



May 2, 2022

Dear Stockholder:

You are cordially invited to attend the 2022 Annual Meeting of Stockholders (the "Annual Meeting") of bluebird bio, Inc. The Annual Meeting will be held on June 22, 2022 at 8.30 a.m. EDT at the offices of the Company, at 455 Grand Union Boulevard, Somerville, Massachusetts. As always, we encourage you to vote your shares prior to the Annual Meeting.

Details regarding admission to the Annual 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 two Class III directors for three-year terms, the approval of named executive officer compensation by a non-binding advisory vote, and the ratification of the appointment of Ernst & Young LLP as our independent registered public accounting firm for the fiscal year ending December 31, 2022.

Under Securities and Exchange Commission rules, we are 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. 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 Annual 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 at the Annual Meeting 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 22, 2022. Your continuing interest in bluebird is very much appreciated.

Sincerely,

A handwritten signature in black ink that reads "Andrew Obenshain".

Andrew Obenshain
President & Chief Executive Officer



NOTICE OF 2022 ANNUAL MEETING OF STOCKHOLDERS

Date	June 22, 2022
Time	8:30 a.m. Eastern Time
Place	455 Grand Union Boulevard, Somerville, Massachusetts 02145
Record Date	April 25, 2022. Only stockholders of record at the close of business on the record date are entitled to receive notice of, and to vote at, the Annual Meeting. A complete list of such stockholders will be open to the examination of any stockholder for a period of ten days prior to the Annual Meeting for a purpose germane to the meeting by sending an email to investor@bluebirdbio.com , stating the purpose of the request and providing proof of ownership of Company stock.
Purpose	<ul style="list-style-type: none">• To elect Nick Leschly and Najoh Tita-Reid as Class III members of the Board of Directors, to serve until the Company's 2025 Annual Meeting of Stockholders and until their successors are duly elected and qualified;• To approve, on a non-binding, advisory basis, 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, 2022; and• To transact any other business that may properly come before the meeting or any adjournment thereof.
Meeting Admission	All stockholders as of the record date, or their duly appointed proxies, may attend the Annual 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 Annual Meeting.
Proxy Voting	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 Annual 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.
Corporate Headquarters	60 Binney Street, Cambridge, Massachusetts 02142

By order of the Board of Directors,

Helen Fu
Senior Vice President, General Counsel and Secretary

Cambridge, Massachusetts
May 2, 2022

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

**PROXY STATEMENT
FOR THE 2022 ANNUAL MEETING OF STOCKHOLDERS
TO BE HELD ON JUNE 22, 2022
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 May 2, 2022, we will begin mailing a Notice of Internet Availability of Proxy Materials and the proxy materials, including the Notice of 2022 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, 2021 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 (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 May 2, 2022. 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.

Important Notice Regarding the Availability of Proxy Materials for the Annual Meeting to Be Held on June 22, 2022

The Notice of 2022 Annual Meeting of Stockholders, Proxy Statement and our Annual Report on Form 10-K for the fiscal year ended December 31, 2021, are available at investor.bluebirdbio.com.

Who is soliciting my vote?

The Board of Directors of bluebird bio, Inc. is soliciting your vote for the 2022 Annual Meeting of Stockholders (the "Annual Meeting").

When is the record date for the Annual Meeting?

The Board has fixed the record date for the Annual Meeting as of the close of business on April 25, 2022.

How many votes can be cast by all stockholders?

A total of 71,446,898 shares of our common stock were outstanding on April 25, 2022, 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 our tabulator, Broadridge, at: 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 our Board, **FOR** the non-binding advisory resolution approving the compensation of the named executive officers, and **FOR** the ratification of Ernst & Young LLP as our independent registered public accounting firm for the fiscal year ending December 31, 2022 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.** If you are a stockholder of record, you may vote in person at the Annual Meeting.

Whether or not you plan to attend the meeting, we urge you to vote by proxy.

If your shares of common stock are held in street name (held for your account by a broker or other nominee), you will receive instructions on how to vote from your broker or other nominee. You must follow their instructions in order for your shares to be voted. Internet and telephone voting also may be offered to stockholders owning shares through certain banks and brokers. As a beneficial owner, you are invited to attend the Annual Meeting. However, since you are not a stockholder of record, you may not vote your shares in person at the Annual Meeting unless you request and obtain a legal proxy from the organization that holds your shares.

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

Our Board recommends a vote:

Proposal 1: **FOR** election of Nick Leschly and Najoh Tita-Reid as Class III directors (page 5)

Proposal 2: **FOR** the approval, on a non-binding, advisory basis, of the compensation of our named executive officers (page 18)

Proposal 3: **FOR** ratification of the selection of Ernst & Young LLP as our independent registered public accounting firm (page 53)

Who pays the cost for soliciting proxies?

We will pay the cost for the solicitation of proxies by the Board. 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. We 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 to approve named executive officer 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 Annual Meeting and voting in person. If your stock is held in street name, you must contact your broker or nominee for instructions as to how to change your vote.

How is a quorum reached?

The presence, in person or by proxy, of holders of at least a majority of the total number of outstanding shares entitled to vote is necessary to constitute a quorum for the transaction of business at the Annual Meeting. 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. Abstentions and broker non-votes are not counted as votes cast and, therefore, will not affect the outcome of the vote on any matter before the meeting. 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 two Class III director nominees

For the election of the two Class III 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 to be filled by election at the Annual Meeting, this election of directors is non-contested. To elect a director nominee to the Board, 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 outcome of the vote on 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 outcome of the vote on Proposal 1.

Proposal 2 – Non-binding advisory vote on named executive officer compensation

For the non-binding advisory vote on named executive officer 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 outcome of the vote on 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 outcome of the vote on 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 2022 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. Therefore, we do not expect any broker non-votes with respect to this 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.

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, 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 Helen Fu, 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, our Board 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 and Najoh Tita-Reid are the Class III directors whose terms expire at this Annual Meeting. Each of Nick Leschly and Najoh Tita-Reid has been nominated for and has agreed to stand for re-election to the Board to serve as a Class III director of the Company until the 2025 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. In an uncontested election, 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. Our Nominating and Corporate Governance Committee will make a recommendation to the Board on whether to accept or reject the resignation, or whether to take some other action. The Board 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 will be voted for the election of the two director nominees listed below. We have no reason to believe that any director nominee will be unable to serve, or for good cause will not serve, if elected at the Annual Meeting. In the event that one or more director nominees is unexpectedly unable to serve, or for good cause will not serve, proxies may be voted for another person designated as a substitute nominee by the Board, or the Board may reduce its size. 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 has fixed the number of directors at nine as of the date of the Annual Meeting. Due to our tax-free spin-off in November 2021 of our oncology programs and portfolio into a separate independent publicly traded company, 2seventy bio, Inc., Dan Lynch, Ramy Ibrahim, Denice Torres, William Sellers, Sarah Glickman and Marcela Maus resigned as members of our board of directors upon the completion of the Separation (as defined below) and we now have two vacancies. Vacancies on the Board 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 UNANIMOUSLY RECOMMENDS THAT YOU VOTE
FOR
EACH OF THE FOLLOWING DIRECTOR NOMINEES FOR CLASS III DIRECTOR:
NICK LESCHLY
NAJOH TITA-REID
(PROPOSAL 1 ON YOUR PROXY CARD)

CORPORATE GOVERNANCE

Board Composition

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

Class I	Term expiring 2023
Class II	Term expiring 2024
Class III	Current term expiring 2022, if elected, subsequent term expiring 2025

At each Annual Meeting, 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 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 may have the effect of delaying or preventing changes in control or management of our company.

Our directors as of May 2, 2022 are as set forth below.

CLASS III DIRECTOR NOMINEES:

Nick Leschly

Other Current Board Experience:

Synlogic, Inc. (SYBX)

2seventy bio, Inc. (TSVT)

Biotechnology Innovation Organization (BIO) (private)

Previous Board Experience within the Last Five Years:

Proclara Biosciences, Inc. (private)

Professional Highlights:

Since November 2021, Mr. Leschly has served as Chief Kairos Officer of 2seventy bio, Inc. Mr. Leschly previously served as bluebird's President and Chief Executive Officer from October 2010 to November 2021. Formerly a partner of Third Rock Ventures, L.P. since its founding in 2007 until 2010, 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. 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.

Key Qualifications and Expertise:

Mr. Leschly has deep operating and historical experience with our Company gained from serving as our President, Chief Executive Officer and member of the Board. In addition, Mr. Leschly also has significant experience in the venture capital industry and drug research and development.

Najoh Tita-Reid

Other Current Board Experience:

None

Previous Board Experience within the Last Five Years:

None

Professional Highlights:

Since April 2021, Ms. Tita-Reid has served as Global Chief Marketing Officer at Logitech where she leads the transformation of the global marketing function and spearheads a strategic, digital-first, and data-driven consumer and customer omnichannel experience. Prior to this role, Ms. Tita-Reid served as Global Commercial Marketing Head from June 2020 to March 2021 and on the Global Marketing Reinvention team from February 2020 to May 2020 at Logitech. Previously, Ms. Tita-Reid served as Global Chief Marketing Officer and Executive Board Member for Hero-AG, a family-run healthy food company, from August 2017 to January 2020. In this role, she developed the organization's marketing function and brand strategy and built the first global innovation pipeline while overseeing the R&D, innovation, sustainability and quality functions. Prior to Hero-AG, Ms. Tita-Reid previously held leadership positions at Bayer PLC, where she served as Vice President-Country Division Head for Consumer Care in the UK in Ireland from 2014 to 2017 and Merck & Co, Inc where she served in various roles from 2011 to 2014, including General Manager for Western Europe from 2013 to 2014. Earlier in her career, Ms. Tita-Reid spent 19 years at Procter & Gamble where she managed a number of consumer brands in the baby and feminine care categories, spearheaded multi-cultural marketing strategy across 15 billion-dollar brands, and led the multi-brand business unit for Hispanic and African American consumers. During her tenure, Ms. Tita-Reid trained and developed the P&G marketing function on ethnic marketing, and created breakthrough marketing strategies. Ms. Tita-Reid graduated with a Bachelor of Arts from Spelman College and holds an MBA from Fuqua School of Business at Duke University.

Key Qualifications and Expertise:

Ms. Tita-Reid has extensive experience as a multi-faceted executive with global marketing expertise, she has a record of strategic and operational ingenuity and transformation across complex organizations and a breadth of experience across the US and Europe.

CONTINUING DIRECTORS:

John O. Agwunobi, M.D.

Other Current Board Experience:

Herbalife Nutrition Inc. (HLF)

U.S. African Development Foundation (private)

Previous Board Experience within the Last Five Years:

Magellan Health Inc. (MGLN)

Professional Highlights:

Since April 2020, Dr. Agwunobi has served as Chief Executive Officer and Chairman of Herbalife Nutrition Inc. Previously, Dr. Agwunobi served as Chief Health and Nutrition Officer at Herbalife, responsible for training, education, science strategy and product development since 2016. 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.

Key Qualifications and Expertise:

Dr. Agwunobi has significant experience as a senior executive and board member in the health and wellness field. In addition, he has deep expertise in public health programs and governmental agencies relevant to the healthcare industry, from his prior service and experience with the public sector. The insights he has developed from these roles provides our Board with important perspectives on the issues facing our company.

Charlotte Jones-Burton, M.D., M.S.**Other Current Board Experience:**

None

Previous Board Experience within the Last Five Years:

None

Professional Highlights:

Since January 2022, Dr. Jones-Burton has served as Senior Vice President, Product Development and Strategy at Chinook Therapeutics, a clinical-stage biotechnology company discovering, developing and commercializing precision medicines for rare, severe kidney diseases. Immediately prior to her current role at Chinook Therapeutics she was VP, Global Clinical Development Head, Nephrology at Otsuka Pharmaceutical Development & Commercialization, Inc. from September 2019 to December 2021. From October 2016 until September 2019, Dr. Jones-Burton held various positions at Bristol-Myers Squibb Company with increasing responsibilities, most recently as Executive Director, Full Development Team Leader of Cardiovascular, Anti-Thrombosis. Prior to that, Dr. Jones-Burton was with Merck & Co. from 2007 to May 2011. With more than 20 years of experience as a clinical development leader, internal medicine and nephrology physician and academician, Dr. Jones-Burton is dedicated to creating healthier communities through drug development, patient advocacy and people engagement. Dr. Jones-Burton is also active in numerous professional associations and organizations and founded Women of Color in Pharma (WOCIP), a non-profit professional society focused women of color in the pharmaceutical industry. Dr. Jones-Burton earned a medical degree and Master of Science degree in Epidemiology and Preventive Medicine, with a concentration in Clinical Research, from the University of Maryland School of Medicine. Dr. Jones-Burton's postgraduate training included an internal medicine residency and a nephrology fellowship at the University of Maryland Medical Systems.

Key Qualifications and Expertise:

Dr. Jones-Burton has extensive experience as an executive in the pharmaceutical industry in drug development, physician and patient engagement and advocacy. The insights she has developed in her work, together with her involvement in professional service organizations, also provide her with important perspectives on the issues facing our company in the development and potential commercialization of our therapies, as well as matters of diversity.

Elisabeth Leiderman, M.D.**Other Current Board Experience:**

None

Previous Board Experience within the Last Five Years:

None

Professional Highlights:

Since September 2020, Dr. Leiderman has served as Chief Financial Officer and Head of Corporate Development for Decibel Therapeutics, a clinical stage biotechnology company developing novel gene therapeutics for restoration of hearing loss and balance disorders. Before joining Decibel, from January 2020 to August 2020, Dr. Leiderman served as Chief Business Officer for Complexa, Inc., a clinical stage biopharmaceutical company focused on life-threatening fibrosis and inflammatory diseases. Prior to Complexa, Dr. Leiderman was Senior Vice President, Head of Corporate Development at Fortress Biotech from November 2016 to November 2019. Earlier in her career from 2007 to 2016, Dr. Leiderman developed her transaction and capital markets expertise in the healthcare investment banking groups at Nomura, Credit Suisse, Jefferies and UBS. Dr. Leiderman began her career in medical affairs at AstraZeneca, where she analyzed product and industry trends related to the central nervous system. Dr. Leiderman earned an M.D. from the Sackler School of Medicine at Tel Aviv University, an MBA from The Wharton School at the University of Pennsylvania and a B.A. from The University of Pennsylvania.

Key Qualifications and Expertise:

Dr. Leiderman has over 20 years of experience in finance, strategy and business development in the life sciences industry. She is an "audit committee financial expert" with particular experience in matters faced by the audit committee of a life sciences company.

Andrew Obenshain

Other Current Board Experience:

None

Previous Board Experience within the Last Five Years:

None

Professional Highlights:

Since November 2021, Mr. Obenshain has served as bluebird's President and Chief Executive Officer. Mr. Obenshain previously served as bluebird's President, Severe Genetic Diseases from August 2020 to November 2021, and as bluebird's Senior Vice President, Head of Europe from 2016 to August 2020. Prior to that, from September 2015 to September 2016, Mr. Obenshain was the general manager of France and Benelux at Shire Pharmaceuticals, Inc. and from 2007 to 2013, he held roles of increasing responsibility at Genzyme. Mr. Obenshain received his MBA from Northwestern University's Kellogg School of Management, and his B.A. in genetics, cell and developmental biology from Dartmouth College.

Key Qualifications and Expertise:

Mr. Obenshain has deep operating and historical experience with our Company gained from serving as our President, Chief Executive Officer and in other roles. Mr. Obenshain also has significant management experience in the biotechnology and pharmaceutical fields.

Mark Vachon

Other Current Board Experience:

Beacon Mobility (private)

Klöckner Pentaplast Group (private)

Global Nephrology Solutions (private)

Previous Board Experience within the Last Five Years:

Charitable Health and Retirement Trust (private)

Numotion (private)

Professional Highlights:

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 holds a B.S. in Finance from Northeastern University and an M.A. from Boston College.

Key Qualifications and Expertise:

Mr. Vachon's corporate leadership experience and financial expertise make him a valuable contributor to our Board. In addition, Mr. Vachon has extensive experience in executive operating roles and in the healthcare field on a global basis. He is an "audit committee financial expert" with particular experience in matters faced by the audit committee of a life sciences company.

Identifying and Evaluating Director Nominees

Our Board is responsible for selecting its own members. The Board delegates the selection and nomination process to the Nominating and Corporate Governance Committee, with the expectation that other members of the Board, 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. Based on the results of the evaluation process, the Nominating and Corporate Governance Committee recommends candidates for the Board's approval as director nominees for election to the Board. Najoh Tita-Reid, one of our Class III director nominees, was recommended by Andrew Obenshain, our Chief Executive Officer.

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. 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 directors 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 directors, 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.

The expertise and experience, characteristics and committee assignments for each of our directors are summarized in the table below:

	Director Nominees		Continuing Directors				
	Leschly	Tita-Reid	Agwunobi	Jones-Burton	Leiderman	Obenshain	Vachon
Expertise & Experience							
General Management Experience	✓		✓		✓	✓	✓
Financial Experience			✓		✓		✓
Audit Committee Financial Expertise					✓		✓
Business Development, Corporate Development, and Mergers & Acquisitions Experience	✓	✓	✓	✓	✓	✓	✓
Drug Development Experience	✓			✓	✓	✓	
Commercial Experience	✓	✓	✓			✓	
International Business Experience		✓	✓			✓	✓
Public Policy Experience			✓				
Operations Experience	✓	✓	✓		✓	✓	✓
Other Public Company Board Service	✓		✓				
Director Characteristics							
Independence		✓	✓	✓	✓		✓
Term expiring	2022	2022	2024	2025	2024	2024	2023
Age	49	49	57	48	45	48	63
Director Since	2010	2021	2017	2022	2021	2021	2014
Gender	M	F	M	F	F	M	M
Ethnic or Racial Diversity		✓	✓	✓			
Committee Composition							
Audit Committee			✓		Chair		✓
Compensation Committee		✓			✓		Chair
Nominating & Corporate Governance Committee		✓	Chair	✓			

The following Board Diversity Matrix presents our Board diversity statistics in accordance with Nasdaq Rule 5606, as self-disclosed by our directors.

Board Diversity Matrix as of May 2, 2022				
Part I: Gender Identity	Female	Male	Non-Binary	Did Not Disclose Gender
Directors (7 total)	3	4	-	-
Part II: Demographic Background	Female	Male	Non-Binary	Did Not Disclose Gender
African American or Black	2	1	-	-
Alaskan Native or Native American	-	-	-	-
Asian	-	-	-	-
Hispanic or Latinx	-	-	-	-
Native Hawaiian or Pacific Islander	-	-	-	-
White	1	3	-	-
Two or More Races or Ethnicities	-	-	-	-
LGBTQ+			-	
Did Not Disclose Demographic Background			-	

Board Independence

Our Board has determined, upon the recommendation of our Nominating and Corporate Governance Committee, that each of our directors, other than Andrew Obenshain who serves as our President and Chief Executive Officer, and Nick Leschly, who served as our President and Chief Executive Officer from October 2010 to November 2021, 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 rules. At least annually, our Board evaluates 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 makes 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 held nine meetings during the fiscal year ended December 31, 2021. In the fiscal year ended December 31, 2021, each of our directors attended at least 75% of the meetings of the Board and the committees of the Board, in the period for which he or she served.

We encourage our directors to attend the Annual Meeting of Stockholders. Of the eight members of our Board at the time of last year's Annual Meeting, all eight attended the meeting.

Board Committees

Our Board 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 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 in the *Investors & Media—Corporate Governance* section. Our Board establishes additional committees from time to time.

Audit Committee

Our Audit Committee is currently composed of Dr. Agwunobi, Dr. Leiderman and Mr. Vachon, with Dr. Leiderman serving as chair of the committee. Our Board 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, and the applicable listing standards of Nasdaq. Our Board has determined that Dr. Leiderman 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, 2021, the Audit Committee met eight 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. Leiderman, Ms. Tita-Reid and Mr. Vachon, with Mr. Vachon serving as chair of the committee. Our Board 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 a non-employee director, as defined in Rule 16b-3 of the Securities Exchange Act. During the fiscal year ended December 31, 2021, the Compensation Committee met nine times. The Compensation Committee’s responsibilities include:

- 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 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 corporate succession plans for our Chief Executive Officer and other key executives.

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 People & Culture management team. In addition, in 2021, the Compensation Committee engaged Radford to assist in making decisions regarding the amount and types of compensation to provide our executive officers and non-employee directors. For more information, see *Executive Officer and Director Compensation - Compensation Discussion Analysis - Role of Our Independent Compensation Consultant* below. Radford reports directly to the Compensation Committee. The Compensation Committee has considered the adviser independence factors required SEC rules as they relate to Radford and has determined that Radford's work does not raise a conflict of interest. The Compensation Committee may delegate its authority to grant certain equity awards to certain individuals to our Chief Executive Officer and in 2021, delegated such authority to Mr. Obenshain and, prior to Mr. Obenshain's appointment as our Chief Executive Officer in November 2021, Mr. Leschly. For more information, see *Executive Officer and Director Compensation—Compensation Discussion and Analysis—Equity Granting Practices* below.

Nominating and Corporate Governance Committee

Our Nominating and Corporate Governance Committee is composed of Dr. Agwunobi, Ms. Jones-Burton, and Ms. Tita-Reid, with Dr. Agwunobi serving as chair of the committee. Our Board has determined that each member of the Nominating and Corporate Governance Committee is "independent" as defined under the applicable listing standards of Nasdaq. During the fiscal year ended December 31, 2021, the Nominating and Corporate Governance Committee met three times. The Nominating and Corporate Governance Committee's responsibilities include:

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

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.

Non-Management Director Meetings

In addition to the meetings of the committees of the Board described above, in connection with the Board meetings, the non-management directors met five times in executive session during the fiscal year ended December 31, 2021. The Chair of the Board presides at these executive sessions. The Audit Committee and the Board 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 Corporate Governance Guidelines provide that the Board shall fill the Chair of the Board and Chief Executive Officer positions based on the Board's view of what is in the Company's best interest. The Roles of Chair of the Board and Chief Executive Officer are currently separate, with Mr. Vachon serving as Chair and Mr. Obenshain serving as Chief Executive Officer. Our Board believes that separation of the positions of Chair and Chief Executive Officer reinforces the independence of the Board from management, creates an environment that encourages objective oversight of management's performance and enhances the effectiveness of the Board as a whole. The Board retains the flexibility to change its leadership structure from time to time as appropriate based on its view of the best interests of the Company.

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, as a whole and through its committees, has responsibility for the oversight of risk management.

Our Board performs its oversight role by using several different levels of review. Our Chair meets regularly with our Chief Executive Officer and other executive officers to discuss our strategy and material risks. 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 reviews the risks, including any environmental or social governance risks, associated with our business strategies periodically throughout the year as part of its consideration of undertaking any such business strategies.

Each of the committees of our Board also oversees the management of our 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 General Counsel, and our Chief Compliance 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 our 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. Wendy Dixon, Mr. Dan Lynch, Ms. Denise Torres, Dr. Agwunobi, Dr. Leiderman and Ms. Tita-Reid served as members of our Compensation Committee during the year ended December 31, 2021. 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 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

We have 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 and going to the *Investors & Media—Corporate Governance* section or by requesting a copy in writing from Helen Fu, Secretary, at our Somerville, Massachusetts office. We intend to post on our website any amendment to, or waiver under, a provision of the Code of Business Conduct and Ethics that applies to 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 and going to the *Investors & Media—Corporate Governance* section or by requesting a copy from Helen Fu, Secretary, at our Somerville, Massachusetts office.

Our 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 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. Our company participates in charitable activities relevant to our business and linked to our mission, vision and values.

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. In addition, we believe in helping our employees to continue to grow at bluebird through 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.

EXECUTIVE OFFICERS

The following table sets forth information regarding our executive officers as of May 2, 2022:

<u>Name</u>	<u>Age</u>	<u>Position(s)</u>
Executive Officers:		
Andrew Obenshain (1)	48	President, Chief Executive Officer and Director (Principal Executive Officer)
Jason F. Cole, Esq.	49	Chief Strategy and Financial Officer (Principal Financial Officer and Principal Accounting Officer)
Anne-Virginie Eggimann	49	Chief Regulatory Officer
Thomas J. Klima	50	Chief Commercial Officer

(1) Andrew Obenshain is also a director and his biographical information appears on page 9.

Jason F. Cole, Esq. – Mr. Cole has served as our Chief Business Officer since November 2021 and as our Chief Strategy and Financial Officer since March 2022. Previously, Mr. Cole served as our Chief Operating and Legal Officer and Secretary from February 2019 to November 2021. Prior to that role, Mr. Cole served as our Chief Legal Officer and Secretary from March 2016 to February 2019 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.

Anne-Virginie Eggimann, M.Sc. – Ms. Eggimann has served as our Chief Regulatory Officer since May 2021. Ms. Eggimann has led our regulatory team since 2011, holding positions of increasing responsibility as our clinical development programs have matured. Prior to joining bluebird, Ms. Eggimann was an Executive Director at Voisin Consulting, leading projects involving the design and implementation of regulatory strategies for medicinal products, with a specific focus on rare diseases, cancer and advanced therapies. Since May 2021, Ms. Eggimann has served on the Board of Directors of Codiak BioSciences, Inc., a clinical-stage biopharmaceutical company. Ms. Eggimann holds a Master of Science in Environmental Health Sciences from the UCLA School of Public Health, as well as a B.S. in Chemical Engineering from the California Institute of Technology.

Thomas J. Klima – Mr. Klima has served as our Chief Commercial Officer since May 2021. Prior to joining bluebird, Mr. Klima served as Chief Commercial Officer at Gamida Cell Ltd. from January 2019 to December 2020, where he led the strategic vision and commercial growth transforming its R&D organization to a commercially ready company. In 2018, Mr. Klima served as senior vice president of global commercial planning and operations at Atara Biotherapeutics. From 2015 to 2017, Mr. Klima served as senior vice president and chief commercial officer at Navidea Biopharmaceuticals Ltd. (acquired by Cardinal Health). Before that, Mr. Klima served as head of sales and commercial operations at Algeta U.S. (acquired by Bayer Healthcare) from 2012 to 2015. Before Algeta, he held various commercial leadership positions at Dendreon from 2009 to 2012. Mr. Klima began his pharmaceutical career at Eli Lilly where he held several positions of increasing responsibility from 2000 to 2009. Mr. Klima received a B.A. in Business Administration and Marketing from Western State College.

PROPOSAL 2
NON-BINDING ADVISORY VOTE ON NAMED EXECUTIVE OFFICER COMPENSATION

Our Board is committed to excellence in governance. As part of that commitment, and as required by Section 14A(a)(1) of the Securities Exchange Act, our Board is providing our stockholders with an opportunity to approve, on a non-binding advisory basis, the compensation of our named executive officers. At the Company's 2021 annual meeting of stockholders, the stockholders approved a frequency of "once every year" for the non-binding, advisory vote to approve the compensation of our named executive officers. Therefore, the next such advisory vote will be held at the Company's annual meeting of stockholders in 2023.

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 unanimously recommends that our 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 2022 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 outcome of the vote on this proposal. As this vote is advisory, it will not be binding upon the Board or the Compensation Committee and neither our Board nor the Compensation Committee will be required to take any action as a result of the outcome of this vote. However, our Board 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.

THE BOARD UNANIMOUSLY RECOMMENDS THAT YOU VOTE

FOR

THE NON-BINDING ADVISORY RESOLUTION APPROVING THE COMPENSATION OF OUR 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 December 31, 2021 and relevant positions, were:

- Andrew Obenshain, our Chief Executive Officer and Principal Executive Officer;
- Gina Consylman, who served as our Chief Financial Officer, Principal Financial Officer and Treasurer as of year-end;
- Jason F. Cole, our Chief Business Officer; and our current Chief Strategy and Financial Officer, Principal Financial Officer, Principal Accounting Officer and Treasurer;
- Thomas J. Klima, our Chief Commercial Officer;
- Nick Leschly, our former Chief Executive Officer and Principal Executive Officer;
- William D. Baird, III, our former Chief Financial Officer, Principal Financial Officer and Principal Accounting Officer; and
- Philip Gregory, D. Phil., our former Chief Scientific Officer.

Mr. Klima was appointed as Chief Commercial Officer effective May 10, 2021 and Ms. Consylman commenced employment as Chief Financial Officer, Severe Genetic Diseases on August 2, 2021.

In connection with the consummation of the separation of our severe genetic disease and oncology programs into two independent, publicly traded companies (the "Separation"), on November 4, 2021, Messrs. Leschly and Baird and Dr. Gregory resigned from their roles with the Company, while Mr. Obenshain transitioned to the role of our President, Chief Executive Officer and Principal Executive Officer (prior to which he served as our President, Severe Genetic Diseases and Senior Vice President, Head of Europe) and Ms. Consylman transitioned to the role of our Chief Financial Officer and Principal Financial Officer (prior to which she commenced employment with the Company as Chief Financial Officer, Severe Genetic Diseases on August 2, 2021) and Mr. Cole transitioned to the role of Chief Business Officer (prior to which he served as Chief Operating and Legal Officer and Secretary).

On March 4, 2022, Ms. Consylman provided noticed of her resignation from employment with us. On April 1, 2022, Mr. Cole transitioned to the role of Chief Strategy and Financial Officer and Principal Financial Officer.

None of our named executive officers received any severance or other benefits in connection with their resignations of employment.

Company Background

In 2021, we completed the tax-free spin-off of our oncology programs and portfolio (referred to in this proxy statement as the Separation) to become a company focused on the pursuit of curative gene therapies for severe genetic diseases. Today, bluebird bio, Inc. has industry-leading, late-stage clinical and research programs for the treatment of sickle cell disease ("SCD"), β -thalassemia and cerebral adrenoleukodystrophy ("CALD"). With more than a decade of experience in gene therapy and over 500 patient-years of experience, we have amassed the largest and deepest *ex vivo* gene therapy data set in the industry. Our core three therapies – betibeglogene autotemcel ("beti-cel") for β -thalassemia, elivaldogene autotemcel ("eli-cel") for CALD and lovetibeglogene autotemcel ("lovo-cel") for SCD have shown robust, durable efficacy and provide great hope to patients with severe genetic diseases and their families. Our leadership in gene therapy also means that we've overcome numerous unanticipated hurdles as our data and our organization have matured.

Early in 2021, our clinical programs for lovo-cel and beti-cel were put on clinical hold following a reported case of acute myeloid leukemia in a patient treated with lovo-cel for SCD. A comprehensive review quickly showed that lentiviral vector (LVV) mediated insertion did not play a role in the development of leukemia in this patient, and to date there have been no cases of insertional oncogenesis related to our BB305 vector. Working in close partnership with the FDA, NIH, international experts, investigators, and clinical trial sites, we were able to resume trials within just a few months. Throughout this process, we gained a deeper understanding of the pathophysiology of SCD that will allow bluebird, and all those

researching and treating SCD, to better serve patients and the broader community. Currently, we are in active dialogue with the FDA about the resolution of a separate partial hold for patients with SCD under 18. We have also undertaken a similarly thorough investigation related to the hold placed on our clinical program for CALD last August, following a diagnosis of myelodysplastic syndrome (MDS), a known risk of the Lenti-D LVV vector. Despite this risk, eli-cel remains the only potential treatment option for children without a matched donor and a critical source of hope for patients and families who receive the devastating diagnosis of CALD.

Despite these setbacks, we nevertheless were able to make significant progress across our programs in 2021. The biologics licensing application ("BLA") for beti-cel is currently under review by the FDA for β -thalassemia in patients who receive regular red blood cell transfusions. The BLA for beti-cel was accepted for filing and granted priority review and the Prescription Drug User Fee Act ("PDUFA") goal date is August 19, 2022. The BLA for eli-cel is currently under review by the FDA for treatment of patients less than 18 years of age with early CALD who do not have an available and willing HLA-matched sibling donor. The BLA for eli-cel was accepted for filing and granted priority review, and the PDUFA goal date is September 16, 2022.

In 2021, we also announced our intent to wind down our operations in Europe and to focus on the U.S. market. The decision to discontinue operations in Europe resulted from prolonged negotiations with European payers and challenges to achieving appropriate value recognition and market access for ZYNTEGLO™ for the treatment of β -thalassemia. Following the exploration of potentially out-licensing the ex-U.S. rights to our three lead programs, we made the decision to withdraw the regulatory marketing authorizations for SKYSONA™ and ZYNTEGLO from the European Union and to withdraw our marketing applications for SKYSONA and ZYNTEGLO from the Medicines and Healthcare products Regulatory Agency (MHRA) in the United Kingdom. We are continuing the long-term follow-up of patients previously enrolled within the clinical trial programs in Europe as planned but do not intend to initiate any new clinical trials in Europe for β -thalassemia, CALD or SCD.

Say on Pay and Stockholder Engagement

We believe that hearing directly from our shareholders is a valuable source of information for our Board and Compensation Committee and we are proud of our robust response to prior shareholder feedback, especially related to changes made to our executive compensation program.

At our 2021 Annual Meeting, approximately 95% of the votes cast on an advisory, non-binding basis approved our executive compensation, up from 61% support at the 2020 Annual Meeting and 67% at the 2019 Annual Meeting. Commencing in late 2020, we began conducting robust shareholder outreach led by the Chair of our Compensation Committee together with our Chief People Officer and corporate counsel in response to shareholder feedback on our executive compensation program, reaching out to stockholders representing over 70% of our outstanding shares. Following feedback collected from our investors during our outreach efforts, our Compensation Committee thoroughly evaluated our overall executive compensation program and consulted with Radford, its compensation consultant, for responsive action focused on enhancing our long-term incentive compensation elements. Our response included the introduction of performance-based restricted stock units granted to our Chief Executive Officer in 2021 that are tied to our total shareholder return as compared to peer group of companies in the Standard & Poor Biotechnology Select Industry Index over a three-year performance period. This was intended as a first step to provide a greater emphasis on performance-based long-term incentive compensation, and the Compensation Committee intends to regularly evaluate this allocation as part of its overall review of our executive compensation program.

We also intend to continue our stockholder engagement efforts following the 2022 Annual Meeting regardless of the outcome of the 2022 "say-on-pay" proposal.

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 our 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, both pre-Separation and post-Separation.

Overview of Our Compensation Programs

Key elements of our executive compensation programs include the following:

Compensation Element	Purpose	Features		
Base salary	To attract and retain highly skilled executives	Fixed component of pay to provide financial stability, based on responsibilities, experience, individual contributions		
Annual incentive program	To promote and reward the achievement of our key short-term strategic and business goals; 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	Short Term Incentive	
Long-term equity incentive compensation	To encourage executives to focus on long-term 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 introduced performance-vesting restricted stock unit grants for our Chief Executive Officer in 2021.	Long Term Incentive	At-Risk Compensation

We may award annual increases in base salary based upon an assessment of each executive's performance, the scope of his or her responsibilities and an assessment of competitive market data based on our approved peer group. Our 2021 annual incentive program was designed to reward annual achievements as measured against pre-established 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 2021 annual 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 competitive market data based on our approved peer group, 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. In connection with the Separation, the outstanding equity awards held by our named executive officers were adjusted (as described in further detail below) and as a result, following the Separation, certain of our named executive officers hold equity awards with respect to stock of both the Company and the spin-off entity 2seventy bio.

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. However, individual named executive officers may be above or below this percentile of compensation based on factors such as the scope of their position and individual performance.

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:

What We Do	What We Don't Do
✓ Use market data from an industry-specific peer group to set competitive compensation levels	X Allow hedging or pledging of equity
✓ Deliver executive compensation primarily through performance-based pay	X 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	X Provide excessive perquisites
✓ Set challenging short-term incentive program goals	X Provide supplemental executive retirement plans
✓ Offer market-competitive benefits for executives that are consistent with those offered to the rest of our employees	X Provide tax gross-up payments for any change-of-control payments
✓ Maximum payout of 150% of target under our short-term incentive program	
✓ Have stock ownership guidelines applicable to our senior executive officers and non-employee directors	
✓ Hold annual stockholder say-on-pay votes	
✓ Provide for double-trigger severance arrangements in a change of control (no single-trigger payouts)	
✓ Stockholder engagement efforts	
✓ Consult with an independent compensation advisor on compensation levels and practices	

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 executives. 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 addition and gene editing platforms in the fields of severe genetic diseases and cancer (prior to the Separation);
- 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, engagement of qualified treatment centers, and number of patients treated in the commercial context;
- 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 senior executives, including our named 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 incentive awards for our executives.

By the end of the first quarter of each year, annual company goals and individual performance objectives applicable to 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 senior executives 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, 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 incentive program. Our Compensation Committee typically grants annual equity awards, and determines changes in base salary and the amount of any incentive payments, at its first regularly scheduled meeting of the new year. Our Compensation Committee may also review the compensation of our senior executive officers throughout the course of the year, including, without limitation, in connection with promotions or special circumstances. 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 executive team and reviewed and approved by our Board and Compensation Committee. Our Chief Executive Officer's annual incentive award is determined entirely on the company's performance relative to pre-established company goals (to drive maximal stockholder value) and the annual incentive awards of our other senior executives are based 80% on company goals and 20% on individual objectives. Individual goals for 2021 for our senior executives 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 senior executive, with review and input from our Chief Executive Officer. Any merit increases in base salary and any annual equity awards or awards made under our 2021 annual incentive program were based on the achievement of these Company and individual, as applicable, performance goals. Our Compensation Committee establishes the target incentive award opportunity for each senior executive under the annual incentive program as a percentage of each individual's base salary.

During the last quarter of each year, our senior executives evaluate our company performance as compared to the company goals and, as applicable, their own performance relative to their individual goals for that year. Based on these evaluations, our Chief Executive Officer recommends to our Compensation Committee any increases in base salary and any annual equity awards and/or awards under our annual incentive program for each senior executive other than himself.

Role of Our Compensation Consultants

For 2021, 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 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 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.

Defining and Comparing Compensation to Market Benchmarks

The Compensation Committee uses competitive compensation data from the annual total compensation studies 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, generally in the middle of each fiscal year, 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. Our Compensation Committee also takes into account 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. In addition, in establishing the peer group for the following compensation cycle, the Compensation Committee reviews the current peer group with a view to preserve continuity in peer group from year to year, despite the inherent volatility in market capitalization and size of companies in the biopharmaceutical and biotechnology industries, as well as a high degree of merger and acquisition activity. Furthermore, the Compensation Committee seeks to have an equal balance of smaller versus larger companies by market capitalization and by size.

For purposes of establishing the 2021 peer group, the selection criteria for inclusion in the peer group included biopharmaceutical and biotechnology companies that were: (1) in late-stage clinical development or early commercial stage (particularly those companies with a therapeutic focus on rare disease and/or gene therapy); (2) revenue under \$1.5 billion to exclude mature, commercial companies; (3) market capitalization of one third to three times bluebird's market capitalization at the time of review in mid-2020; and (4) headcount of one third to three times bluebird's projected headcount for the end of 2021, which resulted in a range of 200 to 2,000 employees in size.

With reference to these and other key business metrics, the Compensation Committee originally established the following peer groups for 2021 as set forth in the following table:

Peer Group Company

ACADIA Pharmaceuticals Inc.
 Acceleron Pharma Inc.
 Agios Pharmaceuticals, Inc.
 Alkermes p.l.c.
 Alnylam Pharmaceuticals, Inc.
 Blueprint Medicines Corporation
 Exelixis, Inc.
 FibroGen, Inc.
 Global Blood Therapeutics, Inc.
 Ionis Pharmaceuticals, Inc.
 Jazz Pharmaceuticals plc
 Nektar Therapeutics
 Neurocrine Biosciences, Inc.
 Portola Pharmaceuticals, Inc.
 Sage Therapeutics, Inc.
 Sarepta Therapeutics, Inc.
 Ultragenyx Pharmaceutical Inc.

In anticipation of the Separation, our Compensation Committee also established a peer group for the post-Separation company that could be used as a more targeted reference point as the Company operated following the Separation. For purposes of establishing the post-Separation peer group, the selection criteria for inclusion in the peer group included biopharmaceutical and biotechnology companies (particularly those companies with a therapeutic focus on rare disease and/or gene therapy) were: (1) in late-stage clinical development or early commercial stage; (2) revenue under \$1.5 billion to exclude mature, commercial companies; (3) market capitalization of \$300 million to \$3 billion, based on a post-Separation profile of \$500 million to \$1.5 billion at the time of review; and (4) headcount of one third to three times bluebird's projected headcount for the end of 2021, which resulted in a range of 200 to 2,000 employees in size. The Compensation Committee

believes that these criteria reflect the core business model and characteristics of the post-spin entity for purposes of establishing an updated peer group. The companies included in the post-Separation peer group for the Company are:

Peer Group Company

Akebia Therapeutics
 Arcus Biosciences
 Atara Biotherapeutics
 Dicerna Pharmaceuticals
 Epizyme
 FibroGen, Inc.
 Homology Medicines
 Inovio Pharmaceuticals
 Intercept Pharmaceuticals
 Orchard Therapeutics
 Precigen
 PTC Therapeutics
 REGENXBIO
 Rubius Therapeutics
 Sangamo Therapeutics
 Travele Therapeutics
 uniQure
 Zogenix

Base Salary

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. Our Compensation Committee's assessment of our named executive officers' base salary takes into account our compensation objectives and philosophy to retain highly qualified executives, to motivate them to achieve our business goals, and to reward them for superior short- and long-term performance.

At the beginning of 2021, our Compensation Committee reviewed the compensation for our Chief Executive Officer and each of our other named executive officers. With respect to Mr. Leschly, our then Chief Executive Officer, our Compensation Committee reviewed his overall compensation and determined to increase his annual base salary from \$725,000 to \$750,500. This determination was based on his critical role at the company, company performance throughout 2020 in meeting key milestones and objectives, as well in consideration of the critical upcoming execution and risk inflection points throughout 2021. In addition, the Compensation Committee took into consideration the market conditions and a comparison of his base salary to the base salary of chief executive officers in our pre-Separation 2021 peer group. The Compensation Committee also approved merit increases in base salary for each of our other named executive officers serving at that time based on several factors including the company's performance against the 2020 company goals, and each named executive officer's achievement of individual goals in 2020, as well as a consideration of the market conditions and a comparison of the executives' base salaries to similarly situated executives in our pre-Separation 2021 peer group. The table below sets forth the adjustments to the base salary, in dollars and as a percentage, for each of our named executive officers, as approved in January 2021:

Name	2020 Base Salary (\$)	January 2021 Base Salary (\$) ⁽¹⁾	Increase (%)
Andrew Obenshain	\$435,000	\$450,300	4%
Jason Cole	\$456,000	\$472,000	4%
Gina Consylman	N/A	\$480,000	N/A
Thomas J. Klima	N/A	\$400,000	N/A
Nick Leschly	\$725,000	\$750,500	4%

Name	2020 Base Salary (\$)	January 2021 Base Salary (\$) ⁽¹⁾	Increase (%)
William D. Baird, III	\$474,600	\$491,300	4%
Philip Gregory, D. Phil.	\$455,000	\$496,300	9%

(1) Represents annual base salary amounts set in January 2021 that do not reflect increases effected following the initial increases in early 2021, as applicable.

In July 2021, Mr. Obenshain received a base salary increase from \$450,300 to \$550,000 in connection with his expected transition to Chief Executive Officer and his duties performed during the Separation process. Effective as of the Separation, Mr. Obenshain received an additional base salary increase in light of his expanded scope of responsibilities and exceptional performance from \$550,000 to \$625,000.

At the beginning of 2022, our Compensation Committee reviewed the base salaries of our named executive officers, including our Chief Executive Officer. Taking into account the Company's performance in 2021 amid the challenging context of the Separation process, and the need to provide a competitive base level of salary balanced against financial discipline, the Compensation Committee determined that each named executive officer, including our Chief Executive Officer, would have increases in their base salaries of between 3 - 6%, as set forth in the table below.

Name	2021 Base Salary (\$)	2022 Base Salary (\$)	Increase (%)
Andrew Obenshain	\$625,000	\$643,750	3%
Jason Cole	\$472,000	\$488,600	4%
Gina Consylman	\$480,000	\$496,800	4%
Thomas J. Klima	\$400,000	\$422,000	6%
Nick Leschly	\$750,500	N/A	N/A
William D. Baird, III	\$491,300	N/A	N/A
Philip Gregory, D. Phil.	\$496,300	N/A	N/A

The 2021 base salary for Mr. Obenshain in the table above reflects his base salary at the end of 2021, taking into account the applicable increase in base salary Mr. Obenshain received in 2021. Following the Separation, Messrs. Leschly and Baird and Dr. Gregory are no longer employed by the Company.

Annual Incentive Program

At the beginning of 2021, our Compensation Committee approved the annual incentive program for 2021. At the time of such approval, consistent with past practice, the 2021 annual incentive program consisted of the opportunity for eligible participants to earn cash incentive awards calculated as a percentage of pre-established bonus targets based on the company's performance against pre-established company goals and, other than for the Chief Executive Officer, individual performance throughout 2021 against pre-established individual goals.

Each year, our pre-established Company goals are proposed by management, reviewed by our Board prior to the beginning of each fiscal year with an eye towards setting our overall business strategy and long-range planning, and approved by our Compensation Committee at the beginning of each fiscal year for purposes of determining compensation. Our goal-setting philosophy is to adopt goals that are challenging, to increase the likelihood of driving high value creation, but also with the expectation that performance against these pre-established goals will be considered in the full context of value creation. At the end of each fiscal year, management provides the Compensation Committee with its recommendation of company and individual performance against these pre-established goals, without taking into consideration overall value creation. The Compensation Committee's uses its discretion in its evaluation by taking into consideration management's recommendation, unplanned accomplishments, and also the overall value creation context such as stock performance, and the trajectory of company performance over the course of the year.

Under our annual incentive plan our Chief Executive Officer's incentive award is based entirely on the company's performance relative to these pre-established company goals, and the incentive award for each of our other named executive officers is based 80% on the company's performance relative to the pre-established company goals, and 20% on individual performance. Our Compensation Committee however, reserves the discretion to adjust upward or downward any cash incentive award as it deems appropriate, provided that neither company performance nor individual performance may exceed 150% and, accordingly, bonuses are capped at 150% of target amounts.

In the first fiscal quarter of 2021, the Compensation Committee approved the annual incentive program for 2021. The terms of the 2021 annual incentive program are substantially the same as the 2020 annual incentive program. The tables below summarize the pre-established 2021 company goals, their relative weighting, and level of achievement for each Company goal as approved by the Compensation Committee.

2021 Company goals	Weighting	2021 Company performance assessment
Deliver for patients	30%	27% (8%)
<ul style="list-style-type: none"> Meet targets for commercial patient enrollment and treatment in Europe for ZYNTEGLO 		The Compensation Committee recognized that challenges in achieving appropriate value recognition and market access for ZYNTEGLO in Europe negatively impacted our ability to meet these objectives
Create sustaining value	30%	140% (42%)
<ul style="list-style-type: none"> Achieve milestones for lovo-cel development 		<p>The Compensation Committee acknowledged while certain lovo-cel development milestones were not achieved due to a clinical hold, other accomplishments across the development programs were also taken into account in assessing the Company's performance for this goal:</p> <ul style="list-style-type: none"> Conducted investigation into safety events that resulted in clinical holds of lovo-cel and beti-cel Conducted investigation into safety events that resulted in clinical hold of eli-cel, with continuing engagement with FDA Lovo-cel clinical study activities were resumed and BLA submission timeline was maintained
Eye on execution	30%	100% (30%)
<ul style="list-style-type: none"> BLA for beti-cel accepted for review by FDA BLA for eli-cel accepted for review by FDA 		<ul style="list-style-type: none"> The BLA for beti-cel was accepted for filing and granted priority review and the PDUFA goal date is August 19, 2022. The BLA for eli-cel was accepted for filing and granted priority review, and the PDUFA goal date is September 16, 2022.
People & business	10%	50% (5%)
<ul style="list-style-type: none"> Meet targets for cash runway, employee engagement, and employee diversity Complete the Separation 		<ul style="list-style-type: none"> The Separation was completed on November 4, 2021 The complexity of the Separation, in combination with challenges across the business in 2021 had a negative impact on employee engagement and our ability to meet targets for employee diversity \$75 million equity financing, with effort to reshape cost structure and sharpen strategic focus of the Company
Total	100%	85%

The Compensation Committee determined that as a result of the Separation, it was appropriate that 2021 bonus payouts would be determined solely based on bluebird performance and exclude metrics related to the 2seventy bio business. Based on the actual achievement by bluebird of the applicable performance goals, the Compensation Committee determined that Company achievement under the 2021 annual incentive program was 85% of target performance with respect to our senior executives, including our named executive officers.

The pre-established individual goals and individual performance against those goals in 2021 applicable to our named executive officers other than our Chief Executive Officer were as follows:

Name	2021 individual performance assessment	2021 individual goals
Gina Consylman	100%	Leadership in guiding severe genetic disease business through budget initiatives and financing strategy leading into and following separation
Jason Cole	100% ⁽¹⁾	Leadership in providing legal advice and overseeing operations, and guiding the organization through separation transaction
Thomas J. Klima	100%	Leadership in preparing the organization for potential commercial launches in the United States
William D. Baird, III	N/A	Leadership in guiding the organization through budget initiatives and financing strategy leading up to separation
Philip Gregory, D. Phil	N/A	Leadership in developing and executing on key pipeline objectives in the oncology business prior to the separation

- (1) The Compensation Committee assessed Jason Cole's 2021 performance at 100% against his pre-determined individual goals. However, in light of Mr. Cole's outstanding leadership across the organization in overseeing the Separation and in providing legal and policy advice throughout 2021, the Compensation Committee exercised its discretion to also award Mr. Cole an additional \$200,000 discretionary bonus in recognition of his efforts and accomplishments.

The table below shows each named executive officer's target incentive award under the 2021 annual incentive program as a percentage of the named executive officer's annual base salary in 2021, the target incentive award opportunity in dollars for 2021 and the actual incentive awards to our named executive officers for 2021 performance, which were paid in February 2022, as well as the actual 2021 incentive award payment as a percentage of the 2021 target incentive award opportunity. Effective as of the Separation, Mr. Obenshain received an increase to his target incentive award from 45% to 60% of his base salary and in accordance with the employee matters agreement entered into in connection with the Separation, 2seventy bio assumed responsibility for paying the annual incentive awards for Messrs. Leschly and Baird and Dr. Gregory. In the aggregate, the target incentive award opportunity for our named executive officers reflects approximately the 50th percentile of our 2021 peer group.

Name	2021 Target Incentive Award (% of 2021 Base Salary)	2021 Target Incentive Award Opportunity (\$)	Actual Total 2021 Incentive Award Amount (\$) (1)
Andrew Obenshain ⁽²⁾	60%	\$375,000	\$345,313
Jason Cole	45%	\$212,400	\$387,000 ⁽⁴⁾
Gina Consylman ⁽³⁾	45%	\$216,000	\$79,208
Thomas J. Klima ⁽³⁾	45%	\$180,000	\$105,600
Nick Leschly	65%	\$487,825	N/A
William D. Baird, III	45%	\$221,085	N/A
Philip Gregory, D. Phil.	45%	\$223,335	N/A

- (1) Represents the total 2021 target incentive award amount.
- (2) Reflects an increase to Mr. Obenshain's annual target bonus to 60% in connection with the Separation.
- (3) Actual amount was prorated based on the executive's employment commencement date with the Company.
- (4) Includes the additional \$200,000 discretionary bonus awarded to Mr. Cole in light of his outstanding leadership across the organization in overseeing the Separation and in providing legal and policy advice throughout 2021.

Signing Bonuses

In connection with the commencement of her employment, our Compensation Committee awarded Ms. Consylman a signing bonus of \$75,000. In addition, Ms. Consylman was eligible to receive additional bonuses of \$50,000 on each of the first two annual anniversaries of her start date of August 2, 2021, subject to her continued employment through such dates. As Ms. Consylman resigned from her employment effective April 3, 2022, she will not be eligible to receive such anniversary bonuses.

Long-Term Incentive Awards

Our long-term incentive equity awards are generally in the form of stock options and restricted stock units, which deliver equivalent value while using fewer authorized shares. Beginning in 2021, we granted performance-based restricted stock units based on relative total shareholder return to our Chief Executive Officer, to further tie executive compensation to stock price performance and in response to stockholder feedback. We typically make equity award grants to each of our

executive officers upon commencement of employment, and annually in conjunction with our review of their individual performance. Additional equity award grants may be made 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 restricted stock units increase as our stock price increases. Accordingly, we believe stock options and restricted stock units provide meaningful incentives to our executives to achieve increases in the value of our stock over time. In addition, the vesting feature of our long-term incentive grants contributes to executive retention by providing an incentive to our executives to remain employed by us during the vesting period.

In connection with the Separation, pursuant to the employee matters agreement, bluebird equity awards held by our employees, including our executives, that were granted prior to January 1, 2021 were bifurcated such that holders continued to hold equity awards with respect to the common stock of both bluebird and 2seventy bio after the Separation, as converted using certain distribution ratios based on the volume-weighted average trading price of bluebird and 2seventy bio. Equity awards granted following January 1, 2021 to employees who remained employees of bluebird following the Separation continued as equity awards with respect to stock of bluebird, subject to adjustment based on the bluebird pre-distribution versus post-distribution volume-weighted average trading price. The intent of the adjustments was to maintain, immediately following the distribution, the economic value of the awards immediately before the distribution date. The same terms and conditions otherwise continued to apply to each equity award (including, for the avoidance of doubt, vesting and expiration).

All equity awards to our executive officers are approved by our Compensation Committee and, other than equity awards to new hires and the one-time grants made in contemplation of the Separation, are typically approved 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, competitive market data, 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, its independent compensation consultant. 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. The target mix for annual long-term incentive equity grants to our executive officers is generally split approximately one-half in stock options and one-half in restricted stock units based on option equivalents (including with respect to our Chief Executive Officer, performance-based restricted stock units). The Compensation Committee believes that this deliberate mix of equity ensures that compensation 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, long-term equity incentive grants of stock options and restricted stock units 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 anniversary of 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 2021, we introduced a new type of performance-based restricted stock unit award to further align our then Chief Executive Officer's compensation with stockholder experience, in response to investor feedback. This performance-based award is earned based on total shareholder return compared to a peer group of companies in the Standard & Poor Biotechnology Select Industry Index having a market value of between \$750 million and \$4.5 billion, which reflects a weighted average of current bluebird and the projected size of 2seventy bio following the Separation over a three-year period of 2021 through 2023. The multiplier used to determine the number of earned restricted stock units could range between 50% and 200%, with a threshold achievement level at -25th percentile (as compared to the peer median) required to earn any

restricted stock units, and a ceiling achievement level at the +50th percentile (as compared to the peer median). The total shareholder return performance-based restricted stock units, to the extent earned, vest in full on the third anniversary of the grant date, subject to Mr. Leschly's continued service. For 2021, the target number of shares subject to this performance-based restricted stock unit award is 54,208 shares (which reflects the adjustments effected in connection with the Separation). Under the terms of this award, the number of performance-based restricted stock units earned is calculated by multiplying the target number of performance-based restricted stock units by a performance multiplier.

In its design of the performance-based restricted stock units, the Compensation Committee considered various design elements and alternative approaches including milestone-based approaches. Given the stage of the company and the number of programs in late-stage development and one in early-stage commercialization, the Compensation Committee felt that an overall relative stock performance metric best captures the value inflections that would potentially be unlocked through exceptional company performance, and is fully aligned with stockholder interests. Furthermore, a three-year measurement period provides an incentive for the Chief Executive Officer to take a long-term view with respect to company performance.

In connection with the annual review of our named executive officers' performance during 2020 and consistent with our compensation philosophy, in February 2021, our Compensation Committee approved the annual long-term equity incentive awards granted to our named executive officers serving at that time as set forth in the table below, which amounts reflect the adjustments effected in connection with the Separation:

Name	2021 Option Award		2021 RSU Award		2021 Performance-Based RSU Award	
	# Shares	Grant date fair value	# Shares	Grant date fair value	# Shares	Grant Date Fair value
Andrew Obenshain	60,230	\$694,976	30,115	\$426,730	—	
Jason Cole	55,211	\$637,900	27,606	\$391,177	—	
Nick Leschly	180,694	\$2,089,130	36,138	\$511,907	54,208	\$1,234,971
William D. Baird, III	50,192	\$589,393	25,096	\$355,493	—	
Philip Gregory, D. Phil.	50,192	\$581,733	25,096	\$355,493	—	

(1) Concurrent with the Separation, Messrs. Leschly and Baird and Dr. Gregory resigned from the Company and commenced employment with 2seventy bio. Pursuant to the terms of the employee matters agreement entered into in connection with the Separation, the awards granted following January 1, 2021 were adjusted into the numbers of shares of bluebird common stock set forth in the table above.

In connection with his expected transition to the role of Chief Executive Officer, on August 2, 2021, Mr. Obenshain was granted 401,543 options and 200,771 restricted stock units (reflecting the adjustment effected in connection with the Separation). Each such award vests in accordance with our standard vesting schedule for such awards described above, with Mr. Obenshain's awards also subject to vesting only in the event the Separation occurred prior to December 31, 2021.

Separation Awards

In order to promote the retention of certain key executives critical for the consummation of the Separation, including Messrs. Cole, Leschly and Baird and Dr. Gregory, our Compensation Committee determined to grant time- and/or performance-vesting restricted stock units to such individuals on August 2, 2021, which are disclosed in the table below and reflect the adjustment effected in connection with the Separation. The time-vesting restricted stock units vest as to 40% of such restricted stock units on the first anniversary of the grant date and as to the remaining 60% of such restricted stock units on the second anniversary of the grant date, subject to the executive's continued employment through the applicable vesting dates.

The performance-vesting restricted stock units granted to Mr. Cole vest as to 40% of such restricted stock units upon approval by the U.S. Food and Drug Administration of the Biologics Licensing Application for beti-cel for the treatment of patients with transfusion dependent beta-thalassemia; and the remaining 60% of such restricted stock units will vest upon the acceptance by the U.S. Food and Drug Administration of the Biologics Licensing Application for lovo-cel for the treatment of patients with sickle cell disease. Such performance targets were designed for Mr. Cole's continuing employment with bluebird following the Separation and are intended to focus on the smooth continuation of the bluebird business.

The performance-vesting restricted stock units granted to Messrs. Leschly and Baird and Dr. Gregory vest as to 40% of such restricted stock units upon the treatment of the later to occur of: (i) the treatment of the first patient in bluebird bio/ 2seventy bio's DARIC/ acute myeloid leukemia program, and (ii) the treatment of the first patient in bluebird bio/ 2seventy bio's NHL 369 program; and the remaining 60% of such restricted stock units will vest upon the fully built, equipped, and qualified internal capacity for the GMP manufacture of clinical-grade drug product. Such performance targets were designed for those employees transferring employment to 2seventy bio following the Separation and are intended to focus on the smooth continuation of the 2seventy bio business.

Name	Time-Vesting RSUs		Performance-Vesting RSUs	
	# Shares	Grant date fair value	# Shares	Grant date fair value
Jason Cole	64,781	\$826,606	64,779	\$826,580
Nick Leschly	103,004	\$1,313,382	103,002	\$1,313,357
William D. Baird, III	67,429	\$859,773	67,427	\$859,747
Philip Gregory, D. Phil.	68,115	\$868,520	68,113	\$868,494

Inducement Awards

The Company sponsors an inducement plan (the "Inducement Plan") for purposes of making equity grants to new hires outside of our shareholder-approved equity plan pursuant to NASDAQ rules. As an inducement to entering into employment with us, we granted each of Ms. Consylman and Mr. Klima stock option and restricted stock unit awards on September 1, 2022 and June 1, 2022, respectively, as set forth below (reflecting the adjustment effected in connection with the Separation):

Name	2021 Inducement Option Award		2021 Inducement RSU Award	
	# Shares	Grant date fair value	# Shares	Grant date fair value
Gina Consylman	170,665	\$2,148,167	100,385	\$916,515
Thomas Klima	100,385	\$1,133,706	50,192	\$777,976

Such stock option awards vest as to 25% of the shares on the first anniversary of the vesting commencement date (or August 2, 2021 for Ms. Consylman and May 10, 2021 for Mr. Klima) and then the remaining shares vest in equal monthly installments thereafter until the fourth anniversary of such date. Such restricted stock units granted to our executives generally vest in equal annual installments beginning on the first anniversary of the vesting commencement date (or August 2, 2021 for Ms. Consylman and May 10, 2021 for Mr. Klima), until the fourth anniversary of such date.

In connection with the annual review of our named executive officers' performance during 2021 and consistent with our compensation philosophy to motivate our named executive officers to achieve our business goals and to reward for superior short- and long-term performance, in January 2022, our Compensation Committee approved the annual long-term equity incentive awards to our named executive officer serving at that time as set forth in the table below:

Name (1)	2022 Option Award	2022 RSU Award Time-Based Vesting	2022 RSU Award Performance-Based Vesting (based on relative total shareholder return (2))
	# Shares	# Shares	Target # Shares
Andrew Obenshain	90,000	18,000	27,000
Jason Cole	50,000	25,000	—
Gina Consylman	50,000	25,000	—
Thomas J. Klima	50,000	25,000	—

(1) Messrs. Leschly and Baird and Dr. Gregory did not receive any equity awards in 2022, as they resigned from their employment effective as of the Separation.

(2) The performance-based restricted stock award granted to Mr. Obenshain is earned based on relative total shareholder return compared to a peer group of companies in the Standard & Poor Biotechnology Index having a market value of between \$500 million and \$1.5 billion, which reflects a weighted average of current bluebird following the spinoff transaction over a three-year period of 2022 through 2024. The multiplier used to determine the number of earned performance-based restricted stock units could range between 50% and 200%, with a threshold achievement level at the 25th percentile (as compared to the peer median). These performance-based restricted stock units, to the extent earned, will vest in full on the third anniversary of the grant date, subject to Mr. Obenshain's continued service. For 2022, the target number of shares subject to this award is 27,000 shares.

The equity awards granted to our named executive officers during 2021, and the grant date fair values of those awards presented above and shown in the *Summary Compensation Table* and the *2021 Grants of Plan-Based Awards* table below were determined in accordance with Financial Accounting Standards Board (FASB), Accounting Standards Codification (ASC), Topic 718.

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 Internal Revenue 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 \$19,500 in 2021), with additional salary deferrals not to exceed \$26,000 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 2021, 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. 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 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 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 set forth on the table below:

Covered Individuals	Applicable Stock Ownership Guideline
Chief Executive Officer	3x base salary
Other Senior Executive Officer	1x base salary
Non-Employee Director	3x annual cash retainer for service on the Board

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 Internal Revenue Code 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 Securities 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, 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.

Taxation of “Parachute” Payments

Sections 280G and 4999 of the Internal Revenue 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 Internal Revenue Code.

Section 409A of the Internal Revenue Code

Section 409A of the Internal Revenue 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

Internal Revenue Code. Although we do not maintain a traditional nonqualified deferred compensation plan, Section 409A of the Internal Revenue 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 Internal Revenue Code.

Accounting for Stock-Based Compensation

We follow FASB ASC 718 for our stock-based compensation awards. FASB ASC 718 requires us to measure the compensation expense for all share-based payment awards made to our employees and non-employee 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.

Equity 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 (the 2013 Plan). In addition, in May 2021 we adopted our 2021 Inducement Plan (the Inducement Plan) for the purposes of making equity grants to new hires in order to induce them to commence employment with us under a non-shareholder approved plan in accordance with the rules of NASDAQ. 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. In addition, since 2021, certain executives, including our prior and current Chief Executive Officers, have received annual grants of performance-vesting restricted stock units. Our Compensation Committee has delegated to Mr. Obenshain, our Chief Executive Officer (and had previously delegated such authority to our former Chief Executive Officer, Mr. Leschly), 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 our Chief Executive Officer 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, our Chief Executive Officer approves the awards in connection with such hires and generally 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, our Chief Executive Officer approves the awards in connection with such promotions and generally provides that the awards are to be granted on the first business day of the calendar month following the date of such promotions. Our Chief Executive Officer 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 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, 2021, which was filed with the SEC on March 4, 2022.

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

Mark Vachon, Chairperson
Elisabeth Leiderman, M.D.
Najoh Tita-Reid

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, 2021, December 31, 2020 and December 31, 2019 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 (\$)(3)	Total (\$)
Andrew Obenshain..... <i>Chief Executive Officer</i>	2021	485,615	—	5,426,581	2,988,568	345,313 ⁽⁴⁾	11,925	9,258,001
Gina Consylman ⁽⁸⁾ <i>Chief Financial Officer, Principal Financial Officer and Treasurer</i>	2021	193,846	75,000 ⁽⁵⁾	2,148,167	916,515	79,208 ⁽⁴⁾	738	3,413,475
Jason Cole..... <i>Chief Business Officer</i>	2021	440,123	200,000 ⁽⁵⁾	637,900	2,044,363	187,000 ⁽⁴⁾	11,850	3,521,236
Thomas J. Klima ⁽⁸⁾ <i>Chief Commercial Officer</i>	2021	253,846	—	1,133,706	777,976	105,600 ⁽⁴⁾	8,607	2,279,794
Nick Leschly ⁽⁹⁾ <i>Chief Executive Officer (former)</i>	2021	384,447	—	2,089,130	4,847,206	— ⁽⁴⁾	11,900	7,332,683
	2020	830,554 ⁽²⁾	—	2,999,893	2,399,800	—	11,400	6,241,647
	2019	660,000	—	8,698,341	3,365,750	418,275	11,200	13,153,566
William D. Baird, III ⁽⁹⁾ <i>Chief Financial Officer (former)</i>	2021	415,025	—	589,393	2,075,013	— ⁽⁴⁾	11,600	3,091,031
	2020	474,600 ⁽²⁾	—	923,044	738,400	121,800 ⁽⁶⁾	122,206	2,380,050
	2019	398,077	—	6,093,675	2,349,900	178,200	180,072	9,199,924
Philip Gregory, D. Phil. ⁽⁹⁾ <i>Chief Scientific Officer (former)</i>	2021	386,427	—	581,733	2,092,507	— ⁽⁴⁾	12,200	3,072,867
	2020	493,510 ⁽²⁾	—	923,044	738,400	123,000 ⁽⁶⁾	11,400	2,289,354
	2019	455,000	—	2,348,552	908,753	194,600	11,200	3,918,105

(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 2019, 2020 and 2021 as computed in accordance with FASB ASC 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 for the year ended December 31, 2021 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 (including the incremental grant-date fair value of these awards following the adjustment of such awards in connection with the Separation), 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. During 2021 we granted performance-based restricted stock unit awards to Messrs. Cole, Leschly and Baird and Dr. Gregory. The grant date fair value computed in accordance with FASB ASC 718 of these awards based on probable outcome as of the grant date is equal to their maximum grant date fair values, including Mr. Leschly's February 1, 2021 grant of 54,208 performance-vesting restricted stock units (as adjusted to reflect the Separation), the fair value of which was determined as of the date of grant using the Monte-Carlo simulation method. The Monte-Carlo simulation method utilizes multiple input variables to estimate the probability of meeting the performance objectives for the award, including the expected volatility of our stock price relative to the pre-Separation group of peer companies listed above at the end of the remaining 2.91 year performance period and a risk-free interest rate of 0.16%. Based on the Monte-Carlo simulation method, the grant date fair value of Mr. Leschly's February 2021 performance award was 138.34% of our stock price on the grant date, or \$1,708,560.

(2) Salary amounts reported in 2020 reflect voluntary reduction in salary paid in cash in 2020, beginning May 2020, and include the grant date fair value of restricted stock unit awards granted in 2020 equal to 80% of the voluntary salary reduction amount for each participating named executive officer, covering the 12-month period beginning May 2020.

(3) Amounts represent employer matching contributions to the executive's 401(k) plan account and certain other employee fringe benefits.

(4) Amounts represent cash payment under our annual cash incentive program earned in respect of 2021, based on achievement of performance goals. As Messrs. Leschly and Baird and Dr. Gregory terminated employment with us in connection with the Separation, they were not eligible to receive cash incentive payments under our annual program for 2021.

- (5) Amount reflects a \$75,000 signing bonus paid to Ms. Consylman in connection with the commencement of her employment with us and a special one-time bonus paid to Mr. Cole in recognition of his extraordinary efforts in connection with the Separation.
- (6) Amounts represent incentive payments under our annual incentive program earned in 2020, and paid during 2021, based on achievement of performance goals. For Messrs. Obeinshain, Cole and Baird and Dr. Gregory, 50% of this amount was paid in cash, and 50% of this amount was paid in shares of fully vested common stock. The shares of vested common stock granted to the named executive officers in lieu of a portion of their bonus are reported in the *Grant of Plan Based Awards Table* below.
- (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) Ms. Consylman's employment commenced on August 2, 2021 and Mr. Klima's employment commenced May 10, 2021. The amounts reported in the *Salary* column and the *Non-equity incentive plan compensation* column for 2021 are prorated to reflect their respective start dates.
- (9) In connection with the consummation of the Separation effective November 4, 2021, Messrs. Leschly and Baird and Dr. Gregory resigned from their roles with the Company. The amounts reported in the *Salary* column for 2021 are prorated to reflect their termination dates.

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, 2021. The numbers set forth in the table reflect the adjustments effected in connection with the Separation.

Name	Grant date	Estimated future payouts under non-equity incentive plan awards (1)		Estimated future payouts under equity incentive plan awards (2)		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 option awards (\$/share) (3)	Grant date fair value of stock and option awards (\$) (4)
		Target (\$)(1)	Maximum (\$)(1)	Threshold (\$)	Target (\$)	Maximum (\$)			
Andrew Obenshain		375,000	562,500	—	—	—	—	—	—
	2/16/2021	—	—	—	—	—	3,188 ⁽⁵⁾	—	58,729
	2/16/2021	—	—	—	—	—	60,230 ⁽⁶⁾	14.17	694,976
	2/16/2021	—	—	—	—	—	30,115 ⁽⁷⁾	—	426,730
	8/2/2021	—	—	—	—	—	401,543 ⁽⁸⁾	12.76	4,731,605
Gina Consylman	8/2/2021	—	—	—	—	—	200,771 ⁽⁸⁾	—	2,561,838
		216,000	324,000	—	—	—	—	—	—
	9/1/2021	—	—	—	—	—	170,655 ⁽⁹⁾	9.13	2,148,167
Jason Cole	9/1/2021	—	—	—	—	—	100,385 ⁽⁹⁾	—	916,515
		212,400	318,600	—	—	—	—	—	—
	2/16/2021	—	—	—	—	—	3,343 ⁽⁵⁾	—	61,753
	2/16/2021	—	—	—	—	—	55,211 ⁽⁶⁾	14.17	637,900
	2/16/2021	—	—	—	—	—	27,606 ⁽⁷⁾	—	391,177
	8/2/2021	—	—	—	64,779	64,779	—	—	826,580
Thomas J. Klima	8/2/2021	—	—	—	—	—	64,781 ⁽¹⁰⁾	—	826,606
		180,000	270,000	—	—	—	—	—	—
	6/1/2021	—	—	—	—	—	100,385 ⁽⁹⁾	15.50	1,133,706
Nick Leschly	6/1/2021	—	—	—	—	—	50,192 ⁽⁹⁾	—	777,976
		487,825	731,738	—	—	—	—	—	—
	2/1/2021	—	—	27,104	54,208	108,416	—	—	1,708,560
	2/16/2021	—	—	—	—	—	180,694 ⁽⁶⁾	14.17	2,089,130
	2/16/2021	—	—	—	—	—	36,138 ⁽⁷⁾	—	511,907
	8/2/2021	—	—	—	103,002	103,002	—	—	1,313,357
William D. Baird, III	8/2/2021	—	—	—	—	—	103,004 ⁽¹⁰⁾	—	1,313,382
		221,085	331,628	—	—	—	—	—	—
	2/16/2021	—	—	—	—	—	3,306 ⁽⁵⁾	—	60,890
	2/16/2021	—	—	—	—	—	50,192 ⁽⁶⁾	14.17	589,393
	2/16/2021	—	—	—	—	—	25,096 ⁽⁷⁾	—	355,493
	8/2/2021	—	—	—	67,427	67,427	—	—	859,747
	8/2/2021	—	—	—	—	—	67,429 ⁽¹⁰⁾	—	859,773

Name	Grant date	Estimated future payouts under non-equity incentive plan awards (1)		Estimated future payouts under equity incentive plan awards (2)		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 option awards (\$/share) (3)	Grant date fair value of stock and option awards (\$) (4)
		Target (\$)(1)	Maximum (\$)(1)	Threshold (\$)	Target (\$)	Maximum (\$)			
Philip Gregory, D. Phil		223,335	335,003	—	—	—	—	—	—
	2/16/2021	—	—	—	—	—	3,338 ⁽⁵⁾	—	61,487
	2/16/2021	—	—	—	—	—	—	50,192 ⁽⁶⁾	581,733
	2/16/2021	—	—	—	—	—	25,096 ⁽⁷⁾	—	355,493
	8/2/2021	—	—	—	68,113	68,113	—	—	868,494
	8/2/2021	—	—	—	—	—	68,115 ⁽¹⁰⁾	—	868,520

- (1) Represents the target and maximum amount of each executive's incentive payments under our 2021 annual incentive program as established by the Compensation Committee and described in *Compensation Discussion and Analysis* above (not including any proration due to an executive's commencement of employment in 2021). Actual payments made for 2021 are provided in the *Summary Compensation Table*. Incentive payments are not subject to threshold payout levels, and accordingly, that column has been omitted.
- (2) Amounts represent performance-vesting restricted stock units granted to certain named executive officers as retention awards, which vest based on the achievement of certain bluebird or 2seventybio performance goals, as described above under "Separation Awards". Amount for Mr. Leschly also represents an annual performance-vesting restricted stock unit awards granted in connection with his role as Chief Executive Officer, which vests based on certain total shareholder return targets.
- (3) 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, reflecting the adjustments effected in connection with the Separation.
- (4) 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 718 (including the incremental grant-date fair value of these awards following the adjustment of such awards in connection with the Separation). See note 14 of *Notes to Consolidated Financial Statements* in our Annual Report on Form 10-K filed with the SEC for the year ended December 31, 2021 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.
- (5) Represents fully-vested shares of common stock granted to certain named executive officers in lieu of a portion of their annual cash incentive bonus for 2021.
- (6) Options subject to time-based vesting criteria established by the Compensation Committee and described in the footnotes to the *Outstanding Equity Awards at Fiscal Year End* table below.
- (7) 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 Fiscal Year End* table below.
- (8) Represents options and restricted stock units granted to Mr. Obenshain in connection with his promotion to Chief Executive Officer. Such awards vest as described in the footnotes to the *Outstanding Equity Awards at Fiscal Year End* table below.
- (9) Represents options and restricted stock units granted to Ms. Consylman and Mr. Klima under the Inducement Plan in connection with their commencement of employment. Such awards vest as described in the footnotes to the *Outstanding Equity Awards at Fiscal Year End* table below.
- (10) Amounts represent time-vesting restricted stock units granted to certain named executive officers as retention awards, which vest as to 40% of such restricted stock units on the first anniversary of the grant date and as to the remaining 60% of such restricted stock units on the second anniversary of the grant date, subject to the executive's continued employment through the applicable vesting dates.

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, 2021.

Name	Option Awards				Stock Awards			
	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 (\$) ⁽²⁰⁾	Equity incentive plan awards: number of unearned shares, units or other rights that have not vested (#)	Equity incentive plan awards: market or payout value of unearned shares, units or other rights that have not vested (\$) ⁽²⁰⁾
Andrew Obenshain	17,721	—	34.20	12/1/2026	—	—		
	9,093	260 ⁽¹⁾	102.24	2/1/2028	—	—		
	5,682	2,145 ⁽²⁾	67.06	2/1/2029	—	—		
	3,284	3,607 ⁽³⁾	36.78	3/2/2030	—	—		
	5,598	15,076 ⁽⁴⁾	26.45	11/2/2030	—	—		
	—	60,230 ⁽⁵⁾	14.17	2/16/2031	—	—		
	—	401,543 ⁽⁶⁾	12.76	8/2/2031	—	—		
					586 ⁽¹⁰⁾	5,854		
					978 ⁽¹¹⁾	9,770		
					2,584 ⁽¹²⁾	25,814		
Gina Consylman					7,753 ⁽¹³⁾	77,452		
					30,115 ⁽¹⁴⁾	300,849		
					200,771 ⁽¹⁵⁾	2,005,702		
	—	170,655 ⁽⁷⁾	9.13	9/1/2031	—	—		
					100,385 ⁽¹⁶⁾	1,002,846		
Jason Cole	34,458	—	48.52	3/2/2025				
	8,799	—	25.16	3/1/2026				
	28,959	—	37.66	2/1/2027				
	24,038	575 ⁽¹⁾	102.24	2/1/2028				
	17,905	6,708 ⁽²⁾	67.06	2/1/2029				
	8,489	9,232 ⁽³⁾	36.78	3/2/2030				
	—	55,211 ⁽⁵⁾	14.17	2/16/2031	1,539 ⁽¹⁰⁾	15,375		
					3,077 ⁽¹¹⁾	30,739		
					6,645 ⁽¹²⁾	66,384		
					27,606 ⁽¹⁴⁾	275,784		
Thomas J. Klima					64,781 ⁽¹⁵⁾	647,162		
							64,779 ⁽¹⁸⁾	647,142
	—	100,385 ⁽⁸⁾	15.50	6/1/2031				
					50,192 ⁽¹⁷⁾	501,418		
Nick Leschly ⁽²¹⁾	162,450	—	12.19	3/3/2024				
	162,450	—	48.52	3/2/2025				
	88,609	—	25.16	3/1/2026				
	108,300	—	37.66	2/1/2027				
	115,671	2,474 ⁽¹⁾	102.24	2/1/2028				
	71,763	26,691 ⁽²⁾	67.06	2/1/2029				
	30,661	33,334 ⁽³⁾	36.78	3/2/2030				
					7,384 ⁽¹⁰⁾	73,766		
					12,306 ⁽¹¹⁾	122,937		
					23,998 ⁽¹²⁾	239,740		

Name	Option Awards				Stock Awards			
	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 (\$) ⁽²⁰⁾	Equity incentive plan awards: number of unearned shares, units or other rights that have not vested (#)	Equity incentive plan awards: market or payout value of unearned shares, units or other rights that have not vested (\$) ⁽²⁰⁾
William D. Baird, III ⁽²¹⁾	41,828	17,244 ⁽⁹⁾	78.03	3/1/2029				
	9,421	10,269 ⁽³⁾	36.78	3/2/2030				
					7,384 ⁽¹⁹⁾	73,766		
					7,384 ⁽¹²⁾	73,766		
Philip Gregory, D. Phil ⁽²¹⁾	49,227	—	81.23	7/1/2025				
	6,103	—	25.16	3/1/2026				
	24,613	—	37.66	2/1/2027				
	32,762	712 ⁽¹⁾	102.24	2/1/2028				
	19,364	7,218 ⁽²⁾	67.06	2/1/2029				
	9,421	10,269 ⁽³⁾	36.78	3/2/2030				
					2,092 ⁽¹⁰⁾	20,899		
					3,323 ⁽¹¹⁾	33,197		
					7,384 ⁽¹²⁾	73,766		

- (1) 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.
- (2) 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.
- (3) Represents options to purchase shares of our common stock granted on March 2, 2020. The shares underlying these options vest as follows: 25% vested on January 4, 2021, with the remainder of the shares vesting in equal monthly installments over the following three years through January 4, 2024, subject to continued service with us through each applicable vesting date.
- (4) Represents options to purchase shares of our common stock granted on November 2, 2020. The shares underlying these options vest as follows: 25% vested on November 2, 2021, with the remainder of the shares vesting in equal monthly installments over the following three years through November 2, 2024, subject to continued service with us through each applicable vesting date.
- (5) Represents options to purchase shares of our common stock granted on February 16, 2021. The shares underlying these options vest as follows: 25% vested on January 4, 2022, with the remainder of the shares vesting in equal monthly installments over the following three years through January 4, 2025, subject to continued service with us through each applicable vesting date.
- (6) Represents options to purchase shares of our common stock granted on August 2, 2021. The shares underlying these options vest as follows: 25% will vest on August 2, 2022, with the remainder of the shares vesting in equal monthly installments over the following three years through August 2, 2025, subject to continued service with us through each applicable vesting date. The awards were subject to vesting only in the event the Separation occurred prior to December 31, 2021.
- (7) Represents options to purchase shares of our common stock granted on September 1, 2021. The shares underlying these options vest as follows: 25% will vest on August 2, 2022, with the remainder of the shares vesting in equal monthly installments over the following three years through August 2, 2025, subject to continued service with us through each applicable vesting date.
- (8) Represents options to purchase shares of our common stock granted on June 1, 2021. The shares underlying these options vest as follows: 25% will vest on May 10, 2022, with the remainder of the shares vesting in equal monthly installments over the following three years through May 10, 2025, subject to continued service with us through each applicable vesting date.
- (9) 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.
- (10) 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.
- (11) 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.

- (12) Restricted stock unit award vests in four equal annual installments through January 4, 2024, subject to continued service with us through each applicable vesting date.
- (13) Restricted stock unit award vests in four equal annual installments through November 2, 2024, subject to continued service with us through each applicable vesting date.
- (14) Restricted stock unit award vests in four equal annual installments through January 4, 2025, subject to continued service with us through each applicable vesting date.
- (15) Restricted stock unit award vests in four equal annual installments through August 2, 2025, subject to continued service with us through each applicable vesting date. The awards were subject to vesting only in the event the Separation occurred prior to December 31, 2021.
- (16) Restricted stock unit award vests in four equal annual installments through August 2, 2025, subject to continued service with us through each applicable vesting date.
- (17) Restricted stock unit award vests in four equal annual installments through June 1, 2025, subject to continued service with us through each applicable vesting date.
- (18) Restricted stock unit award vests as to 40% of such restricted stock units upon approval by the U.S. Food and Drug Administration of the Biologics Licensing Application for beti-cel for the treatment of patients with transfusion dependent beta-thalassemia; and the remaining 60% of such restricted stock units will vest upon the acceptance by the U.S. Food and Drug Administration of the Biologics Licensing Application for lovo-cel for the treatment of patients with sickle cell disease.
- (19) 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.
- (20) All unvested stock options and restricted stock awards were granted under either our 2013 Plan or our Inducement Plan. The market value of the restricted stock unit award is based on the closing price of \$9.99 per share for our common stock on December 31, 2021, as reported on the NASDAQ Global Select Market.
- (21) Messrs. Leschly and Baird and Dr. Gregory terminated employment in connection with the Separation. Pursuant to the employee matters agreement bluebird equity awards held by them that were granted prior to January 1, 2021 were bifurcated such that holders continued to hold equity awards with respect to the common stock of both bluebird and 2seventy bio after the Separation. The equity awards with respect to the common stock of 2seventy bio are not shown in the table above.

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, 2021. Except as set forth in the table below, none of the other named executive officers exercised any stock options or had any stock awards vest during the year ended December 31, 2021. The numbers set forth in the table reflect the adjustments effected in connection with the Separation.

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)
Andrew Obenshain	—	—	12,089 ⁽³⁾	241,553
Jason Cole	—	—	15,306 ⁽³⁾	402,313
Nick Leschly	313,980	4,998,385	51,713	1,453,896
William D. Baird, III	—	—	12,956 ⁽³⁾	344,178
Philip Gregory, D. Phil	—	—	17,338 ⁽³⁾	460,854

- (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.
- (3) Includes fully-vested shares of common stock granted to each executive in lieu of a portion of their annual cash incentive bonus for 2021. Messrs. Obenshain, Cole and Baird and Dr. Gregory received 3,188, 3,343, 3,306 and 3,338 shares, respectively.

Employment Arrangements with our Named Executive Officers

Andrew Obenshain. We have entered into an employment agreement, effective as of January 7, 2021, with Mr. Obenshain providing for his employment as the Company's President, Severe Genetic Disease. Mr. Obenshain currently serves as our Chief Executive Officer and Principal Executive Officer. Under his agreement Mr. Obenshain was initially entitled to

receive a base salary of \$435,000 (which has been subsequently increased as described above), subject to adjustment at the discretion of the Compensation Committee. Mr. Obenshain is also currently eligible for an annual cash incentive award targeted at 60% of his annual base salary. Mr. Obenshain is eligible to participate in our employee benefit plans, subject to the terms of those plans.

Jason Cole. We have entered into an employment agreement, effective as of February 3, 2014, as subsequently amended March 7, 2016 and November 3, 2016, with Mr. Cole providing for his employment as the Company's Chief Legal Officer. Mr. Cole currently serves as our Chief Business Officer and Chief Financial Officer. Under his agreement Mr. Cole was entitled to receive a base salary of \$340,000 (which has been subsequently increased as described above), subject to adjustment at the discretion of the Compensation Committee. Mr. Cole is also currently eligible for an annual cash incentive award targeted at 45% of his annual base salary. The agreement also provided for a signing bonus and initial stock option grant for Mr. Cole. Mr. Cole is eligible to participate in our employee benefit plans, subject to the terms of those plans.

Gina Consylman. We have entered into an employment agreement, effective as of June 1, 2021, with Ms. Consylman providing for her employment as the Company's Chief Financial Officer. Ms. Consylman was entitled to receive a base salary of \$480,000, subject to adjustment at the discretion of the Compensation Committee. Ms. Consylman was also eligible for an annual cash incentive award targeted at 45% of her annual base salary. Ms. Consylman was eligible to participate in our employee benefit plans, subject to the terms of those plans.

Ms. Consylman provided notice of her resignation from employment with us effective April 3, 2022.

Thomas J. Klima. We have entered into an employment agreement, effective as of April 20, 2021, with Mr. Klima providing for his employment as the Company's Chief Commercial Officer. Under his agreement Mr. Klima is entitled to receive a base salary of \$400,000 (which has been subsequently increased as described above), subject to adjustment at the discretion of the Compensation Committee. Mr. Klima is also eligible for an annual cash incentive award targeted at 45% of his annual base salary. Mr. Klima is eligible to participate in our employee benefit plans, subject to the terms of those plans.

Nick Leschly. We previously 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 previously received an annual base salary of \$750,500. Mr. Leschly was also eligible for an annual cash incentive award targeted at 65% of his annual base salary. Mr. Leschly was eligible to participate in our employee benefit plans, subject to the terms of those plans.

Upon the Separation, Mr. Leschly ceased his employment with us and commenced employment with 2seventy bio.

William D. Baird, III. We previously entered into an employment agreement, effective as of December 18, 2018, with Mr. Baird for the position of Chief Financial Officer. Mr. Baird previously received an annual base salary of \$491,300. Mr. Baird was 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 was 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.

Upon the Separation, Mr. Baird ceased his employment with us and commenced employment with 2seventy bio.

Philip Gregory, D. Phil. We previously entered into an employment agreement with Dr. Gregory, effective as of May 30, 2015, and amended on November 3, 2016. Dr. Gregory served as our Chief Scientific Officer and previously received an annual base salary of \$496,300. Dr. Gregory was 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 was eligible to participate in our employee benefit plans, subject to the terms of those plans.

Upon the Separation, Dr. Gregory ceased his employment with us and commenced employment with 2seventy bio.

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, 2021 are set forth under *Outstanding Equity Awards at Fiscal Year End* above.

Involuntary termination of employment

Pursuant to their employment agreements, each named executive officer is (or in the case of Messrs. Leschly and Baird and Dr. Gregory was) eligible to receive certain payments and benefits in the event his or her employment is terminated by us without “cause” (as defined in the employment agreements) or in the event he or she terminates his or her 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 or she 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 or her health insurance if he or she 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 named executive officers terminates (or in the case of Messrs. Leschly and Baird and Dr. Gregory terminated) his or her employment with us for good reason or his or her 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 or she 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 or she 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 or her health insurance if he or she 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 or her employment agreement will become fully exercisable and non-forfeitable as of the date of the named executive officer’s termination.

Messrs. Leschly and Baird and Dr. Gregory resigned from employment with us upon the Separation and immediately commenced employment with 2seventy bio. As a result, none of such executives was entitled to any severance or change of control benefits in connection with such transition of their employment. In addition, Ms. Consylman was not entitled to any severance benefits in connection with her resignation in 2022.

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, 2021 under our current employment agreements in various termination and change in control situations has been estimated in the tables below. Messrs. Leschly and Baird and Dr. Gregory terminated employment with us upon the Separation and were not entitled to any termination benefits in connection therewith.

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, 2021, the last business day of the fiscal year ended December 31, 2021. The per share closing price of the Company’s stock on the NASDAQ Global Select Market as of December 31, 2021, the last trading day of 2021, was \$9.99, 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, 2021, by the difference between the per share closing price of the Company’s stock as of December 31, 2021, and the per share exercise price for such unvested option shares, as adjusted for the Separation. The value of restricted stock unit vesting acceleration (for both time- and performance-vesting restricted stock units) was calculated by multiplying the number of unvested restricted stock units

subject to vesting acceleration as of December 31, 2021, as adjusted for the Separation, by the per share closing price of the Company's stock as of December 31, 2021.

Andrew Obenshain. The following table describes the potential payments and benefits upon employment termination for Mr. Obenshain as if his employment terminated as of December 31, 2020, 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 (\$)
Compensation:					
Base salary	—	625,000 (1)	625,000 (1)	—	625,000 (2)
Cash incentive compensation	—	—	—	—	375,000 (3)
Acceleration of unvested and outstanding stock options and restricted stock unit awards	—	—	—	—	2,425,441 (4)
Benefits and Perquisites:					
Health care continuation	—	24,380 (5)	24,380 (5)	—	24,380 (5)
Total	—	649,380	649,380	—	3,449,821

- (1) Twelve months of 2021 base salary continuation.
- (2) One times base salary in effect prior to the termination, payable in a lump sum.
- (3) Target bonus for 2021, payable in a lump sum.
- (4) Value attributable to the acceleration of 100% of Mr. Obenshain's 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, 2021. Mr. Obenshain's then unvested options were "underwater" as of December 31, 2021 and as a result did not have a positive aggregate spread value.
- (5) Payment of the COBRA health and dental insurance premiums for Mr. Obenshain 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.

Gina Consylman. The following table describes the potential payments and benefits upon employment termination for Ms. Consylman, as if her employment terminated as of December 31, 2021, 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 (\$)
Compensation:					
Base salary	—	480,000 (1)	480,000 (1)	—	480,000 (2)
Cash incentive compensation	—	—	—	—	216,000 (3)
Acceleration of unvested and outstanding stock options and restricted stock unit awards	—	—	—	—	1,149,609 (4)
Benefits and Perquisites:					
Health care continuation	—	24,380 (5)	24,380 (5)	—	24,380 (5)
Total	—	504,380	504,380	—	1,869,989

- (1) Twelve months of 2021 base salary continuation.
- (2) One times base salary in effect prior to the termination, payable in a lump sum.
- (3) Target bonus for 2021, payable in a lump sum.
- (4) Value attributable to the acceleration of 100% of Ms. Consylman'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, 2021, 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, 2021.
- (5) Payment of the COBRA health and dental insurance premiums for Ms. Consylman and her 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 Cole. The following table describes the potential payments and benefits upon employment termination for Mr. Cole, as if his employment terminated as of December 31, 2021, 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 (\$)
Compensation:					
Base salary	—	472,000 (1)	472,000 (1)	—	472,000 (2)
Cash incentive compensation	—	—	—	—	212,400 (3)
Acceleration of unvested and outstanding stock options and restricted stock unit awards	—	—	—	—	1,682,586 (4)
Benefits and Perquisites:					
Health care continuation	—	24,380 (5)	24,380 (5)	—	24,380 (6)
Total	—	496,380	496,380	—	2,391,366

- (1) Twelve months of 2021 base salary continuation.
- (2) One times base salary in effect prior to the termination, payable in a lump sum.
- (3) Target bonus for 2021, payable in a lump sum.
- (4) Value attributable to the acceleration of 100% of Mr. Cole's 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, 2021. Mr. Cole's then unvested options were "underwater" as of December 31, 2021 and as a result did not have a positive aggregate spread value.
- (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.
- (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.

Thomas J. Klima. The following table describes the potential payments and benefits upon employment termination for Mr. Klima, as if his employment terminated as of December 31, 2021, 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 (\$)
Compensation:					
Base salary	—	400,000 (1)	400,000 (1)	—	400,000 (2)
Cash incentive compensation	—	—	—	—	180,000 (3)
Acceleration of unvested and outstanding stock options and restricted stock unit awards	—	—	—	—	501,418 (4)
Benefits and Perquisites:					
Health care continuation	—	— (5)	— (5)	—	— (5)
Total	—	400,000	400,000	—	1,081,418

- (1) Twelve months of 2021 base salary continuation.
- (2) One times base salary in effect prior to the termination, payable in a lump sum.
- (3) Target bonus for 2021, payable in a lump sum.
- (4) Value attributable to the acceleration of 100% of Mr. Klima's 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, 2021. Mr. Klima's then unvested options were "underwater" as of December 31, 2021 and as a result did not have a positive aggregate spread value.
- (5) Mr. Klima was not enrolled in Company group health insurance plans on December 31, 2021 and as a result, notwithstanding his employment agreement, would not have been entitled to payment of continued COBRA insurance premiums in connection with his termination of employment.

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, which we refer to as the CEO Pay Ratio. The paragraphs that follow describe our methodology and the resulting CEO Pay Ratio.

Measurement Date

We have historically used October 1st of the applicable year to determine the employee population and to apply the compensation measure for purposes of complying with Item 402(u) of Regulation S-K. For 2021, we again used October 1, 2020 as our determination date and concluded that there has been no change in our employee population or employee compensation arrangements since 2020 that we believe would significantly impact the pay ratio disclosure for 2021 and require the calculation of a new median employee. As a result, we identified the median employee using our employee population on October 1, 2020 (including all employees, whether employed on a full-time, part-time, seasonal or temporary basis). The “consistently applied compensation measure” we used to identify our median employee in 2020 is described in our Definitive Proxy Statement on Schedule 14A filed with the SEC on April 30, 2021.

For purposes of this section, we calculated the existing 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 \$203,570. Our Chief Executive Officer serving as of October 1, Mr. Leschly’s, compensation as reported in the *Summary Compensation Table* was \$7,332,683. Therefore, our CEO Pay Ratio is approximately 36:1.

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 is responsible for making recommendations to our Board 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 an annual 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 the companies in our peer group.

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 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 service to support the long-term value of the Company.

Based on these considerations, our Board has adopted a non-employee director compensation policy, which provides for annual cash retainers. The non-executive chair of our Board and the chair of each of our committees is entitled to greater compensation for his or her services than other members of our Board, 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. The table below sets forth the cash retainer applicable to our directors in 2021.

Annual cash retainers under the Non-Employee Director Compensation Policy	2021 Cash Retainer (\$)	
Board:		
All non-employee members of the Board	\$	45,000
Additional retainer for non-executive chair of the	\$	35,000
Audit Committee:		
Additional retainer for chair of the Audit Committee	\$	18,000
Additional retainer for other members of the Audit Committee	\$	9,000
Compensation Committee:		
Additional retainer for chair of the Compensation Committee	\$	15,000
Additional retainer for other members of the Compensation	\$	7,500
Nominating and Corporate Governance Committee:		
Additional retainer for chair of the Nominating and Corporate Governance Committee	\$	10,000
Additional retainer for other members of the Nominating and Corporate Governance Committee	\$	5,000

In addition, under our non-employee director compensation policy, new members of our Board are eligible for an initial equity grant under our stock option plan. The initial equity grant takes the form of a grant of stock options and restricted stock units that vest in equal annual installments over a three-year period. In addition, on the date of the annual meeting of stockholders, each continuing non-employee director who has served on the Board for a minimum of six months will be eligible to receive an annual equity grant in the form stock options and restricted stock units. These annual equity grants 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. The number of shares subject to the initial equity grants and the annual equity grants are summarized in the table below. The non-executive chair of our Board is eligible to receive an additional equity grant with a value that is greater than those of the other members of the Board, which we believe is commensurate with the additional time commitment and additional responsibility that the chair of our Board takes on. In the case of each initial equity grant and annual equity grant, the Board 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. 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 equity grant policy applicable to our directors in 2021 is summarized below.

Equity grants under the Non-Employee Director Compensation Policy	Stock options (# of shares)	Restricted Stock Units (# of shares)
Initial equity grant	7,500	4,663
Annual equity grant	5,000	3,109
Additional initial equity grant for non-executive chair of the Board	2,000	1,244
Additional annual equity grant for non-executive chair of the Board	2,000	1,244

Going forward, non-employee director compensation (other than that for new directors or for the chair of the Board) will be limited to no more than the 75th percentile of director compensation of the peer group, as updated annually with the assistance and advice of an independent compensation consultant. At this time, our Compensation Committee is continuing to review our non-employee director compensation policy for 2022.

The following table sets forth the compensation we paid to our non-employee directors during the year ended December 31, 2021. 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 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 in the year ended December 31, 2021. Mr. Obenshain, our current Chief Executive Officer, and Mr. Leschly, our former Chief Executive Officer, each received no compensation for his service as a director, and, consequently, is not included in this table. The compensation received by Mr. Obenshain and Mr. Leschly as an employee during the year ended December 31, 2021 is presented in *Summary Compensation Table* above.

Name(1)	Fees earned or paid in cash\$(2)	Option awards\$(2)	Stock awards\$(2)	Total(\$)
John O. Agwunobi, M.D.	51,750	118,147	102,068	272,000
Wendy Dixon, Ph. D.(3)	55,350	118,147	102,068	275,600
Ramy Ibrahim(3)	50,000	105,110	210,878	365,988
Daniel S. Lynch(3)	93,600	82,390	142,909	318,899
David Schenkein, M.D.(3)	-	-	-	-
William R. Sellers, M.D.(3)	40,500	58,850	102,068	201,418
Mark Vachon	69,200	118,147	102,068	289,416
Elisabeth Leiderman, M.D.(3)	12,338	186,857	97,457	296,643
Najoh Tita-Reid(3)	14,375	190,019	88,504	292,949
Denice Torres(3)	57,500	58,850	102,068	218,453
Sara Glickman(3)	-	94,650	88,504	183,154
Marcela Maus(3)	-	96,075	80,996	177,071

- (1) The aggregate number of shares of our common stock underlying stock options outstanding as of December 31, 2021 for the non-employee directors were: Dr. Agwunobi: 31,401, Dr. Dixon: 59,426, Mr. Lynch: 69,842, Dr. Schenkein 52,534, Dr. Sellers: 10,829, Mr. Vachon: 32,189, Dr. Leiderman: 15,057, Ms. Tita-Reid: 15,057 and Mr. Torres: 4,430. The aggregate number of restricted stock units outstanding as of December 31, 2021 for the non-employee directors was: Dr. Agwunobi: 6,241, Mr. Vachon: 6,241, Dr. Leiderman: 9,361, and Ms. Tita-Reid: 9,361. None of the other non-employee directors held any stock awards as of December 31, 2021.
- (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 2020 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 March 4, 2022 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, 2021. 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. Dixon, Mr. Ibrahim, Mr. Lynch, Dr. Sellers and Mr. Torres each resigned from our Board in November 2021 in connection with the Separation. Dr. Schenkein resigned in January 2021. Dr. Leiderman and Ms. Tita-Reid joined our Board in October 2021 and September 2021, respectively. Ms. Glickman and Mr. Maus joined our Board in September 2021 and resigned from our Board in November 2021 in connection with the Separation.

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 25, 2022, 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 25, 2022, bluebird had 71,446,898 shares of common stock outstanding. Shares of common stock subject to options to purchase, which are now exercisable or are exercisable within 60 days after April 25, 2022, or restricted stock units vesting within 60 days after April 25, 2022 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
5% Stockholders		
State Street Corporation (1)	13,151,891	18.4%
The Vanguard Group (2)	7,233,590	10.1%
Wellington Management Group LLP (3)	6,140,000	8.6%
BlackRock, Inc. (4)	5,912,002	8.3%
The Charger Corporation (5)	5,204,825	7.3%
Directors and Named Executive Officers		
Nick Leschly (6)	1,190,553	1.6%
John Agwunobi, M.D. (7)	43,966	*
Charlotte Jones-Burton, M.D.	—	—
Elisabeth Leiderman, M.D.	—	—
Najoh Tita-Reid	—	—
Mark Vachon (8)	42,087	*
William D. Baird, III (9)	72,533	*
Jason Cole (10)	177,098	*
Gina Consylman	—	—
Philip Gregory, D. Phil. (11)	172,981	*
Thomas J. Klima (12)	39,734	*
Andrew Obenshain (13)	84,982	*
All executive officers and directors as a group (10 persons) (14)	1,628,091	2.2%

* Represents holdings of less than 1%.

- (1) Based solely on a Schedule 13G/A reporting beneficial ownership as of March 31, 2022, filed with the SEC on April 11, 2022, State Street Corporation has shared voting power with respect to 13,013,070 shares and shared dispositive power with respect to 13,151,891 shares, and SSGA Funds Management, Inc. has shared voting power with respect to 11,868,400 shares and shared dispositive power with respect to 11,882,800 shares. The address of each of these entities is State Street Financial Center, 1 Lincoln Street, Boston, Massachusetts 02111.
- (2) Based solely on a Schedule 13G/A reporting beneficial ownership as of December 31, 2021, filed with the SEC on February 9, 2022, The Vanguard Group has shared voting power with respect to 53,838 shares, sole dispositive power with respect to 7,120,948 shares, and shared dispositive power with respect to 112,642 shares. The address of The Vanguard Group is 100 Vanguard Blvd., Malvern, Pennsylvania 19355.
- (3) Based solely on a Schedule 13G/A reporting beneficial ownership as of December 31, 2021, filed with the SEC on February 4, 2022, Wellington Management Group LLP, Wellington Group Holdings LLP, Wellington Investment Advisors Holdings LLP and Wellington Management Company LLP each have shared voting power with respect to 6,140,000 shares and shared dispositive power with respect to 6,140,000 shares. The address of each of these entities is c/o Wellington Management Company LLP, 280 Congress Street, Boston, Massachusetts 02210.

- (4) Based solely on a Schedule 13G/A reporting beneficial ownership as of December 31, 2021, filed with the SEC on February 3, 2022, BlackRock, Inc. has sole voting power with respect to 5,747,306 shares and sole dispositive power with respect to 5,912,002 shares. The address of BlackRock, Inc. is 55 East 52nd Street, New York, New York 10055.
- (5) Based solely on a Schedule 13G reporting beneficial ownership as of December 31, 2021, filed with the SEC on January 26, 2022, First Trust Advisors L.P. and The Charger Corporation each have shared voting power with respect to 5,204,825 shares and shared dispositive power with respect to 5,204,825 shares. The address of each of these entities is 120 East Liberty Drive, Suite 400, Wheaton, Illinois 60187.
- (6) Consists of 427,877 shares of common stock and 762,676 shares of common stock underlying options exercisable within 60 days of April 25, 2022. Such shares include 45,699 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, and 123,000 shares of common stock held in the Nick Leschly Irrevocable GST Trust of 2019 for which Mr. Leschly is co-trustee with his spouse, and with whom he shares voting and dispositive power.
- (7) Consists of 6,324 shares of common stock and 37,642 shares of common stock underlying options exercisable and restricted stock units vesting within 60 days of April 25, 2022.
- (8) Consists of 3,657 shares of common stock and 38,430 shares of common stock underlying options exercisable and restricted stock units vesting within 60 days of April 25, 2022.
- (9) Consists of 11,450 shares of common stock and 61,083 shares of common stock underlying options exercisable within 60 days of April 25, 2022.
- (10) Consists of 29,952 shares of common stock and 147,146 shares of common stock underlying options exercisable within 60 days of April 25, 2022.
- (11) Consists of 25,007 shares of common stock and 147,974 shares of common stock underlying options exercisable within 60 days of April 25, 2022.
- (12) Consists of 0 shares of common stock and 39,734 shares of common stock underlying options exercisable and restricted stock units vesting within 60 days of April 25, 2022.
- (13) Consists of 17,613 shares of common stock and 67,369 shares of common stock underlying options exercisable within 60 days of April 25, 2022.
- (14) Consists of 487,282 shares of common stock and 1,140,809 shares of common stock underlying options exercisable and restricted stock units vesting within 60 days of April 25, 2022.

Equity compensation plan information

The following table presents aggregate summary information as of December 31, 2021, regarding our existing equity compensation plans.

Plan Category	Column (A) Number of Securities to be Issued Upon Exercise of Outstanding Options, Restricted Stock Units and Other Rights	Column (B) Weighted Average Exercise Price of Outstanding Options	Column (C) 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)	6,357,842 (2)(3)	\$ 41.50 (3)(4)	3,704,673 (5)(6)
Equity Compensation Plans Not Approved by Stockholders (7)	421,617	\$ 11.49	178,383
Total	6,779,459	\$ 39.23	3,883,056

- (1) Consists of the 2013 Plan and the 2013 Employee Stock Purchase Plan and the 2013 Employee Stock Purchase Plan (the "ESPP").
- (2) Includes 3,193,368 shares subject to restricted stock units and 3,586,091 shares to be issued upon the exercise of outstanding stock options.
- (3) Excludes purchase rights accruing under the 2013 Employee Stock Purchase Plan.
- (4) The calculation does not take into account the 3,193,368 shares of common stock subject to outstanding restricted stock units. Such shares will be issued at the time the restricted stock units 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, 2021, 1,454,964 shares of common stock were available for issuance under the ESPP, and 2,249,709 shares of common stock were available for issuance under the 2013 Plan. There was no ESPP purchase period in effect as of December 31, 2021 and as a result there were no rights to purchase shares under the ESPP outstanding as of December 31, 2021.
- (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 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 or Compensation Committee.
- (7) We established an Inducement Plan in May 2021 to be used exclusively for the grant of equity awards to prospective officers and employees who were not previously an employee or non-employee director as an inducement material to each such individual entering into employment with us. The Inducement Plan initially reserved 600,000 shares for the issuance of awards to such individuals of non-qualified stock options, stock appreciation rights, restricted stock units, restricted stock awards, stock awards and/or dividend equivalent rights in the discretion of the plan administrator and in accordance with NASDAQ rules. Our compensation committee currently administers the Inducement Plan.

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 General Counsel 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. If pre-approval is required, such matters will be reviewed at the next regular or special Audit Committee and/or Board 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 General Counsel 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

The following are certain transactions, arrangements and relationships with our directors, executive officers and stockholders owning 5% or more of our outstanding common stock, or any member of the immediate family of any of the foregoing persons, since January 1, 2021, other than equity and other compensation, termination, change in control and other arrangements, which are described under "Executive Officer and Director Compensation."

Agreements with 2seventy bio, Inc.

In connection with the Separation, we entered into a separation agreement with 2seventy bio that, among other things, set forth bluebird's agreements with 2seventy bio regarding the principal actions to be taken in connection with the Separation. Nick Leschly, our former Chief Executive Officer, William D. Baird, III, our former Chief Financial Officer, and Philip Gregory, our former Chief Scientific Officer, are executive officers of 2seventy bio, and Mr. Leschly is a member of our Board. The separation agreement identified assets transferred to, liabilities assumed by and contracts assigned to 2seventy bio as part of the Separation, and it provided for when and how these transfers, assumptions and assignments occurred. The purpose of the separation agreement was to provide 2seventy bio and bluebird with assets to operate their respective businesses and retain or assume liabilities related to those assets. Each of 2seventy bio and bluebird agreed to releases, with respect to pre-Separation claims, and cross indemnities, with respect to post-Separation claims, that were principally designed to place financial responsibility for the obligations and liabilities allocated to 2seventy bio under the separation agreement with 2seventy bio and financial responsibility for the obligations and liabilities allocated to bluebird under the separation agreement with bluebird. bluebird and 2seventy bio are also each subject to mutual 12-month employee non-solicit and non-hire restrictions, subject to certain customary exceptions.

In connection with the Separation, we also entered into two transition services agreements with 2seventy bio. Pursuant to the transition services agreements, we are obligated to provide and are entitled to receive certain transition services related to corporate functions, such as finance, human resources, internal audit, research and development, financial reporting, and information technology. Services provided by us to 2seventy bio will continue for an initial term of up to two years, unless earlier terminated or extended according to the terms of the transition services agreement. Services received and performed are paid at a mutually agreed upon rate. During the year ended December 31, 2021, we incurred \$0.7 million of net expense for services provided by 2seventy bio. In April 2022, we and 2seventy bio agreed to amend certain terms of the transition services agreement to reduce our occupancy of a shared facility with 2seventybio and reduce the related fees.

We also entered into a tax matters agreement with 2seventy bio governing bluebird's and 2seventy bio's respective rights, responsibilities and obligations with respect to taxes (including taxes arising in the ordinary course of business and taxes, if any, incurred as a result of any failure of the distribution and certain related transactions to qualify as tax-free for U.S. federal income tax purposes), tax attributes, the preparation and filing of tax returns, the control of audits and other tax proceedings, and assistance and cooperation in respect of tax matters.

In addition, we entered into an employee matters agreement with 2seventy bio. The employee matters agreement allocates assets, liabilities and responsibilities relating to the employment, compensation and employee benefits of bluebird and 2seventy bio employees, and other related matters, in connection with the Separation, including the treatment of outstanding bluebird incentive equity awards and certain retirement and welfare benefit obligations. The employee matters agreement generally provides that, unless otherwise specified, 2seventy bio is responsible for liabilities associated with employees who transfer to 2seventy bio and employees whose employment terminated prior to the distribution but who primarily supported the 2seventy bio business, and bluebird is responsible for liabilities associated with other employees, including employees retained by bluebird. Pursuant to the employee matters agreement, the outstanding bluebird equity awards held by 2seventy bio and bluebird employees were adjusted immediately prior to the distribution, with the intent to maintain, immediately following the distribution, the economic value of the awards immediately before the distribution date.

We additionally entered into an intellectual property license agreement with 2seventy bio, pursuant to which each party granted a license to certain intellectual property and technology to the other. bluebird granted 2seventy bio a perpetual, worldwide, non-exclusive, royalty-free, fully paid-up license (or, as the case may be, sublicense) to certain intellectual property to allow 2seventy bio to use such intellectual property in connection with 2seventy bio's ongoing and future research and development activities and product candidates. 2seventy bio granted bluebird a perpetual, worldwide, non-exclusive, royalty-free, fully paid-up license (or, as the case may be, sublicense) to certain intellectual property for use in bluebird's existing products and product candidates. Such licenses between the parties generally allow current or future uses of the intellectual property in connection with each party's respective fields.

Delinquent Section 16(a) Reports

Section 16(a) of the Securities Exchange Act of 1934, as amended, requires our executive officers and directors (and persons who own more than 10% of our equity securities) to file reports of ownership and changes in ownership with the SEC. Based solely on our review of forms filed electronically with the SEC and written representations from the reporting persons, the Company has determined that no reporting person known to it was delinquent with respect to their reporting obligations during 2021 or prior years, other than as previously disclosed, except for a late Form 4 filed on November 17, 2021 for each of William D. Baird, III, Jason F. Cole, Wendy Dixon, Sarah Glickman, Philip Gregory, Ramy Ibrahim, Nick Leschly, Daniel Lynch, Marcela Maus, Andrew Obenshain, William R. Sellers, and Denice Torres, to report the conversion of shares and stock options beneficially owned following the completion of the Company's Separation on November 4, 2021.

AUDIT COMMITTEE REPORT (1)

The Audit Committee has reviewed our audited financial statements for the fiscal year ended December 31, 2021 and has discussed these statements with management and representatives of Ernst & Young LLP, the our independent registered public accounting firm. Our management is responsible for the preparation of our 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 our accounting principles and such other matters as are required to be discussed with the Audit Committee under audit standards of the Public Company Accounting Oversight Board (PCAOB). The Audit Committee is responsible for providing independent, objective oversight of our 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 our independent registered public accounting firm is required to provide to the Audit Committee, including the applicable requirements of the PCAOB and the SEC. PCAOB Audit Standards require 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 us.

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 that the audited financial statements be included in our Annual Report on Form 10-K for the fiscal year ended December 31, 2021, for filing with the SEC.

Respectfully submitted by the Audit Committee,

Elisabeth Leiderman, M.D., Chairperson
John O. Agwunobi, M.D.
Mark Vachon

(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, 2022. 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.

Our organizational documents do not require that the stockholders ratify the selection of Ernst & Young LLP as our 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. Abstentions will have no effect on the ratification. Brokers, bankers and other nominees have discretionary voting power on this routine matter; as such, we do not anticipate any broker non-votes in connection with this proposal. If the stockholders do not ratify the selection of Ernst & Young LLP, 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 the company 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 the company consistent with our 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, 2021 and 2020.

	Fiscal Year 2021	Percentage of 2021 Services Approved by Audit Committee	Fiscal Year 2020	Percentage of 2020 Services Approved by Audit Committee
Audit fees (1)	\$ 1,928,500	100%	\$ 1,210,003	100%
Audit-related fees (2)	\$ 1,365,000	100%	\$ 240,330	100%
Tax fees (3)	\$ 1,076,223	100%	\$ 528,228	100%
All other fees (4)	\$ 5,700	100%	\$ 5,790	100%
Total fees	<u>\$ 4,375,423</u>	100%	<u>\$ 1,984,351</u>	100%

- (1) Audit fees in 2021 and 2020 include fees for our annual audit, including internal control attestation, and quarterly review procedures. Additionally, audit fees in 2021 include fees incurred for audit related activities associated with the sale of our manufacturing facility and audit fees in 2020 include fees incurred in connection with our public securities offerings, 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 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

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., 455 Grand Union Boulevard, Somerville, Massachusetts 02145: (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 our 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 2023 Annual Meeting of Stockholders may do so by following the procedures prescribed in Rule 14a-8 under the Securities Exchange Act 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 2023 Annual Meeting made under Rule 14a-8 by January 2, 2023.

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 2023 Annual Meeting of Stockholders, notice must be delivered to our Secretary no earlier than the close of business on February 22, 2023 (120 calendar days prior to the first anniversary of our 2022 Annual Meeting) and no later than the close of business on March 24, 2023 (90 calendar days prior to the first anniversary of our 2022 Annual Meeting), unless the date of the 2023 Annual Meeting is advanced by more than thirty (30) days or delayed by more than sixty (60) days from the anniversary date of the 2022 Annual Meeting, in which event the By-laws provide that notice must be delivered to our Secretary no later than the close of business on the later of the ninetieth (90th) day prior to the scheduled date of the 2023 Annual Meeting or the tenth (10th) day following the day on which public announcement of the date of such meeting is first made.

In addition to satisfying the foregoing requirements under our By-laws, to comply with the universal proxy rules, stockholders who intend to solicit proxies in support of director nominees other than the Company's nominees must provide notice that sets forth the information required by Rule 14a-19 under the Exchange Act no later than April 23, 2023.

Any proposal of business or nomination should be mailed to: Helen Fu, Secretary, bluebird bio, Inc., 455 Grand Union Boulevard, Somerville, Massachusetts 02145.

In connection with our solicitation of proxies for our 2023 Annual Meeting, we intend to file a proxy statement and WHITE proxy card with the SEC. Stockholders may obtain our proxy statement (and any amendments and supplements thereto) and other documents as and when filed with the SEC without charge from the SEC's website at: www.sec.gov.

Other Stockholder Communications

Generally, stockholders who have questions or concerns should contact our Investor Relations department at investor@bluebirdbio.com. However, stockholders who wish to communicate directly with our Board, or any individual director, should direct such communications in writing to bluebird bio, Inc., 455 Grand Union Boulevard, Somerville, Massachusetts 02145, Attention: Helen Fu, 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.

The Company's SEC filings are available to the public 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://investor.bluebirdbio.com>.

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 May 2, 2022. 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 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, 2021 as filed with the SEC. Requests for such copies should be addressed to:

bluebird bio, Inc.
455 Grand Union Boulevard
Somerville, Massachusetts 02145
(339) 499-9300
Attention: Helen Fu, 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, 2021, 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, 2021, he or she may contact bluebird bio, Inc., 455 Grand Union Boulevard, Somerville, Massachusetts 02145, (339) 499-9300, Attention: Helen Fu, Secretary, and bluebird will deliver those documents to such stockholder promptly upon receiving the request. Any such stockholder may also contact Helen Fu, 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 Helen Fu, Secretary.

OTHER BUSINESS

The Board knows of no business to be brought before the 2022 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 2022 Annual Meeting unless they receive instructions from you with respect to such matter.

