vaso-occlusive crises following LentiGlobin for SCD treatment. The safety data from all patients in the HGB-206 clinical study were reflective of underlying SCD, the known side effects of hematopoietic stem cell collection and myeloablative conditioning. In addition, in collaboration with BMS, we announced positive pivotal data from the phase 2 KarMMa trial of idecabtagene vicleucel (ide-cel) as a treatment for relapsed and refractory multiple myeloma, that enabled the submission of a biologics license application to the U.S. Food and Drug Administration in early 2020.

These achievements were taken into consideration for executive compensation in 2019, as a significant portion of our 2019 annual cash incentive program is tied to the Company's performance and the execution of key business initiatives, and our Compensation Committee determined that the Company achieved 97.5% of its pre-defined performance goals and objectives for 2019. This contributed to an overall decrease in compensation paid to our Chief Executive Officer in 2019 relative to 2018 (in which the Compensation Committee determined that the Company achieved 117.5% of its pre-defined performance goals and objectives for 2018).

In early 2020, our Compensation Committee met to approve certain elements of 2020 compensation for our named executive officers, including base salary, annual equity incentive awards and the design of our 2020 annual cash incentive program. Such decisions were based on performance during 2019 and comparisons to the compensation of named executive officers in our 2020 peer group. Since that time, the novel coronavirus (COVID-19) outbreak has spread across the globe and the World Health Organization characterized the outbreak as a “pandemic.” The COVID-19 pandemic has had wide-reaching impacts on the global economy and business operations. Although this Compensation Discussion and Analysis would ordinarily provide an overview of our expected executive compensation design for 2020, numerous uncertainties have been created by the COVID-19 outbreak, and certain aspects of our compensation programs may need to be re-evaluated or modified once the Compensation Committee has had the opportunity to fully evaluate the impact of the COVID-19 outbreak on our business. The health and safety of employees and the communities in which we operate continues to be bluebird’s paramount concern, and our Board of Directors, the Compensation Committee and executive leadership team will continue to monitor the impacts of COVID-19 on our business.

***Compensation Philosophy***

Our Compensation Committee believes a well-designed compensation program should align executive interests with the drivers of growth and stockholder returns by supporting the Company’s achievement of its primary business goals, and the Company’s ability to attract and retain employees whose talents, expertise, leadership, and contributions are expected to sustain growth and drive long-term stockholder value. Consequently, we maintain an ongoing commitment to corporate governance principles and strong performance orientation in our compensation program. Our Compensation Committee regularly reviews our compensation policies and program design overall, to ensure that they are aligned with the interests of our stockholders and our business goals, and that the total compensation paid to our employees is fair, reasonable and competitive. The market for qualified and talented executives in the biopharmaceutical industry is highly competitive and we compete for talent with many companies that have greater resources than we do. Furthermore, as the biopharmaceutical industry is characterized by a very long product development cycle, including a lengthy research and development period and a rigorous approval phase involving clinical studies and governmental regulatory approval, many of the traditional benchmarking metrics, such as product sales, revenues and profits are inappropriate for a late-stage development or early-commercial stage biopharmaceutical company such as bluebird.

***Overview of Our Compensation Programs***

Key elements of our executive compensation programs include the following:

| <b>Compensation</b>                         | <b>Purpose</b>   | <b>Features</b>  |
|---|--|--|
| <b><i>Base salary</i></b>                   | To attract and retain highly skilled executives.   | Fixed component of pay to provide financial stability, based on responsibilities, experience, individual contributions and peer company data.  |
| <b><i>Annual cash incentive program</i></b> | To promote and reward the achievement of key short-term strategic and business goals of the Company as well as individual performance; to motivate and attract executives. | Variable component of pay based on annual quantitative and qualitative Company performance goals and, for our executives other than our Chief Executive Officer, individual performance goals.   |
| <b><i>Equity incentive compensation</i></b> | To encourage executives and other employees to focus on long-term Company performance; to promote retention; to reward outstanding Company and individual performance.     | Typically subject to multi-year vesting based on continued service and are primarily in the form of stock options and restricted stock units, the value of which depends on the performance of our common stock price, in order to align employee interests with those of our stockholders over the longer-term. |

We may award annual merit-based increases in base salary based upon an assessment of each executive’s performance and the scope of his or her responsibilities. Our 2019 annual cash incentive program was designed to reward annual achievements as measured against pre-determined quantitative and qualitative company performance goals, and, with respect to members of our senior management team other than our Chief Executive Officer, individual objectives. We awarded cash incentive payments to our named executive officers and the other members of our senior management team under our 2019 annual cash incentive program, which is described in more detail below.

We typically make equity grants to each of our executive officers upon commencement of employment, annually in conjunction with our review of their individual performance, and in connection with a promotion. In addition, equity awards are our primary long-term incentive vehicle for our executives. We believe that equity grants provide our executives with a strong link to our long-term performance, create an ownership culture, and help align the interests of our executives and our

stockholders. Accordingly, we believe equity compensation is a crucial component of any competitive executive compensation package we offer.

With the exception of our 2019 annual cash incentive program, we do not have any pre-established targets for allocations or apportionment by type of compensation. The mix of compensation components is designed to reward annual results as well as drive long-term Company performance and create stockholder value. The Compensation Committee generally targeted overall target compensation for our executive officers near the 50th percentile of compensation paid to similarly situated executives of companies in our peer group.

In addition to our direct compensation elements, the following features of our compensation program are designed to align our executive team with stockholder interests and with market best practices:

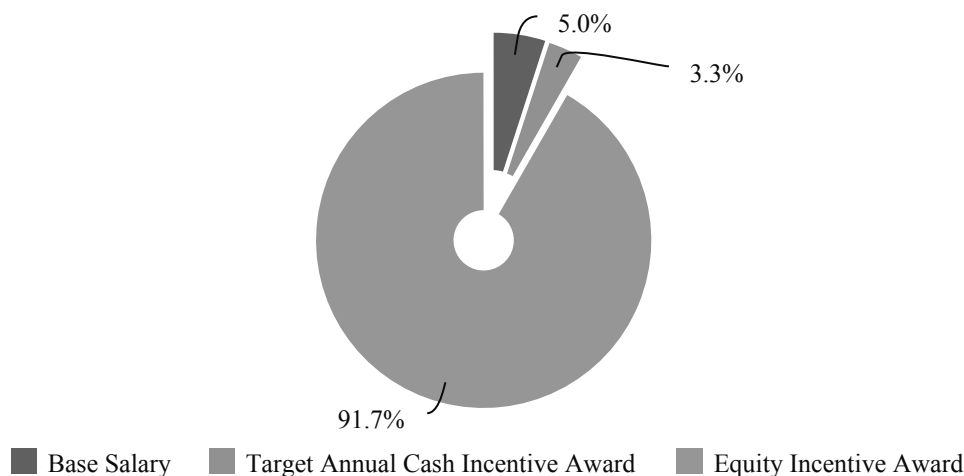
| <b>What We Do</b>   | <b>What We Don't Do</b>  |
|---|--|
| Use market data from an industry-specific peer group to set competitive compensation levels   | Allow hedging or pledging of equity                              |
| Deliver executive compensation primarily through performance-based pay  | Permit re-pricing of stock options without stockholder approval  |
| Have a clawback policy covering cash and equity incentive compensation paid to our Chief Executive Officer and other executive officers | Provide excessive perquisites                                    |
| Set challenging short-term incentive program goals  | Provide supplemental executive retirement plans                  |
| Offer market-competitive benefits for executives that are consistent with those offered to the rest of our employees                    | Provide tax gross-up payments for any change-of-control payments |
| Have stock ownership guidelines applicable to our senior executive officers and non-employee directors                                  |  |
| Annual stockholder say-on-pay votes   |  |
| Double-trigger severance arrangements in change of control  |  |
| Stockholder engagement efforts  |  |
| Consult with an independent compensation advisor on compensation levels and practices   |  |

### ***Chief Executive Officer Compensation***

We believe the target compensation mix provided to our Chief Executive Officer in 2019 encouraged him to focus on the Company's long-term success and was aligned with the long-term interests of our stockholders, in accordance with our compensation philosophy. Mr. Leschly's total target compensation was set near the 50th percentile of compensation paid to similarly situated executives of companies in our peer group. The graphic below illustrates the mix of fixed (in the form of 2019 base salary), annual (in the form of 2019 target annual cash incentive award) and long-term incentive compensation (in the form of equity incentive awards granted in 2019) we provided to our Chief Executive Officer in 2019. Approximately 95% of the target compensation mix was at-risk. Over 90% of the target compensation mix consisted of long-term incentive compensation in the form of equity awards.

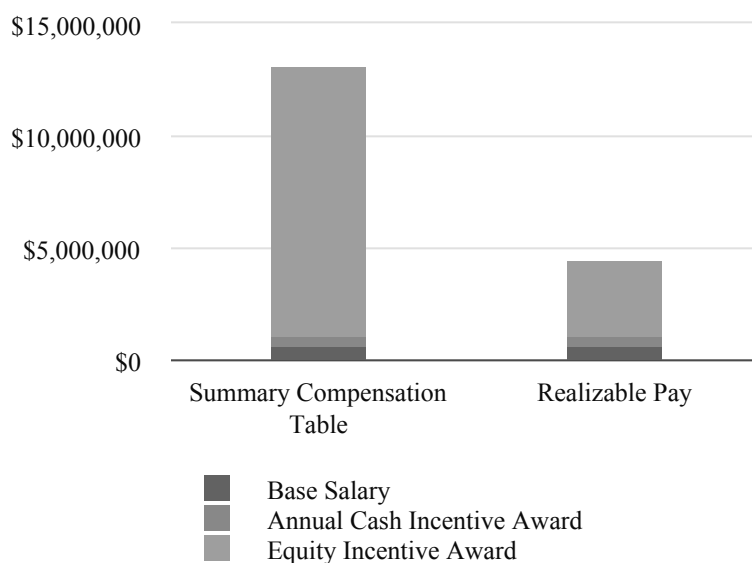


### CEO 2019 Target Compensation Mix



Approximately 66% of Mr. Leschly’s 2019 total compensation as reported in the Summary Compensation Table below relates to stock options which vest over a four-year period, and only realize value if our stock price increases after the date of grant. Approximately 25% of his total 2019 compensation as reported in the Summary Compensation Table relates to restricted stock units that also vest over a four-year period, which promotes retention while using a fewer number of authorized shares to deliver equivalent value. Due to the strong alignment between pay and performance over the last year, our Chief Executive Officer’s total realizable pay in the year ended December 31, 2019, represented by his base salary, annual cash incentive award, and restricted stock unit grants, is approximately 34% of the value disclosed in the Summary Compensation Table, as illustrated in the graphic below. Mr. Leschly will not realize any value from his stock option grants unless our share price increases above our share price on the date of grant.

### Chief Executive Officer Realizable Pay as of December 31, 2019



### Role of Compensation Committee

Each year, our Compensation Committee reviews and establishes the levels of each element of total compensation for our employees, including our senior executive team. As part of this process, our Compensation Committee reviews the mix of compensation elements to ensure our performance-based compensation is an appropriate proportion of overall compensation and is aligned with our business goals and strategy. The specific performance factors our Compensation Committee considers when determining the compensation of our named executive officers include:

- key research and development achievements, including advances in our gene therapy platforms in the fields of severe genetic diseases and cancer, and in our gene editing technology;
- initiation and progress of clinical studies for our product candidates;
- expansion of our manufacturing and operational capabilities, including our commercial readiness, on a global basis;
- achievement of regulatory milestones, including regulatory filings for marketing approval;
- achievement of commercialization milestones, including pricing and reimbursement approval and engaging qualified treatment centers;
- establishment and maintenance of key strategic relationships and new business initiatives, including financings; and
- development of global organizational capabilities, success in hiring and growth management initiatives.

Our executive officers are also evaluated based on factors such as individual, strategic, and leadership achievements. These performance factors are considered by our Compensation Committee in connection with our annual performance reviews described below and are a critical component in the determination of annual cash and equity incentive awards for our executives.

By the end of the first quarter of each year, annual Company goals and individual performance objectives applicable to cash incentive compensation are determined and set forth in writing. After the end of each year, our Compensation Committee determines executive compensation levels after carefully reviewing overall Company performance and performing an evaluation of each named executive officer's annual performance against established Company goals, as well as each individual executive officer's contributions to achievement of the Company goals and, in the case of executive officers other than our Chief Executive Officer, the achievement of individual performance objectives. In addition, our Compensation Committee may apply its discretion, as it deems appropriate, in determining executive compensation.

Our Compensation Committee, with input from the Board of Directors, evaluates our Chief Executive Officer's individual performance and determines whether to change his base salary, grant him an annual equity award and/or change his target percentage cash award under our annual cash incentive program. Our Compensation Committee typically grants annual equity awards, and determines changes in base salary and the amount of any cash incentive payments, at its first regularly scheduled meeting of the new year. Our Compensation Committee may also review the compensation of our executive officers throughout the course of the year. With respect to year-end reviews, any changes in base salary are effective at the beginning of the following year.

### ***Role of Management***

Annual Company goals are proposed by our senior management team and reviewed and approved by our Board of Directors and Compensation Committee. For 2019, our Chief Executive Officer's cash incentive award was determined entirely on performance relative to Company goals (to drive maximal stockholder value) and the cash incentive awards of our other named executive officers were based 80% on Company goals and 20% on individual objectives. Individual objectives for 2019 for our senior management team other than our Chief Executive Officer focused on leadership development objectives as well as individual contributions that were intended to drive achievement of the Company goals and were proposed by each member of senior management, with review and input from our Chief Executive Officer. Any merit increases in base salary and any annual equity awards or cash awards made under our 2019 annual cash incentive program were based on the achievement of these Company and individual, as applicable, performance goals and objectives. In 2019, our Compensation Committee established the target cash incentive award opportunity for each member of our senior management team under the 2019 annual cash incentive program, representing a percentage of each individual's base salary.

During the last quarter of each year, our senior management team evaluates our company performance and each executive officer's individual performance, as compared to the Company goals and, as applicable, the individual objectives for that year. Based on this evaluation, our Chief Executive Officer recommends to our Compensation Committee any increases in base salary and any annual equity awards and/or cash awards under our annual cash incentive program for members of the senior management team other than himself.

### ***Role of Our Independent Compensation Consultant***

For 2019, our Compensation Committee engaged Radford, which is part of the Rewards Solutions practice at Aon plc, as its independent compensation consultant to advise on executive and Board of Directors compensation matters including: overall compensation program design, peer group development and updates, and collection of market data to inform our

compensation programs for our executives and members of our Board of Directors. We develop our compensation programs after reviewing publicly available compensation data and we also subscribe to Radford's various global annual and specialized life sciences and general industry surveys on an ongoing basis. Radford advised the Compensation Committee on all of the principal aspects of executive compensation, including executive new hire compensation arrangements. Radford consultants attend meetings of the Compensation Committee when requested to do so. Radford reports directly to our Compensation Committee and not to management, although it meets with management for purposes of gathering information for its analyses and recommendations. Our Compensation Committee has assessed the independence of Radford consistent with SEC regulations and NASDAQ listing standards and has concluded that the engagement of Radford does not raise any conflict of interest.

### ***Stockholder Engagement***

Our stockholders have the opportunity annually to cast a non-binding advisory vote to approve compensation for our named executive officers, commonly referred to as a "say-on-pay" vote, in accordance with the Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010, or the Dodd-Frank Act. Consistent with the recommendation of our Board of Directors and the preference of our stockholders as reflected in the non-binding advisory vote on the frequency of future "say-on-pay" votes conducted at our 2015 Annual Meeting of Stockholders, we intend to provide for annual non-binding advisory votes on the compensation of our named executive officers until at least the next nonbinding advisory vote on the frequency of future "say-on-pay" votes, which will occur at our 2021 Annual Meeting of Stockholders.

We pay careful attention to any feedback we receive from our stockholders about our executive compensation program. Our Compensation Committee and Board of Directors value the opinions of our stockholders and seriously consider the voting results when making future executive compensation decisions. Approximately 67% of the votes cast by stockholders on the "say-on-pay" proposal at our 2019 Annual Meeting of Stockholders were in support of the compensation paid to our named executive officers. This result was lower than we anticipated, and as a result, we prioritized our stockholder engagement program in order to solicit feedback from our stockholders regarding our executive compensation program. Following the 2019 Annual Meeting and throughout the last quarter of 2019 and into the first quarter of 2020, we reached out to our top ten shareholders, representing approximately 86% of the total shares outstanding, including several institutional shareholders who voted against our 2019 "say-on-pay" proposal, and offered to discuss our executive compensation practices in detail. Our outreach efforts led to constructive conversations with stockholders representing approximately 65% of our total shares outstanding, with our Chief People Officer and Chief Legal and Operating Officer participating in these meetings.

These conversations allowed us to gain insight and outside perspective on our executive compensation program and corporate governance. The feedback we received from our stockholders was positive regarding our compensation philosophy and the overall design of our compensation program, including the use of time-based vesting of equity grants as performance-based compensation that aligns executive incentives with that of stockholders. However, our stockholders expressed a desire to see performance-based vesting conditions for elements of our compensation programs as we make the transition to a commercial company. This concern, as well as concerns regarding our overall equity burn rate and dilution, contributed to the lower support for our 2019 "say-on-pay" proposal. As a result of our outreach efforts, we have resolved that we will examine performance metrics that would be appropriate for setting incentive compensation as we continue to evolve our compensation programs over time. In particular, as we gain experience in commercializing novel gene therapies and better understand the key performance indicators that drive long-term business performance and stockholder value, we intend to incorporate appropriate elements into our compensation program and incentive compensation.

Furthermore, we intend to continue our stockholder outreach following the filing of this proxy statement with the SEC, to seek support for our annual meeting proposals and to solicit additional feedback regarding compensation and governance matters of importance to our stockholders. We view this outreach effort as a valuable opportunity to discuss compensation and corporate governance measures that are important to our stockholders. We also intend to continue our stockholder engagement efforts following the 2020 Annual Meeting regardless of the vote results on the 2020 "say-on-pay" proposal. Stockholder input is reported to our Compensation Committee, Nominating and Corporate Governance Committee, and/or the entire Board of Directors for consideration.

### ***Defining and Comparing Compensation to Market Benchmarks***

The Compensation Committee uses competitive compensation data from the annual total compensation study of peer companies to inform its decisions about overall compensation opportunities and specific compensation elements. The Compensation Committee also considers other reference points and criteria when establishing targeted compensation levels, such as the executive's experience level, contribution to established Company's goals, individual performance against the executive's individual goals where applicable, scope of responsibility, skill sets, and leadership potential, as well as the Company's critical needs and succession planning.

In evaluating the total compensation of our named executive officers, our Compensation Committee, using information provided by Radford, establishes a peer group of publicly traded companies in the biopharmaceutical and biotechnology industries that is selected based on a balance of the following criteria:

- companies whose number of employees, stage of development and market capitalization are similar, though not necessarily identical, to ours;
- companies with similar executive positions to ours;
- companies against which we believe we compete for executive talent; and
- public companies based in the United States whose compensation and financial data are available in proxy statements or through widely available compensation surveys.

In addition to the criteria above, our Compensation Committee also reviewed the peer selection criteria used by proxy advisors and considered the specific peers identified independently by each advisor, and our Compensation Committee also included in their consideration companies who list bluebird as a peer in their compensation disclosures. Because the market for executive talent in the biopharmaceutical and biotechnology industries is competitive, and in particular the pool of candidates with relevant experience for our gene therapy business is small, our peer group reflects the fact that we compete for executive talent with companies who are larger than us and may have more resources than we do.

Based on these criteria and considerations, our peer group for 2019, referred to as our 2019 peer group, as approved by our Compensation Committee consisted of the following 17 companies:

|                               |                              |                                |
|-------------------------------|------------------------------|--------------------------------|
| Agios Pharmaceuticals, Inc.   | FibroGen, Inc.               | Portola Pharmaceuticals, Inc.  |
| Alkermes p.l.c.               | Incyte Corporation           | Sage Therapeutics, Inc.        |
| Alnylam Pharmaceuticals, Inc. | Ionis Pharmaceuticals, Inc.  | Seattle Genetics, Inc.         |
| BioMarin Pharmaceutical Inc.  | Jazz Pharmaceuticals plc     | Spark Therapeutics, Inc.       |
| Clovis Oncology, Inc.         | Nektar Therapeutics          | Ultragenyx Pharmaceutical Inc. |
| Exelixis, Inc.                | Neurocrine Biosciences, Inc. |                                |

We believe that the compensation practices of our 2019 peer group provided us with appropriate compensation reference points for evaluating the compensation of our named executive officers during 2019.

For purposes of compensation for 2020, our Compensation Committee, with the advice of Radford, examined our 2019 peer group in light of our continued growth throughout 2019 which is anticipated to continue in 2020 and beyond, the stage of development and commercialization of our programs, and changes in our market capitalization. With reference to these and other key business metrics, we added Sarepta Therapeutics, Inc. to our 2020 peer group, and Clovis Oncology, Inc. was excluded from our 2020 peer group because its market capitalization was below the selection range. Our peer group for 2020, was approved by our Compensation Committee, consists of the following 17 companies:

|                               |                               |                                |
|-------------------------------|-------------------------------|--------------------------------|
| Agios Pharmaceuticals, Inc.   | Incyte Corporation            | Sage Therapeutics, Inc.        |
| Alkermes p.l.c.               | Ionis Pharmaceuticals, Inc.   | Sarepta Therapeutics, Inc.*    |
| Alnylam Pharmaceuticals, Inc. | Jazz Pharmaceuticals plc      | Seattle Genetics, Inc.         |
| BioMarin Pharmaceutical Inc.  | Nektar Therapeutics           | Spark Therapeutics, Inc.       |
| Exelixis, Inc.                | Neurocrine Biosciences, Inc.  | Ultragenyx Pharmaceutical Inc. |
| FibroGen, Inc.                | Portola Pharmaceuticals, Inc. |                                |

*\* New to the 2020 peer group*

***Base Salary for Our Named Executive Officers in 2019***

We provide base salaries to our named executive officers to compensate them with a fair and competitive base level of compensation for services rendered during the year. Our Compensation Committee typically determines the base salary for each executive based on the executive’s responsibilities, experience and, if applicable, the base salary level of the executive prior to joining bluebird. In addition, our Compensation Committee reviews and considers the level of base salary paid by companies in our peer group for similar positions.

With respect to Mr. Leschly, our Chief Executive Officer, at the beginning of 2019, our Compensation Committee reviewed Mr. Leschly’s overall compensation and determined to increase his annual base salary to \$660,000 from \$610,000, based on his critical role at the Company, his leadership of the Company throughout 2018 in which the Company’s performance exceeded expectations for a number of key business objectives, and a comparison of his base salary to the base salary of chief executive officers in our 2019 peer group.

At the beginning of 2019, our Compensation Committee approved merit increases in base salary for each of our other named executive officers serving at that time, based upon the Company's performance against the 2018 Company goals, as well as each executive officer's achievement of individual goals in 2018, and the other factors described above. The table below sets forth the adjustments to base salary, in dollars and as a percentage, for each of our named executive officers:

| Name                     | 2018             | 2019             | Increase (%) |
|--------------------------|------------------|------------------|--------------|
|                          | Base Salary (\$) | Base Salary (\$) |              |
| Nick Leschly             | \$ 610,000       | \$ 660,000       | 8.2%         |
| Jeffrey T. Walsh         | \$ 450,000       | \$ 470,000       | 4.4%         |
| David Davidson, M.D.     | \$ 442,500       | \$ 486,000       | 9.8%         |
| Philip Gregory, D. Phil. | \$ 425,000       | \$ 455,000       | 7.1%         |
| Jason F. Cole, Esq.      | \$ 390,000       | \$ 425,000       | 9.0%         |

On February 11, 2019, William D. Baird, III joined bluebird as Chief Financial Officer, and based on his experience and an assessment of compensation information for chief financial officers at our peer and similar companies, his annual base salary for 2019 was set at \$450,000.

### ***2019 Annual Cash Incentive Program***

In January 2019, our Compensation Committee approved the annual cash incentive program for 2019, including the opportunity for eligible participants to earn cash incentive awards above established bonus targets if the Company's performance exceeded pre-defined 2019 company goals.

Under the 2019 annual cash incentive program, our Board of Directors and Compensation Committee approved our 2019 Company goals, as well as the relative weightings assigned to each goal, at the end of 2018. The Compensation Committee determined our actual achievement during 2019 as a percentage of our 2019 Company goals based on our performance against these pre-defined goals, taking into account the recommendations of senior management and various unanticipated external outcomes and events. The amounts for the cash incentive awards were determined by first establishing a bonus pool. The bonus pool was calculated by aggregating the target cash incentive awards for all eligible plan participants and then multiplying that sum by a modifier established by our Compensation Committee based on our performance as measured against the 2019 pre-defined Company goals. The bonus pool was then allocated among all of the plan participants in accordance with the terms of the 2019 annual cash incentive program. Our Chief Executive Officer's cash incentive award was based entirely on the Company's performance relative to our pre-defined 2019 Company goals. The cash incentive awards of our other named executive officers were based 80% on the Company's performance relative to our pre-defined 2019 Company goals, and 20% on individual performance. In addition, our Compensation Committee had the discretion under the annual cash incentive program to adjust upward or downward any cash incentive award and/or the bonus pool as it deemed appropriate, provided that Company performance and individual performance may not exceed 150% of the applicable pre-defined goals and objectives.

The table below summarizes our pre-defined 2019 Company goals, their relative weighting, the level of achievement of each Company goal, as determined by the Compensation Committee, as well as the achievements taken into consideration in the Compensation Committee's determination that overall we achieved 97.5% of our Company goals for 2019.

| 2019 Company Goals  | Weighting   | Level of Achievement (weighted achievement)  |
|---|-------------|--|
| <b>Path to Patients</b>   | <b>45%</b>  | <b>102% (45.9%) based on the following achievements:</b>   |
| <ul style="list-style-type: none"> <li>■ Achieve regulatory and product development milestones for our LentiGlobin in TDT</li> <li>■ Achieve regulatory and product development milestones for our LentiGlobin gene therapy in SCD</li> <li>■ Achieve regulatory and product development milestones for ide-cel and bb21217</li> <li>■ Meet operational targets to support first commercial launch in Europe</li> </ul> |             | <ul style="list-style-type: none"> <li>■ Received conditional marketing approval from the European Commission for LentiGlobin for adult and adolescent patients with TDT who do not have a <math>\beta^0/\beta^0</math> genotype, marketed as Zynteglo in Europe</li> <li>■ European Medicines Agency approved the refined commercial drug product manufacturing specifications for Zynteglo</li> <li>■ Initiated the rolling submission of a Biologics Licensing Application to the U.S. Food and Drug Administration for the marketing approval of LentiGlobin for TDT</li> <li>■ Advanced our Northstar-2 study (HGB-207), a phase 3 study of LentiGlobin for the treatment of patients with TDT and a non-<math>\beta^0/\beta^0</math> genotype, and reported updated data at two major medical meetings</li> <li>■ Advanced our Northstar-3 study (HGB-212), a phase 3 study of LentiGlobin for the treatment of patients with TDT and a <math>\beta/\beta</math> genotype or an IVS-I-110 mutation, and reported updated data at two major medical meetings</li> <li>■ Reported updated follow-up data at two major medical meetings for the Northstar study (HGB-204), a phase 1/2 study of LentiGlobin for the treatment of patients with TDT</li> <li>■ Advanced our HGB-206 study, a phase 1/2 study of LentiGlobin for the treatment of patients with SCD, and reported updated data at two major medical meetings</li> <li>■ Advanced preparations for our HGB-210 study, a phase 3 study of LentiGlobin for the treatment of patients with SCD</li> <li>■ Through our collaboration with BMS, advanced the KarMMA study (MM-001), a phase 2 study of ide-cel for the treatment of patients with relapsed/ refractory multiple myeloma, and reported interim data</li> <li>■ Through our collaboration with BMS, advanced the clinical studies of ide-cel for the treatment of patients with multiple myeloma in earlier lines of therapy</li> <li>■ Interim results for the CRB-401 study of ide-cel for the treatment of patients with multiple myeloma published in the <i>New England Journal of Medicine</i></li> <li>■ Advanced the CRB-402 study, a phase 1 study of bb21217 for the treatment of patients with relapsed and refractory multiple myeloma, and reported updated data at a major medical meeting</li> <li>■ Built and expanded commercialization infrastructure and capabilities in the United States and Europe and executed on plans for first commercial launch</li> </ul> |
| <b>Platform Improvement</b>   | <b>25%</b>  | <b>90% (22.5%) based on the following achievements:</b>  |
| <ul style="list-style-type: none"> <li>■ Achieve milestones for advancement of further drug product manufacturing process development</li> <li>■ Achieve milestones for advancement of scalable vector manufacturing process</li> </ul>   |             | <ul style="list-style-type: none"> <li>■ Achieved key milestones for completing internal manufacturing capability for lentiviral viral vector</li> <li>■ Progressed drug product manufacturing process development to enhance efficiency and scalability</li> <li>■ Progressed scalable vector manufacturing process development</li> <li>■ Entered into a collaboration with Forty-Seven, Inc. to pursue clinical proof-of-concept for an alternative conditioning regimen for use with our platform</li> </ul>   |
| <b>Pipeline</b>   | <b>20%</b>  | <b>98% (19.6%) based on the following achievements:</b>  |
| <ul style="list-style-type: none"> <li>■ Execute on key pipeline objectives, including in oncology and in severe genetic disease</li> </ul>   |             | <ul style="list-style-type: none"> <li>■ Entered into a collaboration with Novo Nordisk A/S to jointly develop next-generation <i>in vivo</i> gene editing treatments for genetic diseases</li> <li>■ Entered into an academic collaboration with Seattle Children's Research Institute to pursue next-generation CAR-T approaches for acute myeloid leukemia</li> <li>■ Advanced preclinical programs in oncology and severe genetic diseases</li> </ul>  |
| <b>Business and Culture</b>   | <b>10%</b>  | <b>95% (9.5%) based on the following achievements:</b>   |
| <ul style="list-style-type: none"> <li>■ Meet scaling, culture, and leadership development objectives</li> <li>■ Conclude 2019 with at least two years of cash, cash equivalents and marketable securities</li> </ul>   |             | <ul style="list-style-type: none"> <li>■ Hired and integrated over 400 new employees in 2019, across multiple functional areas and geographic locations globally</li> <li>■ Completed 2019 with a balance of approximately \$1.2 billion in cash, cash equivalents and marketable securities</li> </ul>  |
| <b>2019 Performance Assessment</b>  | <b>100%</b> | <b>97.5%</b>   |

The individual performance objectives in 2019 assigned to our named executive officers other than our Chief Executive Officer were as follows:

|   |   |
|---|---|
| William D. Baird, III<br><i>Chief Financial Officer</i>         | Leadership, responsibility and performance in first year as Chief Financial Officer   |
|   | The Compensation Committee determined that Mr. Baird achieved 90% of his personal objectives in 2019  |
| David Davidson, M.D.<br><i>Chief Medical Officer</i>            | Leadership, achieving clinical and regulatory milestones relating to development and potential approval of our product candidates                             |
|   | The Compensation Committee determined that Dr. Davidson achieved 85% of his personal objectives in 2019   |
| Philip Gregory, D. Phil.<br><i>Chief Scientific Officer</i>     | Leadership, developing and executing a strategic plan for pipeline development, directing preclinical development and advancing identified product candidates |
|   | The Compensation Committee determined that Dr. Gregory achieved 85% of his personal objectives in 2019  |
| Jason F. Cole, Esq.<br><i>Chief Legal and Operating Officer</i> | Leadership, providing outstanding legal and policy advice and counsel to the Company, increasing operational capacity in areas under his supervision          |
|   | The Compensation Committee determined that Mr. Cole achieved 90% of his personal objectives in 2019   |
| Jeffrey T. Walsh<br><i>Chief Strategy Officer</i>               | Leadership, identifying and executing strategic transactions intended to enhance stockholder value  |
|   | The Compensation Committee determined that Mr. Walsh achieved 100% of his personal objectives in 2019   |

The table below shows each named executive officer's target cash incentive award under the 2019 annual cash incentive program as a percentage of the named executive officer's annual base salary in 2019, the target cash incentive award opportunity in dollars for 2019 and the actual cash incentive award payments to our named executive officers for 2019 performance, which were paid in March 2020, as well as the actual 2019 cash incentive award payment as a percentage of the 2019 target cash incentive award opportunity. The details regarding the determination of these cash incentive awards are discussed below.

| Name                      | 2019<br>Target Cash<br>Incentive<br>Award<br>(% of 2019<br>Base Salary) | 2019<br>Target Cash<br>Incentive<br>Award<br>Opportunity (\$) | 2019<br>Cash<br>Incentive<br>Award<br>Payment (\$) | 2019<br>Actual Cash Incentive<br>Award Payment<br>(% of 2019 Target Cash<br>Incentive Award<br>Opportunity) |
|---------------------------|---|---|--|---|
| Nick Leschly              | 65%   | \$ 429,000  | \$ 418,275   | 97.5%   |
| William D. Baird, III (1) | 45%   | \$ 185,625  | \$ 178,200   | 96.0%   |
| David Davidson, M.D.      | 45%   | \$ 218,700  | \$ 207,800   | 95.0%   |
| Philip Gregory, D. Phil.  | 45%   | \$ 204,750  | \$ 194,600   | 95.0%   |
| Jason F. Cole, Esq.       | 45%   | \$ 191,250  | \$ 183,600   | 96.0%   |
| Jeffrey T. Walsh (2)      | 45%   | \$ 211,500  | \$ 206,212   | 97.5%   |

- (1) The amounts reported for Mr. Baird are prorated to reflect his start date of February 11, 2019.
- (2) Mr. Walsh was paid \$206,212 for his performance in 2019 pursuant to the 2019 annual cash incentive program, in accordance with the terms of his separation agreement, described below under the heading "*Separation Agreement with Mr. Walsh*".

### ***Equity Awards***

Historically, our equity awards have generally taken the form of stock options, and beginning in 2015, restricted stock units, which deliver equivalent value while using fewer authorized shares. We typically make equity award grants to each of our executive officers upon commencement of employment, annually in conjunction with our review of their individual performance, in connection with a promotion, or as a special incentive. Our executives benefit from stock options only if our stock price increases through the creation of stockholder value, and the value of RSUs increase as our stock price increases. Accordingly, we believe stock options and RSUs provide meaningful incentives to our executives to achieve increases in the

value of our stock over time. In addition, the vesting feature of our equity grants contributes to executive retention by providing an incentive to our executives to remain employed by us during the vesting period.

All equity awards to our executive officers are approved by our Compensation Committee and, other than equity awards to new hires, are typically granted at our Compensation Committee’s regularly scheduled meeting at the beginning of the year. The size of equity awards varies among our executive officers based on their positions and annual performance assessments. All stock options granted by bluebird have exercise prices equal to the fair market value of our common stock on the date of grant, so that the recipient will not realize any value from his or her options unless our share price increases above the stock price on the date of grant. Accordingly, this portion of our executive officers’ compensation is at risk and is directly aligned with stockholder value creation.

As part of the ongoing review of our compensation strategy and practices, the Compensation Committee determines the appropriate mix of the type of equity awards, based in part on recommendations from Radford. Because of the volatility of our stock price in relation to when equity grants are made, our equity compensation guidelines set forth aggregate grant targets reflecting stock options plus restricted stock units based on number of shares (rather than value of the equity grants), and these guidelines are developed based on and in reference to our equity grant data for our peer companies. For 2019, the target mix for equity grants to our executive officers was generally split approximately two-thirds in stock options and one-third in restricted stock units based on value. Beginning in 2020, the target mix for equity grants to our executive officers will generally be split approximately half in stock options and half in restricted stock units based on value. The Compensation Committee believes that this deliberate mix of equity ensures that wealth creation remains tied to stock performance and promotes retention. The Compensation Committee may adjust the mix of award types or approve different award types as part of the overall compensation strategy. Awards made in connection with a new, extended or expanded employment relationship may involve a different mix of equity awards, depending on the Compensation Committee’s assessment of the total compensation package being offered.

In addition, equity grants to our executive officers typically vest over four years, which we believe provides an incentive to our executives to add value to the Company over the long-term and to remain with bluebird. Typically, the stock options we grant to our executives have a ten-year term and vest as to 25% of the shares on the first anniversary of their hire date (in the case of initial equity grants) or on or about the first business day of the year of grant (in the case of annual grants) and then the remaining shares vest in equal monthly installments thereafter until the fourth anniversary of such date. Vesting of option grants to employees ceases upon termination of employment and exercise rights typically cease three months following termination of employment, except in the case of death or disability. Prior to the exercise of an option, the stock option holder does not have any rights as a stockholder with respect to the shares subject to such option, including voting rights or the right to receive dividends or dividend equivalents. Annual restricted stock units granted to our executives generally vest in equal annual installments beginning on or about the first anniversary of the first business day of the year of grant, until the fourth anniversary of such date.

In connection with the annual review of our named executive officers’ performance during 2018 and consistent with our compensation philosophy, in January 2019, our Compensation Committee approved the annual equity incentive awards granted to our named executive officers serving at that time as set forth in the table below:

| Name                    | 2019<br>Option Award<br>(# Shares) | 2019<br>RSU Award (# Shares) |
|-------------------------|------------------------------------|------------------------------|
| Nick Leschly            | 100,000                            | 25,000                       |
| Jeffrey T. Walsh        | 33,750                             | 8,438                        |
| David Davidson, M.D.    | 37,500                             | 9,375                        |
| Philip Gregory, D.Phil. | 27,000                             | 6,750                        |
| Jason F. Cole, Esq.     | 25,000                             | 6,250                        |

In connection with Mr. Baird joining bluebird on February 11, 2019, the Compensation Committee approved the grant of a stock option to purchase 60,000 shares, and of 15,000 restricted stock units. There were no other one-time grants to our named executive officers in 2019. The equity awards granted to our named executive officers during 2019, and the grant date fair values of those awards determined in accordance with Financial Accounting Standards Board, or FASB, Accounting Standards Codification, or ASC, Topic 718, are shown in the Summary Compensation Table and the 2019 Grants of Plan-Based Awards table below.

### ***Benefits and Other Compensation***

Other compensation to our executives consists primarily of the broad-based benefits we provide to all full-time employees in the United States, including medical, dental and vision insurance, group life and disability insurance, an employee



stock purchase plan and a 401(k) plan. Pursuant to our employee stock purchase plan, employees, including our named executive officers, have an opportunity to purchase our common stock at a discount on a tax-qualified basis through payroll deductions. The employee stock purchase plan is designed to qualify as an “employee stock purchase plan” under Section 423 of the Code. The purpose of the employee stock purchase plan is to encourage our employees, including our named executive officers, to become our stockholders and better align their interests with those of our other stockholders. Pursuant to our 401(k) plan, employees, including our named executive officers, may elect to defer a portion of their current compensation up to the statutorily prescribed annual limit (which was \$19,000 in 2019), with additional salary deferrals not to exceed \$25,000 available to those employees 50 years of age or older, and to have the amount of this deferral contributed to our 401(k) plan. We make discretionary matching contributions and other employer contributions on behalf of eligible employees under our 401(k) plan. For fiscal year 2019, we matched a portion of eligible employee contributions equal to 100% of the first 4% of eligible contributions pursuant to our 401(k) plan’s matching formula.

Currently, we do not view perquisites or other personal benefits as a significant component of our executive compensation program. Accordingly, we do not provide perquisites to our named executive officers, except in situations where we believe it is appropriate to assist an individual in the performance of his or her duties, to make him or her more efficient and effective, and for recruitment and retention purposes. None of our named executive officers received perquisites or other personal benefits with an aggregate value of \$10,000 or more in 2019. All future practices with respect to perquisites or other personal benefits will be approved and subject to periodic review by our Compensation Committee.

Certain executives, including our named executive officers, may be entitled to certain severance and/or change in control protections pursuant to their employment agreements, which are described below under “Executive Officer and Director Compensation—Employment Arrangements with Our Named Executive Officers.” Our goal in providing severance and change in control benefits is to offer sufficient cash continuity protection such that our executives will focus their full time and attention on the requirements of the business rather than the potential implications for their respective position. We prefer to have certainty regarding the potential severance amounts payable to the named executive officers, rather than negotiating severance at the time that a named executive officer’s employment terminates.

#### ***Anti-Hedging and Anti-Pledging Policies; Insider Trading Policy***

Our insider trading policy expressly prohibits short sales and derivative transactions of our stock by our named executive officers, directors and specified other employees, including short sales of our securities, including short sales “against the box”; purchases or sales of puts, calls or other derivative securities of the Company or any derivative securities that provide the economic equivalent of ownership of any of our securities or an opportunity, direct or indirect, to profit from any change in the value of our securities; or other hedging or monetization transactions accomplished through the use of prepaid variable forwards, equity swaps, collars and exchange funds. In addition, our insider trading policy expressly prohibits our named executive officers, directors and specified other employees from purchasing our securities on margin, borrowing against company securities held in a margin account, or pledging our securities as collateral for a loan.

#### ***Clawback Policy***

In 2017, our Compensation Committee and Board of Directors adopted a clawback policy that covers incentive compensation paid to our executive officers, including our Chief Executive Officer, Principal Financial Officer and our Principal Accounting Officer. The policy provides that if we are required to prepare an accounting restatement due to our material non-compliance with any financial reporting requirement and/or intentional misconduct by a covered executive, our Compensation Committee may require the covered executive to repay to us any excess compensation received by the covered executive during the covered period. For purposes of this policy, excess compensation means annual cash bonus and long-term equity incentive compensation that is in excess of the amount such covered executive would have received, if the annual cash bonus and/or long term equity incentive compensation had been determined based on the financial results reported in the restated financial statement.

#### ***Share Ownership Guidelines***

In 2017, our Compensation Committee and Board of Directors adopted share ownership guidelines applicable to our non-employee directors and our senior executive officers, including our Chief Executive Officer, to further align the interests of the leadership of the Company with those of our stockholders. The equity ownership guidelines are as follows: our Chief Executive Officer must hold equity worth at least three times his base salary; each of our other senior executive officers must hold equity worth at least one times his or her base salary; and each of our non-employee directors must hold equity worth at least three times the annual cash retainer for service on the Board of Directors. Covered individuals and newly appointed or elected persons have five years to achieve the guideline. The following forms of equity will count toward the ownership guidelines: shares owned outright, vested but unexercised “in-the-money” stock options, and fifty percent of unvested restricted

stock units. All senior executive officers and directors are currently meeting or are working to achieve these guidelines within the five-year time period.

## **Tax and Accounting Considerations**

### ***Deductibility of Executive Compensation***

Generally, Section 162(m) of the Code, or Section 162(m), disallows a federal income tax deduction for public corporations of remuneration in excess of \$1 million paid in any fiscal year to certain specified executive officers or former executive officers. For taxable years beginning before January 1, 2018 (i) these executive officers consisted of a public corporation's chief executive officer and up to three other executive officers (other than the chief financial officer) whose compensation is required to be disclosed to stockholders under the Exchange Act because they are our most highly-compensated executive officers and (ii) qualifying "performance-based compensation" was not subject to this deduction limit if specified requirements are met.

Pursuant to the Tax Cuts and Jobs Act of 2017, or the Tax Act, which was signed into law on December 22, 2017, for taxable years beginning after December 31, 2017, the remuneration of a public corporation's chief financial officer is also subject to the deduction limit and anyone who was a named executive officer in any year after 2016 will remain a covered employee for as long as he or she (or his or her beneficiaries) receives compensation from the Company. In addition, subject to certain transition rules (which apply to remuneration provided pursuant to written binding contracts which were in effect on November 2, 2017 and which are not subsequently modified in any material respect), for taxable years beginning after December 31, 2017, the exemption from the deduction limit for "performance-based compensation" is no longer available. Consequently, for fiscal years beginning after December 31, 2017, all remuneration in excess of \$1 million paid to a specified executive will not be deductible.

In designing our executive compensation program and determining the compensation of our executive officers, including our named executive officers, the Compensation Committee considers a variety of factors, including the potential impact of the Section 162(m) deduction limit. However, the Compensation Committee will not necessarily limit executive compensation to that which is or may be deductible under Section 162(m). The deductibility of some types of compensation depends upon the timing of an executive officer's vesting or exercise of previously granted rights. Further, interpretations of and changes in the tax laws, and other factors beyond the Compensation Committee's control also affect the deductibility of compensation. The Compensation Committee will consider various alternatives to preserving the deductibility of compensation payments and benefits to the extent consistent with its compensation goals.

To maintain flexibility to compensate our executive officers in a manner designed to promote our short-term and long-term company goals, the Compensation Committee has not adopted a policy that all compensation must be deductible. The Compensation Committee believes that our stockholders' interests are best served if its discretion and flexibility in awarding compensation is not restricted, even though some compensation awards may result in non-deductible compensation expense. From time to time, the Compensation Committee may approve compensation for our named executive officers that does not comply with an exemption from the deduction limit when it believes that such compensation is consistent with the goals of our executive compensation program and is in the best interests of the Company and our stockholders.

### ***Taxation of "Parachute" Payments***

Sections 280G and 4999 of the Code provide that executive officers and directors who hold significant equity interests and certain other service providers may be subject to significant additional taxes if they receive payments or benefits in connection with a change in control of the Company that exceeds certain prescribed limits, and that the Company (or a successor) may forfeit a deduction on the amounts subject to this additional tax. We have not agreed to provide any executive officer, including any named executive officers, with a "gross-up" or other reimbursement payment for any tax liability that the executive officer might owe as a result of the application of Sections 280G or 4999 of the Code.

### ***Section 409A of the Internal Revenue Code***

Section 409A of the Code imposes additional significant taxes in the event that an executive officer, director or service provider receives "deferred compensation" that does not satisfy the requirements of Section 409A of the Code. Although we do not maintain a traditional nonqualified deferred compensation plan, Section 409A of the Code may apply to certain severance arrangements, bonus arrangements and equity awards. We endeavor to structure all our severance arrangements, bonus arrangements and equity awards in a manner to either avoid the application of Section 409A or, to the extent doing so is not possible, to comply with the applicable requirements of Section 409A of the Code.

### ***Accounting for Stock-Based Compensation***

We follow FASB ASC 718 for our stock-based compensation awards. FASB ASC Topic 718 requires us to measure the compensation expense for all share-based payment awards made to our employees and non-employee members of our Board of Directors, including options to purchase shares of our common stock and other stock awards, based on the grant date “fair value” of these awards. This calculation is performed for accounting purposes and reported in the executive compensation tables required by the federal securities laws, even though the recipient of the awards may never realize any value from their awards.

### **Stock Option Granting Practices**

Currently, all of our full-time employees, including our named executive officers, are eligible to participate in our 2013 Stock Option and Incentive Plan, or the 2013 Plan. All new full-time employees are granted stock options and restricted stock units when they start employment and all continuing employees are eligible for stock option and restricted stock unit awards on an annual basis based on performance and upon promotions to positions of greater responsibility. Our Compensation Committee has delegated to Mr. Leschly, our Chief Executive Officer, the authority to make equity awards under our 2013 Plan to new hires (other than to executive officers), in connection with promotions and with our annual incentive program (other than to executive officers) and in connection with certain performance-based restricted stock units (other than to executive officers). The number of shares underlying stock options and the number of restricted stock units he may grant to any one individual must be within the range specifically set by our Compensation Committee for these awards, and the aggregate number of shares underlying stock options and the number of restricted stock units that Mr. Leschly may grant within a period must be within specified limits set by our Compensation Committee for these awards. The exercise price of stock options must be equal to the closing price of our common stock on the NASDAQ Global Market on the date of grant. With respect to stock option awards and restricted stock units to new hires other than executive officers, Mr. Leschly approves the awards in connection with such hires and provides that the awards are to be granted to the new hires on the first business day of the calendar month following the date of such new hires’ first date of regular employment. With respect to stock option and restricted stock unit awards made in connection with promotions other than of executive officers, Mr. Leschly approves the awards in connection with such promotions and provides that the awards are to be granted on the first business day of the calendar month following the date of such promotions. Mr. Leschly is required to maintain a list of stock options and restricted stock units granted pursuant to such delegated authority and periodically report to our Compensation Committee regarding such awards.

### **Compensation Risk Assessment**

We believe that our executive compensation program does not encourage excessive or unnecessary risk taking. As described more fully above, we structure our pay to consist of both fixed and variable compensation, particularly in connection with our pay-for-performance compensation philosophy. We believe this structure motivates our executives to produce superior short- and long-term results that are in the best interests of our Company and our stockholders in order to attain our ultimate objective of increasing stockholder value, and we have established, and our Compensation Committee endorses, several controls to address and mitigate compensation related risk. These include stock ownership guidelines for our senior executive officers and our directors, a clawback policy that permits recovery of incentive compensation from our executive officers in the event that cash and equity incentive award amounts are based on financial results that are subsequently restated, and anti-hedging and anti-pledging policies. As a result, we do not believe that our compensation programs are reasonably likely to have a material adverse effect on us.

### **Report of the Compensation Committee on Executive Compensation**

Our Compensation Committee has reviewed and discussed the “Compensation Discussion and Analysis” required by Item 402(b) of Regulation S-K with management. Based upon such review and discussions, our Compensation Committee recommended to our Board of Directors that such section be included in this proxy statement and incorporated by reference in our Annual Report on Form 10-K for the year ended December 31, 2019, which was filed with the SEC on February 18, 2020.

By the Compensation Committee of the Board of Directors of bluebird bio, Inc.

Daniel S. Lynch, Chairperson  
Wendy L. Dixon, Ph.D.  
David Schenkein, M.D.

## Executive Compensation

### Summary Compensation Table

The following table sets forth the total compensation awarded to, earned by and paid during the fiscal years ended December 31, 2019, December 31, 2018 and December 31, 2017 for each of our named executive officers.

| Name and Principal Position              | Year | Salary (\$) | Bonus (\$) | Option awards (\$)(1) | Stock awards (\$)(1) | Non-equity incentive plan compensation (\$) | All other compensation (\$) | Total (\$) |
|--|------|-------------|------------|-----------------------|----------------------|---|-----------------------------|------------|
| Nick Leschly                             | 2019 | 660,000     | —          | 8,698,341             | 3,365,750            | 418,275 (2)                                 | 11,200 (3)                  | 13,153,566 |
| <i>Chief Executive Officer</i>           | 2018 | 610,000     | —          | 16,719,582            | 6,157,500            | 465,888 (4)                                 | 9,250 (3)                   | 23,962,220 |
|  | 2017 | 560,000     | —          | 5,683,090             | 2,079,000            | 431,200 (5)                                 | 9,000 (3)                   | 8,762,290  |
| William D. Baird, III                    | 2019 | 398,077 (7) | —          | 6,093,675             | 2,349,900            | 178,200 (7)                                 | 180,072 (6)                 | 9,199,924  |
| <i>Chief Financial Officer</i>           | 2018 | —           | —          | —                     | —                    | —   | —                           | —          |
|  | 2017 | —           | —          | —                     | —                    | —   | —                           | —          |
| Jeffrey T. Walsh                         | 2019 | 470,000     | —          | 2,935,690             | 1,136,008            | 206,213 (8)                                 | 510,246 (9)                 | 5,258,157  |
| <i>Former Chief Strategy Officer</i>     | 2018 | 450,000     | —          | 6,269,843             | 2,309,063            | 234,900 (4)                                 | 12,250 (3)                  | 9,276,056  |
|  | 2017 | 425,000     | —          | 3,012,038             | 1,103,760            | 250,600 (5)                                 | 12,000 (3)                  | 4,803,398  |
| David Davidson, M.D.                     | 2019 | 486,000     | —          | 3,261,878             | 1,262,156            | 207,800 (2)                                 | 11,200 (3)                  | 5,229,034  |
| <i>Chief Medical Officer</i>             | 2018 | 442,500     | —          | 6,269,843             | 2,309,063            | 237,000 (4)                                 | 12,250 (3)                  | 9,270,656  |
|  | 2017 | 410,000     | —          | 1,761,758             | 642,600              | 223,100 (5)                                 | 12,000 (3)                  | 3,049,458  |
| Philip Gregory, D. Phil.                 | 2019 | 455,000     | —          | 2,348,552             | 908,753              | 194,600 (2)                                 | 11,200 (3)                  | 3,918,105  |
| <i>Chief Scientific Officer</i>          | 2018 | 425,000     | —          | 4,737,215             | 3,284,000            | 223,800 (4)                                 | 9,250 (3)                   | 8,679,265  |
|  | 2017 | 405,000     | —          | 1,761,758             | 642,600              | 212,300 (5)                                 | 9,000 (3)                   | 3,030,658  |
| Jason F. Cole, Esq.                      | 2019 | 425,000     | —          | 2,174,585             | 841,438              | 183,600 (2)                                 | 11,200 (3)                  | 3,635,823  |
| <i>Chief Operating and Legal Officer</i> | 2018 | 390,000     | —          | 3,483,246             | 1,282,813            | 207,100 (4)                                 | 9,250 (3)                   | 5,372,409  |
|  | 2017 | 365,000     | —          | 1,472,437             | 536,760              | 195,700 (5)                                 | 9,000 (3)                   | 2,578,897  |

- (1) The amounts reported in the “Option awards” and “Stock awards” columns above represent the aggregate grant date fair value of the stock options and restricted stock units granted to such named executive officers during 2017, 2018 and 2019 as computed in accordance with FASB ASC Topic 718, not including any estimates of forfeitures related to service-based vesting conditions. See note 14 of “Notes to Consolidated Financial Statements” in our Annual Report on Form 10-K filed with the SEC on February 18, 2020 for a discussion of assumptions made by the Company in determining the aggregate grant date fair value of our stock option and restricted stock unit awards. Note that the amounts reported in these columns reflect the accounting cost for these stock options and restricted stock units, and do not correspond to the actual economic value that may be received by the named executive officers from the stock options and restricted stock units.
- (2) Amounts represent cash incentive payment under our annual cash incentive program earned in 2019, and paid during 2020, based on achievement of Company and/or individual performance goals (if applicable).

- (3) Amounts represent the employer matching contribution to the executive's 401(k) plan contributions during the relevant year.
- (4) Amounts represent cash incentive payment under our annual cash incentive program earned in 2018, and paid during 2019, based on achievement of Company and/or individual performance goals (if applicable).
- (5) Amounts represent cash payment under our annual cash incentive program earned in 2017, and paid during 2018, based on achievement of performance goals.
- (6) Amounts represent the employer matching contributions to Mr. Baird's 401(k) plan contributions during the year as well as \$75,456 of relocation expenses and a related tax gross-up of \$89,656 paid pursuant to the terms of his employment agreement.
- (7) Mr. Baird's employment commenced on February 11, 2019. His annual base salary for 2019 was \$450,000. The amounts reported in the "Salary" column and the "Non-equity incentive plan compensation" column for 2019 are prorated to reflect his start date.
- (8) Amount represents the cash incentive payment paid to Mr. Walsh under the terms of his separation agreement earned in 2019, and paid during 2020, based on achievement of Company and individual performance goals.
- (9) Amounts represent employer matching contributions to Mr. Walsh's 401(k) plan contributions during the year as well as \$499,046 of severance payments and benefits earned in 2019, pursuant to the terms of his separation agreement.

### Grants of Plan-Based Awards

The following table shows information regarding grants of plan-based awards to the Company's named executive officers during the fiscal year ended December 31, 2019.

| Name                     | Grant date | Estimated future payouts under non-equity incentive plan awards: Target (\$)(1) | All other stock awards: Number of shares of stock or units (#) | All other option awards: Number of securities underlying options (#) | Exercise or base price of stock and option awards (\$/share)(2) | Grant date fair value of stock and option awards (\$)(3) |
|--------------------------|------------|---|--|--|---|--|
| Nick Leschly             |            | 429,000   |  |  |   |  |
|                          | 2/1/2019   | —   |  | 100,000 (4)  | 134.63  | 8,698,341  |
|                          | 2/1/2019   | —   | 25,000 (5)   |  |   | 3,365,750  |
| William D. Baird, III    |            | 185,625 (8)   |  |  |   |  |
|                          | 3/1/2019   |   |  | 60,000 (6)   | 156.66  | 6,093,675  |
|                          | 3/1/2019   |   | 15,000 (7)   |  |   | 2,349,900  |
| Jeffrey T. Walsh         |            | 211,500   |  |  |   |  |
|                          | 2/1/2019   | —   |  | 33,750 (4)   | 134.63  | 2,935,690  |
|                          | 2/1/2019   | —   | 8,438 (5)  |  |   | 1,136,008  |
| David Davidson, M.D.     |            | 218,700   |  |  |   |  |
|                          | 2/1/2019   | —   |  | 37,500 (4)   | 134.63  | 3,261,878  |
|                          | 2/1/2019   | —   | 9,375 (5)  |  |   | 1,262,156  |
| Philip Gregory, D. Phil. |            | 204,750   |  |  |   |  |
|                          | 2/1/2019   | —   |  | 27,000 (4)   | 134.63  | 2,348,552  |
|                          | 2/1/2019   | —   | 6,750 (5)  |  |   | 908,753  |
| Jason F. Cole, Esq.      |            | 191,250   |  |  |   |  |
|                          | 2/1/2019   | —   |  | 25,000 (4)   | 134.63  | 2,174,585  |
|                          | 2/1/2019   | —   | 6,250 (5)  |  |   | 841,438  |

- (1) Represents the target amount of each executive's cash incentive payments under our 2019 annual cash incentive program as established by the Compensation Committee and described in "Compensation Discussion and Analysis" above. Actual payments made for 2019 are provided in the "Summary Compensation Table." Cash incentive payments are not subject to threshold or maximum payout levels, and accordingly, those columns have been omitted.
- (2) The exercise price of these stock options is equal to the closing price of our common stock on the NASDAQ Global Select Market on the grant date.
- (3) Amounts represent the grant date fair value of the named executive officer's stock options and restricted stock units, calculated in accordance with FASB ASC Topic 718. The grant date fair value of our stock options is calculated using

a Black-Scholes valuation model. For purposes of these calculations, we have disregarded the estimate of forfeitures related to service-based vesting conditions.

- (4) Options subject to time-based vesting criteria established by the Compensation Committee and described in the footnotes to the Outstanding Equity Awards at December 31, 2019 table below.
- (5) Restricted stock units subject to time-based vesting criteria established by the Compensation Committee and described in the footnotes to the Outstanding Equity Awards at December 31, 2019 table below.
- (6) New hire stock option granted with time-based vesting criteria established by the Compensation Committee and described in the footnotes to the Outstanding Equity Awards at December 31, 2019 table below.
- (7) New hire restricted stock units granted with time-based vesting criteria established by the Compensation Committee and described in the footnotes to the Outstanding Equity Awards at December 31, 2019 table below.
- (8) Mr. Baird's 2019 award opportunity was prorated based on his employment start date in February 2019.

### Outstanding Equity Awards at Fiscal Year End

The following table sets forth information concerning the outstanding equity awards held by each of the named executive officers as of December 31, 2019.

| Name                  | Option Awards (1)   |   |                                  |                        | Stock Awards (1)  |  |  |
|-----------------------|---|---|----------------------------------|------------------------|---|--|--|
|                       | Number of securities underlying unexercised options (#) exercisable | Number of securities underlying unexercised options (#) unexercisable | Option exercise price (\$/share) | 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 (\$) |  |
| Nick Leschly          | 33,649  | —   | 5.50                             | 1/16/2023              | —   | —  |  |
|                       | 15,999  | —   | 5.50                             | 1/16/2023              | —   | —  |  |
|                       | 73,006  | —   | 5.50                             | 1/16/2023              | —   | —  |  |
|                       | 10,197  | —   | 5.50                             | 1/16/2023              | —   | —  |  |
|                       | 70,504  | —   | 5.50                             | 1/16/2023              | —   | —  |  |
|                       | 165,000   | —   | 24.47                            | 3/3/2024               | —   | —  |  |
|                       | 165,000   | — (2)   | 97.40                            | 3/2/2025               | —   | —  |  |
|                       | 88,125  | 1,875 (3)   | 50.51                            | 3/1/2026               | —   | —  |  |
|                       | 80,193  | 29,807 (4)  | 75.60                            | 2/1/2027               | —   | —  |  |
|                       | 57,500  | 62,500 (5)  | 205.25                           | 2/1/2028               | —   | —  |  |
|                       | —   | 100,000 (6)   | 134.63                           | 2/1/2029               | —   | —  |  |
|                       | —   | —   | —                                | —                      | 5,625 (7)   | 493,594  |  |
|                       | —   | —   | —                                | —                      | 13,750 (8)  | 1,206,563  |  |
| —                     | —   | —   | —                                | 22,500 (9)             | 1,974,375   |  |  |
| —                     | —   | —   | —                                | 25,000 (10)            | 2,193,750   |  |  |
| William D. Baird, III | —   | 60,000 (13)   | 156.66                           | 3/1/2029               | —   | —  |  |
| —                     | —   | —   | —                                | —                      | 15,000 (14)   | 1,316,250  |  |
| Jeffrey T. Walsh      | 9,521   | —   | 24.47                            | 3/3/2024               | —   | —  |  |
|                       | 75,000  | — (2)   | 97.40                            | 3/2/2025               | —   | —  |  |
|                       | 54,810  | 1,190 (3)   | 50.51                            | 3/1/2026               | —   | —  |  |
|                       | 42,497  | 15,803 (4)  | 75.60                            | 2/1/2027               | —   | —  |  |
|                       | 21,557  | 23,443 (5)  | 205.25                           | 2/1/2028               | —   | —  |  |
|                       | —   | 33,750 (6)  | 134.63                           | 2/1/2029               | —   | —  |  |
|                       | —   | —   | —                                | —                      | 3,500 (7)   | 307,125  |  |
|                       | —   | —   | —                                | —                      | 7,300 (8)   | 640,575  |  |
|                       | —   | —   | —                                | —                      | 8,438 (9)   | 740,435  |  |
|                       | —   | —   | —                                | —                      | 8,438 (10)  | 740,435  |  |
| David Davidson, M.D.  | 1,239   | —   | 2.09                             | 4/13/2022              | —   | —  |  |
|                       | 3,610   | —   | 24.47                            | 3/3/2024               | —   | —  |  |
|                       | 60,000  | — (2)   | 97.40                            | 3/2/2025               | —   | —  |  |
|                       | 8,825   | 800 (3)   | 50.51                            | 3/1/2026               | —   | —  |  |
|                       | 24,855  | 9,245 (4)   | 75.60                            | 2/1/2027               | —   | —  |  |
|                       | 21,557  | 23,443 (5)  | 205.25                           | 2/1/2028               | —   | —  |  |
|                       | —   | 37,500 (6)  | 134.63                           | 2/1/2029               | —   | —  |  |
|                       | —   | —   | —                                | —                      | 2,400 (7)   | 210,600  |  |
|                       | —   | —   | —                                | —                      | 4,250 (8)   | 372,938  |  |
|                       | —   | —   | —                                | —                      | 8,438 (9)   | 740,435  |  |
| —                     | —   | —   | —                                | 9,375 (10)             | 822,656   |  |  |

| Name                     | Option Awards (1)   |   |                                  |                        | Stock Awards (1)  |  |              |
|--------------------------|---|---|----------------------------------|------------------------|---|--|--------------|
|                          | Number of securities underlying unexercised options (#) exercisable | Number of securities underlying unexercised options (#) unexercisable | Option exercise price (\$/share) | 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 (\$) |              |
| Philip Gregory, D. Phil. | 50,000  | —   | (11)                             | 163.07                 | 7/1/2025  | —  | —            |
|                          | 6,110   | 690   | (3)                              | 50.51                  | 3/1/2026  | —  | —            |
|                          | 15,755  | 9,245   | (4)                              | 75.60                  | 2/1/2027  | —  | —            |
|                          | 16,288  | 17,712  | (5)                              | 205.25                 | 2/1/2028  | —  | —            |
|                          | —   | 27,000  | (6)                              | 134.63                 | 2/1/2029  | —  | —            |
|                          | —   | —   | —                                | —                      | —   | 2,000  | (7) 175,500  |
|                          | —   | —   | —                                | —                      | —   | 4,250  | (8) 372,938  |
|                          | —   | —   | —                                | —                      | —   | 6,375  | (9) 559,406  |
|                          | —   | —   | —                                | —                      | —   | 3,750  | (12) 329,063 |
|                          | —   | —   | —                                | —                      | —   | 6,750  | (10) 592,313 |
| Jason F. Cole, Esq.      | 35,000  | —   | (2)                              | 97.40                  | 3/2/2025  | —  | —            |
|                          | 8,488   | 450   | (3)                              | 50.51                  | 3/1/2026  | —  | —            |
|                          | 20,764  | 7,736   | (4)                              | 75.60                  | 2/1/2027  | —  | —            |
|                          | 11,970  | 13,030  | (5)                              | 205.25                 | 2/1/2028  | —  | —            |
|                          | —   | 25,000  | (6)                              | 134.63                 | 2/1/2029  | —  | —            |
|                          | —   | —   | —                                | —                      | —   | 1,375  | (7) 120,656  |
|                          | —   | —   | —                                | —                      | —   | 3,550  | (8) 311,513  |
|                          | —   | —   | —                                | —                      | —   | 4,688  | (9) 411,372  |
|                          | —   | —   | —                                | —                      | —   | 6,250  | (10) 548,438 |

- (1) All unvested stock options and restricted stock awards were granted under our 2013 Plan. The market value of the restricted stock unit award is based on the closing stock price of \$87.75 per share for our common stock as reported on the NASDAQ Global Select Market on December 31, 2019, the last trading day in the fiscal year ended December 31, 2019.
- (2) Represents options to purchase shares of our common stock granted on March 2, 2015. The shares underlying these options vested as follows: 25% vested on January 1, 2016, with the remainder of the shares vesting in equal monthly installments over the following three years through January 1, 2019.
- (3) Represents options to purchase shares of our common stock granted on March 1, 2016. The shares underlying these options vested as follows: 25% vested on January 4, 2017, with the remainder of the shares vesting in equal monthly installments over the following three years through January 4, 2020.
- (4) Represents options to purchase shares of our common stock granted on February 1, 2017. The shares underlying these options vest as follows: 25% vested on January 4, 2018, with the remainder of the shares vesting in equal monthly installments over the following three years through January 4, 2021, subject to continued service with us through each applicable vesting date.
- (5) Represents options to purchase shares of our common stock granted on February 1, 2018. The shares underlying these options vest as follows: 25% vested on January 4, 2019, with the remainder of the shares vesting in equal monthly installments over the following three years through January 4, 2022, subject to continued service with us through each applicable vesting date.
- (6) Represents options to purchase shares of our common stock granted on February 1, 2019. The shares underlying these options vest as follows: 25% vested on January 4, 2020, with the remainder of the shares vesting in equal monthly installments over the following three years through January 4, 2023, subject to continued service with us through each applicable vesting date.
- (7) Restricted stock unit award vested in four equal annual installments through January 4, 2020.
- (8) Restricted stock unit award vests in four equal annual installments through January 4, 2021, subject to continued service with us through each applicable vesting date.
- (9) Restricted stock unit award vests in four equal annual installments through January 4, 2022, subject to continued service with us through each applicable vesting date.
- (10) Restricted stock unit award vests in four equal annual installments through January 4, 2023, subject to continued service with us through each applicable vesting date.
- (11) Represents options to purchase shares of our common stock granted on July 1, 2015. The shares underlying these options vest as follows: 25% vested on June 15, 2016, with the remainder of the shares vesting in equal monthly installments over the following three years through June 15, 2019.
- (12) Restricted stock unit award vested in two equal annual installments through January 4, 2020.

- (13) Represents options to purchase shares of our common stock granted on March 1, 2019. The shares underlying these options vest as follows: 25% vested on February 11, 2020, with the remainder of the shares vesting in equal monthly installments over the following three years through February 11, 2023, subject to continued service with us through each applicable vesting date
- (14) Restricted stock unit award vests in four equal annual installments through February 11, 2023, subject to continued service with us through each applicable vesting date.

### Option Exercises and Stock Vested

The following table sets forth, for each of the named executive officers, information with respect to the exercise of stock options and the vesting of restricted stock unit awards during the year ended December 31, 2019.

| Name                     | Option Awards                             |                                    | Stock Awards                             |                                   |
|--------------------------|---|------------------------------------|--|-----------------------------------|
|                          | Number of shares acquired on exercise (#) | Value realized on exercise (\$)(1) | Number of shares acquired on vesting (#) | Value realized on vesting (\$)(2) |
| Nick Leschly             | —   | —                                  | 20,000                                   | 2,130,600                         |
| William D. Baird, III    | —   | —                                  | —  | —                                 |
| Jeffrey T. Walsh         | 11,000                                    | 1,186,936                          | 9,962                                    | 1,061,252                         |
| David Davidson, M.D.     | 58,116                                    | 5,755,149                          | 7,337                                    | 781,611                           |
| Philip Gregory, D. Phil. | 13,500                                    | 890,923                            | 10,000                                   | 1,065,300                         |
| Jason F. Cole, Esq.      | 6,810                                     | 730,428                            | 4,712                                    | 501,969                           |

- (1) Value realized on exercise of stock option awards does not represent proceeds from any sale of any common stock acquired upon exercise, but is determined by multiplying the number of shares acquired upon exercise by the difference between the per share exercise price of the option and the closing price of a share of our common stock on the NASDAQ Global Select Market at each time of exercise.
- (2) The value realized on vesting is based on the closing market price per share of our common stock on the NASDAQ Global Select Market on the vesting date, multiplied by the number of restricted stock units that vested.

### Employment Arrangements with our Named Executive Officers

**Nick Leschly.** We have entered into an amended and restated employment agreement, effective as of the closing of our initial public offering on June 24, 2013, with Mr. Leschly for the position of President and Chief Executive Officer. Mr. Leschly currently receives an annual base salary of \$725,000, which is subject to adjustment at the discretion of the Compensation Committee. Mr. Leschly is also eligible for an annual cash incentive award targeted at 65% of his annual base salary. Mr. Leschly is eligible to participate in our employee benefit plans, subject to the terms of those plans.

**William D. Baird, III.** We have entered into an employment agreement, effective as of December 18, 2018, with Mr. Baird for the position of Chief Financial Officer. Mr. Baird currently receives an annual base salary of \$474,000, which is subject to adjustment at the discretion of the Compensation Committee. Mr. Baird is also eligible for an annual cash incentive award targeted at 45% of his annual base salary, payable at the discretion of the Compensation Committee. Mr. Baird is eligible to participate in our employee benefit plans, subject to the terms of those plans. In addition, pursuant to the terms of the employment agreement, prior to Mr. Baird's permanent relocation to the Cambridge, Massachusetts area for up to a period of three years, we have agreed to reimburse Mr. Baird for the cost of temporary living arrangements reasonably acceptable to us, grossed up for Mr. Baird's anticipated income tax liability.

**David Davidson, M.D.** We have entered into an amended and restated employment agreement, effective as of the closing of our initial public offering on June 24, 2013, with Dr. Davidson for the position of Chief Medical Officer. Dr. Davidson currently receives an annual base salary of \$512,500, which is subject to adjustment at the discretion of the Compensation Committee. Dr. Davidson is also eligible for an annual cash incentive award targeted at 45% of his annual base salary, payable at the discretion of the Compensation Committee. Dr. Davidson is eligible to participate in our employee benefit plans, subject to the terms of those plans.

**Philip Gregory, D. Phil.** We have entered into an employment agreement with Dr. Gregory, effective as of May 30, 2015, and amended on November 3, 2016. Dr. Gregory currently serves as our Chief Scientific Officer and receives an annual base salary of \$479,500, which is subject to adjustment at the discretion of the Compensation Committee. Dr. Gregory is also eligible for an annual cash incentive award targeted at 45% of his annual base salary, payable at the discretion of the Compensation Committee. Dr. Gregory is eligible to participate in our employee benefit plans, subject to the terms of those plans.



**Jason F. Cole, Esq.** We have entered into an employment agreement with Mr. Cole, effective as of February 3, 2014, and amended on March 7, 2016 and November 3, 2016. Mr. Cole currently serves as our Chief Operating and Legal Officer and receives an annual base salary of \$456,000, which is subject to adjustment at the discretion of the Compensation Committee. Mr. Cole is also eligible for an annual cash incentive award targeted at 45% of his annual base salary, payable at the discretion of the Compensation Committee. Mr. Cole is eligible to participate in our employee benefit plans, subject to the terms of those plans.

These employment agreements also contain provisions that provide for certain payments and benefits in the event of an involuntary termination of employment. In addition, the named executive officers may be entitled to accelerated vesting of their outstanding and unvested awards in certain circumstances. The information below describes certain compensation that may become due as a result of certain events. These payments and benefits are in addition to benefits available generally to salaried employees, including an ability to participate in our Section 401(k) plan, and our employee stock purchase plan, accrued benefits under our health and welfare plans and arrangements and vacation pay or other accrued benefits under our medical and dental insurance plans, that are not generally described. Outstanding equity awards for the named executive officers as of December 31, 2019 are set forth under “Outstanding equity awards at December 31, 2019” above.

#### ***Involuntary termination of employment***

Pursuant to their employment agreements, each named executive officer is eligible to receive certain payments and benefits in the event his employment is terminated by us without “cause” (as defined in the employment agreements) or in the event he terminates his employment with “good reason” (as defined in the employment agreements). Upon the timely execution of a severance agreement, including a general release of claims, each named executive officer is eligible to receive the following payments and benefits:

- 12 months of base salary continuation; and
- if he elects to continue his or her group healthcare benefits, to the extent authorized by and consistent with COBRA, we will pay the named executive officer a monthly cash payment equal to the monthly employer contribution we would have made to provide him health insurance if he had remained employed by us until the earlier of (1) 12 months following the date of termination, or (2) the end of the named executive officer’s COBRA health continuation period.

#### ***Sale event***

In addition, in the event that any of our current named executive officers terminates his employment with us for good reason or his employment with us is terminated by us without cause, in either case within 12 months following a “sale event” (as defined in the 2013 Plan), he will be entitled to receive the following payments and benefits (in lieu of the payments and benefits described above) upon the timely execution of a severance agreement, including a general release of claims:

- a lump sum cash payment equal to one times (or one and a half times in the case of Mr. Leschly) the sum of (1) the named executive officer’s then-current base salary (or base salary in effect immediately prior to the sale event, if higher) and (2) the named executive officer’s target annual cash incentive compensation; and
- if he elects to continue his group healthcare benefits, to the extent authorized by and consistent with COBRA, we will pay the named executive officer a monthly cash payment equal to the monthly employer contribution we would have made to provide him or her health insurance if he had remained employed by us until the earlier of (1) 12 months (or 18 months in the case of Mr. Leschly) following the date of termination or (2) the end of the named executive officer’s COBRA health continuation period; and
- all stock options and other stock-based awards granted to the named executive officer after the date of his employment agreement will become fully exercisable and non-forfeitable as of the date of the named executive officer’s termination.

#### ***Separation Agreement with Mr. Walsh***

On October 22, 2019 we entered into a separation agreement with Mr. Walsh, pursuant to which his employment with us ended on January 6, 2020. The separation agreement supersedes the severance provisions of his employment agreement which was effective as of June 24, 2013, and provides for Mr. Walsh to continue to receive his base salary for a period of twelve months following the termination of his employment and remained eligible to receive a bonus under the 2019 annual cash incentive program. In addition, following his departure, Mr. Walsh is engaged as a consultant pursuant to a consulting agreement, pursuant to which he agreed to provide advisory and consulting services to bluebird as reasonably requested by

bluebird. If he elects to continue his group healthcare and dental insurance benefits, to the extent authorized by and consistent with COBRA, bluebird will pay the monthly employer contribution until (A) the later of January 31, 2021, or the termination date of the consulting agreement, or (B) if earlier, the date Mr. Walsh becomes eligible for insurance through another employer or otherwise becomes eligible for insurance through another employer or otherwise becomes ineligible for COBRA. Following his separation from bluebird, Mr. Walsh's outstanding equity awards will continue to vest until the termination of his consulting agreement.

### Estimated Payment and Benefits Upon Termination or Change of Control

The amount of compensation and benefits payable to each named executive officer who was employed on December 31, 2019 under our current employment agreements in various termination and change in control situations has been estimated in the tables below. The value of the equity vesting acceleration was calculated for each of the tables below based on the assumption that the change in control and the named executive officer's employment termination occurred on December 31, 2019, the last business day of the fiscal year ended December 31, 2019. The per share closing price of the Company's stock on the NASDAQ Global Select Market as of December 31, 2019, the last trading day of 2019, was \$87.75, which was used as the value of the Company's stock in the change in control. The value of the option vesting acceleration was calculated by multiplying the number of unvested option shares subject to vesting acceleration as of December 31, 2019, by the difference between the per share closing price of the Company's stock as of December 31, 2019, and the per share exercise price for such unvested option shares. The value of restricted stock unit vesting acceleration was calculated by multiplying the number of unvested restricted stock units subject to vesting acceleration as of December 31, 2019, by the per share closing price of the Company's stock as of December 31, 2019.

**Nick Leschly.** The following table describes the potential payments and benefits upon employment termination for Mr. Leschly, as if his employment terminated as of December 31, 2019, the last business day of the fiscal year.

| Executive Benefits and Payment upon Termination   | Voluntary Resignation not For Good Reason (\$) | Voluntary Resignation For Good Reason Not in Connection with a Sale Event (\$) | Termination by Company without Cause Not in Connection with a Sale Event (\$) | Termination By Company for Cause (\$) | Termination by Company without Cause or Voluntary Resignation for Good Reason within 12 Months Following a Sale Event (\$) |
|---|--|--|---|---------------------------------------|--|
| <b>Compensation:</b>  |  |  |   |                                       |  |
| Base salary   | —  | 660,000 (1)  | 660,000 (1)   | —                                     | 990,000 (2)  |
| Cash incentive compensation   | —  | —  | —   | —                                     | 643,500 (3)  |
| Acceleration of unvested and outstanding stock options and restricted stock unit awards | —  | —  | —   | —                                     | 6,300,261 (4)  |
| <b>Benefits and Perquisites:</b>  |  |  |   |                                       |  |
| Health care continuation  | —  | 22,385 (5)   | 22,385 (5)  | —                                     | 33,577 (6)   |
| <b>Total</b>  | <b>—</b>                                       | <b>682,385</b>   | <b>682,385</b>  | <b>—</b>                              | <b>7,967,338</b>   |

- (1) Twelve months of 2019 base salary continuation.
- (2) One and a half times base salary in effect prior to the termination, payable in a lump sum.
- (3) One and a half times Mr. Leschly's target annual cash incentive compensation bonus for 2019, payable in a lump sum.
- (4) Value attributable to the acceleration of 100% of Mr. Leschly's (i) then unvested and outstanding options, determined by multiplying the number of shares underlying such options by the difference between the per share exercise price of the options and the per share closing price of our common stock on the NASDAQ Global Select Market on December 31, 2019, and (ii) then unvested restricted stock units, determined by multiplying the number of restricted stock units accelerated by the closing price of our common stock on the NASDAQ Global Select Market on December 31, 2019.
- (5) Payment of the COBRA health and dental insurance premiums for Mr. Leschly and his dependents until the earlier of (a) 12 months following the date of termination, or (b) the end of the named executive officer's COBRA health continuation period.

- (6) Payment of the COBRA health and dental insurance premiums for Mr. Leschly and his dependents until the earlier of (a) 18 months following the date of termination, or (b) the end of the named executive officer's COBRA health continuation period.

**William D. Baird, III.** The following table describes the potential payments and benefits upon employment termination for Mr. Baird, as if his employment terminated as of December 31, 2019, the last business day of the fiscal year.

| Executive Benefits and Payment upon Termination   | Voluntary Resignation not For Good Reason (\$) | Voluntary Resignation For Good Reason Not in Connection with a Sale Event (\$) | Termination by Company without Cause Not in Connection with a Sale Event (\$) | Termination By Company for Cause (\$) | Termination by Company without Cause or Voluntary Resignation for Good Reason within 12 Months Following a Sale Event (\$) |
|---|--|--|---|---------------------------------------|--|
| <b>Compensation:</b>  |  |  |   |                                       |  |
| Base salary   | —  | 450,000  | (1)   | 450,000 (1)                           | — 450,000 (2)  |
| Cash incentive compensation   | —  | —  | —   | —                                     | — 202,500 (3)  |
| Acceleration of unvested and outstanding stock options and restricted stock unit awards | —  | —  | —   | —                                     | — 1,316,250 (4)  |
| <b>Benefits and Perquisites:</b>  |  |  |   |                                       |  |
| Health care continuation  | —  | 22,385   | (5)   | 22,385 (5)                            | — 22,385 (5)   |
| <b>Total</b>  | <b>—</b>                                       | <b>472,385</b>   |   | <b>472,385</b>                        | <b>— 1,991,135</b>   |

- (1) Twelve months of 2019 base salary continuation.
- (2) One times base salary in effect prior to the termination, payable in a lump sum.
- (3) Target bonus for 2019, payable in a lump sum.
- (4) Value attributable to the acceleration of 100% of Mr. Baird's (i) then unvested options, determined by multiplying the number of shares accelerated by the difference between the exercise price of the option and the closing price of our common stock on the NASDAQ Global Select Market on December 31, 2019, and (ii) then unvested restricted stock units, determined by multiplying the number of restricted stock units accelerated by the closing price of our common stock on the NASDAQ Global Select Market on December 31, 2019.
- (5) Payment of the COBRA health and dental insurance premiums for Mr. Baird and his dependents until the earlier of (a) 12 months following the date of termination, or (b) the end of the named executive officer's COBRA health continuation period.

**Dr. David Davidson.** The following table describes the potential payments and benefits upon employment termination for Dr. Davidson, as if his employment terminated as of December 31, 2019, the last business day of the fiscal year.

| Executive Benefits and Payment upon Termination   | Voluntary Resignation not For Good Reason (\$) | Voluntary Resignation For Good Reason Not in Connection with a Sale Event (\$) | Termination by Company without Cause Not in Connection with a Sale Event (\$) | Termination By Company for Cause (\$) | Termination by Company without Cause or Voluntary Resignation for Good Reason within 12 Months Following a Sale Event (\$) |
|---|--|--|---|---------------------------------------|--|
| <b>Compensation:</b>  |  |  |   |                                       |  |
| Base salary   | —  | 486,000  | (1)   | 486,000 (1)                           | — 486,000 (2)  |
| Cash incentive compensation   | —  | —  | —   | —                                     | — 218,700 (3)  |
| Acceleration of unvested and outstanding stock options and restricted stock unit awards | —  | —  | —   | —                                     | — 2,288,747 (4)  |
| <b>Benefits and Perquisites:</b>  |  |  |   |                                       |  |
| Health care continuation  | —  | 22,231   | (5)   | 22,231 (5)                            | — 22,231 (5)   |
| <b>Total</b>  | <b>—</b>                                       | <b>508,231</b>   |   | <b>508,231</b>                        | <b>— 3,015,678</b>   |

- (1) Twelve months of 2019 base salary continuation.
- (2) One times base salary in effect prior to the termination, payable in a lump sum.
- (3) Target bonus for 2019, payable in a lump sum.
- (4) Value attributable to the acceleration of 100% of Dr. Davidson's (i) then unvested options, determined by multiplying the number of shares accelerated by the difference between the exercise price of the option and the closing price of our common stock on the NASDAQ Global Select Market on December 31, 2019, and (ii) then unvested restricted stock units, determined by multiplying the number of restricted stock units accelerated by the closing price of our common stock on the NASDAQ Global Select Market on December 31, 2019.
- (5) Payment of the COBRA health and dental insurance premiums for Dr. Davidson and his dependents until the earlier of (a) 12 months following the date of termination, or (b) the end of the named executive officer's COBRA health continuation period.

**Philip Gregory.** The following table describes the potential payments and benefits upon employment termination for Dr. Gregory, as if his employment terminated as of December 31, 2019, the last business day of the fiscal year.

| Executive Benefits and Payment upon Termination   | Voluntary Resignation not For Good Reason (\$) | Voluntary Resignation For Good Reason Not in Connection with a Sale Event (\$) | Termination by Company without Cause Not in Connection with a Sale Event (\$) | Termination By Company for Cause (\$) | Termination by Company without Cause or Voluntary Resignation for Good Reason within 12 Months Following a Sale Event (\$) |   |           |     |
|---|--|--|---|---------------------------------------|--|---|-----------|-----|
| <b>Compensation:</b>  |  |  |   |                                       |  |   |           |     |
| Base salary   | —  | 455,000  | (1)   | 455,000                               | (1)  | — | 455,000   | (2) |
| Cash incentive compensation   | —  | —  |   | —                                     |  | — | 204,750   | (3) |
| Acceleration of unvested and outstanding stock options and restricted stock unit awards | —  | —  |   | —                                     |  | — | 2,167,241 | (4) |
| <b>Benefits and Perquisites:</b>  |  |  |   |                                       |  |   |           |     |
| Health care continuation  | —  | 22,385   | (5)   | 22,385                                | (5)  | — | 22,385    | (5) |
| <b>Total</b>  | —  | 477,385  |   | 477,385                               |  | — | 2,849,376 |     |

- (1) Twelve months of 2019 base salary continuation.
- (2) Twelve months base salary in effect prior to the termination, payable in a lump sum.
- (3) Target bonus for 2019, payable in a lump sum.
- (4) Value attributable to the acceleration of 100% of Dr. Gregory's (i) then unvested options, determined by multiplying the number of shares accelerated by the difference between the exercise price of the option and the closing price of our common stock on the NASDAQ Global Select Market on December 31, 2019, and (ii) then unvested restricted stock units, determined by multiplying the number of restricted stock units accelerated by the closing price of our common stock on the NASDAQ Global Select Market on December 31, 2019.
- (5) Payment of the COBRA health and dental insurance premiums for Dr. Gregory and his dependents until the earlier of (a) 12 months following the date of termination, or (b) the end of the named executive officer's COBRA health continuation period.

**Jason F. Cole, Esq.** The following table describes the potential payments and benefits upon employment termination for Mr. Cole, as if his employment terminated as of December 31, 2019, the last business day of the fiscal year.

| Executive Benefits and Payment upon Termination   | Voluntary Resignation not For Good Reason (\$) | Voluntary Resignation For Good Reason Not in Connection with a Sale Event (\$) | Termination by Company without Cause Not in Connection with a Sale Event (\$) | Termination By Company for Cause (\$) | Termination by Company without Cause or Voluntary Resignation for Good Reason within 12 Months Following a Sale Event (\$) |
|---|--|--|---|---------------------------------------|--|
| <b>Compensation:</b>  |  |  |   |                                       |  |
| Base salary   | —  | 425,000  | (1)   | 425,000 (1)                           | — 425,000 (2)  |
| Cash incentive compensation   | —  | —  | —   | —                                     | — 191,250 (3)  |
| Acceleration of unvested and outstanding stock options and restricted stock unit awards | —  | —  | —   | —                                     | — 1,502,729 (4)  |
| <b>Benefits and Perquisites:</b>  |  |  |   |                                       |  |
| Health care continuation  | —  | 22,385   | (5)   | 22,385 (5)                            | — 22,385 (5)   |
| <b>Total</b>  | <b>—</b>                                       | <b>447,385</b>   |   | <b>447,385</b>                        | <b>— 2,141,364</b>   |

- (1) Twelve months of 2019 base salary continuation.
- (2) Twelve months base salary in effect prior to the termination, payable in a lump sum.
- (3) Target bonus for 2019, payable in a lump sum.
- (4) Value attributable to acceleration of 100% of Mr. Cole’s (i) then unvested options, determined by multiplying the number of shares accelerated by the difference between the exercise price of the option and the closing price of our common stock on the NASDAQ Global Select Market on December 31, 2019, and (ii) then unvested restricted stock units, determined by multiplying the number of restricted stock units accelerated by the closing price of our common stock on the NASDAQ Global Select Market on December 31, 2019.
- (5) Payment of the COBRA health and dental insurance premiums for Mr. Cole and his dependents until the earlier of (a) 12 months following the date of termination, or (b) the end of the named executive officer’s COBRA health continuation period.

### CEO Pay Ratio

Our compensation and benefits philosophy and the overall structure of our compensation and benefit programs are broadly similar across the organization to encourage and reward all employees who contribute to our success. We strive to ensure the pay of every bluebird employee reflects the level of their job impact and responsibilities and is competitive within our peer group. Compensation rates are benchmarked and are generally set to be market-competitive in the country in which the jobs are performed. Our ongoing commitment to pay equity is critical to our success in supporting a diverse workforce with opportunities for all employees to grow, develop, and contribute.

Under rules adopted pursuant to the Dodd-Frank Act, we are required to calculate and disclose the total compensation paid to our median paid employee, as well as the ratio of the total compensation paid to the median employee as compared to the total compensation paid to our Chief Executive Officer (the “CEO Pay Ratio”). The paragraphs that follow describe our methodology and the resulting CEO Pay Ratio.

#### Measurement Date

We identified the median employee using our employee population on October 1, 2019 (including all employees, whether employed on a full-time, part-time, seasonal or temporary basis). The determination date used for 2019 is the same date used to identify the median employee for 2017 and 2018.

#### Consistently Applied Compensation Measure (CACM)

Under the relevant rules, we were required to identify the median employee by use of a “consistently applied compensation measure,” or CACM. We chose a CACM that closely approximates the annual target total direct compensation of

our employees. Specifically, we identified the median employee by looking at annual base pay, annual target cash incentive opportunity, and the grant date fair value for equity awards granted as of October 1, 2019 for all active employees as of that date. The value of our 401(k) plan and health and welfare benefits provided was excluded as all employees, including the Chief Executive Officer, are offered the same benefits. We did not perform adjustments to the compensation paid to part-time employees to calculate what they would have been paid on a full-time basis. In identifying the median employee, we did not exclude workers in non-U.S. countries and did not make any cost-of-living adjustments. The CACM used for 2019 is the same applied to identify the median employee for 2018.

### ***Methodology and Pay Ratio***

After applying our CACM methodology, we identified the median employee. Once the median employee was identified, we calculated the median employee's annual target total direct compensation in accordance with the requirements of the Summary Compensation Table.

Our median employee compensation as calculated using Summary Compensation Table requirements was \$233,104. Our Chief Executive Officer's compensation as reported in the Summary Compensation Table was \$13,153,566. Therefore, our CEO Pay Ratio is approximately 56:1.

This information is being provided for compliance purposes and is a reasonable estimate calculated in a manner consistent with SEC rules, based on our internal records and the methodology described above. The SEC rules for identifying the median compensated employee allow companies to adopt a variety of methodologies, to apply certain exclusions and to make reasonable estimates and assumptions that reflect their employee populations and compensation practices. Accordingly, the pay ratio reported by other companies may not be comparable to the pay ratio reported above, as other companies have different employee populations and compensation practices and may use different methodologies, exclusions, estimates and assumptions in calculating their own pay ratios. Neither the Compensation Committee nor management of the Company used the CEO Pay Ratio measure in making compensation decisions.

### **Director Compensation**

The Compensation Committee of our Board of Directors is responsible for making recommendations to our Board of Directors on appropriate compensation levels and arrangements for our non-employee directors, ensuring they are consistent with our compensation policy and remain competitive with our peer companies. The Compensation Committee reviews our non-employee director compensation on a biennial basis. In making recommendations, the Compensation Committee takes various factors into consideration, including:

- Non-employee directors' responsibilities and the form and amount of compensation paid to directors at our peer companies;
- Ability to retain and attract the most qualified and experienced non-employee directors to oversee the management of our business and operations; and
- Advice of an independent compensation consultant to review our non-employee director compensation program and promote alignment with market practice and stockholder interests.

Our goal is to appropriately compensate non-employee directors for their leadership and expertise while aligning non-employee director interests with those of our stockholders. In line with this goal, our non-employee director compensation policy is underpinned by the same philosophy and principles that govern our executive compensation program. The Compensation Committee generally targeted non-employee director compensation near the 50th percentile of compensation paid non-employee directors with our peer companies.

Our non-employee director compensation program is designed to:

- ✓ Align non-employee director and stockholder interests through grants of non-statutory stock option awards and restricted stock units;
- ✓ Encourage a vested interest in our Company's long-term business performance through stock ownership requirements;
- ✓ Align non-employee director compensation with our peer companies of comparable stage of development, market capitalization and size;
- ✓ Ensure a robust non-employee director compensation governance framework is in place; and
- ✓ Help us attract and retain talent for Board of Director service to support the long-term value of the Company.

Based on these considerations, our Board of Directors has adopted a non-employee director compensation policy, which provides for annual cash retainers as set forth below. The non-executive chairman of our Board of Directors and the

chairs of each of our committees is entitled to greater compensation for his or her services than other members of our Board of Directors, which we believe is commensurate with the additional time commitment and additional responsibility required by the position held and is consistent with the compensation practices of our peer group companies. Accordingly, all of our non-employee directors were paid cash compensation as set forth below during the year ended December 31, 2019:

|   | Annual Retainer (\$) |
|---|----------------------|
| <b>Board of Directors:</b>  |                      |
| All non-employee members  | \$ 45,000            |
| Additional retainer for Non-Executive Chairman of the Board                                       | \$ 35,000            |
| <b>Audit Committee:</b>   |                      |
| Additional retainer for Chairman of the Audit Committee   | \$ 18,000            |
| Additional retainer for Non-Chairman members of the Audit Committee                               | \$ 9,000             |
| <b>Compensation Committee:</b>  |                      |
| Additional retainer for Chairman of the Compensation Committee                                    | \$ 15,000            |
| Additional retainer for Non-Chairman members of the Compensation                                  | \$ 7,500             |
| <b>Nominating and Corporate Governance Committee:</b>   |                      |
| Additional retainer for Chairman of the Nominating and Corporate Governance Committee             | \$ 10,000            |
| Additional retainer for Non-Chairman members of the Nominating and Corporate Governance Committee | \$ 5,000             |

Under the non-employee director compensation policy, each person who is initially appointed or elected to the Board of Directors will be eligible for an initial equity grant in the form of an option grant to purchase 4,500 shares of our common stock under our stock option plan on the date he or she first becomes a non-employee director, and 2,250 restricted stock units. The stock option and the restricted stock units vest in equal annual installments over a three-year period. The Board of Directors or Compensation Committee may exercise their discretion to provide for a different number of shares subject to equity awards in the event they determine a variation from the stated amount is warranted. In addition, on the date of the annual meeting of stockholders, each continuing non-employee director who has served on the Board of Directors for a minimum of six months will be eligible to receive an annual equity grant in the form of an option grant to purchase 3,000 shares of our common stock (or 4,200 shares of common stock, in the case of a non-executive Chairman of the Board of Directors), and 1,500 restricted stock units (or 2,100 restricted stock units in the case of a non-executive Chairman of the Board of Directors). These stock options and the restricted stock units will vest in full upon the earlier of the first anniversary of the date of grant or the date of the following annual meeting of stockholders. All of the foregoing options are granted with an exercise price equal to the fair market value of our common stock on the date of grant.

The following table sets forth the compensation we paid to our non-employee directors during the year ended December 31, 2019. Other than as set forth in the table we did not pay any compensation, reimburse any expense of (other than reasonable out-of-pocket expenses to attend meetings of the Board of Directors or any committee), make any equity awards or non-equity awards to, or pay any other compensation to any of the other non-employee members of our Board of Directors in the year ended December 31, 2019. Mr. Leschly, our Chief Executive Officer, receives no compensation for his service as a director, and, consequently, is not included in this table. The compensation received by Mr. Leschly as an employee during the year ended December 31, 2019 is presented in "Summary Compensation Table" above.

| Name(1)                      | Fees earned or paid in cash(\$) | Option awards\$(2) | Stock awards\$(2) | Total(\$) |
|------------------------------|---------------------------------|--------------------|-------------------|-----------|
| John O. Agwunobi, M.D.       | 50,000                          | 300,626            | 122,010           | 472,636   |
| Wendy Dixon, Ph. D.          | 61,500                          | 300,626            | 122,010           | 484,136   |
| Mary Lynne Hedley, Ph.D. (3) | 11,250                          | —                  | —                 | 11,250    |
| Daniel S. Lynch              | 104,000                         | 420,876            | 170,814           | 695,690   |
| James Mandell, M.D. (4)      | 37,500                          | —                  | —                 | 37,500    |
| Douglas A. Melton, Ph.D.     | 50,000                          | 300,626            | 122,010           | 472,636   |
| David Schenkein, M.D.        | 62,500                          | 300,626            | 122,010           | 485,136   |
| William R. Sellers, M.D. (5) | 11,250                          | 529,994            | 210,240           | 751,484   |
| Mark Vachon                  | 63,000                          | 300,626            | 122,010           | 485,636   |



- (1) The aggregate number of shares of our common stock underlying stock options outstanding as of December 31, 2019 for the non-employee members of the Board of Directors were: Dr. Agwunobi: 18,700, Dr. Dixon: 57,361, Mr. Lynch: 66,742, Dr. Melton: 18,700, Dr. Schenkein: 50,361, Dr. Sellers: 8,000, and Mr. Vachon: 19,500. The aggregate number of restricted stock units outstanding as of December 31, 2019 for the non-employee members of the Board of Directors was: Dr. Agwunobi: 1,900, Dr. Dixon: 1,000, Mr. Lynch: 1,400, Dr. Melton: 1,900, Dr. Schenkein: 1,000, Dr. Sellers: 2,000, and Mr. Vachon: 1,000.
- (2) The amounts reported represent the aggregate grant date fair value of the stock options and restricted stock units granted to our non-employee directors during 2019 as computed in accordance with FASB ASC Topic 718, not including any estimates of forfeitures. See note 14 of “Notes to Consolidated Financial Statements” in our Annual Report on Form 10-K filed with the SEC on February 18, 2020 for a discussion of assumptions made by the Company in determining the aggregate grant date fair value of our stock option and restricted stock unit awards for the fiscal year ended December 31, 2019. Note that the amounts reported in this column reflect the accounting cost for these grants, and do not correspond to the actual economic value that may be received by the non-employee directors from the exercise of the options or vesting of the restricted stock units.
- (3) Dr. Hedley resigned from our Board of Directors effective February 26, 2019.
- (4) Dr. Mandell resigned from our Board of Directors effective June 6, 2019.
- (5) Dr. Sellers was appointed to our Board of Directors effective September 25, 2019. The amounts reported for the option awards and restricted stock units granted to Dr. Sellers represent the new director equity grant pursuant to the Company's Non-Executive Director Compensation Policy, which at the time of Dr. Sellers' appointment provided for a grant of a stock option to purchase 8,000 shares of common stock and 2,000 restricted stock units.

## SECURITY OWNERSHIP OF CERTAIN BENEFICIAL OWNERS AND MANAGEMENT AND RELATED STOCKHOLDER MATTERS

The following table sets forth the amount of common stock of bluebird beneficially owned, directly or indirectly, as of April 23, 2020, by (i) each current director of bluebird, (ii) each named executive officer of bluebird, (iii) all directors and executive officers of bluebird as a group, and (iv) each person who is known to bluebird to beneficially own more than five percent (5%) of the outstanding shares of common stock of bluebird, as determined through SEC filings, and the percentage of the common stock outstanding represented by each such amount. All shares of common stock shown in the table reflect sole voting and investment power except as otherwise noted.

Beneficial ownership is determined by the rules of the SEC and includes voting or investment power of the securities. As of April 23, 2020, bluebird had 55,637,466 shares of common stock outstanding. Shares of common stock subject to options to purchase, which are now exercisable or are exercisable, or RSUs vesting within 60 days after April 23, 2020 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. Unless otherwise indicated, the address for each person listed below is c/o bluebird bio, Inc., 60 Binney Street, Cambridge, Massachusetts 02142.

| Name and Address of Beneficial Owner                             | Number of Shares Beneficially Owned | Percentage of Shares Beneficially Owned |
|--|-------------------------------------|---|
| <b>5% Stockholders</b>   |                                     |   |
| Wellington Management Group LLP (1)                              | 7,548,613                           | 13.6%                                   |
| Capital Research Global Investors (2)                            | 6,779,133                           | 12.2%                                   |
| FMR LLC (3)  | 6,121,442                           | 11.0%                                   |
| Capital World Investors (4)                                      | 5,266,990                           | 9.5%                                    |
| The Vanguard Group (5)   | 3,771,360                           | 6.8%                                    |
| Sands Capital Management, LLC (6)                                | 3,176,644                           | 5.7%                                    |
| BlackRock, Inc. (7)  | 2,925,336                           | 5.3%                                    |
| <b>Directors and Named Executive Officers</b>                    |                                     |   |
| Nick Leschly (8)   | 1,010,190                           | 1.8%                                    |
| John O. Agwunobi, M.D. (9)                                       | 23,400                              | *                                       |
| Wendy L. Dixon, Ph.D. (10)                                       | 61,361                              | *                                       |
| Daniel S. Lynch (11)   | 72,342                              | *                                       |
| Douglas A. Melton, Ph.D. (12)                                    | 23,400                              | *                                       |
| David P. Schenkein, M.D. (13)                                    | 54,361                              | *                                       |
| William R. Sellers, M.D. (14)                                    | —                                   | *                                       |
| Mark Vachon (15)   | 21,500                              | *                                       |
| William D. Baird, III (16)                                       | 22,496                              | *                                       |
| Jeffrey T. Walsh (17)  | 250,442                             | *                                       |
| David Davidson, M.D. (18)  | 157,584                             | *                                       |
| Philip Gregory, D. Phil. (19)                                    | 119,581                             | *                                       |
| Jason F. Cole, Esq. (20)   | 107,660                             | *                                       |
| All executive officers and directors as a group (16 persons)(21) | 2,059,240                           | 3.6%                                    |

\* Represents holdings of less than 1%.

(1) Based solely on a Schedule 13G reporting beneficial ownership as of December 31, 2019, filed with the SEC on January 8, 2020, Wellington Management Group LLP, Wellington Group Holdings LLP, and Wellington Investment Advisors Holdings LLP each has shared voting power with respect to 7,149,922 shares and shared dispositive power with respect to 7,548,613 shares, and Wellington Management Company LLP has shared voting power with respect to

- 6,962,942 shares and shared dispositive power with respect to 7,036,185 shares. The address of Wellington Management Company LLP is 280 Congress Street, Boston, Massachusetts 02210.
- (2) Based solely on a Schedule 13G/A reporting beneficial ownership as of December 31, 2019, filed with the SEC on February 14, 2020, Capital Research Global Investors is deemed to be the beneficial owner of 6,779,133 shares, and has sole voting power and sole dispositive power with respect to all of the shares, as a result of Capital Research and Management Company acting as investment adviser to various investment companies registered under Section 8 of the Investment Company Act of 1940. The address of Capital Research Global Investors is 333 South Hope Street, Los Angeles, California 90071.
  - (3) Based solely on a Schedule 13G/A reporting beneficial ownership as of December 31, 2019, filed with the SEC on February 7, 2020, FMR LLC has sole voting power with respect to 792,869 shares and sole dispositive power over 6,121,442 shares and Abigail P. Johnson has sole dispositive power over 6,121,442 shares. The address of FMR LLC is 245 Summer Street, Boston, Massachusetts 02210.
  - (4) Based solely on a Schedule 13G reporting beneficial ownership as of December 31, 2019, filed with the SEC on February 14, 2020, Capital World Investors has sole voting power and sole dispositive power with respect to 5,266,990 shares. The address of Capital World Investors is 333 South Hope Street, Los Angeles, California 90071. Capital World Investors is a division of Capital Research and Management Company.
  - (5) Based solely on a Schedule 13G/A reporting beneficial ownership as of December 31, 2019, filed with the SEC on February 12, 2020, The Vanguard Group has sole voting power with respect to 28,342 shares, shared voting power with respect to 9,912 shares, sole dispositive power with respect to 3,740,378 shares, and shared dispositive power with respect to 30,982 shares. The address of The Vanguard Group is 100 Vanguard Blvd., Malvern, Pennsylvania 19355.
  - (6) Based solely on a Schedule 13G reporting beneficial ownership as of December 31, 2019, filed with the SEC on February 14, 2020, Sands Capital Management has sole voting power with respect to 2,349,666 shares and sole dispositive power over 3,176,644 shares. The address of Sands Capital Management is 1000 Wilson Boulevard, Suite 3000, Arlington, Virginia 22209.
  - (7) Based solely on a Schedule 13G/A reporting beneficial ownership as of December 31, 2019, filed with the SEC on February 5, 2020, BlackRock, Inc. has sole voting power with respect to 2,712,446 shares and sole dispositive power with respect to 2,925,336 shares. The address of BlackRock, Inc. is 55 East 52nd Street, New York, New York 10055.
  - (8) Consists of 184,981 shares of common stock and 825,209 shares of common stock underlying options exercisable and RSUs vesting within 60 days of April 23, 2020. Such shares include 168,699 shares of common stock held in the Nick Leschly 2001 Trust for which Mr. Leschly is co-trustee with his spouse, and with whom he shares voting and dispositive power.
  - (9) Consists of 2,800 shares of common stock and 20,600 shares of common stock underlying options exercisable and RSUs vesting within 60 days of April 23, 2020.
  - (10) Consists of 3,000 shares of common stock and 58,361 shares of common stock underlying options exercisable and RSUs vesting within 60 days of April 23, 2020.
  - (11) Consists of 4,200 shares of common stock and 68,142 shares of common stock underlying options exercisable and RSUs vesting within 60 days of April 23, 2020.
  - (12) Consists of 2,800 shares of common stock and 20,600 shares of common stock underlying options exercisable and RSUs vesting within 60 days of April 23, 2020.
  - (13) Consists of 3,000 shares of common stock and 51,361 shares of common stock underlying options exercisable and RSUs vesting within 60 days of April 23, 2020.
  - (14) Consists of common stock underlying options exercisable and RSUs vesting within 60 days of April 23, 2020.
  - (15) Consists of 1,000 shares of common stock and 20,500 shares of common stock underlying options exercisable and RSUs vesting within 60 days of April 23, 2020.
  - (16) Consists of 2,496 shares of common stock and 20,000 shares of common stock underlying options exercisable and RSUs vesting within 60 days of April 23, 2020.
  - (17) Consists of 21,009 shares of common stock and 229,433 shares of common stock underlying options exercisable and RSUs vesting within 60 days of April 23, 2020.
  - (18) Consists of 13,536 shares of common stock and 144,048 shares of common stock underlying options exercisable and RSUs vesting within 60 days of April 23, 2020.
  - (19) Consists of 13,270 shares of common stock and 106,311 shares of common stock underlying options exercisable and RSUs vesting within 60 days of April 23, 2020.
  - (20) Consists of 15,460 shares of common stock and 92,200 shares of common stock underlying options exercisable and RSUs vesting within 60 days of April 23, 2020.
  - (21) Consists of 284,035 shares of common stock and 1,775,205 shares of common stock underlying options exercisable and RSUs vesting within 60 days of April 23, 2020.

## Equity compensation plan information

The following table presents aggregate summary information as of December 31, 2019, regarding our existing equity compensation plans.

| Plan Category  | Column (A)<br>Number of Securities to be Issued Upon Exercise of Outstanding Options, Restricted Stock Units and Other Rights | Column (B)<br>Weighted Average Exercise Price of Outstanding Options | Column (C)<br>Number of Securities Remaining Available for Future Issuance Under Equity Compensation Plans (Excluding Securities Reflected in Column A) |
|--|---|--|---|
| Equity Compensation Plans Approved by Stockholders (1) | 6,609,074 (2)(3)  | \$ 116.30 (3)(4)   | 2,154,454 (5)(6)  |
| Equity Compensation Plans Not Approved by Stockholders | —   | N/A  | —   |
| Total  | 6,609,074   | \$ 116.30  | 2,154,454   |

- (1) Consists of the 2013 Plan, the 2010 Plan, and the 2013 Employee Stock Purchase Plan.
- (2) Includes 1,127,645 shares subject to RSUs that will entitle the holder to one share of common stock for each unit that vests over the holder's period of continued service with the Company.
- (3) Excludes purchase rights accruing under the 2013 Employee Stock Purchase Plan.
- (4) The calculation does not take into account the 1,127,645 shares of common stock subject to outstanding RSUs. Such shares will be issued at the time the RSUs vest, without any cash consideration payable for those shares.
- (5) Consists of shares available for future issuance under the 2013 Employee Stock Purchase Plan and the 2013 Plan. As of December 31, 2019, 147,700 shares of common stock were available for issuance under the 2013 Employee Stock Purchase Plan, and 2,006,754 shares of common stock were available for issuance under the 2013 Plan.
- (6) Our 2013 Plan contains an "evergreen" provision, which allows for an annual increase in the number of shares of stock available for issuance under the plan on the first day of each year. The annual increase in the number of shares shall be increased by four percent of the number of shares of common stock issued and outstanding on the immediately preceding December 31, or such lesser number of shares determined by our Board of Directors or Compensation Committee.

## CERTAIN RELATIONSHIPS AND RELATED PERSON TRANSACTIONS

### Procedures for related party transactions

We have adopted a related person transaction approval policy that governs the review of related person transactions at bluebird. Pursuant to this policy, if we want to enter into a transaction with a related person or an affiliate of a related person, our Chief Operating and Legal Officer will review the proposed transaction to determine, based on applicable NASDAQ and SEC rules, if such transaction requires pre-approval by the Audit Committee and/or Board of Directors. If pre-approval is required, such matters will be reviewed at the next regular or special Audit Committee and/or Board of Directors meeting. In addition, our Compensation Committee charter requires that compensation arrangements with our executive officers be approved by our Compensation Committee. We may not enter into a related person transaction unless our Chief Operating and Legal Officer has either specifically confirmed in writing that no further reviews are necessary or has confirmed that all requisite corporate reviews have been obtained.

### Transactions with related persons

Based on a review of the transactions and arrangements between us and any related person or related person affiliate, we have determined that we were not a party to any transaction or arrangement in which any related person or related person affiliate has a direct or indirect material interest during the year ended December 31, 2019.

## AUDIT COMMITTEE REPORT (1)

The Audit Committee has reviewed the Company's audited financial statements for the fiscal year ended December 31, 2019 and has discussed these statements with management and representatives of Ernst & Young LLP, the Company's independent registered public accounting firm. Company 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, members of Ernst & Young LLP 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 applicable requirements of the Public Company Accounting Oversight Board, or PCAOB, and the SEC. PCAOB AS No. 1301 requires our independent registered public accounting firm to discuss with the Audit Committee, among other things, the following:

- methods to account for significant unusual transactions;
- the effect of significant accounting policies in controversial or emerging areas for which there is a lack of authoritative guidance or consensus;
- the process used by management in formulating particularly sensitive accounting estimates and the basis for the independent registered public accounting firm's conclusions regarding the reasonableness of those estimates; and
- disagreements with management regarding financial accounting and reporting matters and audit procedures.

Ernst & Young LLP also provided the Audit Committee with the written disclosures and the letter required by Rule 3526 of the PCAOB. PCAOB Rule 3526 requires independent registered public accounting firms annually to 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 members of Ernst & Young LLP their independence from the Company.

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 Company's Annual Report on Form 10-K for the fiscal year ended December 31, 2019, for filing with the SEC.

Respectfully submitted by the  
Audit Committee,  
Mark Vachon, Chairperson  
Wendy L. Dixon, Ph.D.  
Daniel S. Lynch

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(1) This Section is not "soliciting material," is not deemed filed with the SEC and is not to be incorporated by reference in any filing of the Company under the Securities Act of 1933 or the Securities Exchange Act of 1934, whether made before or after the date hereof and irrespective of any general incorporation language in any such filing.

**PROPOSAL 3: RATIFICATION OF THE SELECTION OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM**

The firm of Ernst & Young LLP, independent registered public accounting firm, has been selected by the Audit Committee as auditors for bluebird for the fiscal year ending December 31, 2020. Ernst & Young LLP has served as the independent registered public accounting firm for bluebird since 2012. A representative of Ernst & Young LLP is expected to be present at the Annual Meeting with the opportunity to make a statement if he or she desires and to respond to appropriate questions.

The Company’s organizational documents do not require that the stockholders ratify the selection of Ernst & Young LLP as the Company’s independent registered public accounting firm. bluebird requests such ratification as a matter of good corporate practice. The selection of Ernst & Young LLP as our independent registered public accounting firm will be ratified if the votes cast FOR exceed the votes cast AGAINST the proposal. Brokers, bankers and other nominees have discretionary voting power on this routine matter. Abstentions and broker non-votes will have no effect on the ratification. If the stockholders do not ratify the selection, the Audit Committee will reconsider whether to retain Ernst & Young LLP, but still may retain this firm. Even if the selection is ratified, the Audit Committee, in its discretion, may change the appointment at any time during the year if it determines that such a change would be in the best interests of bluebird and its stockholders.

The Audit Committee, or a designated member thereof, pre-approves each audit and non-audit service rendered by Ernst & Young LLP to bluebird consistent with the bluebird Audit and Non-Audit Services Pre-Approval Policy.

**Independent Registered Public Accounting Firm Fees**

The following is a summary and description of fees incurred by Ernst & Young LLP for the fiscal years ended December 31, 2019 and 2018.

|                        | <u>Fiscal Year<br/>2019</u> | <u>Percentage of 2019<br/>Services Approved<br/>by Audit Committee</u> | <u>Fiscal Year<br/>2018</u> | <u>Percentage of 2018<br/>Services Approved<br/>by Audit Committee</u> |
|------------------------|-----------------------------|--|-----------------------------|--|
| Audit fees (1)         | \$ 1,234,879                | 100%   | \$ 1,207,853                | 100%   |
| Audit-related fees (2) | \$ 139,000                  | 100%   | \$ 92,300                   | 100%   |
| Tax fees (3)           | \$ 574,293                  | 100%   | \$ 463,660                  | 100%   |
| All other fees (4)     | \$ 5,055                    | 100%   | \$ 6,720                    | 100%   |
| <b>Total fees</b>      | <b><u>\$ 1,953,227</u></b>  | <b>100%</b>  | <b><u>\$ 1,770,533</u></b>  | <b>100%</b>  |

- (1) Audit fees in 2019 and 2018 include fees for our annual audit, including internal control attestation, statutory audits, and quarterly review procedures and fees in connection with our public securities offerings in 2019 and 2018, respectively, including registration statements, comfort letters and consents.
- (2) Audit-related fees are related to accounting consultations.
- (3) Tax fees are related to tax return preparation, tax advisory services and international tax compliance.
- (4) All other fees are related to licensing fees paid to Ernst & Young LLP for access to its proprietary accounting research database.

**THE BOARD OF DIRECTORS UNANIMOUSLY RECOMMENDS THAT YOU VOTE**

**FOR**

**THE RATIFICATION OF THE SELECTION OF ERNST & YOUNG LLP AS THE COMPANY’S INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM**

**(PROPOSAL 3 ON YOUR PROXY CARD)**

## STOCKHOLDER COMMUNICATIONS WITH THE BOARD OF DIRECTORS

### Stockholder Recommendations for Director Nominations

Any stockholder wishing to recommend a director candidate for consideration by the Nominating and Corporate Governance Committee should provide the following information to the chair of the Nominating and Corporate Governance Committee, bluebird bio, Inc., 60 Binney Street, Cambridge, Massachusetts 02142: (a) a brief statement outlining the reasons the candidate would be an effective director for bluebird; (b) (i) the name, age, and business and residence addresses of the candidate, (ii) the principal occupation or employment of the candidate for the past five years, as well as information about any other Board of Directors and board committees on which the candidate has served during that period, (iii) the number of shares of bluebird stock, if any, beneficially owned by the candidate and (iv) details of any business or other significant relationship the candidate has ever had with bluebird; and (c) (i) the stockholder's name and record address and the name and address of the beneficial owner of bluebird shares, if any, on whose behalf the proposal is made and (ii) the number of shares of bluebird stock that the stockholder and any such other beneficial owner beneficially own. The Committee may seek further information from or about the stockholder making the recommendation, the candidate, or any such other beneficial owner, including information about all business and other relationships between the candidate and the stockholder and between the candidate and any such other beneficial owner.

### Deadlines for Stockholder Proposals and Director Nominations

Stockholders who wish to present proposals for inclusion in our proxy materials for the 2021 Annual Meeting of Stockholders may do so by following the procedures prescribed in Rule 14a-8 under the Securities Exchange Act of 1934 and in our By-laws. Our Secretary must receive stockholder proposals intended to be included in our proxy statement and form of proxy relating to our 2021 Annual Meeting of Stockholders made under Rule 14a-8 by December 28, 2020. Under our current By-laws, proposals of business and nominations for directors other than those to be included in our proxy materials following the procedures described in Rule 14a-8 may be made by stockholders entitled to vote at the meeting if notice is timely given and if the notice contains the information required by the By-laws. To provide timely notice with respect to our 2021 Annual Meeting of Stockholders, notice must be delivered to our Secretary no earlier than December 22, 2020 (120 calendar days before the date the Company's proxy statement was released to shareholders in connection with the 2020 Annual Meeting) and no later than January 21, 2021 (90 calendar days before the date the Company's proxy statement was released to shareholders in connection with the 2020 Annual Meeting calendar days before the date the Company's proxy statement was released to shareholders in connection with the 2020 Annual Meeting), unless the date of the 2021 Annual Meeting is advanced or delayed by more than thirty (30) days from the anniversary date of the 2020 Annual Meeting, in which event the By-laws provide different notice requirements. Any proposal of business or nomination should be mailed to: Jason F. Cole, Secretary, bluebird bio, Inc., 60 Binney Street, Cambridge, Massachusetts 02142.

### Other Stockholder Communications

Generally, stockholders who have questions or concerns should contact our Investor Relations department at [investor@bluebirdbio.com](mailto:investor@bluebirdbio.com). However, stockholders who wish to communicate directly with our Board of Directors, or any individual director, should direct such communications in writing to bluebird bio, Inc., 60 Binney Street, Cambridge, Massachusetts 02142, Attention: Jason F. Cole, Secretary. All such communications will be opened by our corporate secretary for the sole purpose of determining whether the contents represent a message to our directors. Any contents that are not in the nature of advertising, promotions of a product or service, or patently offensive material will be forwarded promptly to the addressee(s).

## WHERE YOU CAN FIND MORE INFORMATION

bluebird files annual, quarterly and current reports, proxy statements and other information with the SEC. You may read and copy any reports, statements, or other information that bluebird files at the SEC's public reference room at the following location: 100 F Street, N.E., Washington, D.C. 20549.

Please call the SEC at 1-800-732-0330 for further information on the public reference room. The Company's SEC filings are also available to the public from commercial document retrieval services and at the website maintained by the SEC at <http://www.sec.gov>. You may also read and copy any document the Company files with the SEC on our website at <http://www.bluebirdbio.com> under the "Investors & Media" menu.

You should rely on the information contained in this document to vote your shares at the Annual Meeting. bluebird has not authorized anyone to provide you with information that is different from what is contained in this document. This document is dated April 27, 2020. You should not assume that the information contained in this document is accurate as of any date other than that date, and the mailing of this document to stockholders at any time after that date does not create an implication to the contrary. This Proxy Statement does not constitute a solicitation of a proxy in any jurisdiction where, or to or from any person to whom, it is unlawful to make such proxy solicitations in such jurisdiction.

## FORM 10-K

We are subject to the informational requirements of the Exchange Act, and, in accordance therewith, file reports, proxy statements and other information with the SEC. Reports, proxy statements and other information filed by us may be inspected without charge and copies obtained by way of the SEC's website, <http://www.sec.gov>.

We will provide without charge to each person to whom a copy of the proxy statement is delivered, upon the written or oral request of any such persons, additional copies of our Annual Report on Form 10-K for the fiscal year ended December 31, 2019 as filed with the SEC. Requests for such copies should be addressed to:

**bluebird bio, Inc.**  
60 Binney Street  
Cambridge, Massachusetts 02142  
(339) 499-9300  
Attention: Jason F. Cole, Secretary

## IMPORTANT NOTICE REGARDING DELIVERY OF STOCKHOLDER DOCUMENTS

Stockholders of bluebird common stock who share a single address, may receive only one copy of this Proxy Statement, Notice of Internet Availability and our Annual Report on Form 10-K for the fiscal year ended December 31, 2019, unless bluebird has received contrary instructions from any stockholder at that address. This practice, known as "householding," is designed to reduce the Company's printing and postage costs. However, if any stockholder residing at such an address wishes to receive a separate copy of this Proxy Statement, Notice of Internet Availability or our Annual Report on Form 10-K for the fiscal year ended December 31, 2019, he or she may contact bluebird bio, Inc., 60 Binney Street, Cambridge, Massachusetts 02142, (339) 499-9300, Attention: Jason F. Cole, Secretary, and bluebird will deliver those documents to such stockholder promptly upon receiving the request. Any such stockholder may also contact Jason F. Cole, Secretary, using the above contact information if he or she would like to receive separate proxy statements, notice of internet availability and annual reports in the future. If you are receiving multiple copies of our annual reports, notice of internet availability and proxy statements, you may request householding in the future by contacting Jason F. Cole, Secretary.

## OTHER BUSINESS

The Board of Directors knows of no business to be brought before the 2020 Annual Meeting which is not referred to in the accompanying Notice of Annual Meeting. Should any such matters be presented, the persons named in the proxy shall have the authority to take such action in regard to such matters as in their judgment seems advisable. 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 2020 Annual Meeting unless they receive instructions from you with respect to such matter.



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