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

SCHEDULE 14A
(Rule 14a-101)

**INFORMATION REQUIRED IN PROXY STATEMENT
SCHEDULE 14A INFORMATION**

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

Filed by the Registrant

Filed by a party other than the Registrant

Check the appropriate box:

- Preliminary Proxy Statement
- Confidential, for Use of the Commission Only (as permitted by Rule 14a-6(e)(2))
- Definitive Proxy Statement
- Definitive Additional Materials
- Soliciting Material under §240.14a-12

bluebird bio, Inc.

(Name of Registrant as Specified in its Charter)

(Name of Person(s) Filing Proxy Statement, if Other Than the Registrant)

Payment of Filing Fee (Check all boxes that apply):

- No fee required.
- Fee paid previously with preliminary materials.
- Fee computed on table in exhibit required by Item 25(b) per Exchange Act Rules 14a-6(i)(1) and 0-11.
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[_____] , 2024

Dear Stockholder:

You are cordially invited to attend the 2024 Annual Meeting of Stockholders (the "Annual Meeting") of bluebird bio, Inc. The Annual Meeting will be held on November 6, 2024 at 8.30 a.m. EST 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 three Class II directors for three-year terms ("Proposal 1"), the approval of named executive officer compensation by a non-binding advisory vote ("Proposal 2"), the approval of an amendment to our Amended and Restated Certificate of Incorporation, as amended (the "Amended and Restated Certificate of Incorporation") to provide for the exculpation of officers for certain breaches of fiduciary duty to the extent permitted by the General Corporation Law of the State of Delaware ("Proposal 3"), the approval of amendments to our Amended and Restated Certificate of Incorporation to effect a reverse stock split of our common stock at a ratio ranging from any whole number between 1-for-15 and 1-for-20, as determined by our Board of Directors in its discretion ("Proposal 4"), the approval of an amendment and restatement of our 2023 Incentive Award Plan to, among other things, increase the number of shares of our common stock authorized for issuance thereunder ("Proposal 5"), the ratification of the appointment of Ernst & Young LLP as our independent registered public accounting firm for the fiscal year ending December 31, 2024 ("Proposal 6"), and the approval of an adjournment of the Annual Meeting, if necessary, to solicit additional proxies if there are not sufficient votes at the time of the Annual Meeting to approve Proposal 3, Proposal 4 and/or Proposal 5 ("Proposal 7").

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 Internet Availability of Proxy Materials 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 November 6, 2024. Your continuing interest in bluebird is very much appreciated.

Sincerely,

Andrew Obenshain
President & Chief Executive Officer



NOTICE OF 2024 ANNUAL MEETING OF STOCKHOLDERS

Date November 6, 2024
Time 8:30 a.m. Eastern Time
Place 455 Grand Union Boulevard, Somerville, Massachusetts 02145

Record Date

September 16, 2024. 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

- To elect John O. Agwunobi, Elisabeth Leiderman and Andrew Obenshain as Class II members of the Board of Directors, to serve until the Company's 2027 Annual Meeting of Stockholders and until their successors are duly elected and qualified ("Proposal 1");
- To approve, on a non-binding, advisory basis, the compensation paid to the Company's named executive officers ("Proposal 2");
- To approve an amendment to the Company's Amended and Restated Certificate of Incorporation to provide for the exculpation of officers for certain breaches of fiduciary duty to the extent permitted by the General Corporation Law of the State of Delaware ("Proposal 3");
- To approve amendments to the Company's Amended and Restated Certificate of Incorporation to effect a reverse stock split of our common stock at a ratio ranging from any whole number between 1-for-15 and 1-for-20, as determined by our Board of Directors in its discretion ("Proposal 4");
- To approve an amendment and restatement of the Company's 2023 Incentive Award Plan to, among other things, increase the number of shares of our common stock authorized for issuance thereunder ("Proposal 5");
- To ratify the selection of Ernst & Young LLP as the Company's independent registered public accounting firm for the fiscal year ending December 31, 2024 ("Proposal 6");
- To approve an adjournment of the Annual Meeting, if necessary, to solicit additional proxies if there are not sufficient votes at the time of the Annual Meeting to approve Proposal 3, Proposal 4 and/or Proposal 5 ("Proposal 7"); 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 455 Grand Union Boulevard, Somerville, Massachusetts 02145

By order of the Board of Directors,

Joseph Vittiglio
Chief Legal and Business Officer and Secretary

Somerville, Massachusetts
[_____] , 2024

BLUEBIRD BIO, INC.
455 GRAND UNION BOULEVARD
SOMERVILLE, MASSACHUSETTS 02145

PROXY STATEMENT
FOR THE 2024 ANNUAL MEETING OF STOCKHOLDERS
TO BE HELD ON NOVEMBER 6, 2024
AT 8:30 AM EST

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 [____], 2024, we will begin mailing a Notice of Internet Availability of Proxy Materials and the proxy materials, including the Notice of 2024 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, 2023 (the "Annual Report") 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 [____], 2024. 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 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 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 November 6, 2024

The Notice of 2024 Annual Meeting of Stockholders, Proxy Statement and our Annual Report on Form 10-K for the fiscal year ended December 31, 2023, 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 2024 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 September 16, 2024.

How many votes can be cast by all stockholders?

A total of [____] shares of our common stock were outstanding on September 16, 2024, 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, **FOR** the approval of the amendment to the Amended and Restated Certificate of Incorporation to provide for exculpation of officers for certain breaches of fiduciary duty to the extent permitted by the General Corporation Law of the State of Delaware, **FOR** the approval of amendments to the Amended and Restated Certificate of Incorporation to effect a reverse stock split of our common stock at a ratio ranging from any whole number between 1-for-15 and 1-for-20, as determined by our Board of Directors in its discretion, **FOR** the approval of the amendment and restatement of the 2023 Incentive Award Plan to, among other things, increase the number of shares of common stock authorized for issuance thereunder, **FOR** the ratification of Ernst & Young LLP as our independent registered public accounting firm for the fiscal year ending December 31, 2023, and **FOR** the approval of an adjournment of the Annual Meeting, if necessary, to solicit additional proxies if there are not sufficient votes at the time of the Annual Meeting to approve Proposal 3, Proposal 4 and/or Proposal 5, 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** the election of John O. Agwunobi, Elisabeth Leiderman and Andrew Obenshain as Class II directors (page 7)

Proposal 2: **FOR** the approval, on a non-binding, advisory basis, of the compensation of our named executive officers (page 22)

Proposal 3: **FOR** the approval of the amendment to our Amended and Restated Certificate of Incorporation to provide for the exculpation of officers for certain breaches of fiduciary duty to the extent permitted by the General Corporation Law of the State of Delaware (page 23)

Proposal 4: **FOR** the approval of amendments to our Amended and Restated Certificate of Incorporation to effect a reverse stock split of our common stock at a ratio ranging from any whole number between 1-for-15 and 1-for-20, as determined by our Board of Directors in its discretion (page 41)

Proposal 5: **FOR** the approval of the amendment and restatement of our 2023 Incentive Award Plan to, among other things, increase the number of shares of common stock authorized for issuance thereunder (page 50)

Proposal 6: **FOR** ratification of the selection of Ernst & Young LLP as our independent registered public accounting firm (page 61); and

Proposal 7: **FOR** the approval of an adjournment of the Annual Meeting, if necessary, to solicit additional proxies if there are not sufficient votes at the time of the Annual Meeting to approve Proposal 3, Proposal 4 and/or Proposal 5 (page 62)

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), the non-binding advisory vote to approve named executive officer compensation (Proposal 2), the approval of the amendment to our Amended and Restated Certificate of Incorporation to provide for the exculpation of officers for certain breaches of fiduciary duty to the extent permitted by the General Corporation Law of the State of Delaware (Proposal 3) and the approval of the amendment and restatement of our 2023 Incentive Award Plan to, among other things, increase the number of shares of common stock authorized for issuance thereunder (Proposal 5) are non-routine matters. The approval of amendments to our Amended and Restated Certification of Incorporation to effect a reverse stock split of our common stock at a ratio ranging from any whole number between 1-for-15 and 1-for-20, as determined by our Board of Directors in its discretion (Proposal 4), the ratification of the appointment of our independent registered public accounting firm (Proposal 6) and the approval of an adjournment of the Annual Meeting, if necessary, to solicit additional proxies if there are not sufficient votes at the time of the Annual Meeting to approve Proposal 3, 4 or 5 (Proposal 7) are routine matters. 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. A broker non-vote occurs when a nominee holding shares for a beneficial owner does not vote on a particular proposal because the nominee does not have discretionary voting power with respect to that item and has not received instructions from the beneficial owner.

Proposal 1 – Election of three Class II director nominees

For the election of the three Class II 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 – Approval of the amendment to our Amended and Restated Certificate of Incorporation to provide for the exculpation of officers for certain breaches of fiduciary duty

For the approval of the amendment to our Amended and Restated Certificate of Incorporation to provide for the exculpation of officers for certain breaches of fiduciary duty to the extent permitted by the General Corporation Law of the State of Delaware, the holders of at least a majority of the outstanding shares of our common stock entitled to vote at the Annual Meeting must vote FOR this proposal. **Proposal 3 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 3. Abstentions and broker non-votes will have the effect of votes AGAINST Proposal 3.

Proposal 4 – Approval of amendments to our Amended and Restated Certificate of Incorporation to effect a reverse stock split of our common stock at a ratio ranging from any whole number between 1-for-15 and 1-for-20, as determined by our Board of Directors in its discretion

For the approval of amendments to our Amended and Restated Certificate of Incorporation to effect a reverse stock split of our common stock at a ratio ranging from any whole number between 1-for-15 and 1-for-20, as determined by our Board of Directors in its discretion, the holders of at least a majority of the outstanding shares of our common stock entitled to vote at the Annual Meeting must vote FOR this proposal. **Proposal 4 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 4. Therefore, we do not expect any broker non-votes with respect to this proposal. Abstentions will have the same effect as an AGAINST vote on Proposal 4.

Proposal 5 - Approval of the amendment and restatement of our 2023 Incentive Award Plan to, among other things, increase the number of shares of our common stock authorized for issuance thereunder.

For the approval of the amendment and restatement of our 2023 Incentive Award Plan, 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

outcome of the vote on Proposal 5. **Proposal 5 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 5. 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 5 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 5.

Proposal 6 – 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 2024 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 outcome of Proposal 6. **Proposal 6 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 6. Therefore, we do not expect any broker non-votes with respect to this proposal.

Proposal 7 – Approval of an adjournment of the Annual Meeting, if necessary, to solicit additional proxies if there are not sufficient votes at the time of the Annual Meeting to approve Proposal 3, Proposal 4 and/or Proposal 5

For the approval of an adjournment of the Annual Meeting, if necessary, to solicit additional proxies if there are not sufficient votes at the time of the Annual Meeting to approve Proposal 3, Proposal 4 and/or Proposal 5, 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 7. **Proposal 7 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 7. 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 amended 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 Joseph Vittiglio, 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. John O. Agwunobi, Elisabeth Leiderman and Andrew Obenshain are the Class II directors whose terms expire at this Annual Meeting. Each of John O. Agwunobi, Elisabeth Leiderman and Andrew Obenshain has been nominated for and has agreed to stand for re-election to the Board to serve as a Class II director of the Company until the 2027 Annual Meeting and until his or her successor is duly elected and qualified.

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, and we have one vacancy. 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 II DIRECTOR:

JOHN O. AGWUNOBI

ELISABETH LEIDERMAN

ANDREW OBENSHAIN

(PROPOSAL 1 ON YOUR PROXY CARD)

CORPORATE GOVERNANCE

Board Composition

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

Class I	Term expiring 2026
Class II	Current term expiring 2024, if elected, subsequent term expiring 2027
Class III	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 September 16, 2024 are as set forth below.

CLASS II DIRECTOR NOMINEES:

John O. Agwunobi, M.D.

Other Current Board Experience:

Ensign Group Inc. (ENSG)
U.S. African Development Foundation (private)

Previous Board Experience within the Last Five Years:

Herbalife Nutrition Inc. (HLF)
Magellan Health Inc. (MGLN)

Professional Highlights:

Dr. Agwunobi was Chief Executive Officer and Chairman of the Board of Herbalife Nutrition Inc. from 2020 to 2022. Previously, Dr. Agwunobi served as Co-President of Herbalife from May 2018 to 2020. He also served as Chief Health and Nutrition Officer at Herbalife, responsible for training, education, science strategy and product development from 2016 to 2018. Prior to joining Herbalife, Dr. Agwunobi was an independent consultant, advising a number of privately-held health-related companies, including serving as an advisory board member of Shopko Stores Operating Co., LLC on behalf of the private equity firm Sun Capital Partners. From September 2007 to April 2014, Dr. Agwunobi served as Senior Vice President and President of Health and Wellness for Wal-Mart (NYSE: WMT) in the United States where he grew the business and provided insight and advice on the company's health reform position. From December 2005 to September 2007, he served as the Assistant Secretary of Health for the U.S. Department of Health and Human Services, where he was responsible for disease prevention and health promotion. His responsibilities included the oversight of the Centers for Disease Control, National Institute of Health, the U.S. Food and Drug Administration, the Office of the U.S. Surgeon General, and numerous other public health offices and programs. Dr. Agwunobi also serves on the Board of the Ensign Group, Inc. and the Board of the U.S. African Development Foundation.

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.

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

Autolus Therapeutics (AUTL)

Previous Board Experience within the Last Five Years:

None

Professional Highlights:

Since June 2024, Dr. Leiderman has served as Chief Financial Officer and Corporate Development Officer at Dewpoint Therapeutics, a biotechnology company applying biomolecular condensates to drug discovery. From November 2022 to November 2023, Dr. Leiderman served as Chief Financial Officer and Chief Business Officer at Atsena Therapeutics, a clinical-stage gene therapy company. Before joining Atsena, from September 2020 to October 2022, Dr. Leiderman was Chief Financial Officer and Head of Corporate Development at Decibel Therapeutics, a clinical stage biotechnology company developing novel gene therapeutics for restoration of hearing loss and balance disorders. 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. Since December 2023, Dr. Leiderman has served on the Board of Directors of Autolus Therapeutics and is a member of the Audit Committee. Dr. Leiderman earned an M.D. from the American Medical Program at Tel Aviv University, an M.B.A. 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:**

Biotechnology Innovation Organization (BIO) (private)

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 2015, he held roles of increasing responsibility at Genzyme/Sanofi. Mr. Obenshain received his M.B.A. 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.

CONTINUING DIRECTORS:

Charlotte Jones-Burton, M.D., M.S.

Other Current Board Experience:

American Kidney Fund (private)
Women of Color in Pharma (private)

Previous Board Experience within the Last Five Years:

None

Professional Highlights:

Since May 2024, Dr. Jones-Burton has been Director and Head of Life Science Product Development and Strategy at 2Flo Ventures, an emerging venture capital firm and startup studio focused on the discovery, development, and commercialization of healthcare solutions. From January 2022 to November 2023, Dr. Jones-Burton 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. Prior to her 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, equity and inclusion.

Michael Cloonan

Other Current Board Experience:

Sionna Therapeutics (private)

Previous Board Experience within the Last Five Years:

Certego Therapeutics (private)

Professional Highlights:

Since May 2021, Mr. Cloonan has served as President and Chief Executive Officer of Sionna Therapeutics, where he leads company strategy and operations. From May 2017 to April 2021, Mr. Cloonan served as Chief Operating Officer at Sage Therapeutics, where he led all business functions (commercial, medical affairs, government affairs, business development, technical operations, strategy and program management) as well as general and administrative functions. Prior to Sage, Mr. Cloonan served in various business and commercial roles at Biogen for fourteen years, including most recently as Senior Vice President, U.S. Commercial, where he was the general manager of the multi-billion-dollar multiple sclerosis, hemophilia, and spinal muscular atrophy franchises. Prior to Biogen, Mr. Cloonan worked at Bain & Company as a consultant specializing in healthcare. Mr. Cloonan earned his M.B.A. from the Darden Graduate School of Business Administration at the University of Virginia and a B.A. from College of the Holy Cross.

Key Qualifications and Expertise:

Mr. Cloonan has extensive operating experience gained from serving as President and Chief Executive Officer at Sionna and leadership roles at Sage and Biogen.

Nick Leschly

Other Current Board Experience:

Synlogic, Inc. (SYBX)

2seventy bio, Inc. (TSVT)

Biotechnology Innovation Organization (BIO) (private)

Professional Highlights:

Mr. Leschly is Chairman of the Board of 2seventy bio, Inc., a cell and gene therapy company, and from November 2021 to March 2024, Mr. Leschly served as its Chief Executive Officer. 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.

Richard Paulson

Other Current Board Experience:

Karyopharm Therapeutics, Inc. (KPTI)

Sequent AG (private)

Professional Highlights:

Since 2021, Mr. Paulson has been President, Chief Executive Officer and Director at Karyopharm Therapeutics, a commercial-stage pharmaceutical company. Previously, Mr. Paulson was Executive Vice President of Ipsen Pharmaceuticals and Chief Executive Officer of Ipsen North America from 2018 to 2021 where he focused on innovative therapies and specialty care for oncology, neuroscience and rare diseases. Before joining Ipsen, Mr. Paulson worked at Amgen for 10 years holding various leadership positions across Europe and North America. Mr. Paulson received his M.B.A. from the University of Toronto and his B.Com in marketing and finance from the University of Saskatchewan.

Key Qualifications and Expertise:

Mr. Paulson has deep operating experience gained from serving as President, Chief Executive Officer and Director at Karyopharm and leadership roles at Ipsen and Amgen. Mr. Paulson also has significant experience in sales, marketing, and market access in the biotechnology and pharmaceutical fields.

Najoh Tita-Reid

Other Current Board Experience:

CMI Marketing, Inc. (private)

Previous Board Experience within the Last Five Years:

None

Professional Highlights:

Since November 2023, Ms. Tita-Reid has served as Chief Brand and Experience Officer at Mars Petcare, to lead brand, experience, digitalization and technology to drive business transformation. From April 2021 to October 2023, Ms. Tita-Reid served as Global Chief Marketing Officer for Logitech, a global manufacturer of computer peripherals, software and services, where she led the global marketing function. 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 held leadership positions at Bayer PLC, where she served as Vice President-Country Division Head for Consumer Care in the UK and 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 M.B.A. 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.

Mark Vachon (Chair of the Board)

Other Current Board Experience:

Beacon Mobility (private)

Clergy Trust of Boston (private)

Panoramic Health (private)

Previous Board Experience within the Last Five Years:

Charitable Health and Retirement Trust (private)

Klöckner Pentaplast Group (private)

Numotion (private)

Professional Highlights:

Mr. Vachon served as President and Executive Vice President at Change Healthcare Holdings, Inc. from November 2016 to April 2018. For over 30 years, Mr. Vachon held a variety of leadership positions across the General Electric organization, and was a company officer beginning in 1999 and a member of GE's Corporate Executive Council. Mr. Vachon was President and CEO of GE Healthcare Americas from 2009 to 2010, and prior to that he was President and CEO of Global Diagnostics Imaging, GE Healthcare, between 2006 and 2009. Between 2003 and 2006, Mr. Vachon was Executive Vice President and CFO of GE Healthcare. Mr. Vachon 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. Elisabeth Leiderman, one of our Class II directors, was recommended by a third-party search firm.

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 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					
	Agwunobi	Leiderman	Obenshain	Cloonan	Jones-Burton	Leschly	Paulson	Tita-Reid	Vachon
Expertise & Experience									
Public Company Experience	✓	✓	✓	✓	✓	✓	✓	✓	✓
International Business Experience		✓	✓	✓	✓	✓	✓	✓	✓
Corporate Governance Experience	✓	✓	✓	✓	✓	✓	✓	✓	✓
Capital Allocation / Corporate Financing Experience	✓	✓	✓	✓		✓	✓	✓	✓
Financial Literacy / Expertise	✓	✓	✓	✓	✓	✓	✓	✓	✓
Information Services & Technology Experience	✓	✓		✓	✓		✓	✓	✓
Legal / Regulatory / Public Policy Experience	✓			✓	✓	✓	✓	✓	✓
Marketing / Sales / Business Development Experience	✓	✓	✓	✓		✓	✓	✓	✓
Risk Management Experience	✓	✓	✓	✓	✓	✓	✓	✓	✓
Strategic Planning Experience	✓	✓	✓	✓	✓	✓	✓	✓	✓
Human Resource, Executive Compensation, and Talent Management Experience	✓	✓		✓	✓	✓	✓	✓	✓
Senior Leadership Experience	✓	✓	✓	✓		✓	✓	✓	✓
Cybersecurity / Data Privacy	✓	✓		✓			✓	✓	✓
ESG and Climate Risks	✓	✓		✓			✓	✓	✓
Industry Experience	✓	✓	✓	✓	✓	✓	✓	✓	✓
Shareholder Advocacy	✓	✓	✓	✓	✓	✓	✓	✓	✓
Director Characteristics									
Independence	✓	✓		✓	✓		✓	✓	✓
Term expiring	2024	2024	2024	2026	2026	2025	2025	2025	2026
Age	59	47	50	53	51	52	57	51	65
Director Since	2017	2021	2021	2024	2022	2010	2023	2021	2014
Gender	M	F	M	M	F	M	M	F	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 [_____], 2024				
Part I: Gender Identity	Female	Male	Non-Binary	Did Not Disclose Gender
Directors (9 total)	3	6	-	-
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	5	-	-
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 relationship exists that would interfere with the exercise of independent judgment in carrying out the responsibilities of a 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 four meetings during the fiscal year ended December 31, 2023. In the fiscal year ended December 31, 2023, 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, six 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, 2023, the Audit Committee met five 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;
- monitoring information security matters and risks, including those regarding data privacy and cybersecurity;
- 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, 2023, the Compensation Committee met four times. The Compensation Committee’s responsibilities include, as applicable:

- 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, including practices regarding competitive pay opportunity and program design;
- 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;
- reviewing and discussing with the Board corporate succession plans for our Chief Executive Officer and other key executives;
- overseeing the application of our policies for clawback or recoupment of incentive compensation;
- overseeing our strategies, policies and practices with respect to human capital management, diversity, equity, inclusion; and
- overseeing the management of risks relating to our compensation policies and programs.

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 2023, the Compensation Committee engaged the Human Capital Solutions practice of Aon plc ("Aon") 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 - Role of Our Independent Compensation Consultant* below. Aon reports directly to the Compensation Committee. The Compensation Committee has considered the adviser independence factors required SEC rules as they relate to Aon and has determined that Aon'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 2023, delegated such authority to Mr. Obenshain.

Nominating and Corporate Governance Committee

Our Nominating and Corporate Governance Committee is composed of Dr. Agwunobi, Dr. 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, 2023, the Nominating and Corporate Governance Committee met two 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.

Independent Director Meetings

In addition to the meetings of the committees of the Board described above, in connection with the Board meetings, the independent directors met four times in executive session during the fiscal year ended December 31, 2023. 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 independent 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 commercial operations and our ability to obtain reimbursement for our approved products; competition; manufacturing and supply chain; growth and capacity expansion in the United States; research and development; regulatory reviews and approvals; intellectual property filings, prosecution, maintenance and challenges; the establishment and maintenance of strategic alliances; 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, social or governance risks, associated with our business strategies periodically throughout the year as part of its consideration of undertaking any such business strategies. Moreover, our Audit Committee oversees enterprise risk management and discusses guidelines and policies that govern the process by which the Company's exposure to risk is assessed and managed by management.

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 Chief Legal & Business Officer, 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

Mr. Vachon, Dr. Leiderman and Ms. Tita-Reid served as members of our Compensation Committee during the year ended December 31, 2023. 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). We provide mandatory online training for our employees with respect to the Code of Business Conduct and Ethics on an annual basis to ensure understanding and the importance of adhering to such guidelines. 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 Joseph Vittiglio, 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 Joseph Vittiglio, Secretary, at our Somerville, Massachusetts office.

Our Social Responsibility Efforts

For patients and society to benefit from our therapies, we believe they must be available to those who will benefit from them. To enable access to our products, 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 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 that provide a strong focus on diversity, equity and inclusion. We also provide equity compensation to all of our employees and offer an employee stock purchase plan to promote employee ownership of our shares and to allow employees to share in our success. Our employees are highly engaged which is due, in part, to the creation of an environment where our team thrives through professional development, total rewards, a robust diversity, equity, inclusion and belonging strategy and a successful ESG strategy and approach.

EXECUTIVE OFFICERS

The following table sets forth information regarding our executive officers as of September 16, 2024:

<u>Name</u>	<u>Age</u>	<u>Position(s)</u>
Executive Officers:		
Andrew Obenshain (1)	50	President, Chief Executive Officer and Director (Principal Executive Officer)
O. James Sterling	54	Chief Financial Officer (Principal Financial Officer and Principal Accounting Officer)
Richard A. Colvin, M.D., Ph.D.	58	Chief Medical Officer
Thomas J. Klima	52	Chief Commercial and Operating Officer
Joseph Vittiglio	53	Chief Legal and Business Officer

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

O. James Sterling – Mr. Sterling has served as our Chief Financial Officer since June 2024. Previously, Mr. Sterling served as Chief Financial Officer of Renalytix plc from November 2018 to June 2024, where he led the finance department. From 2015 to 2018, Mr. Sterling served as managing partner of Renwick Capital LLC. Prior to that, he served as a managing director at investment banks Brock Capital Group LLC and Aleutian Capital Group. Mr. Sterling is currently a director of Star Mountain Lower Middle-Market Capital Corp. Mr. Sterling received his B.A. from Boston University and an M.B.A. from Columbia Business School.

Richard A. Colvin, M.D., Ph.D. – Dr. Colvin has served as our Chief Medical Officer since October 2022. Previously, Dr. Colvin was our interim Chief Medical Officer from March 2021 through September 2022 and our Vice President and head of severe genetic diseases clinical research and development from January 2020 to March 2021. Dr. Colvin joined us in 2018 as Vice President, Medical Lead Thalassemia Program, for the successful European submission and approval of the Company's beti-cel gene therapy for the treatment of patients with beta-thalassemia. Dr. Colvin is on faculty at Harvard Medical School and also sees patients as a Clinical Associate in Medicine, Infectious Diseases Clinic, at Massachusetts General Hospital Chelsea Health Care Center. Prior to joining bluebird, Dr. Colvin was an executive director in translational medicine at Novartis, where he led anti-infective drug development programs for the treatment of patients with certain infections from 2014 to 2018. Previously, Dr. Colvin completed his clinical and research fellowships in the Mass General Brigham Infectious Diseases Program and completed his internship and residency at the Brigham and Women's Hospital. Dr. Colvin received his M.D. and Ph.D. from Duke University School of Medicine and his B.S. in Biology from Cornell University.

Thomas J. Klima – Mr. Klima has served as our Chief Operating Officer since September 2022 and 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.

Joseph Vittiglio, Esq. – Mr. Vittiglio has served as our Chief Legal and Business Officer since January 2023. Prior to joining bluebird, Mr. Vittiglio served as Chief Business and Legal Officer at Finch Therapeutics from December 2020 to December 2022 where he guided its initial public offering in 2021. Prior to joining Finch, Mr. Vittiglio was the General Counsel and Chief Business Officer for AMAG Pharmaceuticals from August 2015 to November 2020 where he led its legal and business initiatives, including its successful sale to private equity investors and multiple out-licensing and partnership collaborations. Prior to AMAG, Mr. Vittiglio held leadership roles at Flexion Therapeutics, AVEO Pharmaceuticals, and Oscient Pharmaceuticals. Mr. Vittiglio began his career as a corporate and securities attorney at Mintz, Levin, Cohn, Ferris, Glovsky and Popeo, P.C. Mr. Vittiglio received a B.A. in International Relations from Tufts University and a J.D. from Northeastern University School of Law.

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 2025.

As described below under *Executive Officer and Director Compensation*, 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 approve, on an advisory (non-binding) basis, the compensation of the Company's named executive officers, as disclosed in the Company's Proxy Statement for the 2024 Annual Meeting of Stockholders pursuant to the compensation disclosure rules of the Securities and Exchange Commission, including the Summary Compensation Table and the other compensation tables and narrative discussion."

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)

PROPOSAL 3

AMENDMENT OF AMENDED AND RESTATED CERTIFICATION OF INCORPORATION TO PROVIDE FOR THE EXCULPATION OF OFFICERS FOR CERTAIN BREACHES OF FIDUCIARY DUTY TO THE EXTENT PERMITTED BY THE GENERAL CORPORATION LAW OF THE STATE OF DELAWARE

General

As part of its continuing review of our corporate governance standards and practices, the Board unanimously approved and declared advisable, subject to stockholder approval, an amendment and restatement (the "Exculpation Amendment") to the Company's Amended and Restated Certificate of Incorporation to reflect developing law. A copy of the Exculpation Amendment, which would add a new Article XI to the Amended and Restated Certificate of Incorporation, is attached to this Proxy Statement as Appendix A.

Effective August 1, 2022, Section 102(b)(7) of the General Corporation Law of the State of Delaware (the "DGCL") was amended ("Amended 102(b)(7)") to enable a corporation to include in its certificate of incorporation a provision exculpating certain corporate officers from liability for breach of the fiduciary duty of care in certain circumstances. Previously, Section 102(b)(7) of the DGCL provided for the ability to exculpate directors only and our Amended and Restated Certificate of Incorporation currently limits the monetary liability of our directors in certain circumstances consistent with Section 102(b)(7) of the DGCL. Amended 102(b)(7) allows for the exculpation of certain officers only in connection with direct claims brought by stockholders, including class actions, but would not eliminate officers' monetary liability for breach of fiduciary duty claims brought by the corporation itself or for derivative claims brought by stockholders in the name of the corporation. Further, Amended 102(b)(7) does not permit a corporation to exculpate covered officers from liability for breach of the duty of loyalty, acts or omissions not in good faith or that involve intentional misconduct or a knowing violation of law, or any transaction in which the officer derived an improper personal benefit. Under Amended 102(b)(7), the officers who may be exculpated include a person who (i) is the president, chief executive officer, chief operating officer, chief financial officer, chief legal officer, controller, treasurer or chief accounting officer of the corporation at any time during the course of conduct alleged in the action or proceeding to be wrongful, (ii) is or was identified in the corporation's public filings with the SEC because such person is or was one of the most highly compensated executive officers of the corporation, or (iii) has consented to services of process in Delaware by written agreement (the "Covered Officers").

Effect of the Exculpation Amendment

The proposed Exculpation Amendment would allow for the exculpation of our officers to the fullest extent permitted by the DGCL. As described above, this currently means that the proposed Exculpation Amendment would allow for the exculpation of Covered Officers only in connection with direct claims brought by stockholders, including class actions, but would not eliminate such officers' monetary liability for breach of fiduciary duty claims brought by the corporation itself or for derivative claims brought by stockholders in the name of the corporation. Further, the Exculpation Amendment would not limit the liability of Covered Officers for any breach of the duty of loyalty to the corporation or its stockholders, any acts or omissions not in good faith or which involve intentional misconduct or a knowing violation of the law, or any transaction from which a Covered Officer derived an improper personal benefit.

Rationale for Adoption of the Exculpation Amendment

Our Board believes that adopting the Exculpation Amendment would better position the Company to attract top officer candidates and retain our current officers. The Exculpation Amendment would also more closely align the protections available to our officers with those already available to our directors. We believe that failing to adopt the Exculpation Amendment could impact our recruitment and retention of exceptional officer candidates who conclude that the potential exposure to liabilities, costs of defense, and other risks of proceedings exceeds the benefits of serving as an officer of the Company.

In addition, adopting the Exculpation Amendment would enable the officers to exercise their business judgment in furtherance of the interests of the stockholders without the potential for distraction posed by the risk of personal liability. The nature of the role of officers often requires them to make decisions on crucial matters. Frequently, officers must make decisions in response to time-sensitive opportunities and challenges, which can create substantial risk of investigations, claims, actions, suits, or proceedings seeking to impose liability based on hindsight, especially in the current litigious environment and regardless of merit. Limiting our current and prospective officers' concern about personal risk would empower officers to best exercise their business judgment in furtherance of stockholder interests and better position the Company to retain our current officers and attract top officer candidates. Enhancing our ability to retain and attract experienced officers is in the best interests of the Company and its stockholders and we should seek to assure such persons that exculpation under certain circumstances is available. Certain of our officers would stand to benefit if Proposal 3 is adopted, as it could reduce their potential monetary liability for certain breaches of fiduciary duties.

If our stockholders approve the Exculpation Amendment, our Board has authorized our officers to file a Certificate of Amendment with the Delaware Secretary of State, which we anticipate doing as soon as practicable following stockholder approval of the Amendment at the Annual Meeting, and the Certificate of Amendment would become effective upon acceptance by the Delaware Secretary of State.

If our stockholders do not approve the Exculpation Amendment, the Certificate of Amendment will not be filed with the Delaware Secretary of State. However, even if our stockholders approve the Exculpation Amendment, our Board retains discretion under Delaware law to determine when to file the Certificate of Amendment with the Delaware Secretary of State and to abandon the Exculpation Amendment notwithstanding prior stockholder approval of the Exculpation Amendment.

THE BOARD UNANIMOUSLY RECOMMENDS THAT YOU VOTE

FOR

THE APPROVAL OF THE AMENDMENT TO OUR AMENDED AND RESTATED CERTIFICATE OF INCORPORATION TO PROVIDE FOR THE EXCULPATION OF OFFICERS FOR CERTAIN BREACHES OF FIDUCIARY DUTY TO THE EXTENT PERMITTED BY THE GENERAL CORPORATION LAW OF THE STATE OF DELAWARE

(PROPOSAL 3 ON YOUR PROXY CARD)

EXECUTIVE OFFICER AND DIRECTOR COMPENSATION

Overview of Executive Officer Compensation

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, 2023 and relevant positions, were:

- Andrew Obenshain, our Chief Executive Officer and Principal Executive Officer;
- Thomas J. Klima, our Chief Commercial and Operating Officer; and
- Richard A. Colvin, M.D., Ph.D., our Chief Medical Officer.

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.

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	At-Risk Compensation
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 also introduced performance-vesting restricted stock unit grants for our Chief Executive Officer in 2021, and for our other executives in 2024, to further tie executive compensation to stock price performance.	Long Term Incentive	

Role of Compensation Committee

Each year, as part of its oversight of broader human capital management, 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 platform in the fields of severe genetic diseases;
- initiation and progress of clinical studies for our product candidates;

- expansion of our manufacturing and operational capabilities, including our commercial readiness and capacity planning;
- 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;
- development of organizational capabilities, success in hiring and growth management initiatives; and
- leadership skills, and the ability to drive decisions that positively impact the business overall, including through financial acumen, business judgment and strategic planning.

Our senior executives, including our named executive officers, are also evaluated based on factors such as individual, strategic, and demonstrated enterprise 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.

Our Compensation Committee, with input from the Board and our Chief People Officer, 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.

Role of Our Compensation Consultants

For 2023, our Compensation Committee engaged Aon 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 Aon's various global annual and specialized life sciences and general industry surveys on an ongoing basis. Aon advised the Compensation Committee on all of the principal aspects of executive compensation, including executive new hire compensation arrangements. Aon consultants attend meetings of the Compensation Committee when requested to do so. Aon 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 Aon consistent with SEC regulations and NASDAQ listing standards and has concluded that the engagement of Aon does not raise any conflict of interest.

Elements of Compensation

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 2023, our Compensation Committee reviewed the compensation for our Chief Executive Officer and each of our other named executive officers. With respect to Mr. Obenshain, our Compensation Committee reviewed his overall compensation and determined to increase his annual base salary from \$643,750 to \$682,400. This determination was based on his critical role at the Company, market conditions, company performance throughout 2022 in meeting key milestones and objectives, as well as consideration of the critical upcoming execution and risk inflection points throughout 2023. 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 2022 company goals, and each named executive officer's achievement of individual goals in 2022, as well as a consideration of the market conditions and a comparison of the executives' base salaries to similarly situated executives in our 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:

Name	2022 Base Salary (\$)	2023 Base Salary (\$)	Aggregate Increase (%)
Andrew Obenshain	643,750	682,400	6.0
Thomas J. Klima	460,000	480,000	4.4
Richard A. Colvin	480,000	490,000	2.1

In December 2023, our Compensation Committee and our Board reviewed the base salaries of our named executive officers, including our Chief Executive Officer. Taking into account the Company's performance in 2023 and the need to provide a competitive base level of salary balanced against financial discipline, the Compensation Committee and the Board determined that each named executive officer, including our Chief Executive Officer, would receive increases to their base salaries of between 4% - 7%, as set forth in the table below, effective January 1, 2024.

Name	2023 Base Salary (\$)	2024 Base Salary (\$)	Aggregate Increase (%)
Andrew Obenshain	682,400	730,000	6.98
Thomas J. Klima	480,000	511,000	6.46
Richard A. Colvin	490,000	510,000	4.08

Annual Incentive Program

At the end of 2022, our Board approved the Company's corporate goals for 2023. Consistent with past practice, the Company's annual incentive program for 2023 was structured based on Company-wide achievement of the Company's corporate goals and our employees' achievement of their individual goals during 2023. For 2023, our employees, including our named executive officers, had the opportunity to earn cash incentive awards calculated as a percentage of pre-established bonus targets based on the Company's performance against the Company's corporate goals and such employee's individual performance against their own pre-established individual goals.

For fiscal year 2023, the incentive award for our Chief Executive Officer and each of our other named executive officers was based 100% on the Company's performance relative to the pre-established company goals, with an individual multiplier of 0 - 1.5x based 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 bonuses are capped at 150% of target amounts.

The table below summarizes the pre-established 2023 Company goals, their relative weighting, and level of achievement for each Company goal as approved by the Board in December 2023.

2023 Company goals	Weighting	2023 Company performance assessment (weighted assessment)
Deliver for Patients	75%	80% (60)
<ul style="list-style-type: none"> – Complete target number of patient starts across ZYNTEGLO and SKYSONA programs – Expand QTC network – Achieve timely disposition of drug product – Submit lovo-cel BLA by target date and begin commercial preparation, including marketing plans and manufacturing capacity 		The Board recognized the Company's achievements in receiving FDA approval of LYFGENIA, while simultaneously executing on the commercial launches of ZYNTEGLO and SKYSONA. Additionally, the Company made significant progress in expanding its QTC network and completing patient starts for ZYNTEGLO and SKYSONA in 2023. However, the Board also acknowledged certain regulatory delays and delays in drug product disposition.
People & Business	25%	100% (25)
<ul style="list-style-type: none"> – Meet targets for cash runway, employee engagement, and employee diversity 		The Board recognized that the Company achieved its goals with respect to employee diversity. The Company ended the year with positive employee engagement, as evidenced by a comprehensive employee engagement survey, and achieved a turnover rate lower than the industry average. The Board also acknowledged challenges with respect to the Company's cash runway, including because the Company did not receive a priority review voucher in connection with the approval of LYFGENIA, but noted progress as the Company worked toward a year-end equity raise.
Total	100%	85%

The pre-established individual goals and individual performance against those goals in 2023 applicable to our named executive officers were as follows:

Name	2023 individual performance assessment (multiplier)	2023 individual goals
Andrew Obenshain	100% (1x)	Cross-functional leadership in guiding the organization to accomplish each of the corporate goals
Thomas J. Klima	100% (1x)	Leadership in preparing the organization for commercial launches in the United States and ongoing operational efficiency
Richard A. Colvin	100% (1x)	Leadership in guiding the organization through late-stage development programs in severe genetic disease and associated regulatory interactions as well as overseeing the continued efforts towards the filing and approval of the Iovo-cel BLA

The table below shows each named executive officer's target incentive award under the 2023 annual incentive program as a percentage of the named executive officer's annual base salary in 2023, the target incentive award opportunity in dollars for 2023 and the actual incentive awards to our named executive officers for 2023 performance, which were paid in March 2024.

Name	2023 Target Incentive Award (% of 2023 Base Salary)(1)	2023 Target Incentive Award Opportunity (\$)	Actual Total 2023 Incentive Award Amount (\$)
Andrew Obenshain	60%	409,440	348,024
Thomas J. Klima	45%	216,000	183,600
Richard A. Colvin	45%	220,500	187,425

(1) Target Incentive Awards as a percentage of base salary did not change in 2023.

In 2024, our Compensation Committee approved changes to the 2024 annual incentive program, providing that the award for our Chief Executive Officer will be based 100% on the Company's performance against the corporate goals and the award for our other named executive officers will be based 80% on the Company's performance against the corporate goals and 20% on such executive officer's performance against his or her individual goals.

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, and beginning in 2024, we extended these grants to our other executive officers, in each case 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, while performance-based restricted stock units further align our executive officers' interests with long-term stockholders' interests and company performance. 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.

All equity awards to our executive officers are approved by our Compensation Committee. 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 Aon, 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 (including 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 the date of grant 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 day of grant, until the fourth anniversary of such date.

2023 Equity Awards

In 2023, we granted our Chief Executive Officer a performance-based restricted stock unit award, to further align our Chief Executive Officer's compensation with stockholder experience (the "2023 Performance-Based RSU Award"). This 2023 Performance-Based RSU Award is earned based on total shareholder return compared to a selected group of companies that are considered relevant peers across business segment and size metrics, with a focus on industry classifications, revenue, and market capitalization, and which was developed in consultation with Aon (our "Named Peer Group"). The multiplier used to determine the number of earned restricted stock units could range between 0% and 200%, with a threshold achievement level at -25th percentile (as compared to the peer median) required to earn any restricted stock units, target achievement level equal to the peer median, and a ceiling achievement level at the +50th percentile (as compared to the peer median). The 2023 Performance-Based RSU Award, to the extent earned, vest in full on approximately the third anniversary of the grant date on the date performance achievement is certified by our Compensation Committee, subject to Mr. Obenshain's continued service. For 2023, the target number of shares subject to this 2023 Performance-Based RSU Award is 101,400 shares. 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, early in its commercial product launches, 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 our executives to take a long-term view with respect to company performance.

In connection with the annual review of our named executive officers' performance during 2022 and consistent with our compensation philosophy, in 2023 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:

Name	2023 Option Award		2023 RSU Award		2023 Performance-Based RSU Award	
	# Shares	Grant date fair value	# Shares	Grant date fair value	Target # Shares	Grant Date Fair value
Andrew Obenshain	338,000	\$1,142,440	67,600	\$345,436	101,400	\$518,154
Thomas J. Klima	110,000	\$371,800	55,000	\$281,050	—	\$—
Richard A. Colvin	110,000	\$371,800	55,000	\$281,050	—	\$—

2024 Equity Awards

In connection with the annual review of our named executive officers' performance during 2023, the Compensation Committee has approved the annual long-term equity incentive award amounts set forth in the table below in respect of our named executive officers:

Name	2024 Option Award	2024 RSU Award Time-Based Vesting(1)	2024 RSU Award Performance-Based Vesting (1)(2)
	# Shares	# Shares	Target # Shares
Andrew Obenshain	650,000	130,000	195,000
Thomas J. Klima	199,000	50,000	50,000
Richard A. Colvin	199,000	50,000	50,000

(1) We anticipate issuing the RSUs and performance-based RSUs approved during the 2024 annual review cycle during the second half of 2024.

(2) Similar to the 2023 Performance-Based RSU Award granted to Mr. Obenshain, each performance-based restricted stock award granted to our named executive officers in 2024 is earned based on relative total shareholder return compared to our Named Peer Group. The multiplier used to determine the number of earned performance-based restricted stock units ranges between 0% and 200%, with a threshold achievement level at the 25th percentile (as compared to the peer median) and target achievement level equal to the peer median. These performance-based restricted stock units, to the extent earned, will vest in full on approximately the third anniversary of the grant date, subject to the named executive officer's continued service.

The equity awards granted to our named executive officers, and the grant date fair values of those awards presented above and shown in the *Summary Compensation 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 \$22,500 in 2023), with additional salary deferrals not to exceed \$30,000 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 2023, 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 2023, we adopted our Policy for Recovery of Erroneously Awarded Compensation (the "Policy"), which amended and restated our prior clawback policy and is intended to comply with SEC and Nasdaq listing standards. Accordingly, as set forth in the Policy, the Company is required to recover certain erroneously paid incentive-based compensation of its current and former executive officers in the event the Company is required to prepare a qualifying accounting restatement.

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.

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, 2023 and December 31, 2022 for each of our named executive officers.

Name and Principal Position	Year	Salary (\$)	Option awards (\$)(1)	Stock awards (\$)(1)	Non-equity incentive plan compensation (\$)(2)	All other compensation (\$)(3)	Total (\$)
Andrew Obenshain.....	2023	681,657	1,142,440	863,590	348,024	13,470	3,049,181
Chief Executive Officer	2022	643,390	421,830	351,000	386,280	12,200	1,814,700
Thomas J. Klima.....	2023	479,615	371,800	281,050	183,600	13,470	1,329,535
Chief Commercial and Operating Officer	2022	435,769	325,232	267,050	207,000	12,200	1,247,251
Richard A. Colvin	2023	489,808	371,800	281,050	187,425	14,170	1,344,253
Chief Medical Officer	2022	467,639	374,297	294,240	216,000	12,600	1,364,776

- (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 2022 and 2023 as computed in accordance with FASB ASC 718, not including any estimates of forfeitures related to service-based vesting conditions. See note 16 of *Notes to Consolidated Financial Statements* in our Annual Report on Form 10-K for the year ended December 31, 2023 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. We also granted performance-based restricted stock unit awards to Mr. Obenshain in 2022 and 2023. 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.
- (2) Amounts represent cash payment under our annual cash incentive program earned in respect of 2022 and 2023, based on achievement of performance goals. Please see the description of the annual cash incentive program under which bonuses were paid to the named executive officers in the "Annual Incentive Program" section above.
- (3) Amounts represent employer matching contributions to the executive's 401(k) plan account and certain other employee fringe benefits.

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, 2023.

Name	Award Grant Date	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 (\$) ⁽¹⁾	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 (\$) ⁽¹⁾
Andrew Obenshain	12/1/2016	17,721	—	\$34.20	12/1/2026				
	2/1/2018	9,353	—	\$102.24	2/1/2028				
	2/1/2019	7,827	—	\$67.06	2/1/2029				
	3/2/2020	6,705	186 (2)	\$36.78	3/2/2030				
	3/2/2020					862 (3)	1,190		
	11/2/2020	15,918	4,756 (4)	\$26.45	11/2/2030				
	11/2/2020					2,585 (5)	3,567		
	2/16/2021	43,889	16,331 (6)	\$14.17	2/16/2031				
	2/16/2021					15,059 (7)	20,781		
	8/2/2021	240,655	160,888 (8)	\$12.76	8/2/2031				
	8/2/2021					100,387 (9)	138,534		
	2/1/2022	41,250	48,750 (4)	\$7.80	2/1/2032				
	2/1/2022					13,500 (5)	18,630		
	2/1/2022							27,000 (10)	37,260
	3/1/2023	—	338,000 (4)	\$5.11	3/1/2033				
3/1/2023					67,600 (5)	93,288			
3/1/2023							101,400 (10)	139,932	
Thomas J. Klima	6/1/2021	64,812	35,573 (11)	\$15.50	6/1/2031				
	6/1/2021					25,096 (5)	34,632		
	2/1/2022	22,910	27,090 (4)	\$7.80	2/1/2032				
	2/1/2022					18,750 (5)	25,875		
	9/1/2022	6,874	15,126 (4)	\$6.55	9/1/2032				
	9/1/2022					8,250 (5)	11,385		
	3/1/2023	—	110,000 (4)	\$5.11	3/1/2033				
3/1/2023					55,000 (5)	75,900			
Richard A. Colvin	11/1/2018	11,134	—	\$64.83	11/1/2028				
	3/2/2020	4,305	124 (2)	\$36.78	3/2/2030				
	3/2/2020					555 (3)	766		
	2/16/2021	5,835	2,195 (6)	\$14.17	2/16/2031				
	2/16/2021					2,009 (7)	2,772		
	3/1/2021	27,573	12,580 (4)	\$14.99	3/1/2031				
	3/1/2021					10,039 (5)	13,854		
	2/1/2022	12,100	14,300 (4)	\$7.80	2/1/2032				
	2/1/2022					9,975 (5)	13,766		
	11/1/2022	16,250	43,750 (4)	\$6.35	11/1/2032				
	11/1/2022					22,500 (5)	31,050		
	3/1/2023	—	110,000 (4)	\$5.11	3/1/2033				
3/1/2023					55,000 (5)	75,900			

(1) All unvested stock options and restricted stock awards were granted under our 2013 Stock Option and Incentive Plan, 2023 Incentive Award Plan, or our 2021 Inducement Plan. The market value of restricted stock units that have not vested is based on the closing price of \$1.38 per share for our common stock on December 31, 2023, as reported on the NASDAQ Global Select Market.

- (2) 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 the grantee's continued service with us through each applicable vesting date.
- (3) These restricted stock unit awards vest in four equal annual installments of 25% starting on January 4, 2021 through January 4, 2024, subject to the grantee's continued service with us through each applicable vesting date.
- (4) The shares underlying these options vest as follows: 25% vest on the one-year anniversary of the grant date, with the remainder of the shares vesting in equal monthly installments over the following three years, subject to the grantee's continued service with us through each applicable vesting date.
- (5) These restricted stock unit awards vest in four equal annual installments of 25% starting on the one-year anniversary of the award grant date, subject to the grantee's continued service with us through each applicable vesting date.
- (6) 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 the grantee's continued service with us through each applicable vesting date.
- (7) These restricted stock unit awards vest in four equal annual installments of 25% starting on January 4, 2022 through January 4, 2025, subject to the grantee's continued service with us through each applicable vesting date.
- (8) This performance-based option was earned based on performance criteria related to the separation of 2seventy bio. Subject to achievement of the performance criteria, the shares underlying this option vest as follows: 25% vested 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 the grantee's continued service with us through each applicable vesting date.
- (9) This performance-based restricted stock unit award was earned based on performance criteria related to the separation of 2seventy bio. Subject to achievement of the performance criteria, the PSU vests in four equal annual installments of 25% starting on August 2, 2022 through August 2, 2025, subject to the grantee's continued service with us through each applicable vesting date.
- (10) These performance-based restricted stock unit awards are earned based on relative total shareholder return compared to a peer group of companies in the Standard & Poor Biotechnology Index and, to the extent earned, will vest approximately three years from the grant date, subject to the grantee's continued service with us on the applicable vesting date.
- (11) The shares underlying this option vest as follows: 25% vested 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 the grantee's continued service with us through each applicable vesting date.

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.

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. Mr. Klima currently serves as our Chief Commercial and Operating 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's employment agreement also provides for an initial grant of stock options and restricted stock units and his eligibility to participate in our employee benefit plans, subject to the terms of those plans.

Richard A. Colvin. We have entered into an employment agreement, effective as of October 31, 2022, with Dr. Colvin providing for his employment as the Company's Chief Medical Officer. Under his agreement Dr. Colvin is entitled to receive a base salary of \$480,000 (which has been subsequently increased as described above), subject to adjustment at the discretion of the Compensation Committee. Dr. Colvin is also eligible for an annual cash incentive award targeted at 45% of his annual base salary. Dr. Colvin is eligible to participate in our employee benefit plans, subject to the terms of those plans.

These employment agreements also contain provisions that provide for certain payments and benefits in the event of an involuntary termination of employment. In addition, the named executive officers may be entitled to accelerated vesting of their outstanding and unvested awards in certain circumstances as described below.

Involuntary termination of employment

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

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

Involuntary termination of employment in connection with a sale event

In addition, in the event that any of our named executive officers terminates 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 Stock Option and Incentive Plan (now referred to as a "change in control" under the 2023 Incentive Award 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 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 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.

Pay vs. Performance

In accordance with rules adopted by the Securities and Exchange Commission pursuant to the Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010, we provide the following disclosure regarding executive compensation for our principal executive officers ("PEOs") and Non-PEO named executive officers ("Non-PEO NEOs") and Company performance for the fiscal years listed below. The Compensation Committee did not consider the pay versus performance disclosure below in making its pay decisions for any of the years shown.

Year	Summary Compensation Table Total for PEO 1 ¹ (\$)	Summary Compensation Table Total for PEO 2 ¹ (\$)	Compensation Actually Paid to PEO 1 ^{1,2,3} (\$)	Compensation Actually Paid to PEO 2 ^{1,2,3} (\$)	Average Summary Compensation Table Total for Non-PEO NEOs ⁴ (\$)	Average Compensation Actually Paid to Non-PEO NEOs ^{1,2,3} (\$)	Value of Initial Fixed \$100 Investment based on ⁴	Net Income (\$ Thousands)
							TSR (\$)	
2023	3,049,181	-	(608,619)	-	1,336,894	179,961	5.35	(205,904)
2022	1,814,700	-	(136,947)	-	1,353,832	850,656	26.80	(266,578)
2021	9,258,001	7,332,683	5,104,693	1,650,578	3,075,681	1,462,375	38.70	(819,378)

(1) Nick Leschly was our PEO until his resignation on November 4, 2021 (PEO 2). Andrew Obenshain has been our PEO since November 4, 2021 (PEO 1). The individuals comprising the Non-PEO NEOs for each year presented are listed below.

2021	2022	2023
Gina Consylman	Thomas J. Klima	Thomas J. Klima
Jason Cole	Richard A. Colvin	Richard A. Colvin
Thomas J. Klima	Jason Cole	
William D. Baird, III		
Philip Gregory		

(2) The amounts shown for the "Compensation Actually Paid" columns have been calculated in accordance with Item 402(v) of Regulation S-K and do not reflect compensation actually earned, realized, or received by the Company's NEOs. These amounts reflect the Summary Compensation Table Total with certain adjustments as described in footnote 3 below. On November 4, 2021, the Company completed the spin-off of 2seventy bio, Inc. All equity awards granted before January 1, 2021 were bifurcated into awards based in both Company stock and 2seventy bio, Inc. stock. The impact of this

conversion has been incorporated into the calculation of Compensation Actually Paid in accordance with the methodologies disclosed in our Annual Report on Form 10-K for the year ended December 31, 2023.

- (3) The "Compensation Actually Paid" columns reflect the exclusions and inclusions of certain amounts for the PEOs and the Non-PEO NEOs as set forth below for the most recent fiscal year. Equity values are calculated in accordance with FASB ASC Topic 718. Amounts in the Exclusion of Stock Awards and Option Awards column are the totals from the Stock Awards and Option Awards columns set forth in the Summary Compensation Table. The fair values of RSUs, PSUs, and stock options included in the "Compensation Actually Paid" to our PEOs and the "Average Compensation Actually Paid" to our Non-PEO NEOs columns are calculated at the required measurement dates, consistent with the approach used to value the awards at the grant date as described in our Annual Report on Form 10-K for the year ended December 31, 2023. Any changes to the RSU and PSU fair values are based on our updated stock price at the respective measurement dates and updated performance metric projections (for PSUs). Changes to the stock option fair values are based on the updated stock price at the respective measurement dates, in addition to updated expected option life, volatility, dividend yield and risk-free rate assumptions. For all years presented, the meaningful increases or decreases in the year-end stock option fair value from the fair value on the grant date were primarily driven by changes in the stock price.

Year	Summary Compensation Table Total for PEO 1 (\$)	Exclusion of Stock Awards and Option Awards for PEO 1 (\$)	Inclusion of Equity Values for PEO 1 (\$)	Compensation Actually Paid to PEO 1 (\$)
2023	3,049,181	(2,006,030)	(1,651,770)	(608,619)

Year	Average Summary Compensation Table Total for Non-PEO NEOs (\$)	Average Exclusion of Stock Awards and Option Awards for Non-PEO NEOs (\$)	Average Inclusion of Equity Values for Non-PEO NEOs (\$)	Average Compensation Actually Paid to Non-PEO NEOs (\$)
2023	1,336,894	(652,850)	(504,083)	179,961

The amounts in the Inclusion of Equity Values in the tables above are derived from the amounts set forth in the following tables:

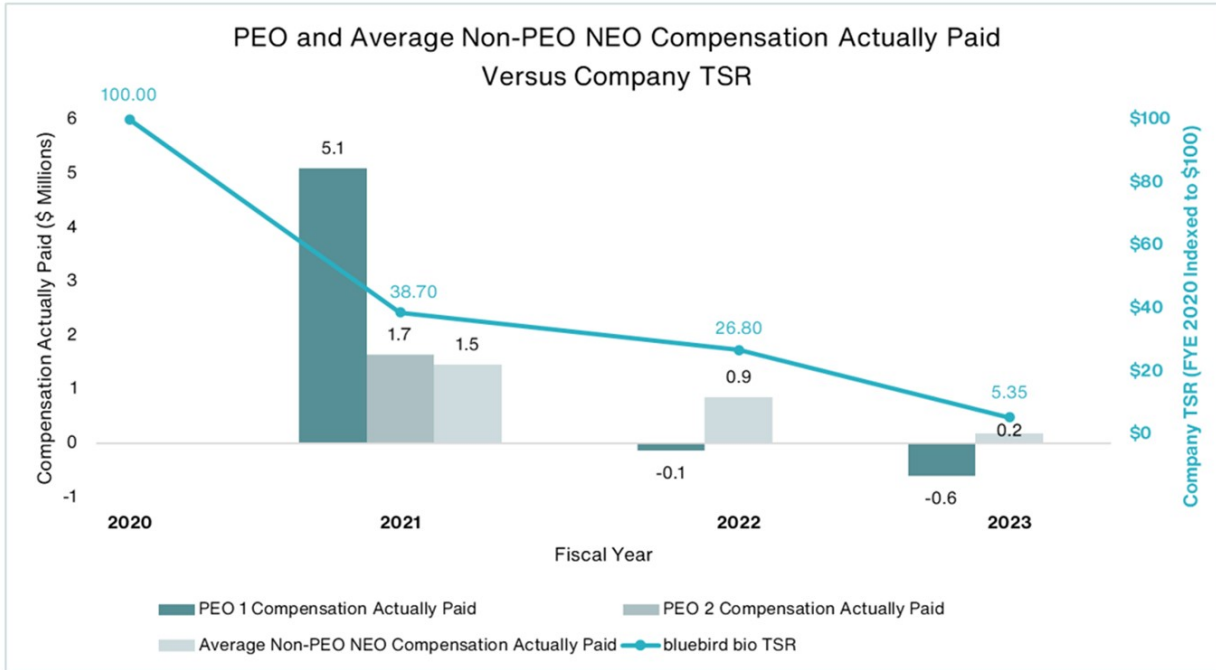
Year	Year-End Fair Value of Equity Awards Granted During Year That Remained Unvested as of Last Day of Year for PEO 1 (\$)	Change in Fair Value from Last Day of Prior Year to Last Day of Year of Unvested Equity Awards for PEO 1 (\$)	Vesting-Date Fair Value of Equity Awards Granted During Year that Vested During Year for PEO 1 (\$)	Change in Fair Value from Last Day of Prior Year to Vesting Date of Unvested Equity Awards that Vested During Year for PEO 1 (\$)	Fair Value at Last Day of Prior Year of Equity Awards Forfeited During Year for PEO 1 (\$)	Total - Inclusion of Equity Values for PEO 1 (\$)
2023	595,914	(1,814,736)	-	(432,948)	-	(1,651,770)

Year	Average Year-End Fair Value of Equity Awards Granted During Year That Remained Unvested as of Last Day of Year for Non-PEO NEOs (\$)	Average Change in Fair Value from Last Day of Prior Year to Last Day of Year of Unvested Equity Awards for Non-PEO NEOs (\$)	Average Vesting-Date Fair Value of Equity Awards Granted During Year that Vested During Year for Non-PEO NEOs (\$)	Average Change in Fair Value from Last Day of Prior Year to Vesting Date of Unvested Equity Awards that Vested During Year for Non-PEO NEOs (\$)	Average Fair Value at Last Day of Prior Year of Equity Awards Forfeited During Year for Non-PEO NEOs (\$)	Total - Average Inclusion of Equity Values for Non-PEO NEOs (\$)
2023	171,167	(540,934)	-	(134,316)	-	(504,083)

- (4) Assumes \$100 was invested for the period starting December 31, 2020, through the end of the listed year. Historical stock performance is not necessarily indicative of future stock performance.

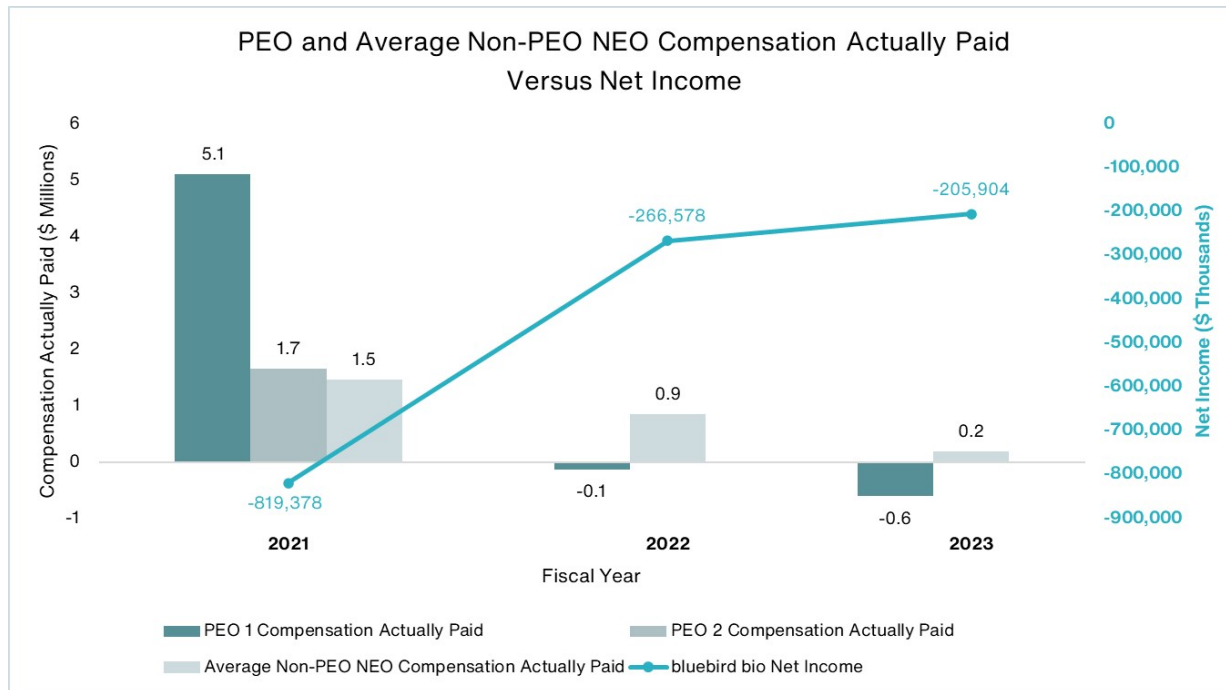
Relationship Between PEOs and Non-PEO NEO Compensation Actually Paid and Company Total Shareholder Return ("TSR")

The following chart sets forth the relationship between Compensation Actually Paid to our PEOs, the average of Compensation Actually Paid to our Non-PEO NEOs, and the Company's cumulative TSR over the three most recently completed fiscal years.



Relationship Between PEOs and Non-PEO NEO Compensation Actually Paid and Net Income

The following chart sets forth the relationship between Compensation Actually Paid to our PEOs, the average of Compensation Actually Paid to our Non-PEO NEOs, and our Net Income during the three most recently completed fiscal years.



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 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. On April 18, 2023, our Board amended the non-employee director compensation policy to increase the cash retainers payable for service on our Audit Committee. The table below sets forth the cash retainer applicable to our directors in 2023 following such amendment.

Annual cash retainers under the Non-Employee Director Compensation Policy	2023 Cash Retainer (\$)	
Board:		
All non-employee members of the Board	\$	45,000
Additional retainer for non-executive chair of the Board	\$	35,000
Audit Committee:		
Additional retainer for chair of the Audit Committee	\$	20,000
Additional retainer for other members of the Audit Committee	\$	10,000
Compensation Committee:		
Additional retainer for chair of the Compensation Committee	\$	15,000
Additional retainer for other members of the Compensation Committee	\$	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, subject to the non-employee director's

continued service. In addition, on the date of the annual meeting of stockholders, each continuing non-employee director who has served on the Board for the previous six months will be eligible to receive an annual equity grant in the form of 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, subject to the non-employee director's continued service. The number of shares subject to the initial equity grants and the annual equity grants are summarized in the table below. 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. On April 18, 2023, our Board amended the non-employee director compensation policy to also increase the size of the annual and initial equity grant retainers payable thereunder as well as remove the additional equity grant retainer payable for service as non-executive chair of the Board. The equity grant policy applicable to our directors in 2023 is summarized below.

Equity grants under the Non-Employee Director Compensation Policy	Stock options (# of shares)	Restricted Stock Units (# of shares)
Initial equity grant	32,400	16,185
Annual equity grant	21,600	10,790

In March 2024, the Board, upon recommendation from the Compensation Committee and to further align certain director compensation to be within the 50th percentile of director compensation of the Company's peer group, approved the following changes to director equity compensation:

- adjusted initial equity grants for new Board members to 74,775 stock options and 37,350 restricted stock units; and
- adjusted annual equity grants for continuing Board members to 49,850 stock options and 24,900 restricted stock units.

The grant of annual equity awards for continuing Board members in 2024 is contingent upon the approval by our stockholders of the amendment and restatement of our 2023 Incentive Award Plan described in Proposal 5.

The following table sets forth the compensation we paid to our non-employee directors during the year ended December 31, 2023. 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, 2023. Mr. Obenshain, our current Chief Executive Officer, received no compensation for his service as a director, and, consequently, is not included in this table. The compensation received by Mr. Obenshain as an employee during the year ended December 31, 2023 is presented in the *Summary Compensation Table* above.

Name(1)	Fees earned or paid in cash\$(2)	Stock awards\$(2)	Option awards\$(2)	Total(\$)
John O. Agwunobi, M.D.	64,500	41,110	55,296	160,906
Mark Vachon	104,500	41,110	55,296	200,906
Elisabeth Leiderman, M.D.	71,500	41,110	55,296	167,906
Najoh Tita-Reid	57,500	41,110	55,296	153,906
Charlotte Jones-Burton, M.D., M.S.	50,000	41,110	55,296	146,406
Richard Paulson (3)	33,500	15,388	16,350	65,238
Nick Leschly	— (4)	41,110	55,296	96,406

(1) The aggregate number of shares of our common stock underlying stock options outstanding as of December 31, 2023 for the non-employee directors were: Dr. Agwunobi: 58,001, Mr. Vachon: 60,789, Dr. Leiderman: 41,657, Ms. Tita-Reid: 41,657, Dr. Jones-Burton: 34,100, Mr. Paulson: 7,500, and Mr. Leschly: 829,003. The aggregate number of restricted stock units outstanding as of December 31, 2023 for the non-employee directors was: Dr. Agwunobi: 10,790, Mr. Vachon: 10,790, Dr. Leiderman: 13,913, Ms. Tita-Reid: 13,899, Dr. Jones-Burton: 13,899, Mr. Paulson: 4,663, and Mr. Leschly: 18,790. Mr. Leschly's stock option and restricted stock unit amounts include equity awards granted to him from his time as the former CEO of bluebird.

(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 2023 as computed in accordance with FASB ASC Topic 718, not including any estimates of forfeitures. See note 16 of *Notes to Consolidated Financial Statements* in our Annual Report on Form 10-K for the year ended December 31, 2023 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, 2023. 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) Mr. Paulson joined our Board in April 2023.

(4) Mr. Leschly elected to not receive the cash portion of his compensation.

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 September 11, 2024, 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 September 11, 2024, bluebird had 193,913,585 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 September 11, 2024, or restricted stock units vesting within 60 days after September 11, 2024 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., 455 Grand Union Boulevard, Somerville, Massachusetts 02145.

Name and Address of Beneficial Owner	Number of Shares Beneficially Owned	Percentage of Shares Beneficially Owned
5% Stockholders		
The Goldman Sachs Group, Inc. (1)	12,180,740	6.3%
Directors and Named Executive Officers		
Nick Leschly (2)	1,123,597	*
John Agwunobi, M.D. (3)	84,465	*
Charlotte Jones-Burton, M.D., M.S. (4)	48,607	*
Elisabeth Leiderman, M.D. (5)	63,913	*
Richard Paulson (6)	4,054	*
Najoh Tita-Reid (7)	64,917	*
Mark Vachon (8)	85,830	*
Michael Cloonan	—	*
Richard A. Colvin (9)	205,558	*
Thomas J. Klima (10)	229,114	*
Andrew Obenshain (11)	818,093	*
All executive officers and directors as a group (13 persons) (12)	2,779,178	1.4%

* Represents holdings of less than 1%.

- (1) Based solely on a Schedule 13G reporting beneficial ownership as of December 29, 2023, filed with the SEC on February 6, 2024, each of The Goldman Sachs Group, Inc. and The Goldman Sachs Group, LLC has shared voting power with respect to 12,180,235 shares and shared dispositive power with respect to 12,180,740 shares. The address of The Goldman Sachs Group, Inc. is 200 West Street, New York, New York 10282.
- (2) Consists of 457,044 shares of common stock and 666,553 shares of common stock underlying options exercisable within 60 days of September 11, 2024. 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.
- (3) Consists of 26,464 shares of common stock and 58,001 shares of common stock underlying options exercisable and restricted stock units vesting within 60 days of September 11, 2024.
- (4) Consists of 17,007 shares of common stock and 31,600 shares of common stock underlying options exercisable and restricted stock units vesting within 60 days of September 11, 2024.
- (5) Consists of 19,133 shares of common stock and 44,780 shares of common stock underlying options exercisable and restricted stock units vesting within 60 days of September 11, 2024.
- (6) Consists of 1,554 shares of common stock and 2,500 shares of common stock underlying options exercisable and restricted stock units vesting within 60 days of September 11, 2024.
- (7) Consists of 20,137 shares of common stock and 44,780 shares of common stock underlying options exercisable and restricted stock units vesting within 60 days of September 11, 2024.

- (8) Consists of 25,041 shares of common stock and 60,789 shares of common stock underlying options exercisable and restricted stock units vesting within 60 days of September 11, 2024.
- (9) Consists of 44,098 shares of common stock and 161,460 shares of common stock underlying options exercisable and restricted stock units vesting within 60 days of September 11, 2024.
- (10) Consists of 46,458 shares of common stock and 182,656 shares of common stock underlying options exercisable and restricted stock units vesting within 60 days of September 11, 2024.
- (11) Consists of 109,795 shares of common stock and 708,298 shares of common stock underlying options exercisable and restricted stock units vesting within 60 days of September 11, 2024.
- (12) Consists of 774,014 shares of common stock and 2,005,164 shares of common stock underlying options and restricted stock units vesting within 60 days of September 11, 2024.

Equity compensation plan information

The following table presents aggregate summary information as of December 31, 2023, regarding our existing equity compensation plans.

Plan Category	Number of Securities to be Issued Upon Exercise of Outstanding Options, Restricted Stock Units and Other Rights (a)	Weighted Average Exercise Price of Outstanding Options (b)	Number of Securities Remaining Available for Future Issuance Under Equity Compensation Plans (excluding securities reflected in column (a)) (c)
Equity Compensation Plans Approved by Stockholders (1)	8,434,643 (2)	\$ 14.16 (3)	6,214,812 (4)
Equity Compensation Plans Not Approved by Stockholders (5)	150,577	\$ 15.50	1,099,423
Total	8,585,220	\$ 14.18	7,314,235

- (1) Consists of shares of common stock underlying equity awards under the 2013 Stock Option and Incentive Plan, the 2013 Employee Stock Purchase Plan (the "ESPP") and the 2023 Incentive Award Plan. Our 2013 Stock Option and Incentive Plan expired in June 2023 and no further shares were available for issuance thereunder after such date.
- (2) Includes 4,207,682 shares subject to restricted stock units and 4,226,961 shares to be issued upon the exercise of outstanding stock options.
- (3) The calculation does not take into account the 4,207,682 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.
- (4) Consists of shares available for future issuance under the ESPP and the 2023 Incentive Award Plan. As of December 31, 2023, 1,144,236 shares of common stock were available for issuance under the ESPP, and 5,070,576 shares of common stock were available for issuance under the 2023 Incentive Award Plan.
- (5) We established an Inducement Plan in May 2021 (the "Inducement Plan") 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, which was later increased to an aggregate of 1,250,000 shares in January, 2022, 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.

PROPOSAL 4
APPROVAL OF AMENDMENTS TO OUR AMENDED AND RESTATED CERTIFICATE OF INCORPORATION
TO EFFECT A REVERSE STOCK SPLIT OF OUR COMMON STOCK AT A RATIO RANGING FROM ANY WHOLE NUMBER
BETWEEN 1-FOR-15 AND 1-FOR-20, AS DETERMINED BY OUR BOARD OF DIRECTORS IN ITS DISCRETION

General

Our Board has adopted and is recommending that our stockholders approve amendments to our Amended and Restated Certificate of Incorporation to effect a reverse stock split of our common stock, par value \$0.01 per share (the "Common Stock") at a ratio ranging from any whole number between 1-for-15 and 1-for-20, with the exact ratio within such range to be determined by the Board in its discretion (the "Reverse Stock Split"), subject to the Board's authority to determine when to file the amendment and to abandon the other amendments notwithstanding prior stockholder approval of such amendments. Pursuant to the law of the State of Delaware, our state of incorporation, the Board must adopt any amendment to our Amended and Restated Certificate of Incorporation and submit the amendment to stockholders for their approval. The form of the proposed amendments to our Amended and Restated Certificate of Incorporation, one of which would be filed with the Secretary of State of the State of Delaware, are attached to this proxy statement as Appendix B.

By approving this proposal, stockholders will approve alternative amendments to our Amended and Restated Certificate of Incorporation pursuant to which a whole number of outstanding shares of our Common Stock between 15 and 20, inclusive, would be combined into one share of our Common Stock. Upon receiving stockholder approval, the Board will have the authority, in its sole discretion, but not the obligation, to elect, without further action on the part of the stockholders, whether to effect the Reverse Stock Split and, if so, to determine the Reverse Stock Split ratio from among the approved range described above and to effect the Reverse Stock Split by filing a Certificate of Amendment with the Secretary of State of the State of Delaware. In this case, all other amendments will be abandoned. The Board may also elect not to effect any Reverse Stock Split.

The Board's decision as to whether and when to effect the Reverse Stock Split will be based on a number of factors, including market conditions, the historical, then-existing and expected trading price of our Common Stock, the anticipated impact of the Reverse Stock Split on the trading price of our Common Stock and on the number of holders of our Common Stock, and the continued listing requirements of The Nasdaq Global Select Market. Although our stockholders may approve the Reverse Stock Split, we will not effect the Reverse Stock Split if the Board does not deem it to be in the best interests of the Company and its stockholders.

Because the Reverse Stock Split will decrease the number of outstanding shares of our Common Stock by a ratio in the range of 1-for-15 to 1-for-20 but would not effect a decrease to the number of shares of Common Stock that the Company will be authorized to issue, the proposed amendments to the Amended and Restated Certificate of Incorporation to effect the Reverse Stock Split (the "Reverse Stock Split amendments") would result in a relative increase in the number of authorized and unissued shares of our Common Stock. For more information on the relative increase in the number of authorized shares of our Common Stock, see "*Principal Effects of the Reverse Stock Split-Relative Increase in Number of Authorized Shares of Common Stock for Issuance*" below.

Purpose and Background of the Reverse Stock Split

On September 12, 2024, the Board approved the proposed amendments to our Amended and Restated Certificate of Incorporation to effect the Reverse Stock Split for the following reasons:

- the Board believes that implementing the Reverse Stock Split could be an effective means of maintaining compliance with the minimum bid price requirement for continued listing of our Common Stock on The Nasdaq Global Select Market;
- the Board believes that continued listing on The Nasdaq Global Select Market provides overall credibility to an investment in our stock, given the stringent listing and disclosure requirements of The Nasdaq Global Select Market. Notably, some trading firms discourage investors from investing in lower priced stocks that are traded in the over-the-counter market because they are not held to the same stringent standards; and
- the Board believes that a higher stock price, which may be achieved through a Reverse Stock Split, could help facilitate the Company's ability to raise new equity capital either through private fund-raising transactions or by accessing the equity capital markets, generally stimulate investor interest in the Company and help attract, retain, and motivate employees.

Nasdaq Requirements for Continued Listing

Our Common Stock is quoted on The Nasdaq Global Select Market under the symbol "BLUE." One of the requirements for continued listing on The Nasdaq Global Select Market pursuant to Nasdaq Listing Rule 5450(a)(1) is maintenance of a minimum closing bid price of \$1.00 per share. On September 11, 2024, the closing market price per share of our Common Stock was \$0.58, as reported by The Nasdaq Global Select Market.

If our Common Stock continues to trade below the minimum closing bid price of \$1.00 per share, we expect to receive written notification from The Nasdaq Stock Market LLC ("Nasdaq") on or about September 25, 2024 notifying us that we have failed to comply with the minimum bid price requirement because the bid price for our Common Stock over a period of 30 consecutive business days prior to such date has closed below the minimum \$1.00 per share requirement (the "Bid Price Requirement"). In accordance with Nasdaq Listing Rule 5810(c)(3)(A), we may be provided an initial period of 180 calendar days to regain compliance with the minimum Bid Price Requirement of \$1.00 per share. However, if it appears to the Nasdaq staff that the Company would not be able to cure the deficiency, or if the Company is otherwise not eligible, Nasdaq would notify the Company that its securities would be subject to delisting (a "Staff Delisting Determination"). In addition, if the Company were to have a closing bid price of \$0.10 or less for a period of ten consecutive business days, Nasdaq would also issue a Staff Delisting Determination letter. In the event of either such notification, the Company may appeal the Nasdaq staff's determination to delist its securities. There can be no assurance that the Nasdaq staff would grant the Company's request for continued listing subsequent to any delisting notification.

If our Common Stock is delisted from The Nasdaq Global Select Market, we cannot assure you that our Common Stock would be listed on another national securities exchange, a national quotation service, the over-the-counter markets or the pink sheets. Delisting from The Nasdaq Global Select Market, or even the issuance of a notice of potential delisting, would also result in negative publicity, make it more difficult for us to raise additional capital, adversely affect the market liquidity of our securities, decrease securities analysts' coverage of us or diminish investor, supplier and employee confidence.

Facilitation of Future Capital Raising

The Board believes it is critically important for the Company to maintain its flexibility in accessing the equity capital markets. As disclosed in the Company's Annual Report on Form 10-K for the year ended December 31, 2023 and Quarterly Report on Form 10-Q for the quarter ended March 31, 2024, there is substantial doubt regarding our ability to continue as a going concern.

Such additional financing could take a variety of forms, including a private investment in Common Stock or preferred equity securities, convertible debt securities or other debt financing, an at-the-market offering of our Common Stock, rights offering or other public offering of equity or debt securities. The availability of additional equity or debt financing will depend on our ability to demonstrate a path to long-term profitable growth, as well as market conditions. There can be no assurance that such equity or debt financing will be available in amounts or on terms acceptable to us, if at all, or that we will be able to raise capital to fund our operations and to continue as a going concern.

The sale of additional equity would result in significant dilution to our stockholders. The incurrence of debt financing would result in additional debt service obligations and the instruments governing such debt could provide for restrictive operating and financial covenants, security interests on our assets, and other terms that could be adverse to our current stakeholders.

Failure to raise additional capital through equity or debt financing would have a material adverse effect on our ability to meet our short and long-term liquidity needs and achieve our business objectives. The Board believes that the Reverse Stock Split would facilitate the Company's ability to raise additional equity capital in particular, including due to the expected resulting increase in the per share price of our Common Stock, as described under "Potential Increased Investor Interest" below. The Board believes that an increased price per share of Common Stock following a Reverse Stock Split would enhance the Company's ability to raise capital to fund its current operations, and to otherwise take advantage of favorable opportunities as they arise.

Potential Increased Investor Interest

In addition, in approving the proposed Reverse Stock Split amendments, the Board considered that the Reverse Stock Split and the expected resulting increase in the per share price of our Common Stock could improve the perception of our Common Stock as an investment security, reset our stock price to more normalized trading levels in the face of potentially extended market dislocation and decrease price volatility for our Common Stock, as small price movements currently may cause relatively large percentage changes in our stock price.

Our Board also considered that the Reverse Stock Split and the resulting increase in the per share price of our Common Stock could encourage increased investor interest in our Common Stock and promote greater liquidity for our

stockholders. Many brokerage houses and institutional investors have internal policies and practices that prohibit them from investing in low-priced stocks or tend to discourage individual brokers from recommending low-priced stocks to their customers, further limiting the liquidity of our Common Stock. These factors could result in lower prices and larger spreads in the bid and ask prices for our Common Stock. Additionally, investors may be dissuaded from purchasing lower priced stocks because the brokerage commissions, as a percentage of the total transaction, tend to be higher for such stocks. Moreover, the analysts at many brokerage firms do not monitor the trading activity or otherwise provide coverage of lower priced stocks. A greater price per share of our Common Stock could allow a broader range of institutions to invest in our Common Stock.

In the event that our Common Stock were to be delisted from The Nasdaq Global Select Market, our Common Stock would likely trade in the over-the-counter market. If our Common Stock were to trade on the over-the-counter market, selling our Common Stock could be more difficult because smaller quantities of shares would likely be bought and sold, and transactions could be delayed. For all of these reasons, we believe the Reverse Stock Split could potentially increase marketability, trading volume, and liquidity of our Common Stock.

Employee Retention

The Board believes that the Company's employees and directors who are compensated in the form of our equity-based securities may be less incentivized and invested in the Company if we are no longer listed on Nasdaq. Accordingly, the Board believes that maintaining Nasdaq listing qualifications for our Common Stock, can help attract, retain, and motivate employees and members of our Board.

In light of the factors mentioned above, our Board unanimously approved the proposed amendments to our Amended and Restated Certificate of Incorporation to effect the Reverse Stock Split as a potential means of increasing and maintaining the price of our Common Stock to above \$1.00 per share in compliance with Nasdaq requirements.

Board Discretion to Implement the Reverse Stock Split

The Board believes that stockholder approval of a range of ratios (as opposed to a single Reverse Stock Split ratio) is in the best interests of our Company and stockholders because it is not possible to predict market conditions at the time that the Reverse Stock Split would be effected. We believe that a range of Reverse Stock Split ratios provides us with the most flexibility to achieve the desired results of the Reverse Stock Split. The Reverse Stock Split ratio to be selected by our Board will be a whole number in a range of 1-for-15 to 1-for-20. The Board can only authorize the filing of one Reverse Stock Split amendment and all other Reverse Stock Split amendments will be abandoned. The Board also has the authority to abandon all Reverse Stock Split amendments.

In determining the Reverse Stock Split ratio and whether and when to effect the Reverse Stock Split following the receipt of stockholder approval, the Board will consider a number of factors, including, without limitation:

- our ability to maintain the listing of our Common Stock on The Nasdaq Global Select Market;
- the historical trading price and trading volume of our Common Stock;
- the number of shares of our Common Stock outstanding immediately before and after the Reverse Stock Split;
- the then-prevailing trading price and trading volume of our Common Stock and the anticipated impact of the Reverse Stock Split on the trading price and trading volume of our Common Stock;
- the anticipated impact of a particular ratio on the number of holders of our Common Stock; and
- prevailing general market conditions.

We believe that granting the Board the authority to set the ratio for the Reverse Stock Split is essential because it allows us to take these factors into consideration and to react to changing market conditions. If our Board chooses to implement the Reverse Stock Split, we will make a public announcement regarding the determination of the Reverse Stock Split ratio.

Risks Associated with the Reverse Stock Split

There are risks associated with the Reverse Stock Split, including that the Reverse Stock Split may not result in a sustained increase in the per share price of our Common Stock. There is no assurance that:

- the market price per share of our Common Stock after the Reverse Stock Split will rise in proportion to the reduction in the number of shares of our Common Stock outstanding before the Reverse Stock Split;
- the Reverse Stock Split will facilitate the Company's access to the equity capital markets;

- the Reverse Stock Split will result in a per share price that will increase the level of investment in our Common Stock by institutional investors or increase analyst and broker interest in our Company;
- the Reverse Stock Split will result in a per share price that will increase our ability to attract, retain and motivate employees and other service providers; or
- the market price per share will either exceed or remain in excess of the \$1.00 minimum bid price as required by Nasdaq, or that we will otherwise meet the requirements of Nasdaq for continued inclusion for trading on The Nasdaq Global Select Market.

Stockholders should note that the effect of the Reverse Stock Split, if any, upon the market price of our Common Stock cannot be accurately predicted. In particular, we cannot assure you that the price for a share of our Common Stock after the Reverse Stock Split will increase in proportion to the reduction in the number of shares of our Common Stock outstanding immediately prior to the Reverse Stock Split. Furthermore, even if the market price of our Common Stock does rise following the Reverse Stock Split, we cannot assure you that the market price of our Common Stock immediately after the Reverse Stock Split will be maintained for any period of time. Even if an increased per-share price can be maintained, the Reverse Stock Split may not achieve the desired results that have been outlined above.

Moreover, because some investors may view the Reverse Stock Split negatively, we cannot assure you that the Reverse Stock Split will not adversely impact the market price of our Common Stock.

While we aim that the Reverse Stock Split will be sufficient to satisfy the Minimum Bid Requirement, it is possible that, even if the Reverse Stock Split results in a bid price for our Common Stock that exceeds \$1.00 per share, we may not be able to continue to satisfy Nasdaq's additional criteria for continued listing of our Common Stock on The Nasdaq Global Select Market. For example, we are currently out of compliance with Nasdaq Listing Rule 5250(c)(1), which requires us to timely file all required periodic reports with the SEC. While we filed our Annual Report on Form 10-K for the year ended December 31, 2023 and our Quarterly Report on Form 10-Q for the quarter ended March 31, 2024 with the SEC on September 13, 2024, we have not yet filed our Quarterly Report on Form 10-Q for the quarter ended June 30, 2024 (the "Q2 Form 10-Q"). Nasdaq has granted us an exception to file the Q2 Form 10-Q by October 14, 2024. However, there is no assurance we will meet this deadline.

We believe that the Reverse Stock Split may result in greater liquidity for our stockholders. However, it is also possible that such liquidity could be adversely affected by the reduced number of shares outstanding after the Reverse Stock Split, particularly if the price of our Common Stock does not increase as a result of the Reverse Stock Split.

Principal Effects of the Reverse Stock Split

Issued and Outstanding Shares of Common Stock

If the Reverse Stock Split is approved and effected, each holder of our Common Stock outstanding immediately prior to the effectiveness of the Reverse Stock Split will own a reduced number of shares of our Common Stock upon effectiveness of the Reverse Stock Split. The Reverse Stock Split will be effected simultaneously for all issued and outstanding shares of Common Stock and the Reverse Stock Split ratio will be the same for all issued and outstanding shares of Common Stock. The Reverse Stock Split will affect all of our stockholders uniformly and will not affect any stockholder's percentage ownership interests in the Company, except to the extent that the Reverse Stock Split results in any of our stockholders owning a fractional share. After the Reverse Stock Split, the shares of our Common Stock will have the same voting rights and rights to dividends and distributions and will be identical in all other respects to our Common Stock now authorized. Common Stock issued pursuant to the Reverse Stock Split will remain fully paid and non-assessable. The Reverse Stock Split will not affect the Company continuing to be subject to the periodic reporting requirements of the Securities Exchange Act of 1934, as amended (the "Exchange Act").

The Reverse Stock Split may result in some stockholders owning "odd-lots" of less than 100 shares of our Common Stock. Brokerage commissions and other costs of transactions in odd-lots are generally higher than the costs of transactions in "round-lots" of even multiples of 100 shares.

Relative Increase in Number of Authorized Shares of Common Stock for Issuance

The Reverse Stock Split will not affect the number of authorized shares or the par value of our capital stock, which will remain at 250,000,000 authorized shares of Common Stock and 5,000,000 authorized shares of preferred stock, par value \$0.01 per share ("Preferred Stock," and together with the Common Stock, the "Capital Stock"). Although the number of authorized shares of our Capital Stock will not change as a result of the Reverse Stock Split, the number of shares of our Common Stock issued and outstanding will be reduced in proportion to the ratio selected by the Board. Thus, the Reverse Stock Split will effectively increase the number of authorized and unissued shares of our Common Stock available for future issuance by the amount of the reduction effected by the Reverse Stock Split.

If the proposed Reverse Stock Split amendments are approved, all or any of the authorized and unissued shares of our Common Stock may be issued in the future for such corporate purposes and such consideration as the Board deems advisable from time to time, without further action by the stockholders of our Company and without first offering such shares to our stockholders. When and if additional shares of our Common Stock are issued, these new shares would have the same voting and other rights and privileges as the currently issued and outstanding shares of Common Stock, including the right to cast one vote per share.

Because our stockholders have no preemptive rights to purchase or subscribe for any of our unissued shares of Common Stock, the future issuance of additional shares of Common Stock will reduce our current stockholders' percentage ownership interest in the total outstanding shares of Common Stock. In the absence of a proportionate increase in our future earnings and book value, an increase in the number of our outstanding shares of Common Stock would dilute our projected future earnings per share, if any, and book value per share of all our outstanding shares of Common Stock. If these factors were reflected in the price per share of our Common Stock, the potential realizable value of a stockholder's investment could be adversely affected. An issuance of additional shares could therefore have an adverse effect on the potential realizable value of a stockholder's investment.

Effect on Outstanding Equity Incentive Plans

The Company maintains the 2013 Stock Option and Incentive Plan (the "2013 Plan"), the 2013 Employee Stock Purchase Plan, as amended (the "ESPP"), the 2021 Inducement Plan, as amended (the "Inducement Plan"), the 2023 Incentive Award Plan (the "2023 Plan", and together with the 2013 Plan and the Inducement Plan, the "Incentive Plans," and together with the ESPP, the "Plans"), which are designed primarily to provide stock-based incentives to employees and directors of the Company. As of September 11, 2024, options to purchase 7,621,185 shares of our Common Stock were outstanding under the Incentive Plans. As of September 11, 2024, 4,498,987 restricted stock units which were subject solely to time-based vesting conditions and 228,787 restricted stock units which were subject to performance-based vesting conditions (with performance-based awards counted assuming "target" performance) were outstanding under the Incentive Plans. In the event of a Reverse Stock Split, our Board generally has the discretion to determine the appropriate adjustment to awards granted and share-based limits under the Plans. Accordingly, if the Reverse Stock Split is approved by our stockholders and our Board decides to implement the Reverse Stock Split, as of the Effective Time (as defined below) the number of shares issuable upon exercise and the exercise price of all outstanding options and any total shareholder return-based calculations of any equity awards under the Plans will be proportionately adjusted (and rounded down to the nearest whole share in the case of shares and up to the nearest whole cent in the case of exercise prices, as applicable) based on the Reverse Stock Split ratio selected by our Board, subject to the terms of such Plans, options, and restricted stock units, as applicable. In addition, the number of shares available for future issuance and any share-based award limits under the Plans will be proportionately reduced based on the Reverse Stock Split ratio selected by our Board.

Our Board has also authorized the Company to effect any other changes necessary, desirable or appropriate to give effect to the Reverse Stock Split, including any applicable technical, conforming changes.

Effects of the Amendment on our Common Stock

After the Effective Time, each stockholder will own fewer shares of our Common Stock as a result of the Reverse Stock Split. Because the Reverse Stock Split will decrease the number of outstanding shares of our Common Stock, the proposed amendments will result in a relative increase in the number of authorized and unissued shares of our Common Stock. All outstanding options to purchase shares of our Common Stock, including any held by our officers and directors, would be adjusted as a result of the Reverse Stock Split. In particular, the number of shares issuable upon the exercise of each instrument would be reduced, and the exercise price per share, if applicable, would be increased, in accordance with the terms of each instrument and based on the ratio of the Reverse Stock Split.

The chart below outlines the capital structure as described in this proposal and prior to and immediately following a possible Reverse Stock Split if the Reverse Stock Split is effected at a ratio of 1-for-15 or 1-for-20 based on share information as of the close of business on September 11, 2024, but does not give effect to any other changes, including any issuance of securities after September 11, 2024.

	Number of Shares of common stock before Reverse Stock Split	1-for-15	1-for-20
Authorized	250,000,000	250,000,000	250,000,000
Issued and Outstanding	193,913,585	12,927,572	9,695,679
Issuable under Outstanding Warrants (1)	2,586,207	172,414	129,310
Issuable under Outstanding Equity Awards (2)	12,348,959	823,264	617,448
Reserved for Future Issuance under the Plans (3)	3,688,502	245,900	184,425
Reserved for Future Issuance under Loan Agreement (4)	3,448,276	229,885	172,414
Authorized but Unissued and Unreserved (5)	34,014,472	235,600,965	239,200,724

- (1) Consists of shares reserved for issuance upon exercise of outstanding warrants.
- (2) Consists of shares reserved for issuance pursuant to outstanding stock options and restricted stock units (with performance-based restricted stock units counted assuming "target" performance).
- (3) Consists of shares reserved for future issuance under the Plans, excluding shares issuable under outstanding stock options and restricted stock units.
- (4) Consists of shares reserved for issuance pursuant to future warrants that may be issued under the Company's loan agreement.
- (5) Consists of shares authorized but unissued and unreserved for future issuance.

Procedure for Effecting Reverse Stock Split and Exchange of Stock Certificates, if Applicable

If the proposed amendments to our Amended and Restated Certificate of Incorporation are approved by the Company's stockholders and the Board determines to effect the Reverse Stock Split, the Reverse Stock Split will become effective at 5:00 p.m. Eastern time, on the date the certificate of amendment is filed with the Secretary of State of the State of Delaware (the "Effective Time"). At the Effective Time, shares of Common Stock issued and outstanding immediately prior thereto will be combined, automatically and without any action on the part of the stockholders, into new shares of Common Stock in accordance with the Reverse Stock Split ratio contained in the certificate of amendment.

As soon as practicable after the Effective Time, stockholders will be notified by our transfer agent that the Reverse Stock Split has been effected. If you hold shares of Common Stock in book-entry form, you will not need to take any action to receive post-Reverse Stock Split shares of our Common Stock. As soon as practicable after the Effective Time, the Company's transfer agent will send to your registered address a statement of ownership indicating the number of post-Reverse Stock Split shares of Common Stock you hold. If applicable, a check representing a cash payment in lieu of fractional shares will also be mailed to your registered address as soon as practicable after the Effective Time (see "Fractional Shares" below).

Some stockholders may hold their shares of Common Stock in certificate form. Our transfer agent will act as exchange agent for purposes of implementing the exchange of stock certificates, if applicable. If you are a stockholder holding pre-Reverse Stock Split shares in certificate form, you will receive a transmittal letter from the Company's transfer agent as soon as practicable after the Effective Time. The transmittal letter will be accompanied by instructions specifying how you can exchange your certificate or certificates representing the pre-Reverse Stock Split shares of our Common Stock for a statement of ownership. When you submit your certificate or certificates representing the pre-Reverse Stock Split shares of our Common Stock, your post-Reverse Stock Split shares of our Common Stock will be held electronically in book-entry form in the Direct Registration System. This means that, instead of receiving a new stock certificate representing the aggregate number of post-Reverse Stock Split shares you own, you will receive a statement indicating the number of post-Reverse Stock Split shares you own in book-entry form. We will no longer issue physical stock certificates.

STOCKHOLDERS SHOULD NOT DESTROY ANY STOCK CERTIFICATE(S) AND SHOULD NOT SUBMIT ANY CERTIFICATE(S) UNTIL REQUESTED TO DO SO.

Beginning at the Effective Time, each certificate representing pre-Reverse Stock Split shares will be deemed for all corporate purposes to evidence ownership of post-Reverse Stock Split shares.

Fractional Shares

No scrip or fractional shares would be issued if, as a result of the Reverse Stock Split, a stockholder would otherwise become entitled to a fractional share because the number of shares of Common Stock they hold before the Reverse Stock Split is not evenly divisible by the split ratio ultimately determined by the Board. Instead, each stockholder will be entitled to receive a cash payment in lieu of such fractional share. The cash payment to be paid will be equal to the fraction of a share to which such stockholder would otherwise be entitled multiplied by the closing price per share as reported by The Nasdaq

Global Select Market (as adjusted to give effect to the Reverse Stock Split) on the date of the Effective Time. The Company will not assess any transaction costs to stockholders for the cash payment. Stockholders would not be entitled to receive interest for their fractional shares for the period of time between the Effective Time and the date payment is received.

After the Reverse Stock Split, then-current stockholders would have no further interest in our Company with respect to their fractional shares. A person entitled to only a fractional share would not have any voting, dividend or other rights in respect of their fractional share except to receive the cash payment as described above. Such cash payments would reduce the number of post-Reverse Stock Split stockholders to the extent that there are stockholders holding fewer than that number of pre-Reverse Stock Split shares within the Reverse Stock Split ratio that is determined by the Board as described above. Reducing the number of post-Reverse Stock Split stockholders, however, is not the purpose of this proposal.

Stockholders should be aware that, under the escheat laws of the various jurisdictions where stockholders reside, where we are domiciled and where the funds for fractional shares would be deposited, sums due to stockholders in payment for fractional shares that are not timely claimed after the Effective Time may be required to be paid to the designated agent for each such jurisdiction. Thereafter, stockholders otherwise entitled to receive such funds may have to seek to obtain them directly from the state to which they were paid.

No Appraisal Rights

Under the Delaware General Corporation Law, the Company's stockholders will not be entitled to appraisal rights with respect to the Reverse Stock Split, and we do not intend to independently provide stockholders with any such right.

No Going Private Transaction

Notwithstanding the decrease in the number of outstanding shares following the Reverse Stock Split, the Board does not intend for this transaction to be the first step in a series of plans or proposals of a "going private transaction" within the meaning of Rule 13e-3 of the Exchange Act.

Interests of Certain Persons in the Proposal

Certain of our officers and directors have an interest in this Proposal 4 as a result of their ownership of shares of our Common Stock, as set forth in the section entitled "Stock Ownership of Certain Beneficial Owners and Management" below. However, we do not believe that our officers or directors have interests in Proposal 4 that are different from or greater than those of any of our other stockholders.

Anti-takeover Effects of Proposed Amendments

Release No. 34-15230 of the staff of the SEC requires disclosure and discussion of the effects of any action, including the proposed amendments to our Amended and Restated Certificate of Incorporation discussed herein, that may be used as an anti-takeover mechanism. An additional effect of the Reverse Stock Split would be to increase the relative amount of authorized but unissued shares of our Common Stock, which may, under certain circumstances, be construed as having an anti-takeover effect. Although not intended for such purposes, the effect of the increased available shares could be to render more difficult or discourage an attempt to take over or otherwise obtain control of the Company (for example, by permitting issuances that would dilute the stock ownership of a person or entity seeking to effect a change in the composition of the Board or contemplating a tender offer or other change in control transaction). In addition, our Amended and Restated Certificate of Incorporation and our Bylaws include provisions that may have an anti-takeover effect. These provisions, among things, permit the Board to issue preferred stock with rights senior to those of the Common Stock without any further vote or action by the stockholders and do not provide for cumulative voting rights, which could make it more difficult for stockholders to effect certain corporate actions and may delay or discourage a change in control.

Our Board is not presently aware of any attempt to acquire control of the Company, and the Reverse Stock Split proposal is not part of any plan by our Board to recommend or implement a series of anti-takeover measures.

Accounting Treatment of the Reverse Stock Split

If the Reverse Stock Split is effected, the par value per share of our Common Stock will remain unchanged at \$0.01. Accordingly, at the Effective Time, the stated capital on the Company's consolidated balance sheets attributable to our Common Stock will be reduced in proportion to the size of the Reverse Stock Split ratio, and the additional paid-in-capital account will be increased by the amount by which the stated capital is reduced. Our stockholders' equity, in the aggregate, will remain unchanged as a result of the Reverse Stock Split. Per share net income or loss will be increased because there will be fewer shares of Common Stock outstanding. The Company does not anticipate that any other accounting consequences, including changes to the amount of stock-based compensation expense to be recognized in any period, will arise as a result of the Reverse Stock Split.

Certain U.S. Federal Income Tax Consequences of the Reverse Stock Split

The following is a summary of certain U.S. federal income tax consequences of the Reverse Stock Split to U.S. Holders (as defined below) that hold their shares of Common Stock as capital assets for U.S. federal income tax purposes. This summary is based upon the provisions of the U.S. Internal Revenue Code (the "Code"), Treasury regulations promulgated thereunder, administrative rulings and judicial decisions, all as in effect as of the date hereof, and all of which are subject to change and differing interpretations, possibly with retroactive effect. Changes in these authorities or their interpretation may result in the U.S. federal income tax consequences of the Reverse Stock Split differing substantially from the consequences summarized below.

This summary is for general information purposes only and does not address all aspects of U.S. federal income taxation that may be relevant to U.S. Holders in light of their particular circumstances or to U.S. Holders that may be subject to special tax rules, including, without limitation: (i) persons subject to any alternative minimum tax; (ii) banks, insurance companies, or other financial institutions; (iii) tax-exempt organizations, qualified retirement plans, individual retirement accounts or other tax deferred accounts, or governmental organizations; (iv) dealers in securities or commodities; (v) regulated investment companies or real estate investment trusts; (vi) partnerships (including entities or arrangements treated as partnerships for U.S. federal income tax purposes and their partners or members); (vii) brokers, dealers, or traders in securities; (viii) persons whose "functional currency" is not the U.S. dollar; (ix) persons holding our Common Stock in a hedging transaction, "straddle," "conversion transaction" or other risk reduction transaction; (x) persons who acquired our Common Stock in connection with employment or the performance of services; (xi) persons deemed to sell our Common Stock under the constructive sale provisions of the Code; (xii) corporations that accumulate earnings to avoid U.S. federal income tax; or (xiii) certain former citizens or long-term residents of the United States.

In addition, this summary of certain U.S. federal income tax consequences does not address the tax consequences arising under the laws of any foreign, state or local jurisdiction or any U.S. federal tax consequences other than U.S. federal income taxation (such as U.S. federal estate and gift tax consequences). Furthermore, the following discussion does not address any tax consequences of transactions effectuated before, after or at the same time as the Reverse Stock Split, whether or not they are in connection with the Reverse Stock Split.

If a partnership (including any entity or arrangement treated as a partnership for U.S. federal income tax purposes) holds shares of our Common Stock, the tax treatment of a partner in the partnership generally will depend upon the status of the partner, the activities of the partnership, and certain determinations made at the partner level. Partnerships holding our Common Stock and the partners in such partnerships should consult their tax advisors regarding the tax consequences to them of the Reverse Stock Split.

We have not sought, and will not seek, an opinion of counsel or a ruling from the Internal Revenue Service (the "IRS"), regarding the U.S. federal income tax consequences of the Reverse Stock Split, and there can be no assurance that the IRS will not challenge the statements and conclusions set forth below or that a court would not sustain any such challenge.

EACH STOCKHOLDER SHOULD CONSULT ITS TAX ADVISORS WITH RESPECT TO THE PARTICULAR TAX CONSEQUENCES OF THE REVERSE STOCK SPLIT TO SUCH STOCKHOLDER.

This summary addresses only stockholders that are U.S. Holders. For purposes of this discussion, a "U.S. Holder" is any beneficial owner of our Common Stock that, for U.S. federal income tax purposes, is or is treated as any of the following:

- an individual who is a citizen or resident of the United States;
- a corporation created or organized under the laws of the United States, any state thereof or the District of Columbia;
- an estate, the income of which is subject to U.S. federal income tax regardless of its source; or
- a trust that (i) is subject to the primary supervision of a U.S. court and all substantial decisions of which are subject to the control of one or more "United States persons" (within the meaning of Section 7701(a)(30) of the Code) or (ii) has a valid election in effect to be treated as a United States person for U.S. federal income tax purposes.

The Reverse Stock Split should constitute a "recapitalization" for U.S. federal income tax purposes. As a recapitalization, except as described below with respect to cash received in lieu of fractional shares, a U.S. Holder should not recognize gain or loss as a result of the Reverse Stock Split. A U.S. Holder's aggregate tax basis in the shares of the Common Stock received pursuant to the Reverse Stock Split should equal the U.S. Holder's aggregate tax basis in the shares of the Common Stock surrendered (excluding any portion of such basis that is allocated to any fractional share of our Common Stock), and such U.S. Holder's holding period in the shares of the Common Stock received should include the holding period of the shares of the Common Stock surrendered.

Treasury regulations promulgated under the Code provide detailed rules for allocating the tax basis and holding period of the shares of Common Stock surrendered pursuant to the Reverse Stock Split to the shares of Common Stock received pursuant to the Reverse Stock Split. U.S. Holders holding shares of Common Stock that were acquired on different dates and at different prices should consult their tax advisors regarding the allocation of the tax basis and holding period of such shares.

A U.S. Holder who receives cash in lieu of a fractional share of Common Stock should be treated as first receiving such fractional share and then receiving cash in redemption of such fractional share. A U.S. Holder who receives cash in lieu of a fractional share in the Reverse Stock Split should recognize capital gain or loss in an amount equal to the difference between the amount of the cash received in lieu of the fractional share and the portion of the U.S. Holder's adjusted tax basis allocable to the fractional share. Such capital gain or loss should be long-term capital gain or loss if the U.S. Holder's holding period for the Common Stock surrendered exceeded one year at the Effective Time of the Reverse Stock Split. The deductibility of capital losses is subject to limitations. U.S. Holders should consult their tax advisors regarding the tax effects to them of receiving cash in lieu of fractional shares based on their particular circumstances.

U.S. Holders (other than corporations and certain other exempt recipients) may be subject to information reporting with respect to any cash received in exchange for a fractional share interest in a new share in the Reverse Stock Split. U.S. Holders who are subject to information reporting and who do not provide a correct taxpayer identification number and other required information (such as by submitting a properly completed IRS Form W-9) may also be subject to backup withholding at the applicable rate. Backup withholding is not an additional tax. Any amounts withheld under the backup withholding rules may be refunded or credited against the U.S. Holder's U.S. federal income tax liability; provided that the required information is properly furnished in a timely manner to the IRS. U.S. Holders should consult their tax advisors regarding their qualification for an exemption from backup withholding and the procedures for obtaining such an exemption.

THE BOARD UNANIMOUSLY RECOMMENDS THAT YOU VOTE

FOR

**THE APPROVAL OF AMENDMENTS TO OUR AMENDED AND RESTATED CERTIFICATE OF INCORPORATION
TO EFFECT A REVERSE STOCK SPLIT OF OUR COMMON STOCK AT A RATIO RANGING FROM ANY WHOLE NUMBER
BETWEEN 1-FOR-15 AND 1-FOR-20, AS DETERMINED BY OUR BOARD OF DIRECTORS IN ITS DISCRETION**

(PROPOSAL 4 ON YOUR PROXY CARD)

PROPOSAL 5
APPROVAL OF THE AMENDMENT AND RESTATEMENT OF THE 2023 INCENTIVE AWARD PLAN

On September 12, 2024, the Board adopted, subject to stockholder approval, an amendment and restatement of the bluebird bio, Inc. 2023 Incentive Award Plan (the "2023 Plan") to (i) increase the aggregate number of shares authorized for issuance under the 2023 Plan by 15,000,000 shares to 20,200,000 shares, (ii) include minimum vesting requirements for certain awards granted thereunder, (iii) clarify the treatment of performance-based awards in the event of a change in control and (iv) extend the date following which ISOs can no longer be granted to September 12, 2034, the tenth anniversary of the date the Board approved the amended and restated plan (such amended and restated plan, the "Amended 2023 Plan"). The additional shares would include 523,250 shares to be reserved for issuance of stock options and restricted stock units to our non-employee directors on the date of the Annual Meeting, which are contingent upon stockholder approval of this Proposal 5 at the Annual Meeting (the "Contingent Awards").

If the Amended 2023 Plan is not approved by our stockholders, it will not become effective, the Contingent Awards will not be granted, the 2023 Plan will continue in effect and we may continue to grant awards under the 2023 Plan subject to its terms, using the shares available for issuance thereunder. As of September 11, 2024, there are 2,158,963 shares available for future awards under the 2023 Plan. After September 11, 2024 and prior to the date of the Annual Meeting, we anticipate issuing equity awards under the 2023 Plan to certain of our directors and employees, including our executive officers, comprising (i) 499,000 PSUs (based on the target attainment level), 470,800 RSUs and 76,500 options under the 2023 Plan and (ii) 242,500 RSUs under the Inducement Plan (collectively, the "Anticipated Awards"). We believe that our stock-based compensation programs have been integral to our success in the past and are critical to our ability to succeed in the future. The inability to make competitive equity awards to attract and retain talented employees or incent non-employee directors to serve on our board of directors in a highly competitive market could have an adverse impact on our business. Further, if the Amended 2023 Plan is not approved, we could be forced to increase cash compensation, which will reduce the resources we have allocated to meeting our business needs and objectives. Therefore, the approval of the Amended 2023 Plan is vital to our future success.

Employees and consultants of the Company and its subsidiaries, as well as members of our Board, are eligible to receive awards under the Amended 2023 Plan. We granted all of our approximately 375 employees equity awards upon hire and on an annual basis, which we believe is an integral part of their total compensation package. Pursuant to our non-employee director compensation policy, the Contingent Awards would be granted on the date of the Annual Meeting.

In addition, in keeping with current compensation and governance best practices, we determined to include minimum vesting conditions in the Amended 2023 Plan, which provide that, with certain limited exceptions, awards or portions of an award granted under the Amended 2023 Plan may vest no earlier than the first anniversary of the award's grant date.

The Amended 2023 Plan also extends the date following which ISOs can no longer be granted under the plan to September 12, 2034 and further clarifies the specific treatment of awards in connection with a change in control.

Background on Share Request

In its determination to approve the Amended 2023 Plan, our Board reviewed our historical share usage, certain burn rate metrics, and other considerations outlined below in conjunction with information provided by our independent compensation consultant, Aon. Specifically, our Board considered the following:

- In determining the reasonableness of the increase to the 2023 Plan share reserve of 15,000,000 shares, our Board considered our historic burn rate, described below under "Key Equity Metrics." The 15,000,000 new shares represent 7.7% of common shares outstanding as of September 11, 2024 which our Board believes is a reasonable request.
- The aggregate number of shares authorized for issuance under the Amended 2023 Plan would increase by 15,000,000 shares, which is inclusive of the 523,250 shares reserved for the Contingent Awards described above, which we expect to provide us with enough shares for awards for approximately one year, assuming we continue to grant awards consistent with our current practices and historical usage. We cannot predict our future equity grant practices, the future price of our shares or future hiring activity with any degree of certainty at this time, and the share reserve under the Amended 2023 Plan could last for a shorter or longer period of time.
- If our stockholders do not approve the Amended 2023 Plan at the Annual Meeting, we may be unable to continue granting equity awards as needed, which could prevent us from successfully attracting and retaining the highly skilled talent we need.

Our Board and management believe that equity awards are necessary to remain competitive in our industry and are essential to recruiting and retaining the best talent in a crucial period of growth for the Company. In light of the factors

described above, our Board has determined that the size of the share reserve under the Amended 2023 Plan is reasonable and appropriate at this time.

Key Features of the Amended 2023 Plan

- *No liberal share counting.* The Amended 2023 Plan prohibits the reuse of shares withheld or delivered to satisfy the exercise price of a stock option or to satisfy tax withholding requirements with respect to stock options or stock awards.
- *No repricing of awards without stockholder approval.* Under the Amended 2023 Plan, awards may not be repriced without stockholder approval if the effect would be to reduce the exercise price for the shares underlying the award.
- *No evergreen feature; stockholder approval required for share reserve increases.* The Amended 2023 Plan does not provide for an annual increase in the share reserve, and the Amended 2023 Plan may not be amended to increase the share reserve without stockholder approval.
- *Limit on Non-Employee Director Awards.* The sum of the grant date fair value of all equity-based awards and the maximum amount that may become payable pursuant to all cash-based awards that may be as compensation for services as a non-employee director during any calendar year may not exceed \$750,000; provided that such maximum amount will not exceed \$1,000,000 in the calendar year of any such non-employee director's initial election or appointment to the Board.
- *No reload options or SARs.* No additional stock options or SARs may contain a provision entitling the award holder to automatic grant of additional options or SARs in connection with any exercise of the original option or SAR.
- *No discounted options or SARs.* All options and SARs must have an exercise or measurement price that is at least equal to the fair market value of the underlying common stock on the date of grant.
- *No payment of dividends on unvested awards.* Under the Amended 2023 Plan, no dividends or dividend equivalents in respect of shares underlying an unvested award may be paid until the award vests and no dividend or dividend equivalents may be paid on outstanding stock options or SARs.
- *All awards are subject to clawback.* All awards granted under the Amended 2023 Plan are subject to our clawback policy.
- *Independent plan administrator.* The Compensation Committee, consisting of independent members of our board of directors, is charged with the administration of the Amended 2023 Plan.
- *No accelerated vesting.* The Amended 2023 Plan does not have automatic accelerated vesting provisions for awards in connection with a change in control (other than in connection with the non-assumption of awards).
- *Minimum vesting conditions.* With certain limited exceptions, awards or portions of an award granted under the Amended 2023 Plan may vest no earlier than the first anniversary of the award's grant date.

Key Equity Metrics

- *Overhang.* "Overhang" is a measure of potential dilution which we define as the sum of (i) the total number of shares underlying all equity awards outstanding and (ii) the total number of shares available for future award grants, divided by (iii) the number of shares of common stock outstanding. On September 11, 2024, the Company had an aggregate of 193,913,585 shares of common stock outstanding and a total of approximately 2,158,963 shares of common stock reserved for issuance and available for future grants under the 2023 Plan and 658,523 shares of common stock reserved for issuance and available for future grants under the Inducement Plan. As of September 11, 2024, not including shares subject to the Contingent Awards or the Anticipated Awards, there were approximately 7,182,600 stock options outstanding with a weighted remaining term of 7.4 years and a weighted average exercise price of \$17.13, of which 7,182,600 are currently underwater, and 4,612,526 RSUs outstanding under the 2013 Plan and the 2023 Plan, 4,383,739 of which were subject solely to time-based vesting conditions, and 228,787 of which were subject to performance-based vesting conditions (with performance-based awards counted assuming "target" performance). Additionally, as of September 11, 2024, there were 438,585 stock options outstanding with a weighted average exercise price of \$4.31 and a weighted remaining term of 9.11 years, of which 438,585 are currently underwater, and 115,248 RSUs outstanding under the Inducement Plan, all of which are subject to time-based vesting. If the 15,000,000 new shares proposed to be authorized for grant under the Amended 2023 Plan

(including with respect to the Contingent Awards) are included in the calculation, our overhang on September 11, 2024 would have been 15.6%.¹

- **Burn Rate.** “Burn Rate” measures how quickly we use shares and is calculated by dividing (a) the number of shares subject to equity awards granted during the applicable fiscal year (excluding performance-based vesting RSUs granted in the applicable fiscal year, but including performance-based vesting RSUs that are earned and vest during the applicable fiscal year) by (b) the weighted average number of shares of our common stock outstanding during the applicable fiscal year. The following table provides information regarding the grant of equity awards over the past three completed fiscal years and which we considered in setting the number of shares available for issuance under the Amended 2023 Plan:

Fiscal Year	Stock Options	Time-Based RSUs Granted	Performance-Based RSUs Granted ⁽¹⁾	Actual Performance Based RSUs Earned ⁽²⁾	Total Granted ⁽³⁾	Weighted Average # of Shares	Burn Rate
2021	1,238,018	2,963,957	395,031	112,350	4,314,325	68,910,001	6.3 %
2022	1,194,060	1,688,036	27,000	76,103	2,958,199	78,584,575	3.8 %
2023	2,077,000	3,267,523	101,400	50,192	5,394,715	109,825,177	4.9 %

Average Three-Year Burn Rate (2021-2023) _____ 5.0%

(1) Reflects target number of performance-vesting RSUs granted in applicable fiscal year.

(2) Reflects the performance-vesting RSUs for which the performance criteria was certified as attained and vested during such fiscal year.

(3) Total number of shares granted in a particular fiscal year includes all stock options and time-vesting RSUs granted during such fiscal year, and performance-vesting RSUs for which the performance criteria was certified as attained and vested during such fiscal year.

Summary of Amended 2023 Plan

A summary of the principal provisions of the Amended 2023 Plan is set forth below. The summary is qualified by reference to the full text of the Amended 2023 Plan, which is attached as Appendix C to this Proxy Statement.

Administration

The Compensation Committee (or, with respect to awards to non-employee directors, our Board) (together, the “administrator”) is charged with the general administration of the Amended 2023 Plan. The Amended 2023 Plan provides that, subject to certain limitations, our Board and the Compensation Committee may from time to time delegate its authority to grant awards to a committee consisting of one or more members of our Board or the Compensation Committee or one or more of our officers. Subject to the terms and conditions of the Amended 2023 Plan, the administrator has the authority to select the persons to whom awards are to be made; to determine the type of awards to be granted, the number of shares to be subject to awards and the terms and conditions of awards; to determine when awards can be settled in cash, shares, or other property or whether an award may be cancelled, forfeited or surrendered; to accelerate vesting or lapse restrictions; and to make all other determinations and to take all other actions necessary or advisable for the administration of the Amended 2023 Plan. The administrator is also authorized to adopt, amend or repeal rules relating to the administration of the Amended 2023 Plan.

Eligibility

Persons eligible to participate in the Amended 2023 Plan include all members of the Board (currently including eight non-employee directors), approximately 375 employees of the Company and its subsidiaries, and approximately 80 consultants of the Company and its subsidiaries, in each case, as determined by the administrator of the Amended 2023 Plan. Only employees may be granted ISOs under the Amended 2023 Plan.

Shares Available and Limitations on Awards

The number of shares authorized for issuance under the 2023 Plan equals 5,200,000 shares of our common stock, plus any shares of our common stock that were subject to outstanding awards under our 2013 Stock Option and Incentive Plan that become available for issuance under the 2023 Plan. If our stockholders approve the Amended 2023 Plan, the number of shares available for issuance under the 2023 Plan will be increased by 15,000,000 shares of our common stock to 20,200,000 shares (plus any shares of our common stock that were subject to outstanding awards under our 2013 Stock

¹ After September 11, 2024 and prior to the date of the Annual Meeting, we anticipate issuing equity awards to certain of our directors and employees, including our executive officers, comprising: (i) 499,000 PSUs (at target), 470,800 RSUs and 76,500 options under the 2023 Plan and (ii) 242,500 RSUs under the Inducement Plan.

Option and Incentive Plan that become available for issuance under the 2023 Plan). The maximum number of shares that may be issued under the Amended 2023 Plan upon the exercise of ISOs is 20,200,000.

If all or any part of an award under the Amended 2023 Plan or our 2013 Stock Option and Incentive Plan (following the original effective date of the 2023 Plan), expires, lapses or is terminated, converted into an award in respect of shares of another entity in connection with a spin-off or other similar event, exchanged or settled for cash, surrendered, repurchased, cancelled without having been fully exercised or forfeited, in any case, in a manner that results in us acquiring the underlying shares at a price not greater than the price paid by the participant for such shares or not issuing the underlying shares, such unused shares subject to the award at such time will be available for future grants under the Amended 2023 Plan. In addition, the following items will not be counted against the shares available for issuance under the Amended 2023 Plan: (i) the payment of dividends or dividend equivalents in cash in conjunction with any outstanding awards; (ii) any awards which are settled in cash rather than by issuance of shares; and (iii) shares issued in assumption of, or in substitution for, any outstanding awards of any entity acquired in any form of combination by us or any of our subsidiaries, except shares acquired upon the exercise of ISOs will count against the maximum number of shares that may be issued under the Amended 2023 Plan pursuant to the exercise of ISOs.

The following types of shares will not be added back to the shares available for issuance under the Amended 2023 Plan: (i) shares tendered by a participant or withheld by us in payment of the exercise price of an option; (ii) shares tendered by a participant or withheld to satisfy any tax withholding obligation with respect to an award; (iii) shares subject to a SAR that are not issued in connection with the stock settlement of the SAR or SAR granted under the 2013 Stock Option and Incentive Plan on exercise; and (iv) shares purchased on the open market with the cash proceeds from the exercise of options.

In addition, under the Amended 2023 Plan, the sum of the grant date fair value (determined as of the grant date in accordance with Financial Accounting Standards Board Accounting Standards Codification Topic 718) of all equity-based awards and the maximum amount that may become payable pursuant to all cash-based awards that may be granted to a service provider as compensation for services as a non-employee director during any calendar year may not exceed \$750,000; provided that such maximum amount will not exceed \$1,000,000 in the calendar year of any such non-employee director's initial election or appointment to the Board.

As of September 11, 2024, the closing price of a share of our common stock on Nasdaq was \$0.58.

Awards

The Amended 2023 Plan provides that the administrator may grant or issue stock options, SARs, restricted stock, RSUs, performance bonus awards, performance stock units, other stock or cash-based awards, dividend equivalents, or any combination thereof. Each award will be set forth in a separate agreement with the person receiving the award and will indicate the type, terms and conditions of the award.

- *Nonqualified Stock Options* ("NSOs") will provide for the right to purchase shares of our common stock at a specified price which may not be less than fair market value on the date of grant (except in the case of "substitute awards" (as defined in the Amended 2023 Plan), and usually will become exercisable (at the discretion of the administrator) in one or more installments after the grant date, subject to the participant's continued employment or service with us and/or subject to the satisfaction of corporate performance targets and individual performance targets established by the administrator. NSOs may be granted for any term specified by the administrator that does not exceed ten years.
- *Incentive Stock Options* ("ISOs") will be designed in a manner intended to comply with the provisions of Section 422 of the Code and will be subject to specified restrictions contained in the Code. Among such restrictions, ISOs must have an exercise price of not less than the fair market value of a share of our common stock on the date of grant, may only be granted to employees, and must not be exercisable after a period of ten years measured from the date of grant. In the case of an ISO granted to an individual who owns (or is deemed to own) at least 10% of the total combined voting power of all classes of our capital stock, the Amended 2023 Plan provides that the exercise price must be at least 110% of the fair market value of a share of common stock on the date of grant and the ISO must not be exercisable after a period of five years measured from the date of grant.
- *Restricted Stock* may be granted to any eligible individual and made subject to such restrictions as may be determined by the administrator. Restricted stock typically may be forfeited for no consideration or repurchased by us at the original purchase price if the conditions or restrictions on vesting are not met. In general, restricted stock may not be sold or otherwise transferred until restrictions are removed or expired. Purchasers of restricted stock, unlike recipients of options, will have voting rights and will have the right to receive dividends, if any, prior to the time when the restrictions lapse, however, dividends will not be paid until the restrictions are removed and the vesting conditions are met.

- *Restricted Stock Units* may be awarded to any eligible individual, typically without payment of consideration, but subject to vesting conditions based on continued employment or service or on performance criteria established by the administrator. Like restricted stock, RSUs may not be sold, or otherwise transferred or hypothecated, until vesting conditions are removed or expire. Unlike restricted stock, stock underlying RSUs will not be issued until the RSUs have vested, and recipients of RSUs generally will have no voting or dividend rights prior to the time when vesting conditions are satisfied.
- *Stock Appreciation Rights* may be granted in connection with stock options or other awards, or separately. SARs granted in connection with stock options or other awards typically will provide for payments to the holder based upon increases in the price of our common stock over a set exercise price. The exercise price of any SAR granted under the Amended 2023 Plan must be at least 100% of the fair market value of a share of our common stock on the date of grant (except in the case of “substitute awards”). SARs under the Amended 2023 Plan will be settled in cash or shares of our common stock, or in a combination of both, at the election of the administrator.
- *Performance Bonus Awards and Performance Stock Units* are denominated in cash or share/unit equivalents, respectively, and may be linked to one or more performance or other criteria as determined by the administrator.
- *Other Stock or Cash Based Awards* are awards of cash, fully vested shares of our common stock and other awards valued wholly or partially by referring to, or otherwise based on, shares of our common stock. Other stock or cash based awards may be granted to participants and may also be available as a payment form in the settlement of other awards, as standalone payments and as payment in lieu of compensation otherwise payable to any individual who is eligible to receive awards. The administrator will determine the terms and conditions of other stock or cash based awards, which may include vesting conditions based on continued service, performance and/or other conditions.
- *Dividend Equivalents* represent the right to receive the equivalent value of dividends paid on shares of our common stock and may be granted alone or in tandem with awards other than stock options or SARs. Dividend equivalents are converted to cash or shares by such formula and such time as determined by the administrator. In addition, dividend equivalents with respect to an award subject to vesting will either (i) to the extent permitted by applicable law, not be paid or credited or (ii) be accumulated and subject to vesting to the same extent as the related award.

Any award may be granted as a performance award, meaning that the award will be subject to vesting and/or payment based on the attainment of specified performance goals.

Minimum Vesting

The Amended 2023 Plan contains a minimum vesting requirement, subject to limited exceptions, that awards made pursuant to the Amended 2023 Plan may not vest earlier than the date that is one year following the grant date of the award. The limited exceptions allow the issuance of awards in an aggregate of up to 5% of the shares available to be granted under the Amended 2023 Plan without minimum vesting provisions, as well as the issuance of (i) awards in lieu of cash compensation, (ii) annual equity grants to non-employee directors granted at the annual meeting of stockholders that vest at the following annual meeting of stockholders so long as the period between such meetings is not less than 50 weeks, and (iii) substitute awards. The plan administrator has the authority to waive the one-year vesting restrictions upon the participant's termination of service or a change in control.

Prohibition on Repricing

Except in connection with a corporate transaction involving the Company, the terms of outstanding awards may not be amended without the approval of our stockholders to (i) reduce the exercise price per share of outstanding options or SARs or (ii) cancel outstanding options or SARs in exchange for cash or other awards when the exercise price of such option or SAR exceeds the fair market value of the underlying shares.

Awards Subject to Clawback

All awards (including any proceeds, gains or other economic benefit actually or constructively received by a participant) granted under the Amended 2023 Plan will be subject to our clawback policy.

Adjustment Upon Certain Events

The administrator has broad discretion to take action under the Amended 2023 Plan, as well as to make adjustments to the terms and conditions of existing and future awards, to prevent the dilution or enlargement of intended benefits and facilitate necessary or desirable changes in the event of certain transactions and events affecting our common stock, such as stock dividends, stock splits, mergers, acquisitions, consolidations, change in control events, and other corporate transactions. Notwithstanding the foregoing, in the event of a change in control in which awards are not assumed, continued or substituted

by the successor entity or parent thereof, as of the effective time of such change in control, any time-based awards will fully vest and become exercisable and any performance-based awards will become vested at the greater of target and actual achievement of the applicable performance goals as of such change in control, unless specifically provided otherwise under the applicable award agreement or as otherwise determined by the plan administrator. In addition, in the event of certain non-reciprocal transactions with our stockholders known as “equity restructurings,” the administrator will make equitable adjustments to the Amended 2023 Plan and outstanding awards.

Foreign Participants, Transferability, and Participant Payments

The administrator may modify awards granted to participants who are foreign nationals or employed outside the United States or establish subplans or procedures to address differences in laws, rules, regulations or customs of such foreign jurisdictions. Except as the administrator may determine or provide in an award agreement, awards under the Amended 2023 Plan are generally non-transferable, except by will or the laws of descent and distribution, or, subject to the administrator’s consent, pursuant to a domestic relations order, and are generally exercisable only by the participant. With regard to tax withholding obligations arising in connection with awards under the Amended 2023 Plan, and exercise price obligations arising in connection with the exercise of stock options under the Amended 2023 Plan, the administrator may, in its discretion, accept cash, wire transfer or check, shares of common stock that meet specified conditions, a “market sell order,” such other consideration as the administrator deems suitable, or any combination of the foregoing.

Plan Amendment and Termination

The administrator may amend, suspend, or terminate the Amended 2023 Plan at any time. However, we must generally obtain stockholder approval to the extent required by applicable law, rule or regulation (including any applicable stock exchange rule), and generally no amendment may materially and adversely affect any outstanding award without the affected participant’s consent.

No ISOs may be granted pursuant to the Amended 2023 Plan after the tenth anniversary of the date the Board approved the Amended 2023 Plan. Any award that is outstanding on the termination date of the Amended 2023 Plan will remain in force according to the terms of the Amended 2023 Plan and the applicable award agreement.

Material U.S. Federal Income Tax Consequences

The following is a general summary under current law of the principal United States federal income tax consequences related to awards under the Amended 2023 Plan. This summary deals with the general federal income tax principles that apply and is provided only for general information. Some kinds of taxes, such as state, local and foreign income taxes and federal employment taxes, are not discussed. This summary is not intended as tax advice to participants, who should consult their own tax advisors.

- *Nonqualified Stock Options.* If a participant is granted an NSO under the Amended 2023 Plan, the participant should not have taxable income on the grant of the option. Generally, the participant should recognize ordinary income at the time of exercise in an amount equal to the fair market value of the shares acquired on the date of exercise, less the exercise price paid for the shares. The participant’s basis in the common stock for purposes of determining gain or loss on a subsequent sale or disposition of such shares generally will be the fair market value of our common stock on the date the participant exercises such option. Any subsequent gain or loss will be taxable as a long-term or short-term capital gain or loss. We or our subsidiaries or affiliates generally should be entitled to a federal income tax deduction at the time and for the same amount as the participant recognizes ordinary income.
- *Incentive Stock Options.* A participant should not recognize taxable income upon grant or exercise of an ISO. However, the excess of the fair market value of the shares of our common stock received upon exercise over the option exercise price is an item of tax preference income potentially subject to the alternative minimum tax. If stock acquired upon exercise of an ISO is held for a minimum of two years from the date of grant and one year from the date of exercise and otherwise satisfies the ISO requirements, the gain or loss (in an amount equal to the difference between the fair market value on the date of disposition and the exercise price) upon disposition of the stock will be treated as a long-term capital gain or loss, and we will not be entitled to any deduction. If the holding period requirements are not met, the ISO will be treated as one that does not meet the requirements of the Code for ISOs and the participant will recognize ordinary income at the time of the disposition equal to the excess of the fair market value of the shares at the time of exercise over the exercise price (or if less, the amount realized in the disposition over the exercise price), with any remaining gain or loss being treated as capital gain or capital loss. We or our subsidiaries or affiliates generally are not entitled to a federal income tax deduction upon either the exercise of an ISO or upon disposition of the shares acquired pursuant to such exercise, except to the extent that the participant recognizes ordinary income on disposition of the shares.

- **Other Awards.** The current federal income tax consequences of other awards authorized under the Amended 2023 Plan generally follow certain basic patterns: SARs are taxed and deductible in substantially the same manner as NSOs; nontransferable restricted stock subject to a substantial risk of forfeiture results in income recognition equal to the excess of the fair market value over the price paid, if any, only at the time the restrictions lapse (unless the recipient elects to accelerate recognition as of the date of grant through a Code Section 83(b) election, in which case ordinary income is recognized on the date of grant in an amount equal to the excess of the fair market value of the shares on the date of grant over the price paid, if any); and restricted stock units, dividend equivalents and other stock or cash based awards are generally subject to tax at the time of payment. We or our subsidiaries or affiliates generally should be entitled to a federal income tax deduction at the time and for the same amount as the participant recognizes ordinary income.
- **Limitation on the Employer's Compensation Deduction.** Section 162(m) of the Code limits the deduction certain employers may take for otherwise deductible compensation payable to certain executive officers of the employer to the extent the compensation paid to such an officer for the year exceeds \$1 million.
- **Section 409A of the Code.** Certain types of awards under the Amended 2023 Plan may constitute, or provide for, a deferral of compensation subject to Section 409A of the Code. Unless certain requirements set forth in Section 409A of the Code are complied with, holders of such awards may be taxed earlier than would otherwise be the case (e.g., at the time of vesting instead of the time of payment) and may be subject to an additional 20% penalty tax (and, potentially, certain interest, penalties and additional state taxes). To the extent applicable, the Amended 2023 Plan and awards granted under the Amended 2023 Plan are generally intended to be structured and interpreted in a manner intended to either comply with or be exempt from Section 409A of the Code and the Department of Treasury regulations and other interpretive guidance that may be issued under Section 409A of the Code.

New Plan Benefits

Other than with respect to the Contingent Awards and the Anticipated Awards, all future awards under the Amended 2023 Plan (assuming it is approved by stockholders) are subject to the discretion of the administrator and are not currently determinable, and therefore it is not possible to determine the benefits that will be received in the future by other participants in the Amended 2023 Plan. The table below reflects the Contingent Awards and the Anticipated Awards to be issued pursuant to the Amended 2023 Plan.

Name and Position	Dollar Value (\$)(1)	Number of Options (#)	Number of RSUs (#)	Number of PSUs #(2)
<i>Named Executive Officers</i>				
Andrew Obenshain, Chief Executive Officer and Director	—	—	130,000	195,000
Thomas J. Klima, Chief Commercial and Operating Officer	—	—	50,000	50,000
Richard A. Colvin, Chief Medical Officer	—	—	50,000	50,000
<i>All current executive officers as a group</i>	—	—	280,000	395,000
<i>All current directors who are not executive officers as a group</i>	—	348,950 ⁽³⁾	211,650 ⁽³⁾	—
<i>All employees who are not executive officers as a group</i>	—	76,500	153,450	104,000

(1) The dollar value of the Contingent Awards and the Anticipated Awards are not included in the table above because the value of the equity awards will depend on the per share closing price of our common stock on the date of grant.

(2) PSUs are reflected based on the target attainment level.

(3) Subject to our stockholders' approval of this Proposal 5, each non-employee director serving on our Board on the date of our Annual Meeting and who has served on our Board for the previous six months will be awarded 24,900 RSUs and 49,850 options pursuant to our non-employee director compensation policy. This figure also represents 37,350 RSUs to be granted to Michael Cloonan pursuant to our Non-Employee Director Compensation Policy, which are included in the Anticipated Awards.

Awards Granted Under the 2023 Plan

The following table shows the number of options, time-based RSUs, and performance-based RSUs (PSUs) issued under the 2023 Plan as of September 11, 2024 to certain individuals and certain groups of individuals. The table below excludes the Contingent Awards and the Anticipated Awards.

Name and Position	Stock Options	RSUs	PSUs
<i>Named Executive Officers</i>			
Andrew Obenshain (also a nominee for election as a director)	650,000	—	—
Thomas J. Klima	199,000	—	—
Richard A. Colvin	199,000	—	—
<i>All current executive officers as a group</i>	1,247,000	—	—
<i>All current directors who are not executive officers as a group</i>	204,375	64,740	—
<i>Nominees for election as a director (1)</i>			
John O. Agwunobi	21,600	10,790	—
Elisabeth Leiderman	21,600	10,790	—
<i>Associate of any such directors, executive officers, or nominees</i>	—	—	—
<i>Any other person who received or is to receive 5% of such options or rights</i>	—	—	—
<i>All non-executive officer employees as a group</i>	1,655,875	2,724,540	—

(1) Awards granted to John O. Agwunobi and Elisabeth Leiderman are also included in the row titled "All current directors who are not executive officers as a group".

**THE BOARD UNANIMOUSLY RECOMMENDS THAT YOU VOTE
FOR
THE APPROVAL OF THE AMENDMENT AND RESTATEMENT TO THE 2023 INCENTIVE AWARD PLAN
(PROPOSAL 5 ON YOUR PROXY CARD)**

CERTAIN RELATIONSHIPS AND RELATED PERSON TRANSACTIONS

Procedures for related party transactions

We have adopted a related person transaction approval policy that governs the review of related person transactions at bluebird. Pursuant to this policy, if we want to enter into a transaction with a related person or an affiliate of a related person, our Chief Legal and Business Officer will review the proposed transaction to determine, based on applicable Nasdaq and SEC rules, if such transaction requires pre-approval by the Audit Committee and/or Board. 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 Chief Legal and Business Officer has either specifically confirmed in writing that no further reviews are necessary or has confirmed that all requisite corporate reviews have been obtained.

Transactions with related persons

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, 2022, 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 2021 separation of our severe genetic disease and oncology programs into two independent, publicly traded companies (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, is an executive officer 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 years ended December 31, 2023 and 2022, we incurred \$5.0 million and \$8.8 million, respectively, 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.

AUDIT COMMITTEE REPORT (1)

The Audit Committee has reviewed our audited financial statements for the fiscal year ended December 31, 2023 and has discussed these statements with management and representatives of Ernst & Young LLP, the 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, 2023, 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 6
RATIFICATION OF THE SELECTION OF INDEPENDENT REGISTERED PUBLIC
ACCOUNTING FIRM

The firm of Ernst & Young LLP, the independent registered public accounting firm, has been selected by the Audit Committee as auditors for bluebird for the fiscal year ending December 31, 2024. 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 billed by Ernst & Young LLP for the fiscal years ended December 31, 2023 and 2022.

	Fiscal Year 2023	Percentage of 2023 Services Approved by Audit Committee	Fiscal Year 2022	Percentage of 2022 Services Approved by Audit Committee
Audit fees (1)	\$ 4,105,605	100%	\$ 1,179,300	100%
Audit-related fees (2)	\$ —	100%	\$ —	100%
Tax fees (3)	\$ 104,022	100%	\$ 282,116	100%
All other fees (4)	\$ —	100%	\$ 2,585	100%
Total fees	\$ 4,209,627	100%	\$ 1,464,001	100%

- (1) Audit fees in 2023 and 2022 include fees for our annual audit, and quarterly review procedures. Additionally, audit fees in 2023 and 2022 include fees incurred in connection with our public equity 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 6 ON YOUR PROXY CARD)

PROPOSAL 7
APPROVAL OF AN ADJOURNMENT OF THE ANNUAL MEETING, IF NECESSARY, TO SOLICIT ADDITIONAL PROXIES IF THERE ARE NOT SUFFICIENT VOTES AT
THE TIME OF THE ANNUAL MEETING TO APPROVE PROPOSAL 3, PROPOSAL 4 OR
PROPOSAL 5

The Board believes that if the number of shares of the Company's common stock outstanding and entitled to vote at the Annual Meeting is insufficient to approve Proposal 3 (the amendment to our Amended and Restated Certificate of Incorporation to provide for the exculpation of officers for certain breaches of fiduciary duty), Proposal 4 (amendments to our Amended and Restated Certificate of Incorporation to effect a reverse stock split of our common stock at a ratio ranging from any whole number between 1-for-15 and 1-for-20, as determined by our Board of Directors in its discretion) or Proposal 5 (the amendment and restatement of our 2023 Incentive Award Plan to, among other things, increase the number of shares of common stock authorized for issuance thereunder), it is in the best interests of the stockholders to enable the Company to continue to seek to obtain a sufficient number of additional votes to approve Proposal 3, Proposal 4 and/or Proposal 5.

In this Proposal 7, we are asking stockholders to authorize the holder of any proxy solicited by the Board to vote in favor of adjourning the Annual Meeting or any adjournment or postponement thereof. If our stockholders approve this proposal, we could adjourn the Annual Meeting, and any adjourned session of the Annual Meeting, to use the additional time to solicit additional proxies in favor of Proposal 3, Proposal 4 and/or Proposal 5.

THE BOARD UNANIMOUSLY RECOMMENDS THAT YOU VOTE

FOR

THE APPROVAL OF AN ADJOURNMENT OF THE ANNUAL MEETING, IF NECESSARY, TO SOLICIT ADDITIONAL PROXIES IF THERE ARE NOT SUFFICIENT VOTES
AT THE TIME OF THE ANNUAL MEETING TO APPROVE PROPOSAL 3, PROPOSAL 4 AND/OR PROPOSAL 5

(PROPOSAL 7 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 2025 Annual Meeting of Stockholders may do so by following the procedures prescribed in Rule 14a-8 under the Securities Exchange Act. Our Secretary must receive stockholder proposals intended to be included in our proxy statement and form of proxy relating to our 2025 Annual Meeting made under Rule 14a-8 by [_____].

Under our current Amended and Restated By-laws (the "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 2025 Annual Meeting of Stockholders, delivered to, or mailed and received at, the principal executive offices of the Corporation no earlier than the close of business on July 9, 2025 (120 days prior to the one-year anniversary of the 2024 Annual Meeting) and no later than the close of business on August 8, 2025 (90 days prior to one-year anniversary of the 2024 Annual Meeting), unless the date of the 2025 Annual Meeting is more than thirty (30) days before or more than sixty (60) days after such anniversary date, notice by the stockholder, to be timely, must be so delivered, or mailed and received, not more than one hundred twenty (120) days prior to the 2025 Annual Meeting and not later than ninety (90) days prior to the 2025 Annual Meeting or, if later, the tenth (10th) day following the day on which public announcement of the date of such meeting was 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.

Any proposal of business or nomination should be mailed to our principal executive offices and addressed to: Joseph Vittiglio, Secretary, bluebird bio, Inc., 455 Grand Union Boulevard, Somerville, Massachusetts 02145.

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: Joseph Vittiglio, 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 [____], 2024. 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, 2023 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: Joseph Vittiglio, 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, 2023, 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, 2023, he or she may contact bluebird bio, Inc., 455 Grand Union Boulevard, Somerville, Massachusetts 02145, (339) 499-9300, Attention: Joseph Vittiglio, Secretary, and bluebird will deliver those documents to such stockholder promptly upon receiving the request. Any such stockholder may also contact Joseph Vittiglio, 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 Joseph Vittiglio, Secretary.

OTHER BUSINESS

The Board knows of no business to be brought before the 2024 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 2024 Annual Meeting unless they receive instructions from you with respect to such matter.

APPENDIX A

**AMENDMENT TO OUR AMENDED AND RESTATED CERTIFICATE OF INCORPORATION
TO PROVIDE FOR THE EXCULPATION OF OFFICERS FOR CERTAIN BREACHES OF FIDUCIARY DUTY**

* * *

ARTICLE XI
LIMITATION OF LIABILITY OF OFFICERS

No officer of the Corporation shall be personally liable to the Corporation or its stockholders for monetary damages for any breach of fiduciary duty as an officer, except to the extent such exemption from liability or limitation thereof is not permitted under the DGCL as the same exists or hereafter may be amended. If the DGCL is amended to authorize corporate action further eliminating or limiting the personal liability of officers, then the liability of an officer of the Corporation shall be eliminated or limited to the fullest extent permitted by the DGCL, as so amended.

Any amendment, repeal or modification of this Article XI by either of (i) the stockholders of the Corporation or (ii) an amendment to the DGCL, shall not adversely affect any right or protection existing at the time of such amendment, repeal or modification with respect to any acts or omissions occurring before such amendment, repeal or modification of a person serving as an officer at the time of such amendment, repeal or modification.

APPENDIX B

* * *

**CERTIFICATE OF AMENDMENT
TO
AMENDED AND RESTATED CERTIFICATE OF INCORPORATION
OF
BLUEBIRD BIO, INC.**

Pursuant to Section 242 of the
General Corporation Law of the State of Delaware

bluebird bio, Inc. (the "Corporation"), a corporation organized and existing under and by virtue of the General Corporation Law of the State of Delaware,

DOES HEREBY CERTIFY THAT:

1. The Board of Directors of the Corporation duly adopted resolutions at a meeting recommending and declaring advisable that the Amended and Restated Certificate of Incorporation of the Corporation be amended and that such amendment be submitted to the stockholders of the Corporation for their consideration, as follows:

RESOLVED, that the first paragraph of Article IV of the Amended and Restated Certificate of Incorporation of the Corporation, as amended and/or restated to date, be amended and restated in its entirety to read as follows:

"That, effective as of 5 p.m. Eastern Time on the date this Certificate of Amendment of Amended and Restated Certificate of Incorporation is filed with the Office of the Secretary of State of the State of Delaware (the "**Effective Time**"), a one-for-[]¹ reverse stock split of the Corporation's Common Stock (as defined below) shall become effective, pursuant to which each []¹ shares of Common Stock outstanding and held of record by each stockholder of the Corporation (including treasury shares) immediately prior to the Effective Time shall be reclassified and combined into one validly issued, fully-paid and nonassessable share of Common Stock automatically and without any action by the holder thereof upon the Effective Time and shall represent one share of Common Stock from and after the Effective Time (such reclassification and combination of shares, the "**Reverse Stock Split**"). The par value of the Common Stock following the Reverse Stock Split shall remain at \$0.01 per share. No fractional shares of Common Stock shall be issued as a result of the Reverse Stock Split. In lieu thereof, (i) with respect to holders of one or more certificates which formerly represented shares of Common Stock that were issued and outstanding immediately prior to the Effective Time, upon surrender after the Effective Time of such certificate or certificates, any holder who would otherwise be entitled to a fractional share of Common Stock as a result of the Reverse Stock Split, following the Effective Time, shall be entitled to receive a cash payment (the "**Fractional Share Payment**") equal to the fraction of which such holder would otherwise be entitled multiplied by the closing price per share as reported by The Nasdaq Capital Market (as adjusted to give effect to the Reverse Stock Split) on the date of the Effective Time; provided that, whether or not fractional shares would be issuable as a result of the Reverse Stock Split shall be determined on the basis of (a) the total number of shares of Common Stock that were issued and outstanding immediately prior to the Effective Time formerly represented by certificates that the holder is at the time surrendering and (b) the aggregate number of shares of Common Stock after the Effective Time into which the shares of Common Stock formerly represented by such certificates shall have been reclassified; and (ii) with respect to holders of shares of Common Stock in book-entry form in the records of the Company's transfer agent that were issued and outstanding immediately prior to the Effective Time, any holder who would otherwise be entitled to a fractional share of Common Stock as a result of the Reverse Stock Split, following the Effective Time, shall be entitled to receive the Fractional Share Payment automatically and without any action by the holder.

The total number of shares of capital stock which the Corporation shall have authority to issue is two hundred fifty-five million (255,000,000) of which (i) two hundred fifty million (250,000,000) shares shall be a class designated as common stock, par value \$0.01 per share (the "**Common Stock**"), and (ii) five million

¹ Shall be a whole number between and including 15 and 20, which number is referred to as the "Reverse Split Factor" (it being understood that any Reverse Split Factor within such range shall, together with the remaining provisions of this Certificate of Amendment not appearing in brackets, constitute a separate amendment being approved and adopted by the Board and stockholders in accordance with Section 242 of the Delaware General Corporation Law).

(5,000,000) shares shall be a class designated as undesignated preferred stock, par value \$0.01 per share (the “**Undesignated Preferred Stock**”).”

2. The stockholders of the Corporation duly adopted such amendment at an annual meeting of the stockholders of the Corporation.
3. Such amendment has been duly adopted in accordance with Section 242 of the General Corporation Law of the State of Delaware.

IN WITNESS WHEREOF, this Certificate of Amendment to Amended and Restated Certificate of Incorporation has been executed by a duly authorized officer of the Corporation on this [] day of [], 2024.

By: /s/ Andrew Obenshain
Name: Andrew Obenshain
Title: President and Chief Executive Officer

APPENDIX C

AMENDMENT AND RESTATEMENT OF THE 2023 INCENTIVE AWARD PLAN
TO, AMONG OTHER THINGS, INCREASE THE NUMBER OF SHARES OF COMMON STOCK AUTHORIZED
FOR ISSUANCE THEREUNDER

* * *

BLUEBIRD BIO, INC.

2023 INCENTIVE AWARD PLAN

(As amended and restated [____], 2024)

ARTICLE I.
PURPOSE

The Plan's purpose is to enhance the Company's ability to attract, retain and motivate persons who make (or are expected to make) important contributions to the Company by providing these individuals with equity ownership opportunities.

ARTICLE II.
DEFINITIONS

As used in the Plan, the following words and phrases have the meanings specified below, unless the context clearly indicates otherwise:

2.1 **"Administrator"** means the Board or a Committee to the extent that the Board's powers or authority under the Plan have been delegated to such Committee. With reference to the Board's or a Committee's powers or authority under the Plan that have been delegated to one or more officers pursuant to Section 4.2, the term "Administrator" shall refer to such officer(s) unless and until such delegation has been revoked.

2.2 **"Applicable Law"** means any applicable law, including without limitation: (a) provisions of the Code, the Securities Act, the Exchange Act and any rules or regulations thereunder; (b) corporate, securities, tax or other laws, statutes, rules, requirements or regulations, whether U.S. or non-U.S. federal, state or local; and (c) rules of any securities exchange or automated quotation system on which the Shares are listed, quoted or traded.

2.3 **"Award"** means an Option award, Stock Appreciation Right award, Restricted Stock award, Restricted Stock Unit award, Performance Bonus Award, Performance Stock Unit award, Dividend Equivalents award or Other Stock or Cash Based Award granted to a Participant under the Plan.

2.4 **"Award Agreement"** means an agreement evidencing an Award, which may be written or electronic, that contains such terms and conditions as the Administrator determines, consistent with and subject to the terms and conditions of the Plan.

2.5 **"Board"** means the Board of Directors of the Company.

2.6 **"Change in Control"** means the occurrence of any of the following:

(a) A transaction or series of transactions (other than an offering of Common Stock to the general public through a registration statement filed with the Securities and Exchange Commission) whereby any "person" or related "group" of "persons" (as such terms are used in Sections 13(d) and 14(d) (2) of the Exchange Act) directly or indirectly acquires beneficial ownership (within the meaning of Rules 13d-3 and 13d-5 under the Exchange Act) of the Company's securities possessing more than 50% of the total combined voting power of the Company's securities outstanding immediately after such acquisition; provided, however, that the following acquisitions shall not constitute a Change in Control: (i) any acquisition by the Company or any Subsidiary; (ii) any acquisition by an employee benefit plan maintained by the Company or any Subsidiary, (iii) any acquisition which complies with clauses (c)(i), (c)(ii) and (c)(iii) of this definition; or (iv) in respect of an Award held by a particular Participant, any acquisition by the Participant or any group of persons including the Participant (or any entity controlled by the Participant or any group of persons including the Participant);

(b) The Incumbent Directors cease for any reason to constitute a majority of the Board;

(c) The consummation by the Company (whether directly involving the Company or indirectly involving the Company through one or more intermediaries) of (x) a merger, consolidation, reorganization, or business combination, (y) a sale or other disposition of all or substantially all of the Company's assets in any single transaction or series of related transactions or (z) the acquisition of assets or stock of another entity, in each case other than a transaction:

(i) which results in the Company's voting securities outstanding immediately before the transaction continuing to represent (either by remaining outstanding or by being converted into voting securities of the Company or the person that, as a result of the transaction, controls, directly or indirectly, the Company or owns, directly or indirectly, all or substantially all of the Company's assets or otherwise succeeds to the business of the Company (the Company or such person, the "**Successor Entity**") directly or indirectly, at least a majority of the combined voting power of the Successor Entity's outstanding voting securities immediately after the transaction;

(ii) after which no person or group beneficially owns voting securities representing 50% or more of the combined voting power of the Successor Entity; provided, however, that no person or group shall be treated for purposes of this clause (c)(ii) as beneficially owning 50% or more of the combined voting power of the Successor Entity solely as a result of the voting power held in the Company prior to the consummation of the transaction; and

(iii) after which at least a majority of the members of the board of directors (or the analogous governing body) of the Successor Entity were Board members at the time of the Board's approval of the execution of the initial agreement providing for such transaction; or

(d) The completion of a liquidation or dissolution of the Company.

Notwithstanding the foregoing, if a Change in Control constitutes a payment event with respect to any Award (or any portion of an Award) that provides for the deferral of compensation that is subject to Section 409A, to the extent required to avoid the imposition of additional taxes under Section 409A, the transaction or event described in subsection (a), (b), (c) or (d) of this definition with respect to such Award (or portion thereof) shall only constitute a Change in Control for purposes of the payment timing of such Award if such transaction also constitutes a "change in control event," as defined in Treasury Regulation Section 1.409A-3(i)(5).

The Administrator shall have full and final authority, which shall be exercised in its sole discretion, to determine conclusively whether a Change in Control has occurred pursuant to the above definition, the date of such Change in Control and any incidental matters relating thereto; provided that any exercise of authority in conjunction with a determination of whether a Change in Control is a "change in control event" as defined in Treasury Regulation Section 1.409A-3(i)(5) shall be consistent with such regulation.

2.7 "**Code**" means the U.S. Internal Revenue Code of 1986, as amended, and all regulations, guidance, compliance programs and other interpretative authority issued thereunder.

2.8 "**Committee**" means one or more committees or subcommittees of the Board, which may include one or more Directors or executive officers of the Company, to the extent permitted by Applicable Law. To the extent required to comply with the provisions of Rule 16b-3, it is intended that each member of the Committee will be, at the time the Committee takes any action with respect to an Award that is subject to Rule 16b-3, a "non-employee director" within the meaning of Rule 16b-3; however, a Committee member's failure to qualify as a "non-employee director" within the meaning of Rule 16b-3 will not invalidate any Award granted by the Committee that is otherwise validly granted under the Plan.

2.9 "**Common Stock**" means the common stock of the Company.

2.10 "**Company**" means bluebird bio, Inc., a Delaware corporation, or any successor.

2.11 "**Consultant**" means any person, including any adviser, engaged by the Company or a Subsidiary to render services to such entity if the consultant or adviser: (a) renders bona fide services to the Company or a Subsidiary; (b) renders services not in connection with the offer or sale of securities in a capital-raising transaction and does not directly or indirectly promote or maintain a market for the Company's securities; and (c) is a natural person.

2.12 "**Designated Beneficiary**" means, if permitted by the Company, the beneficiary or beneficiaries the Participant designates, in a manner the Company determines, to receive amounts due or exercise the Participant's rights if the

Participant dies. Without a Participant's effective designation, "Designated Beneficiary" will mean the Participant's estate or legal heirs.

2.13 "**Director**" means a Board member.

2.14 "**Disability**" means a permanent and total disability under Section 22(e)(3) of the Code.

2.15 "**Dividend Equivalents**" means a right granted to a Participant to receive the equivalent value (in cash or Shares) of dividends paid on a specified number of Shares. Such Dividend Equivalent shall be converted to cash or additional Shares, or a combination of cash and Shares, by such formula and at such time and subject to such limitations as may be determined by the Administrator.

2.16 "**DRO**" means a "domestic relations order" as defined by the Code or Title I of the Employee Retirement Income Security Act of 1974, as amended, or the rules thereunder.

2.17 "**Effective Date**" has the meaning set forth in Section 11.3.

2.18 "**Employee**" means any employee of the Company or any of its Subsidiaries.

2.19 "**Equity Restructuring**" means a nonreciprocal transaction between the Company and its stockholders, such as a stock dividend, stock split (including a reverse stock split), spin-off or recapitalization through a large, nonrecurring cash dividend, that affects the number or kind of Shares (or other Company securities) or the share price of Common Stock (or other Company securities) and causes a change in the per share value of the Common Stock underlying outstanding Awards.

2.20 "**Exchange Act**" means the U.S. Securities Exchange Act of 1934, as amended, and all regulations, guidance and other interpretative authority issued thereunder.

2.21 "**Fair Market Value**" means, as of any date, the value of a Share determined as follows: (a) if the Common Stock is listed on any established stock exchange, the value of a Share will be the closing sales price for a Share as quoted on such exchange for such date, or if no sale occurred on such date, the last day preceding such date during which a sale occurred, as reported in *The Wall Street Journal* or another source the Administrator deems reliable; (b) if the Common Stock is not listed on an established stock exchange but is quoted on a national market or other quotation system, the value of a Share will be the closing sales price for a Share on such date, or if no sales occurred on such date, then on the last date preceding such date during which a sale occurred, as reported in *The Wall Street Journal* or another source the Administrator deems reliable; or (iii) if the Common Stock is not listed on any established stock exchange or quoted on a national market or other quotation system, the value established by the Administrator in its sole discretion.

2.22 "**Full Value Award**" means any Award that is settled in Shares other than (a) an Option, (b) a Stock Appreciation Right or (c) any other Award for which a Participant pays the intrinsic value existing as of the date of grant (whether directly or by foregoing a right to receive a payment from the Company or any affiliate thereof).

2.23 "**Greater Than 10% Stockholder**" means an individual then owning (within the meaning of Section 424(d) of the Code) more than 10% of the total combined voting power of all classes of stock of the Company or any parent corporation or subsidiary corporation of the Company, as determined in accordance with Section 424(e) and (f) of the Code, respectively.

2.24 "**Incentive Stock Option**" means an Option that meets the requirements to qualify as an "incentive stock option" as defined in Section 422 of the Code.

2.25 "**Incumbent Directors**" means, for any period of 12 consecutive months, individuals who, at the beginning of such period, constitute the Board together with any new Director(s) (other than a Director designated by a person who shall have entered into an agreement with the Company to effect a transaction described in clause (a) or (c) of the Change in Control definition) whose election or nomination for election to the Board was approved by a vote of at least a majority (either by a specific vote or by approval of the proxy statement of the Company in which such person is named as a nominee for Director without objection to such nomination) of the Directors then still in office who either were Directors at the beginning of the 12-month period or whose election or nomination for election was previously so approved. No individual initially elected or nominated as a director of the Company as a result of an actual or threatened election contest with respect to Directors or as a result of any other actual or threatened solicitation of proxies by or on behalf of any person other than the Board shall be an Incumbent Director.

- 2.26 **"Non-Employee Director"** means a Director who is not an Employee.
- 2.27 **"Nonqualified Stock Option"** means an Option that is not an Incentive Stock Option.
- 2.28 **"Option"** means a right granted under Article VI to purchase a specified number of Shares at a specified price per Share during a specified time period. An Option may be either an Incentive Stock Option or a Nonqualified Stock Option.
- 2.29 **"Other Stock or Cash Based Awards"** means cash awards, awards of Shares, and other awards valued wholly or partially by referring to, or are otherwise based on, Shares or other property.
- 2.30 **"Overall Share Limit"** means the sum of (a) 20,200,000 Shares plus (b) any Shares that are subject to Prior Plan Awards that become available for issuance under the Plan as Shares pursuant to Article V.
- 2.31 **"Participant"** means a Service Provider who has been granted an Award.
- 2.32 **"Performance Bonus Award"** has the meaning set forth in Section 8.3.
- 2.33 **"Performance Stock Unit"** means a right granted to a Participant pursuant to Section 8.1 and subject to Section 8.2, to receive Shares or an amount of cash or other consideration determined by the Administrator to be of equal value as of the settlement date, the payment of which is contingent upon achieving certain performance goals or other performance-based targets established by the Administrator.
- 2.34 **"Permitted Transferee"** means, with respect to a Participant, any "family member" of the Participant, as defined in the General Instructions to Form S-8 Registration Statement under the Securities Act (or any successor form thereto), or any other transferee specifically approved by the Administrator after taking into account Applicable Law.
- 2.35 **"Plan"** means this 2023 Incentive Award Plan, as amended and restated.
- 2.36 **"Prior Plan"** means the Company's 2013 Stock Option and Incentive Plan, as it may be amended from time to time.
- 2.37 **"Prior Plan Award"** means an award outstanding under the Prior Plan as of immediately prior to the Original Effective Date.
- 2.38 **"Restricted Stock"** means Shares awarded to a Participant under Article VII, subject to certain vesting conditions and other restrictions.
- 2.39 **"Restricted Stock Unit"** means an unfunded, unsecured right to receive, on the applicable settlement date, one Share or an amount in cash or other consideration determined by the Administrator to be of equal value as of such settlement date, subject to certain vesting conditions and other restrictions.
- 2.40 **"Rule 16b-3"** means Rule 16b-3 promulgated under the Exchange Act, including any amendments thereto.
- 2.41 **"Section 409A"** means Section 409A of the Code.
- 2.42 **"Securities Act"** means the Securities Act of 1933, as amended, and all regulations, guidance and other interpretative authority issued thereunder.
- 2.43 **"Service Provider"** means an Employee, Consultant or Director.
- 2.44 **"Shares"** means shares of Common Stock.
- 2.45 **"Stock Appreciation Right" or "SAR"** means a right granted under Article VI to receive a payment equal to the excess of the Fair Market Value of a specified number of Shares on the date the right is exercised over the exercise price set forth in the applicable Award Agreement.
- 2.46 **"Subsidiary"** means any entity (other than the Company), whether U.S. or non-U.S., in an unbroken chain of entities beginning with the Company if each of the entities other than the last entity in the unbroken chain beneficially owns,

at the time of the determination, securities or interests representing at least 50% of the total combined voting power of all classes of securities or interests in one of the other entities in such chain.

2.47 **“Substitute Awards”** means Awards granted or Shares issued by the Company in assumption of, or in substitution or exchange for, awards previously granted, or the right or obligation to make future awards, in each case by a company or other entity acquired by the Company or any Subsidiary or with which the Company or any Subsidiary combines.

2.48 **“Tax-Related Items”** means any U.S. and non-U.S. federal, state and/or local taxes (including, without limitation, income tax, social insurance contributions, fringe benefit tax, employment tax, stamp tax and any employer tax liability which has been transferred to a Participant) for which a Participant is liable in connection with Awards and/or Shares.

2.49 **“Termination of Service”** means:

(a) As to a Consultant, the time when the engagement of a Participant as a Consultant to the Company or a Subsidiary is terminated for any reason, including, without limitation, by resignation, discharge, death or retirement, but excluding terminations where the Consultant simultaneously commences or remains in employment or service with the Company or any Subsidiary.

(b) As to a Non-Employee Director, the time when a Participant who is a Non-Employee Director ceases to be a Director for any reason, including, without limitation, a termination by resignation, failure to be elected, death or retirement, but excluding terminations where the Participant simultaneously commences employment or service or remains in service with the Company or any Subsidiary.

(c) As to an Employee, the time when the employee-employer relationship between a Participant and the Company or any Subsidiary is terminated for any reason, including, without limitation, a termination by resignation, discharge, death, disability or retirement; but excluding terminations where the Participant simultaneously commences or remains in employment or service with the Company or any Subsidiary.

The Company, in its sole discretion, shall determine the effect of all matters and questions relating to any Termination of Service, including, without limitation, whether a Termination of Service has occurred, whether a Termination of Service resulted from a discharge for “cause” and all questions of whether particular leaves of absence constitute a Termination of Service. For purposes of the Plan, a Participant’s employee-employer relationship or consultancy relationship shall be deemed to be terminated in the event that the Subsidiary employing or contracting with such Participant ceases to remain a Subsidiary following any merger, sale of stock or other corporate transaction or event (including, without limitation, a spin-off), even though the Participant may subsequently continue to perform services for that entity.

ARTICLE III. ELIGIBILITY

Service Providers are eligible to be granted Awards under the Plan, subject to the limitations described herein. No Service Provider shall have any right to be granted an Award pursuant to the Plan and neither the Company nor the Administrator is obligated to treat Service Providers, Participants or any other persons uniformly.

ARTICLE IV. ADMINISTRATION AND DELEGATION

4.1 Administration.

(a) The Plan is administered by the Administrator. The Administrator has authority to determine which Service Providers receive Awards, grant Awards and set Award terms and conditions, subject to the conditions and limitations in the Plan. The Administrator also has the authority to take all actions and make all determinations under the Plan, to interpret the Plan and Award Agreements and to adopt, amend and repeal Plan administrative rules, guidelines and practices as it deems advisable. The Administrator may correct defects and ambiguities, supply omissions, reconcile inconsistencies in the Plan or any Award and make all other determinations that it deems necessary or appropriate to administer the Plan and any Awards. The Administrator (and each member thereof) is entitled to, in good faith, rely or act upon any report or other information furnished to the Administrator or member thereof by any officer or other Employee, the Company’s independent certified public accountants, or any executive compensation consultant or other professional retained by the Company to assist in the administration of the Plan. The Administrator’s determinations under the Plan are in its sole discretion and will be final, binding and conclusive on all persons having or claiming any interest in the Plan or any Award.

(b) Without limiting the foregoing, the Administrator has the exclusive power, authority and sole discretion to: (i) designate Participants; (ii) determine the type or types of Awards to be granted to each Participant; (iii) determine the number of Awards to be granted and the number of Shares to which an Award will relate; (iv) subject to the limitations in the Plan, determine the terms and conditions of any Award and related Award Agreement, including, but not limited to, the exercise price, grant price, purchase price, any performance criteria, any restrictions or limitations on the Award, any schedule for vesting, lapse of forfeiture restrictions or restrictions on the exercisability of an Award, and accelerations, waivers or amendments thereof; (v) determine whether, to what extent, and under what circumstances an Award may be settled in, or the exercise price of an Award may be paid in cash, Shares, or other property, or an Award may be cancelled, forfeited, or surrendered; and (vi) make all other decisions and determinations that may be required pursuant to the Plan or as the Administrator deems necessary or advisable to administer the Plan.

4.2 Delegation of Authority. To the extent permitted by Applicable Law, the Board or any Committee may delegate any or all of its powers under the Plan to one or more Committees or officers of the Company or any of its Subsidiaries; provided, however, that in no event shall an officer of the Company or any of its Subsidiaries be delegated the authority to grant Awards to, or amend Awards held by, the following individuals: (a) individuals who are subject to Section 16 of the Exchange Act, or (b) officers of the Company or any of its Subsidiaries or Directors to whom authority to grant or amend Awards has been delegated hereunder. Any delegation hereunder shall be subject to the restrictions and limits that the Board or Committee specifies at the time of such delegation or that are otherwise included in the applicable organizational documents, and the Board or Committee, as applicable, may at any time rescind the authority so delegated or appoint a new delegate. At all times, the delegate appointed under this Section 4.2 shall serve in such capacity at the pleasure of the Board or the Committee, as applicable, and the Board or the Committee may abolish any committee at any time and re-vest in itself any previously delegated authority. Further, regardless of any delegation, the Board or a Committee may, in its discretion, exercise any and all rights and duties as the Administrator under the Plan delegated thereby, except with respect to Awards that are required to be determined in the sole discretion of the Board or Committee under the rules of any securities exchange or automated quotation system on which the Shares are listed, quoted or traded.

ARTICLE V. STOCK AVAILABLE FOR AWARDS

5.1 Number of Shares. Subject to adjustment under Article IX and the terms of this Article V, Awards may be made under the Plan covering up to the Overall Share Limit. As of the Original Effective Date, the Company ceased granting awards under the Prior Plan; however, Prior Plan Awards will remain subject to the terms of the Prior Plan. Shares issued or delivered under the Plan may consist of authorized but unissued Shares, Shares purchased on the open market or treasury Shares.

5.2 Share Recycling.

(a) If all or any part of an Award or Prior Plan Award expires, lapses or is terminated, converted into an award in respect of shares of another entity in connection with a spin-off or other similar event, exchanged or settled for cash, surrendered, repurchased, cancelled without having been fully exercised or forfeited, in any case, in a manner that results in the Company acquiring Shares covered by the Award or Prior Plan Award at a price not greater than the price (as adjusted to reflect any Equity Restructuring) paid by the Participant for such Shares or not issuing any Shares covered by the Award or Prior Plan Award, the unused Shares covered by the Award or Prior Plan Award will, as applicable, become or again be available for Awards under the Plan. The payment of dividends or Dividend Equivalents in cash in conjunction with any outstanding Awards or Prior Plan Awards and any Awards that are settled in cash rather than by issuance of Shares shall not count against the Overall Share Limit.

(b) Notwithstanding anything in the Plan to the contrary, the following Shares shall not be available for future grants of Awards: (i) Shares tendered by a Participant or withheld by the Company in payment of the exercise price of an Option or any stock option granted under the Prior Plan; (ii) Shares tendered by a Participant or withheld by the Company to satisfy any tax withholding obligation with respect to an Award or any Prior Plan Award; (iii) Shares subject to a Stock Appreciation Right that are not issued in connection with the stock settlement of the Stock Appreciation Right or stock appreciation right granted under the Prior Plan on exercise; and (iv) Shares purchased on the open market with the cash proceeds from the exercise of Options or stock options granted under the Prior Plan.

5.3 Incentive Stock Option Limitations. Notwithstanding anything to the contrary herein, no more than 20,200,000 Shares (as adjusted to reflect any Equity Restructuring) may be issued pursuant to the exercise of Incentive Stock Options.

5.4 Substitute Awards. In connection with an entity's merger or consolidation with the Company or any Subsidiary or the Company's or any Subsidiary's acquisition of an entity's property or stock, the Administrator may grant Substitute Awards in respect of any options or other stock or stock-based awards granted before such merger or consolidation by such entity or its affiliate subject to Applicable Law. Substitute Awards may be granted on such terms and conditions as the Administrator deems appropriate, notwithstanding limitations on Awards in the Plan. Subject to Applicable Law, Substitute Awards will not count against the Overall Share Limit (nor shall Shares subject to a Substitute Award be added to the Shares available for Awards under the Plan as provided under Section 5.2 above), except that Shares acquired by exercise of substitute Incentive Stock Options will count against the maximum number of Shares that may be issued pursuant to the exercise of Incentive Stock Options under the Plan. Additionally, in the event that a company acquired by the Company or any Subsidiary or with which the Company or any Subsidiary combines has shares available under a pre-existing plan approved by stockholders and not adopted in contemplation of such acquisition or combination subject to Applicable Law, the shares available for grant pursuant to the terms of such pre-existing plan (as appropriately adjusted to reflect the transaction) may be used for Awards under the Plan and shall not count against the Overall Share Limit (and Shares subject to such Awards may again become available for Awards under the Plan as provided under Section 5.2 above); provided that Awards using such available shares shall not be made after the date awards or grants could have been made under the terms of the pre-existing plan, absent the acquisition or combination, and shall only be made to individuals who were not Service Providers prior to such acquisition or combination.

5.5 Non-Employee Director Award Limit. The maximum aggregate amount of cash and value of Awards (calculated based on grant date fair value determined in accordance with Financial Accounting Standards Board Accounting Standards Codification Topic 718, or any successor thereto) granted in any calendar year to any individual Non-Employee Director for their services as a Non-Employee Director shall not exceed \$750,000 in the case of an incumbent Non-Employee Director; provided, however, that such maximum aggregate amount shall not exceed \$1,000,000 in any calendar year for any individual Non-Employee Director in such Non-Employee Director's initial year of election or appointment; and provided, further, however, that fees paid by the Company on behalf of any Non-Employee Director in connection with regulatory compliance and any amounts paid to a Non-Employee Director as reimbursement of an expense shall not count against the foregoing limit. The Board may make exceptions to this limit for individual Non-Employee Directors in extraordinary circumstances, as the Board may determine in its discretion, provided that the Non-Employee Director receiving such additional compensation may not participate in the decision to award such compensation. For the avoidance of doubt, this limitation shall not apply to cash or Awards granted to a Non-Employee Director in his or her capacity as an advisor or consultant to the Company.

5.6 Minimum Award Vesting Limitations. Notwithstanding any other provision of the Plan to the contrary, but subject to Section 9.2, no Award (or portion thereof) granted under the Plan shall vest earlier than the first anniversary of the date the Award is granted and no Award Agreement shall reduce or eliminate such minimum vesting requirement; provided, however, that, notwithstanding the foregoing, the minimum vesting requirement of this Section 5.6 shall not apply to: (a) any Substitute Awards, (b) any Awards delivered in lieu of fully-vested cash-based Awards (or other fully-vested cash awards or payments), (c) any Awards to Non-Employee Directors for which the vesting period runs from the date of one annual meeting of the Company's stockholders to the next annual meeting of the Company's stockholders and which is at least 50 weeks after the immediately preceding year's annual meeting, or (d) any other Awards granted by the Administrator from time to time that result in the issuance of an aggregate of up to 5% of the Overall Share Limit. In addition, the Administrator may provide that such one-year vesting restrictions may lapse or be waived upon the Participant's Termination of Service and/or in connection with a Change in Control.

ARTICLE VI. STOCK OPTIONS AND STOCK APPRECIATION RIGHTS

6.1 General. The Administrator may grant Options or Stock Appreciation Rights to one or more Service Providers, subject to such terms and conditions not inconsistent with the Plan as the Administrator shall determine. The Administrator will determine the number of Shares covered by each Option and Stock Appreciation Right, the exercise price of each Option and Stock Appreciation Right and the conditions and limitations applicable to the exercise of each Option and Stock Appreciation Right. A Stock Appreciation Right will entitle the Participant (or other person entitled to exercise the Stock Appreciation Right) to receive from the Company upon exercise of the exercisable portion of the Stock Appreciation Right an amount determined by multiplying (a) the excess, if any, of the Fair Market Value of one Share on the date of exercise over the exercise price per Share of the Stock Appreciation Right by (b) the number of Shares with respect to which the Stock Appreciation Right is exercised, subject to any limitations of the Plan or that the Administrator may impose, and payable in cash, Shares valued at Fair Market Value on the date of exercise or a combination of the two as the Administrator may determine or provide in the Award Agreement.

6.2 Exercise Price. The Administrator will establish each Option's and Stock Appreciation Right's exercise price and specify the exercise price in the Award Agreement. Subject to Section 6.7, the exercise price will not be less than 100% of the Fair Market Value on the grant date of the Option or Stock Appreciation Right. Notwithstanding the foregoing, in the case of an Option or Stock Appreciation Right that is a Substitute Award, the exercise price per share of the Shares subject to such Option or Stock Appreciation Right, as applicable, may be less than the Fair Market Value per share on the date of grant; provided that the exercise price of any Substitute Award shall be determined in accordance with the applicable requirements of Sections 424 and 409A of the Code.

6.3 Duration of Options. Subject to Section 6.7, each Option or Stock Appreciation Right will be exercisable at such times and as specified in the Award Agreement, provided that the term of an Option or Stock Appreciation Right will not exceed ten years; provided, further, that, unless otherwise determined by the Administrator or specified in the Award Agreement, (a) no portion of an Option or Stock Appreciation Right which is unexercisable at a Participant's Termination of Service shall thereafter become exercisable and (b) the portion of an Option or Stock Appreciation Right that is unexercisable at a Participant's Termination of Service shall automatically expire on the date of such Termination of Service. In addition, in no event shall an Option or Stock Appreciation Right granted to an Employee who is a non-exempt employee for purposes of overtime pay under the U.S. Fair Labor Standards Act of 1938 be exercisable earlier than six months after its date of grant. Notwithstanding the foregoing, if the Participant, prior to the end of the term of an Option or Stock Appreciation Right, commits an act of "cause" (as determined by the Administrator), or violates any non-competition, non-solicitation or confidentiality provisions of any employment contract, confidentiality and nondisclosure agreement or other agreement between the Participant and the Company or any of its Subsidiaries, the right to exercise the Option or Stock Appreciation Right, as applicable, may be terminated by the Company and the Company may suspend the Participant's right to exercise the Option or Stock Appreciation Right when it reasonably believes that the Participant may have participated in any such act or violation.

6.4 Exercise. Options and Stock Appreciation Rights may be exercised by delivering to the Company (or such other person or entity designated by the Administrator) a notice of exercise, in a form and manner the Company approves (which may be written, electronic or telephonic and may contain representations and warranties deemed advisable by the Administrator), signed or authenticated by the person authorized to exercise the Option or Stock Appreciation Right, together with, as applicable, (a) payment in full of the exercise price for the number of Shares for which the Option is exercised in a manner specified in Section 6.5 and (b) satisfaction in full of any withholding obligation for Tax-Related Items in a manner specified in Section 10.5.

6.5 No Fractional Shares. No fractional shares of Stock shall be issued or delivered pursuant to the Plan or any Award, and the Administrator shall determine whether cash, other securities or other property shall be paid or transferred in lieu of any fractional shares, or whether such fractional shares or any rights thereto shall be canceled, terminated or otherwise eliminated.

6.6 Payment Upon Exercise. The Administrator shall determine the methods by which payment of the exercise price of an Option shall be made, including, without limitation:

(a) Cash, check or wire transfer of immediately available funds; provided that the Company may limit the use of one of the foregoing methods if one or more of the methods below is permitted;

(b) If there is a public market for Shares at the time of exercise, unless the Company otherwise determines, (A) delivery (including electronically or telephonically to the extent permitted by the Company) of a notice that the Participant has placed a market sell order with a broker acceptable to the Company with respect to Shares then issuable upon exercise of the Option and that the broker has been directed to deliver promptly to the Company funds sufficient to pay the exercise price, or (B) the Participant's delivery to the Company of a copy of irrevocable and unconditional instructions to a broker acceptable to the Company to deliver promptly to the Company an amount sufficient to pay the exercise price by cash, wire transfer of immediately available funds or check; provided that such amount is paid to the Company at such time as may be required by the Company;

(c) To the extent permitted by the Administrator, delivery (either by actual delivery or attestation) of Shares owned by the Participant valued at their Fair Market Value on the date of delivery;

(d) To the extent permitted by the Administrator, surrendering Shares then issuable upon the Option's exercise valued at their Fair Market Value on the exercise date;

(e) To the extent permitted by the Administrator, any combination of the above payment forms.

6.7 Additional Terms of Incentive Stock Options. The Administrator may grant Incentive Stock Options only to employees of the Company, any of its present or future parent or subsidiary corporations, as defined in Sections 424(e) or (f) of the Code, respectively, and any other entities the employees of which are eligible to receive Incentive Stock Options under the Code. If an Incentive Stock Option is granted to a Greater Than 10% Stockholder, the exercise price will not be less than 110% of the Fair Market Value on the Option's grant date, and the term of the Option will not exceed five years. All Incentive Stock Options (and Award Agreements related thereto) will be subject to and construed consistently with Section 422 of the Code. By accepting an Incentive Stock Option, the Participant agrees to give prompt notice to the Company of dispositions or other transfers (other than in connection with a Change in Control) of Shares acquired under the Option made within the later of (a) two years from the grant date of the Option or (b) one year after the transfer of such Shares to the Participant, specifying the date of the disposition or other transfer and the amount the Participant realized, in cash, other property, assumption of indebtedness or other consideration, in such disposition or other transfer. Neither the Company nor the Administrator will be liable to a Participant, or any other party, if an Incentive Stock Option fails or ceases to qualify as an "incentive stock option" under Section 422 of the Code. Any Incentive Stock Option or portion thereof that fails to qualify as an "incentive stock option" under Section 422 of the Code for any reason, including becoming exercisable with respect to Shares having a fair market value exceeding the \$100,000 limitation under Treasury Regulation Section 1.422-4, will be a Nonqualified Stock Option.

ARTICLE VII. RESTRICTED STOCK; RESTRICTED STOCK UNITS

7.1 General. The Administrator may grant Restricted Stock, or the right to purchase Restricted Stock, to any Service Provider, subject to forfeiture or the Company's right to repurchase all or part of the underlying Shares at their issue price or other stated or formula price from the Participant if conditions the Administrator specifies in the Award Agreement are not satisfied before the end of the applicable restriction period or periods that the Administrator establishes for such Award. In addition, the Administrator may grant Restricted Stock Units, which may be subject to vesting and forfeiture conditions during the applicable restriction period or periods, as set forth in an Award Agreement, to Service Providers. The Administrator shall establish the purchase price, if any, and form of payment for Restricted Stock and Restricted Stock Units; provided, however, that if a purchase price is charged, such purchase price shall be no less than the par value, if any, of the Shares to be purchased, unless otherwise permitted by Applicable Law. In all cases, legal consideration shall be required for each issuance of Restricted Stock and Restricted Stock Units to the extent required by Applicable Law. The Award Agreement for each Award of Restricted Stock and Restricted Stock Units shall set forth the terms and conditions not inconsistent with the Plan as the Administrator shall determine.

7.2 Restricted Stock.

(a) *Stockholder Rights*. Unless otherwise determined by the Administrator, each Participant holding Shares of Restricted Stock will be entitled to all the rights of a stockholder with respect to such Shares, subject to the restrictions in the Plan and the applicable Award Agreement, including the right to receive all dividends and other distributions paid or made with respect to the Shares to the extent such dividends and other distributions have a record date that is on or after the date on which such Participant becomes the record holder of such Shares; provided, however, that with respect to a share of Restricted Stock subject to restrictions or vesting conditions, except in connection with a spin-off or other similar event as otherwise permitted under Section 9.2, dividends which are paid to Company stockholders prior to the removal of restrictions and satisfaction of vesting conditions shall only be paid to the Participant to the extent that the restrictions are subsequently removed and the vesting conditions are subsequently satisfied and the share of Restricted Stock vests.

(b) *Stock Certificates*. The Company may require that the Participant deposit in escrow with the Company (or its designee) any stock certificates issued in respect of Shares of Restricted Stock, together with a stock power endorsed in blank.

(c) *Section 83(b) Election*. If a Participant makes an election under Section 83(b) of the Code to be taxed with respect to the Restricted Stock as of the date of transfer of the Restricted Stock rather than as of the date or dates upon which such Participant would otherwise be taxable under Section 83(a) of the Code, such Participant shall be required to deliver a copy of such election to the Company promptly after filing such election with the Internal Revenue Service along with proof of the timely filing thereof.

7.3 Restricted Stock Units. The Administrator may provide that settlement of Restricted Stock Units will occur upon or as soon as reasonably practicable after the Restricted Stock Units vest or will instead be deferred, on a mandatory basis or at the Participant's election, subject to compliance with Applicable Law. A Participant holding Restricted Stock Units

will have only the rights of a general unsecured creditor of the Company (solely to the extent of any rights then applicable to Participant with respect to such Restricted Stock Units) until delivery of Shares, cash or other securities or property is made as specified in the applicable Award Agreement.

ARTICLE VIII. OTHER TYPES OF AWARDS

8.1 General. The Administrator may grant Performance Stock Unit awards, Performance Bonus Awards, Dividend Equivalents or Other Stock or Cash Based Awards, to one or more Service Providers, in such amounts and subject to such terms and conditions not inconsistent with the Plan as the Administrator shall determine.

8.2 Performance Stock Unit Awards. Each Performance Stock Unit award shall be denominated in a number of Shares or in unit equivalents of Shares or units of value (including a dollar value of Shares) and may be linked to any one or more of performance or other specific criteria, including service to the Company or Subsidiaries, determined to be appropriate by the Administrator, in each case on a specified date or dates or over any period or periods determined by the Administrator. In making such determinations, the Administrator may consider (among such other factors as it deems relevant in light of the specific type of award) the contributions, responsibilities and other compensation of the particular Participant.

8.3 Performance Bonus Awards. Each right to receive a bonus granted under this Section 8.3 shall be denominated in the form of cash (but may be payable in cash, stock or a combination thereof) (a "**Performance Bonus Award**") and shall be payable upon the attainment of performance goals that are established by the Administrator and relate to one or more of performance or other specific criteria, including service to the Company or Subsidiaries, in each case on a specified date or dates or over any period or periods determined by the Administrator.

8.4 Dividends and Dividend Equivalents. If the Administrator provides, an Award (other than an Option or Stock Appreciation Right) may provide a Participant with the right to receive dividends or Dividend Equivalents. Dividend and Dividend Equivalents may be paid currently or credited to an account for the Participant, settled in cash or Shares and subject to the same restrictions on transferability and forfeitability as the Award with respect to which the dividends or Dividend Equivalents are granted and subject to other terms and conditions as set forth in the Award Agreement. Notwithstanding anything to the contrary herein, dividends and Dividend Equivalents with respect to an Award subject to vesting shall either (a) to the extent permitted by Applicable Law, not be paid or credited or (b) be accumulated and subject to vesting to the same extent as the related Award. Any such dividends and Dividend Equivalents shall be paid at such time as the Administrator shall specify in the applicable Award Agreement or as determined by the Administrator in the event not specified in such Award Agreement. In no event shall dividends or Dividend Equivalents be paid with respect to Options or Stock Appreciation Rights.

8.5 Other Stock or Cash Based Awards. Other Stock or Cash Based Awards may be granted to Participants, including Awards entitling Participants to receive cash or Shares to be delivered in the future and annual or other periodic or long-term cash bonus awards (whether based on specified performance criteria or otherwise), in each case subject to any conditions and limitations in the Plan. Such Other Stock or Cash Based Awards will also be available as a payment form in the settlement of other Awards, as standalone payments and as payment in lieu of compensation to which a Participant is otherwise entitled, subject to compliance with Section 409A. Other Stock or Cash Based Awards may be paid in Shares, cash or other property, as the Administrator determines. Subject to the provisions of the Plan, the Administrator will determine the terms and conditions of each Other Stock or Cash Based Award, including any purchase price, performance goal(s), transfer restrictions, and vesting conditions, which will be set forth in the applicable Award Agreement. Except in connection with a spin-off or other similar event as otherwise permitted under Article IX, dividends that are scheduled to be paid prior to vesting of any Other Stock or Cash Based Award shall only be paid to the applicable Participant to the extent that the vesting conditions are subsequently satisfied and the Other Stock or Cash Based Award vests.

ARTICLE IX. ADJUSTMENTS FOR CHANGES IN COMMON STOCK AND CERTAIN OTHER EVENTS

9.1 Equity Restructuring. In connection with any Equity Restructuring, notwithstanding anything to the contrary in this Article IX, the Administrator will equitably adjust the terms of the Plan and each outstanding Award as it deems appropriate to reflect the Equity Restructuring, which may include (a) adjusting the number and type of securities subject to each outstanding Award or with respect to which Awards may be granted under the Plan (including, but not limited to, adjustments of the limitations in Article V hereof on the maximum number and kind of shares that may be issued); (b) adjusting the terms and conditions of (including the grant or exercise price), and the performance goals or other criteria included in, outstanding Awards; and (c) granting new Awards or making cash payments to Participants. The adjustments

provided under this Section 9.1 will be nondiscretionary and final and binding on all interested parties, including the affected Participant and the Company; provided that the Administrator will determine whether an adjustment is equitable.

9.2 Corporate Transactions. In the event of any extraordinary dividend or other distribution (whether in the form of cash, Common Stock, other securities, or other property), reorganization, merger, consolidation, split-up, spin off, combination, amalgamation, repurchase, recapitalization, liquidation, dissolution, or sale, transfer, exchange or other disposition of all or substantially all of the assets of the Company, or sale or exchange of Common Stock or other securities of the Company, Change in Control, issuance of warrants or other rights to purchase Common Stock or other securities of the Company, other similar corporate transaction or event, other unusual or nonrecurring transaction or event affecting the Company or its financial statements or any change in any Applicable Law or accounting principles, the Administrator, on such terms and conditions as it deems appropriate, either by the terms of the Award or by action taken prior to the occurrence of such transaction or event (except that action to give effect to a change in Applicable Law or accounting principles may be made within a reasonable period of time after such change) and either automatically or upon the Participant's request, is hereby authorized to take any one or more of the following actions whenever the Administrator determines that such action is appropriate in order to (i) prevent dilution or enlargement of the benefits or potential benefits intended by the Company to be made available under the Plan or with respect to any Award granted or issued under the Plan, (ii) to facilitate such transaction or event or (iii) give effect to such changes in Applicable Law or accounting principles:

(a) To provide for the cancellation of any such Award in exchange for either an amount of cash or other property with a value equal to the amount that could have been obtained upon the exercise or settlement of the vested portion of such Award or realization of the Participant's rights under the vested portion of such Award, as applicable, in each case as of the date of such cancellation; provided that, if the amount that could have been obtained upon the exercise or settlement of the vested portion of such Award or realization of the Participant's rights, in any case, is equal to or less than zero, then the Award may be terminated without payment;

(b) To provide that such Award shall vest and, to the extent applicable, be exercisable as to all Shares (or other property) covered thereby, notwithstanding anything to the contrary in the Plan or the provisions of such Award;

(c) To provide that such Award be assumed by the successor or survivor corporation or entity, or a parent or subsidiary thereof, or shall be substituted for by awards covering the stock of the successor or survivor corporation or entity, or a parent or subsidiary thereof, with appropriate adjustments as to the number and kind of shares and applicable exercise or purchase price, in all cases, as determined by the Administrator;

(d) To make adjustments in the number and type of Shares (or other securities or property) subject to outstanding Awards or with respect to which Awards may be granted under the Plan (including, but not limited to, adjustments of the limitations in Article V hereof on the maximum number and kind of shares which may be issued) or in the terms and conditions of (including the grant or exercise price), and the criteria included in, outstanding Awards;

(e) To replace such Award with other rights or property selected by the Administrator; or

(f) To provide that the Award will terminate and cannot vest, be exercised or become payable after the applicable event.

9.3 Change in Control.

(a) Notwithstanding the provisions of Section 9.2, in the event that the successor corporation in a Change in Control refuses to assume or substitute for an Award, the Administrator shall cause such Award to become fully vested and, if applicable, exercisable immediately prior to the consummation of such transaction and all forfeiture restrictions on such Award to lapse and, to the extent unexercised upon the consummation of such transaction, to terminate in exchange for cash, rights or other property (and with respect to the portion of such Award subject to performance-based vesting, all performance criteria will be deemed achieved at the greater of (1) 100% of target levels and (2) actual achievement of the applicable performance criteria as of such Change in Control, unless specifically provided otherwise under the applicable Award Agreement or other written agreement between the Participant and the Company or any of its Subsidiaries, as applicable, or as otherwise determined by the Administrator). The Administrator shall notify the Participant of any Award that becomes exercisable pursuant to the preceding sentence that such Award shall be fully exercisable for a period of 15 days from the date of such notice, contingent upon the occurrence of the Change in Control, and such Award shall terminate upon the consummation of the Change in Control in accordance with the preceding sentence.

(b) For the purposes of this Section 9.3, an Award shall be considered assumed if, following the Change in Control, the Award confers the right to purchase or receive, for each Share subject to the Award immediately prior to the Change in Control, the consideration (whether stock, cash, or other securities or property) received in the Change in Control by holders of Common Stock for each Share held on the effective date of the transaction (and if holders were offered a choice of consideration, the type of consideration chosen by the holders of a majority of the outstanding Shares); provided, however, that if such consideration received in the Change in Control was not solely common stock of the successor corporation or its parent, the Administrator may, with the consent of the successor corporation, provide for the consideration to be received upon the exercise of the Award, for each Share subject to an Award, to be solely common stock of the successor corporation or its parent equal in fair market value to the per-share consideration received by holders of Common Stock in the Change in Control.

9.4 Administrative Stand Still. In the event of any pending stock dividend, stock split, combination or exchange of shares, merger, consolidation or other distribution (other than normal cash dividends) of Company assets to stockholders, or any other extraordinary transaction or change affecting the Shares or the share price of Common Stock (including any Equity Restructuring or any securities offering or other similar transaction) or for reasons of administrative convenience or to facilitate compliance with any Applicable Law, the Company may refuse to permit the exercise or settlement of one or more Awards for such period of time as the Company may determine to be reasonably appropriate under the circumstances.

9.5 General. Except as expressly provided in the Plan or the Administrator's action under the Plan, no Participant will have any rights due to any subdivision or consolidation of Shares of any class, dividend payment, increase or decrease in the number of Shares of any class or dissolution, liquidation, merger, or consolidation of the Company or other corporation. Except as expressly provided with respect to an Equity Restructuring under Section 9.1 above or the Administrator's action under the Plan, no issuance by the Company of Shares of any class, or securities convertible into Shares of any class, will affect, and no adjustment will be made regarding, the number of Shares subject to an Award or the Award's grant price or exercise price. The existence of the Plan, any Award Agreements and the Awards granted hereunder will not affect or restrict in any way the Company's right or power to make or authorize (a) any adjustment, recapitalization, reorganization or other change in the Company's capital structure or its business, (b) any merger, consolidation, spinoff, dissolution or liquidation of the Company or sale of Company assets or (c) any sale or issuance of securities, including securities with rights superior to those of the Shares or securities convertible into or exchangeable for Shares.

ARTICLE X. PROVISIONS APPLICABLE TO AWARDS

10.1 Transferability.

(a) No Award may be sold, assigned, transferred, pledged or otherwise encumbered, either voluntarily or by operation of law, except by will or the laws of descent and distribution, or, subject to the Administrator's consent, pursuant to a DRO, unless and until such Award has been exercised or the Shares underlying such Award have been issued, and all restrictions applicable to such Shares have lapsed. During the life of a Participant, Awards will be exercisable only by the Participant, unless it has been disposed of pursuant to a DRO. After the death of a Participant, any exercisable portion of an Award may, prior to the time when such portion becomes unexercisable under the Plan or the applicable Award Agreement, be exercised by the Participant's personal representative or by any person empowered to do so under the deceased Participant's will or under the then-Applicable Law of descent and distribution. References to a Participant, to the extent relevant in the context, will include references to a transferee approved by the Administrator.

(b) Notwithstanding Section 10.1(a), the Administrator, in its sole discretion, may determine to permit a Participant or a Permitted Transferee of such Participant to transfer an Award other than an Incentive Stock Option (unless such Incentive Stock Option is intended to become a Nonqualified Stock Option) to any one or more Permitted Transferees of such Participant, subject to the following terms and conditions: (i) an Award transferred to a Permitted Transferee shall not be assignable or transferable by the Permitted Transferee other than (A) to another Permitted Transferee of the applicable Participant or (B) by will or the laws of descent and distribution or, subject to the consent of the Administrator, pursuant to a DRO; (ii) an Award transferred to a Permitted Transferee shall continue to be subject to all the terms and conditions of the Award as applicable to the original Participant (other than the ability to further transfer the Award to any person other than another Permitted Transferee of the applicable Participant); (iii) the Participant (or transferring Permitted Transferee) and the receiving Permitted Transferee shall execute any and all documents requested by the Administrator, including, without limitation, documents to (A) confirm the status of the transferee as a Permitted Transferee, (B) satisfy any requirements for an exemption for the transfer under Applicable Law and (C) evidence the transfer; and (iv) any transfer of an Award to a Permitted Transferee shall be without consideration, except as required by Applicable Law. In addition, and further notwithstanding Section 10.1(a), the Administrator, in its sole discretion, may determine to permit a Participant to transfer

Incentive Stock Options to a trust that constitutes a Permitted Transferee if, under Section 671 of the Code and other Applicable Law, the Participant is considered the sole beneficial owner of the Incentive Stock Option while it is held in the trust.

(c) Notwithstanding Section 10.1(a), if permitted by the Administrator, a Participant may, in the manner determined by the Administrator, designate a Designated Beneficiary. A Designated Beneficiary, legal guardian, legal representative, or other person claiming any rights pursuant to the Plan is subject to all terms and conditions of the Plan and any Award Agreement applicable to the Participant and any additional restrictions deemed necessary or appropriate by the Administrator. If the Participant is married or a domestic partner in a domestic partnership qualified under Applicable Law and resides in a community property state, a designation of a person other than the Participant's spouse or domestic partner, as applicable, as the Participant's Designated Beneficiary with respect to more than 50% of the Participant's interest in the Award shall not be effective without the prior written or electronic consent of the Participant's spouse or domestic partner. Subject to the foregoing, a beneficiary designation may be changed or revoked by a Participant at any time; provided that the change or revocation is delivered in writing to the Administrator prior to the Participant's death.

10.2 Documentation. Each Award will be evidenced in an Award Agreement in such form as the Administrator determines in its discretion. Each Award may contain such terms and conditions as are determined by the Administrator in its sole discretion, to the extent not inconsistent with those set forth in the Plan.

10.3 Discretion. Except as the Plan otherwise provides, each Award may be made alone or in addition or in relation to any other Award. The terms of each Award to a Participant need not be identical, and the Administrator need not treat Participants or Awards (or portions thereof) uniformly.

10.4 Changes in Participant's Status. The Administrator will determine how the disability, death, retirement, authorized leave of absence or any other change or purported change in a Participant's Service Provider status affects an Award and the extent to which, and the period during which, the Participant, the Participant's legal representative, conservator, guardian or Designated Beneficiary may exercise rights under the Award, if applicable. Except to the extent otherwise required by Applicable Law or expressly authorized by the Company or by the Company's written policy on leaves of absence, no service credit shall be given for vesting purposes for any period the Participant is on a leave of absence.

10.5 Withholding. Each Participant must pay the Company or a Subsidiary, as applicable, or make provision satisfactory to the Administrator for payment of, any Tax-Related Items to be withheld in connection with such Participant's Awards and/or Shares. At the Company's discretion and subject to any Company insider trading policy (including black-out periods), any withholding obligation for Tax-Related Items may be satisfied by (a) deducting an amount sufficient to satisfy such withholding obligation from any payment of any kind otherwise due to a Participant; (b) accepting a payment from the Participant in cash, by wire transfer of immediately available funds, or by check made payable to the order of the Company or a Subsidiary, as applicable; (c) accepting the delivery of Shares, including Shares delivered by attestation; (d) retaining Shares from an Award; (e) if there is a public market for Shares at the time the withholding obligation for Tax-Related Items is to be satisfied, selling Shares issued pursuant to an Award, either voluntarily by the Participant or mandatorily by the Company; (f) any other method of withholding determined by the Company and, to the extent required by Applicable Law or the Plan, approved by the Administrator; or (g) any combination of the foregoing payment forms. The amount withheld pursuant to any of the foregoing payment forms shall be determined by the Company and may be up to, but no greater than, the aggregate amount of such obligations based on the maximum statutory withholding rates in the applicable Participant's jurisdiction for all Tax-Related Items.

10.6 Amendment of Award. The Administrator may amend, modify or terminate any outstanding Award, including by substituting another Award of the same or a different type, changing the exercise or settlement date, and converting an Incentive Stock Option to a Nonqualified Stock Option. The Participant's consent to such action will be required unless (a) the action, taking into account any related action, does not materially and adversely affect the Participant's rights under the Award, or (b) the change is permitted under Article IX or pursuant to Section 11.6.

10.7 Prohibition on Repricing. Except pursuant to Article IX, the Administrator shall not, without the approval of the Company's stockholders, (a) amend any outstanding Option or Stock Appreciation Right to reduce its exercise price per Share or (b) cancel any Option or Stock Appreciation Right in exchange for cash or another Award when the exercise price of such Option or Stock Appreciation Right exceeds the Fair Market Value of the underlying Shares.

10.8 Conditions on Delivery of Stock. The Company will not be obligated to deliver any Shares under the Plan or remove restrictions from Shares previously delivered under the Plan until (a) all Award conditions have been met or removed to the Company's satisfaction, (b) as determined by the Company, all other legal matters regarding the issuance and delivery

of such Shares have been satisfied, including, without limitation, any applicable securities laws and stock exchange or stock market rules and regulations, (c) any approvals from governmental agencies that the Company determines are necessary or advisable have been obtained, and (d) the Participant has executed and delivered to the Company such representations or agreements as the Administrator deems necessary or appropriate to satisfy Applicable Law. The inability or impracticability of the Company to obtain or maintain authority to issue or sell any securities from any regulatory body having jurisdiction, which authority is deemed by the Company's counsel to be necessary to the lawful issuance and sale of any Shares hereunder, shall relieve the Company of any liability in respect of the failure to issue or sell such Shares as to which such requisite authority shall not have been obtained, and shall constitute circumstances in which the Administrator may determine to amend or cancel Awards pertaining to such Shares, with or without consideration to the Participant.

10.9 Acceleration. The Administrator may at any time provide that any Award will become immediately vested and fully or partially exercisable, free of some or all restrictions or conditions, or otherwise fully or partially realizable.

ARTICLE XI. MISCELLANEOUS

11.1 No Right to Employment or Other Status. No person will have any claim or right to be granted an Award, and the grant of an Award will not be construed as giving a Participant the right to commence or continue employment or any other relationship with the Company or a Subsidiary. The Company and its Subsidiaries expressly reserve the right at any time to dismiss or otherwise terminate its relationship with a Participant free from any liability or claim under the Plan or any Award, except as expressly provided in an Award Agreement or other written agreement between the Participant and the Company or any Subsidiary.

11.2 No Rights as Stockholder; Certificates. Subject to the Award Agreement, no Participant or Designated Beneficiary will have any rights as a stockholder with respect to any Shares to be distributed under an Award until becoming the record holder of such Shares. Notwithstanding any other provision of the Plan, unless the Administrator otherwise determines or Applicable Law requires, the Company will not be required to deliver to any Participant certificates evidencing Shares issued in connection with any Award and instead such Shares may be recorded in the books of the Company (or, as applicable, its transfer agent or stock plan administrator). The Company may place legends on any share certificate or book entry to reference restrictions applicable to the Shares (including, without limitation, restrictions applicable to Restricted Stock).

11.3 Effective Date. The Plan originally became effective June 16, 2023 (the "**Original Effective Date**"). The Board approved the amended and restated Plan on September 12, 2024, subject to the approval of the Company's stockholders, and the amended and restated plan will become effective on the date it is approved by the Company's stockholders ("**Effective Date**"). No Incentive Stock Option may be granted pursuant to the Plan after the tenth anniversary of the date the amended and restated Plan was approved by the Board.

11.4 Amendment of Plan. The Administrator may amend, suspend or terminate the Plan at any time and from time to time; provided that (a) no amendment requiring stockholder approval to comply with Applicable Law shall be effective unless approved by the stockholders, and (b) no amendment, other than an increase to the Overall Share Limit or pursuant to Article IX or Section 11.6, may materially and adversely affect any Award outstanding at the time of such amendment without the affected Participant's consent. No Awards may be granted under the Plan during any suspension period or after Plan termination. Awards outstanding at the time of any Plan suspension or termination will continue to be governed by the Plan and the Award Agreement, as each in effect before such suspension or termination. The Administrator will obtain stockholder approval of any Plan amendment to the extent necessary to comply with Applicable Law.

11.5 Provisions for Non-U.S. Participants. The Administrator may modify Awards granted to Participants who are nationals of a country other than the United States or employed or residing outside the United States, establish subplans or procedures under the Plan or take any other necessary or appropriate action to address Applicable Law, including (a) differences in laws, rules, regulations or customs of such jurisdictions with respect to tax, securities, currency, employee benefit or other matters, (b) listing and other requirements of any non-U.S. securities exchange, and (c) any necessary local governmental or regulatory exemptions or approvals.

11.6 Section 409A.

(a) *General*. The Company intends that all Awards be structured to comply with, or be exempt from, Section 409A, such that no adverse tax consequences, interest, or penalties under Section 409A apply. Notwithstanding anything in the Plan or any Award Agreement to the contrary, the Administrator may, without a Participant's consent, amend

this Plan or Awards, adopt policies and procedures, or take any other actions (including amendments, policies, procedures and retroactive actions) as are necessary or appropriate to preserve the intended tax treatment of Awards, including any such actions intended to (i) exempt this Plan or any Award from Section 409A, or (ii) comply with Section 409A, including regulations, guidance, compliance programs and other interpretative authority that may be issued after an Award's grant date. The Company makes no representations or warranties as to an Award's tax treatment under Section 409A or otherwise. The Company will have no obligation under this Section 11.6 or otherwise to avoid the taxes, penalties or interest under Section 409A with respect to any Award and will have no liability to any Participant or any other person if any Award, compensation or other benefits under the Plan are determined to constitute noncompliant "nonqualified deferred compensation" subject to taxes, penalties or interest under Section 409A.

(b) *Separation from Service.* If an Award constitutes "nonqualified deferred compensation" under Section 409A, any payment or settlement of such Award upon a Participant's Termination of Service will, to the extent necessary to avoid taxes under Section 409A, be made only upon the Participant's "separation from service" (within the meaning of Section 409A), whether such "separation from service" occurs upon or after the Participant's Termination of Service. For purposes of this Plan or any Award Agreement relating to any such payments or benefits, references to a "termination," "termination of employment" or like terms means a "separation from service."

(c) *Payments to Specified Employees.* Notwithstanding any contrary provision in the Plan or any Award Agreement, any payment(s) of "nonqualified deferred compensation" required to be made under an Award to a "specified employee" (as defined under Section 409A and as the Administrator determines) due to such employee's "separation from service" will, to the extent necessary to avoid taxes under Section 409A(a)(2)(B)(i) of the Code, be delayed for the six-month period immediately following such "separation from service" (or, if earlier, until the specified employee's death) and will instead be paid (as set forth in the Award Agreement) on the day immediately following such six-month period or as soon as administratively practicable thereafter (without interest). Any payments of "nonqualified deferred compensation" under such Award payable more than six months following the Participant's "separation from service" will be paid at the time or times the payments are otherwise scheduled to be made.

(d) *Separate Payments.* If an Award includes a "series of installment payments" within the meaning of Section 1.409A-2(b)(2)(iii) of Section 409A, the Participant's right to the series of installment payments will be treated as a right to a series of separate payments and not as a right to a single payment and, if an Award includes "dividend equivalents" within the meaning of Section 1.409A-3(e) of Section 409A, the Participant's right to receive the dividend equivalents will be treated separately from the right to other amounts under the Award.

11.7 Limitations on Liability. Notwithstanding any other provisions of the Plan, no individual acting as an Administrator, Director, officer or other Employee will be liable to any Participant, former Participant, spouse, beneficiary, or any other person for any claim, loss, liability, or expense incurred in connection with the Plan or any Award, and such individual will not be personally liable with respect to the Plan because of any contract or other instrument executed in such person's capacity as an Administrator, Director, officer or other Employee. The Company will indemnify and hold harmless each Director, officer or other Employee that has been or will be granted or delegated any duty or power relating to the Plan's administration or interpretation, against any cost or expense (including attorneys' fees) or liability (including any sum paid in settlement of a claim with the Administrator's approval) arising from any act or omission concerning this Plan unless arising from such person's own fraud or bad faith; provided that such person gives the Company an opportunity, at its own expense, to handle and defend the same before undertaking to handle and defend it on such person's own behalf.

11.8 Data Privacy. As a condition for receiving any Award, each Participant explicitly and unambiguously consents to the collection, use and transfer, in electronic or other form, of personal data as described in this Section 11.8 by and among the Company and its Subsidiaries and affiliates exclusively for implementing, administering and managing the Participant's participation in the Plan. The Company and its Subsidiaries and affiliates may hold certain personal information about a Participant, including the Participant's name, address and telephone number; birthdate; social security, insurance number or other identification number; salary; nationality; job title(s); any Shares held in the Company or its Subsidiaries and affiliates; and Award details, to implement, manage and administer the Plan and Awards (the "**Data**"). The Company and its Subsidiaries and affiliates may transfer the Data amongst themselves as necessary to implement, administer and manage a Participant's participation in the Plan, and the Company and its Subsidiaries and affiliates may transfer the Data to third parties assisting the Company with Plan implementation, administration and management. These recipients may be located in the Participant's country, or elsewhere, and the Participant's country may have different data privacy laws and protections than a recipient's country. By accepting an Award, each Participant authorizes such recipients to receive, possess, use, retain and transfer the Data, in electronic or other form, to implement, administer and manage the Participant's participation in the Plan, including any required Data transfer to a broker or other third party with whom the Company or the Participant may elect to deposit any Shares. The Data related to a Participant will be held only as long as necessary to implement, administer,

and manage the Participant's participation in the Plan. A Participant may, at any time, view the Data that the Company holds regarding such Participant, request additional information about the storage and processing of the Data regarding such Participant, recommend any necessary corrections to the Data regarding the Participant or refuse or withdraw the consents in this Section 11.8 in writing, without cost, by contacting the local human resources representative. The Company may cancel Participant's ability to participate in the Plan and, in the Administrator's sole discretion, the Participant may forfeit any outstanding Awards if the Participant refuses or withdraws the consents in this Section 11.8. For more information on the consequences of refusing or withdrawing consent, Participants may contact their local human resources representative.

11.9 Severability. If any portion of the Plan or any action taken under it is held illegal or invalid for any reason, the illegality or invalidity will not affect the remaining parts of the Plan, and the Plan will be construed and enforced as if the illegal or invalid provisions had been excluded, and the illegal or invalid action will be null and void.

11.10 Governing Documents. If any contradiction occurs between the Plan and any Award Agreement or other written agreement between a Participant and the Company (or any Subsidiary), the Plan will govern, unless such Award Agreement or other written agreement was approved by the Administrator and expressly provides that a specific provision of the Plan will not apply.

11.11 Governing Law. The Plan and all Awards will be governed by and interpreted in accordance with the laws of the State of Delaware, without regard to the conflict of law rules thereof or of any other jurisdiction. By accepting an Award, each Participant irrevocably and unconditionally consents to submit, at the Company's discretion, to the exclusive jurisdiction of the courts of the State of Delaware and of the United States of America, in each case located in the State of Delaware, for any action arising out of or relating to the Plan (and agrees not to commence any litigation relating thereto except in such courts), and further agrees that service of any process, summons, notice or document by U.S. registered mail to the address contained in the records of the Company shall be effective service of process for any litigation brought against it in any such court. By accepting an Award, each Participant irrevocably and unconditionally waives any objection to the laying of venue of any litigation arising out of the Plan or Award hereunder in the courts of the State of Delaware or the United States of America, in each case located in the State of Delaware, and further irrevocably and unconditionally waives and agrees not to plead or claim in any such court that any such litigation brought in any such court has been brought in an inconvenient forum. By accepting an Award, each Participant irrevocably and unconditionally waives, to the fullest extent permitted by Applicable Law, any and all rights to trial by jury in connection with any litigation arising out of or relating to the Plan or any Award hereunder.

11.12 Clawback Provisions. All Awards (including the gross amount of any proceeds, gains or other economic benefit the Participant actually or constructively receives upon receipt or exercise of any Award or the receipt or resale of any Shares underlying the Award) will be subject to recoupment by the Company to the extent required to comply with Applicable Law or any policy of the Company providing for the reimbursement of incentive compensation, whether or not such policy was in place at the time of grant of an Award.

11.13 Titles and Headings. The titles and headings in the Plan are for convenience of reference only and, if any conflict, the Plan's text, rather than such titles or headings, will control.

11.14 Conformity to Applicable Law. Participant acknowledges that the Plan is intended to conform to the extent necessary with Applicable Law. Notwithstanding anything herein to the contrary, the Plan and all Awards will be administered only in a manner intended to conform with Applicable Law. To the extent Applicable Law permits, the Plan and all Award Agreements will be deemed amended as necessary to conform to Applicable Law.

11.15 Relationship to Other Benefits. No payment under the Plan will be taken into account in determining any benefits under any pension, retirement, savings, profit sharing, group insurance, welfare or other benefit plan of the Company or any Subsidiary, except as expressly provided in writing in such other plan or an agreement thereunder.

11.16 Unfunded Status of Awards. The Plan is intended to be an "unfunded" plan for incentive compensation. With respect to any payments not yet made to a Participant pursuant to an Award, nothing contained in the Plan or Award Agreement shall give the Participant any rights that are greater than those of a general creditor of the Company or any Subsidiary.

11.17 Limitations Applicable to Section 16 Persons. Notwithstanding any other provision of the Plan, the Plan and any Award granted or awarded to any individual who is then subject to Section 16 of the Exchange Act shall be subject to any additional limitations set forth in any applicable exemptive rule under Section 16 of the Exchange Act (including Rule 16b-3) that are requirements for the application of such exemptive rule. To the extent permitted by Applicable Law, the Plan and

Awards granted or awarded hereunder shall be deemed amended to the extent necessary to conform to such applicable exemptive rule.

11.18 Prohibition on Executive Officer and Director Loans. Notwithstanding any other provision of the Plan to the contrary, no Participant who is a Director or an “executive officer” of the Company within the meaning of Section 13(k) of the Exchange Act shall be permitted to make payment with respect to any Awards granted under the Plan, or continue any extension of credit with respect to such payment, with a loan from the Company or a loan arranged by the Company in violation of Section 13(k) of the Exchange Act.

11.19 Broker-Assisted Sales. In the event of a broker-assisted sale of Shares in connection with the payment of amounts owed by a Participant under or with respect to the Plan or Awards, including amounts to be paid under the final sentence of Section 10.5: (a) any Shares to be sold through the broker-assisted sale will be sold on the day the payment first becomes due, or as soon thereafter as practicable; (b) such Shares may be sold as part of a block trade with other Participants in the Plan in which all Participants receive an average price; (c) the applicable Participant will be responsible for all broker’s fees and other costs of sale, and by accepting an Award, each Participant agrees to indemnify and hold the Company and its Directors, officers and other Employees harmless from any losses, costs, damages, or expenses relating to any such sale; (d) to the extent the Company or its designee receives proceeds of such sale that exceed the amount owed, the Company will pay such excess in cash to the applicable Participant as soon as reasonably practicable; (e) the Company and its designees are under no obligation to arrange for such sale at any particular price; and (f) in the event the proceeds of such sale are insufficient to satisfy the Participant’s applicable obligation, the Participant may be required to pay immediately upon demand to the Company or its designee an amount in cash sufficient to satisfy any remaining portion of the Participant’s obligation.

* * * * *



VOTE BY INTERNET - www.proxyvote.com or scan the QR Barcode above
Use the Internet to transmit your voting instructions and for electronic delivery of information. Vote by 11:59 P.M. Eastern Time on November 5, 2024. Have your proxy card in hand when you access the web site and follow the instructions to obtain your records and to create an electronic voting instruction form.

ELECTRONIC DELIVERY OF FUTURE PROXY MATERIALS
If you would like to reduce the costs incurred by our company in mailing proxy materials, you can consent to receiving all future proxy statements, proxy cards and annual reports electronically via e-mail or the Internet. To sign up for electronic delivery, please follow the instructions above to vote using the Internet and, when prompted, indicate that you agree to receive or access proxy materials electronically in future years.

VOTE BY PHONE - 1-800-690-6903
Use any touch-tone telephone to transmit your voting instructions. Vote by 11:59 P.M. Eastern Time on November 5, 2024. Have your proxy card in hand when you call and then follow the instructions.

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

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

V46998-P17280

KEEP THIS PORTION FOR YOUR RECORDS
DETACH AND RETURN THIS PORTION ONLY

THIS PROXY CARD IS VALID ONLY WHEN SIGNED AND DATED.

BLUEBIRD BIO, INC.

The Board of Directors recommends you vote FOR the following:

1. Election of Class II Directors

Nominees:

	For	Against	Abstain
1a. John O. Agwunobi	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1b. Elisabeth Leiderman	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1c. Andrew Obenshain	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

The Board of Directors recommends you vote FOR proposals 2, 3, 4, 5, 6, and 7.

- | | | | |
|---|--------------------------|--------------------------|--------------------------|
| 2. The approval, on a non-binding, advisory basis, of the compensation of our named executive officers. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 3. The approval of an amendment to our Amended and Restated Certificate of Incorporation to provide for the exculpation of officers for certain breaches of fiduciary duty to the extent permitted by the General Corporation Law of the State of Delaware. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 4. The approval of amendments to our Amended and Restated Certificate of Incorporation to effect a reverse stock split of our common stock at a ratio ranging from any whole number between 1-for-15 and 1-for-20, as determined by our Board of Directors in its discretion. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

- | | For | Against | Abstain |
|---|--------------------------|--------------------------|--------------------------|
| 5. The approval of an amendment and restatement of our 2023 Incentive Award Plan to, among other things, increase the number of shares of common stock authorized for issuance thereunder. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 6. Ratification of the selection of Ernst & Young LLP as our independent registered public accounting firm for the fiscal year ending December 31, 2024. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 7. The approval of an adjournment of the Annual Meeting, if necessary, to solicit additional proxies if there are not sufficient votes at the time of the Annual Meeting to approve Proposal 3, Proposal 4 and/or Proposal 5. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

NOTE: To transact any other business that may properly come before the meeting or any adjournment thereof.

Please sign exactly as your name(s) appear(s) hereon. When signing as attorney, executor, administrator, or other fiduciary, please give full title as such. Joint owners should each sign personally. All holders must sign. If a corporation or partnership, please sign in full corporate or partnership name by authorized officer.

Signature [PLEASE SIGN WITHIN BOX] Date

Signature (Joint Owners) Date

Important Notice Regarding the Availability of Proxy Materials for the Annual Meeting:

The Notice and Proxy Statement and Annual Report are available at www.proxyvote.com.

V46999-P17280

bluebird bio, Inc.
Annual Meeting of Stockholders
November 6, 2024, 8:30 AM EST
This proxy is solicited by the Board of Directors

The undersigned stockholder of bluebird bio, Inc., a Delaware corporation (the "Company"), hereby acknowledges receipt of the Notice of 2024 Annual Meeting of Stockholders and Proxy Statement and hereby appoints Andrew Obenshain, O. James Sterling and Joseph Vittiglio, and each of them, proxies and attorneys-in-fact, with full power of substitution to each, on behalf and in the name of the undersigned, to represent the undersigned at the 2024 Annual Meeting of Stockholders of the Company to be held at the offices of bluebird bio, Inc., located at 455 Grand Union Boulevard, Somerville, MA 02145 on November 6, 2024, at 8:30 AM EST, and at any adjournments, continuations or postponements thereof, and to vote all shares of Common Stock which the undersigned would be entitled to vote if then and there personally present, on the matters set forth on the reverse side.

Such proxies are authorized to vote in their discretion (x) for the election of any person to the Board of Directors if any nominee named herein becomes unable to serve or for good cause will not serve, (y) on any matter that the Board of Directors did not know would be presented at the Annual Meeting by a reasonable time before the proxy solicitation was made, and (z) on such other business as may properly be brought before the meeting or any adjournment, continuation or postponement thereof.

This proxy, when properly executed, will be voted in the manner directed herein. If no such direction is made, this proxy will be voted in accordance with the Board of Directors' recommendations.

Continued and to be signed on reverse side