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

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

IDERA PHARMACEUTICALS, INC.

(Exact name of Registrant as Specified in its Charter)

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

Payment of Filing Fee (Check the appropriate box):

☒ No fee required.

☐ Fee paid previously with preliminary materials.

☐ Fee computed on table in exhibit required by Item 25(b) per Exchange Act Rules 14a6(i)(1) and 0-11.

IDERA PHARMACEUTICALS, INC.

505 Eagleview Blvd., Suite 212
Exton, PA 19341
(484) 348-1600

NOTICE OF SPECIAL MEETING OF STOCKHOLDERS

To be held January 12, 2023

Notice is hereby given that a special meeting of stockholders (the "Special Meeting") of Idera Pharmaceuticals, Inc. (the "Company"), will be held virtually, via live webcast at https://www.virtualmeetingportal.com/iderapharma/2023 on January 12, 2023 at 9:00 a.m. Eastern Time. The purpose of the Special Meeting is the following:

1. To approve, in accordance with Nasdaq Listing Rule 5635(a), the issuance of shares of the Company's common stock, par value $0.001 per share ("Common Stock"), upon conversion of the Company's Series Z Non-Voting Convertible Preferred Stock, par value $0.01 per share ("Series Z Preferred Stock"), issued in September 2022 (the "Conversion Proposal" or "Proposal No. 1");

2. To approve an amendment to the Restated Certificate of Incorporation to effect a reverse stock split of the Common Stock at a ratio to be determined by the Company's Board of Directors (the "Board of Directors") within a range of one-for-seventeen (1:17) and one-for-twenty-three (1:23) (or any number in between), to be effected in the sole discretion of the Board of Directors at any time within one year of the date of the Special Meeting without further approval or authorization from the Company's stockholders (the "Reverse Stock Split Proposal" or "Proposal No. 2");

3. To approve the Idera Pharmaceuticals, Inc. 2022 Stock Incentive Plan (the "Equity Compensation Plan Proposal" or "Proposal No. 3"); and

4. To approve the adjournment or postponement of the Special Meeting, if necessary, to continue to solicit votes for Proposal Nos. 1, 2, and/or 3 (the "Adjournment Proposal" or "Proposal No. 4").

Only Company stockholders of record at the close of business on December 5, 2022 will be entitled to vote at the Special Meeting and any adjournment or postponement thereof.

On November 17, 2022, we announced an issuance of Series B Preferred Stock with multiple votes per share, to be paid to Company stockholders on December 2, 2022, with the intent of increasing the likelihood of receiving sufficient votes at the Special Meeting to approve Proposal 2. **Please note that the holders of this Series B Preferred Stock may only vote on Proposals 2 and 4 and their votes may only be cast in direct proportion to the final votes cast by the holders of the Common Stock**. As described in the accompanying proxy statement, the Series B Preferred Stock only serves to amplify the Common Stock voted in favor of the Reverse Stock Split Proposal.

Your vote is important. Whether or not you are able to attend the Special Meeting, it is important that your shares be represented. To ensure that your vote is recorded promptly, please vote as soon as possible, even if you plan to virtually attend the Special Meeting, by submitting your proxy via the Internet at the address listed on the proxy card or by signing, dating, and returning the proxy card.

Thank you for your ongoing support and continued interest in Idera Pharmaceuticals, Inc.

By order of the Board of Directors,

/s/ Vincent J. Milano

Vincent J. Milano
Chair of the Board

Exton, Pennsylvania
December 8, 2022

Important Notice Regarding the Availability of Proxy Materials for the Special Stockholders Meeting to Be Held on January 12, 2023:

This proxy statement is available at http://www.edocumentview.com/IDRA and is also available to any stockholder who wishes to receive a paper copy by calling Investor Relations at 484-348-1600 or by emailing ir@iderapharma.com.

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505 Eagleview Blvd., Suite 212
Exton, PA 19341
(484) 348-1600

PROXY STATEMENT

SPECIAL MEETING OF STOCKHOLDERS

To Be Held on January 12, 2023

INFORMATION CONCERNING SOLICITATION AND VOTING

This proxy statement contains information about the Special Meeting of Stockholders (the "Special Meeting") of Idera Pharmaceuticals, Inc. (the "Company," "Idera," "we," "us," or "our"), which will be held virtually, via live webcast at https://www.virtualmeetingportal.com/iderapharma/2023 on January 12, 2023 at 9:00 a.m. Eastern Time. The Company's Board of Directors (the "Board of Directors" or the "Board") is using this proxy statement to solicit proxies for the Special Meeting.

All properly submitted proxies will be voted in accordance with the instructions contained in those proxies. If no instructions are specified, the proxies will be voted in accordance with the recommendation of our Board of Directors with respect to each of the matters set forth in the accompanying Notice of Special Meeting. You may revoke your proxy at any time before it is exercised at the Special Meeting by giving our corporate secretary written notice to that effect, delivering to us another signed proxy card with a later date, voting by telephone or over the internet at a later date, or virtually attending the Special Meeting and voting online during the Special Meeting.

At the Special Meeting, the Company will ask stockholders:

1. To approve, in accordance with Nasdaq Listing Rule 5635(a), the issuance of shares of the common stock, par value $0.001 per share ("Common Stock"), upon conversion of the Company's Series Z Non-Voting Convertible Preferred Stock, par value $0.01 per share ("Series Z Preferred Stock"), issued in September 2022 (the "Conversion Proposal" or "Proposal No. 1");

2. To approve an amendment to the Restated Certificate of Incorporation to effect a reverse stock split of the Common Stock (the "Reverse Stock Split") at a ratio to be determined by the Board of Directors within a range of one-for-seventeen (1:17) and one-for-twenty-three (1:23) (or any number in between), to be effected in the sole discretion of the Board of Directors at any time within one year of the date of the Special Meeting without further approval or authorization from our stockholders (the "Reverse Stock Split Proposal" or "Proposal No. 2");

3. To approve the Idera Pharmaceuticals, Inc. 2022 Stock Incentive Plan (the "Equity Compensation Plan Proposal" or "Proposal No. 3"); and

4. To approve the adjournment or postponement of the Special Meeting, if necessary, to continue to solicit votes for Proposal Nos. 1, 2, and/or 3 (the "Adjournment Proposal" or "Proposal No. 4" and, together with Proposal Nos. 1, 2, and 3, the "Proposals").

After careful consideration, the Board of Directors approved the Proposals being submitted to a stockholder vote, and having determined that the Proposals are advisable, fair, and in the best interests of the Company and its stockholders, recommends that stockholders vote "FOR" each of the Proposals.

Your vote is important. Whether or not you expect to virtually attend the Special Meeting, please complete, date, sign, and promptly return the accompanying proxy card in the enclosed postage-paid envelope to ensure that your shares will be represented and voted at the Special Meeting. If you hold your shares in "street name" through a broker, you should follow the procedures provided by your broker.

This proxy statement is dated December 8, 2022 and is first being mailed to stockholders on or about December 9, 2022.

CAUTIONARY INFORMATION REGARDING FORWARD-LOOKING STATEMENTS

This proxy statement, and the documents incorporated by reference into this proxy statement, contains forward-looking statements within the meaning of the Private Securities Litigation Reform Act of 1995, including, but not limited to, statements regarding: the Company's strategy, anticipated clinical development milestones, future operations, future financial position, future revenue, projected expenses, prospects, plans and objectives of management or the expected features of or potential indications for the Company's product candidates, uses of proceeds, projected cash runways, and stockholder approval of the conversion rights of the Series Z Preferred Stock. The use of words such as, but not limited to, "anticipate," "believe," "continue," "could," "estimate," "expect," "intend," "may," "might," "plan," "potential," "predict," "project," "should," "target," "will," or "would" and similar words and expressions are intended to identify forward-looking statements. Forward-looking statements are neither historical facts nor assurances of future performance. Instead, they are based on our current beliefs, expectations and assumptions regarding the future of our business, future plans and strategies, our clinical results and other future conditions. New risks and uncertainties may emerge from time to time, and it is not possible to predict all risks and uncertainties. No representations or warranties (expressed or implied) are made about the accuracy of any such forward-looking statements. We may not actually achieve the forecasts disclosed in our forward-looking statements, and you should not place undue reliance on our forward-looking statements. Such forward-looking statements are subject to a number of material risks and uncertainties including but not limited to those set forth under the caption "Risk Factors" in this proxy statement and in the Company's most recent Annual Report on Form 10-K and Quarterly Report on Form 10-Q filed with the SEC, as well as discussions of potential risks, uncertainties, and other important factors in our subsequent filings with the SEC. Any forward-looking statement speaks only as of the date on which it was made. Neither we, nor our affiliates, advisors or representatives, undertake any obligation to publicly update or revise any forward-looking statement, whether as a result of new information, future events or otherwise, except as required by law. These forward-looking statements should not be relied upon as representing our views as of any date subsequent to the date hereof.

WEBSITES

Website addresses referenced in this proxy statement are provided for convenience only, and the content on the referenced websites does not constitute a part of this proxy statement.

OVERVIEW

QUESTIONS AND ANSWERS ABOUT THE SPECIAL MEETING

The following section provides answers to frequently asked questions about the Special Meeting. This section, however, only provides summary information. These questions and answers may not address all issues that may be important to you as a stockholder. You should carefully read this entire proxy statement, including each of the annexes.

Why am I receiving these materials, and who is soliciting my vote?

We sent you this proxy statement because our Board of Directors is soliciting your proxy to vote at the Special Meeting that the Company is holding, in part, in order to seek stockholder approval on certain matters in connection with our September 2022 acquisition (the "Acquisition") of Aceragen, Inc. ("Aceragen") and as described in further detail herein. This proxy statement summarizes the information you need to vote at the Special Meeting. You do not need to attend the Special Meeting to vote your shares.

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

On or about December 9, 2022, we will begin mailing our proxy materials, including the Notice of the Special Meeting, this proxy statement, and the accompanying proxy card or, for shares held in street name (i.e., shares held for your account by a broker or other nominee), a voting instruction form.

When and where will the Special Meeting take place?

We will be hosting the Special Meeting via live webcast only. The Special Meeting will be held virtually, via live webcast at https://www.virtualmeetingportal.com/iderapharma/2023 on January 12, 2023, at 9:00 a.m. Eastern Time. Regardless of whether you are the "record holder" of your shares or your shares are held in street name, if you held your shares as of the close of business on December 5, 2022, you are entitled to attend the Special Meeting. Stockholders may vote, submit questions, and view the stockholders while attending the Special Meeting online. The webcast will open 15 minutes before the start of the Special Meeting. Instructions on how to virtually attend and participate online are also available at https://www.virtualmeetingportal.com/iderapharma/2023. Information on how to vote online at the virtual Special Meeting is discussed below.

When is the record date for the Special Meeting?

The record date for determination of stockholders entitled to vote at the Special Meeting is the close of business on December 5, 2022, which we refer to as the "record date."

Who is entitled to vote at the Special Meeting?

Only holders of record of our Common Stock and Series B Preferred Stock, par value $0.01 per share ("Series B Preferred Stock") as of the record date will be entitled to notice of, and to vote at, the Special Meeting or any adjournment or postponement thereof.

How many votes can be cast by all stockholders?

There were 62,355,434 shares of our Common Stock and 62,355 shares of Series B Preferred Stock outstanding on the record date, all of which are entitled to vote with respect to all matters to be acted upon at the Special Meeting. Each outstanding share of Common Stock is entitled to one vote on each matter considered at the Special Meeting.

As previously announced, on November 17, 2022, the Board of Directors declared a dividend of one thousandth ($1/1,000^{th}$) of a share of Series B Preferred Stock, for each outstanding share of Common Stock to stockholders of record as of the close of business on November 28, 2022. The holders of the Series B Preferred Stock have 1,000,000 votes per whole share (i.e., 1,000 votes per one-thousandth of a share of Series B Preferred Stock) and are entitled to vote with the Common Stock, voting together as a single class, on the Reverse Stock Split Proposal, but are not otherwise entitled to vote on the other proposals to be

presented at the Special Meeting. Each share of Series B Preferred Stock redeemed pursuant to the Initial Redemption (as defined below) will have no voting power with respect to the Reverse Stock Split Proposal or any other matter. When a holder of Common Stock submits a vote on the Reverse Stock Split Proposal, the corresponding number of fractional shares of Series B Preferred Stock held by such holder will be automatically voted in a mirrored fashion. For example, if a stockholder holds 10 shares of Common Stock (entitled to one vote per share) and votes in favor of the Reverse Stock Split Proposal, then 10,010 votes will be recorded in favor of the Reverse Stock Split Proposal, because the Series B Preferred Stock will automatically be voted in favor of the Reverse Stock Split Proposal alongside the Common Stock.

All shares of Series B Preferred Stock that are not virtually present in person or by proxy at the Special Meeting as of immediately prior to the opening of the polls at the Special Meeting will be automatically redeemed (the "Initial Redemption"). Any outstanding shares of Series B Preferred Stock that have not been redeemed pursuant to the Initial Redemption will be redeemed in whole, but not in part, (i) if and when ordered by our Board or (ii) automatically upon the approval by the Company's stockholders of the Reverse Stock Split Proposal at any meeting of the stockholders held for the purpose of voting on such proposal.

On the record date, there were 80,656 shares of Series Z Preferred Stock issued and outstanding; the Series Z Preferred Stock is a non-voting class and therefore is not entitled to vote on the matters being considered at the Special Meeting. On the record date, there were five shares of Series X Preferred Stock, par value $0.01 per share ("Series X Preferred Stock"), issued and outstanding; the Series X Preferred Stock is a non-voting class and therefore is not entitled to vote on the matters being considered at the Special Meeting.

Of the shares of Common Stock issued and outstanding and entitled to vote, 7,677,411 shares of Common Stock were issued as consideration in our Acquisition of Aceragen. These 7,677,411 shares of Common Stock are not entitled to vote on Proposal No. 1 for purposes of the listing rules of the Nasdaq Stock Market ("Nasdaq"). The Company anticipates that these 7,677,411 shares of Common Stock will be voted in favor of Proposal No. 1 for purposes of adopting the proposal under Delaware law. However, to comply with Nasdaq rules, the Company will instruct the inspector of elections to conduct a separate tabulation that subtracts 7,677,411 shares of Common Stock from the total number of shares voted in favor of Proposal No. 1 to determine whether that proposal has been adopted in accordance with applicable Nasdaq rules.

How do I vote?

If you are a stockholder of record (meaning that you hold shares in your name in the records of our transfer agent, Computershare Trust Company, N.A. ("Computershare"), and that your shares are not held in "street name" by a bank or brokerage firm), you may vote your shares in any one of the following ways:

- *By internet.* To vote over the internet through services provided by Computershare, please go to the following website: http://www.investorvote.com/IDRA and follow the instructions at that site for submitting your proxy. If you vote over the internet, you do not need to complete and mail your proxy card.
- *By telephone.* To vote by telephone through services provided by Computershare, call 1-800-652-VOTE (8683), and follow the instructions provided on the proxy card that accompanies this proxy statement. If you vote by telephone, you do not need to complete and mail your proxy card.
- *By mail.* If you requested printed proxy materials, you need to complete, date, and sign the proxy card that accompanies this proxy statement and promptly mail it in the enclosed postage-prepaid envelope. You do not need to put a stamp on the enclosed envelope if you mail it from within the United States. If you are mailed or otherwise receive or obtain a proxy card, and you choose to vote by telephone or by Internet, you do not have to return your proxy card.
- *At the Special Meeting.* To vote during the Special Meeting, virtually attend the Special Meeting by visiting https://www.virtualmeetingportal.com/iderapharma/2023, where stockholders may submit questions, and view the stockholder list during the Special Meeting. The meeting starts at 9:00 a.m. Eastern Time. You may vote online during the Special Meeting at http://www.investorvote.com/IDRA.

Your proxy will only be valid if you complete and return the proxy card, vote by telephone, vote over the internet before the Special Meeting, or vote online during the Special Meeting. The persons named in the proxy card will vote the shares you own in accordance with your instructions on your proxy card, in your vote by telephone, or in your vote over the internet. If you return the proxy card, vote by telephone, or vote over the internet, but do not give any instructions on a particular matter described in this proxy statement, the persons named in the proxy card will vote the shares you own in accordance with the recommendations of our Board of Directors.

How do I vote my shares if I hold them in "street name"?

If the shares you own are held in "street name" by a bank or brokerage firm, your bank or brokerage firm, as the record holder of your shares, is required to vote your shares according to your instructions. In order to vote your shares, you will need to follow the directions that your bank or brokerage firm provides to you. Many banks and brokerage firms solicit voting instructions over the internet or by telephone. Even if your shares are held in street name, you are welcome to attend the Special Meeting if you have a legal proxy to attend. If your shares are held in street name, you may not vote your shares online during the Special Meeting unless you obtain a "legal proxy," executed in your favor, from the holder of record (i.e., your bank or brokerage firm). If you hold your shares in street name and wish to vote online during the Special Meeting, please contact your bank or brokerage firm before the Special Meeting to obtain the necessary proxy from the holder of record. You must then submit the legal proxy to the Company by 5:00 p.m., Eastern Time, on January 11, 2023. Legal proxies may be submitted by mail to Corporate Secretary, Idera Pharmaceuticals, Inc., 505 Eagleview Boulevard, Suite 212, Exton, Pennsylvania 19341; or by email to legal@iderapharma.com.

If the beneficial owner does not provide voting instructions, banks and brokerage firms cannot vote the shares with respect to "non-routine" matters but can vote the shares with respect to "routine" matters. "Broker non-votes" occur when a beneficial owner of shares held in street name fails to provide instructions to the bank or brokerage firm holding the shares as to how to vote on matters deemed "non-routine." We believe Proposal No. 1 (Conversion Proposal), Proposal No. 2 (Reverse Stock Split Proposal), Proposal No. 3 (Equity Compensation Plan Proposal), and Proposal No. 4 (the Adjournment Proposal) are each considered non-routine under applicable New York Stock Exchange rules. Thus, your broker, bank, or other nominee would not be able to vote on such non-routine matters. As noted above, if your shares are held in street name, your broker, bank, or other nominee will provide you with an instructional letter on how to vote your shares without attending the Special Meeting.

The votes of the Series B Preferred Stock on Proposal 2 will mirror the votes cast by holders of Common Stock, without giving effect to abstentions or broker non-votes by holders of Common Stock. Because the voting standard for Proposal 2 is a majority of the combined voting power of the shares of Common Stock and Series B Preferred Stock issued and outstanding and entitled to vote on the proposal, voting together and counted as a single class, abstentions and broker non-votes will, in one sense, have the effect of a vote "AGAINST" the proposal. However, because the Series B Preferred Stock has 1,000,000 votes per share on the reverse split proposal (or a total of 62,355,000,000 votes), and such votes must be counted by us in the same proportion as the aggregate shares of Common Stock voted on the Reverse Stock Split Proposal without giving effect to broker non-votes or abstentions, the failure of a share of Common Stock to be voted on Proposal 2 will effectively have no impact on the outcome of the vote.

How do I change my vote?

If you are a stockholder of record, even if you complete and return a proxy card or vote by telephone or over the internet, you may change or revoke your vote at any time before your proxy is exercised by taking one of the following actions:

- send written notice to our Corporate Secretary, Bryant Lim, at our address above, stating that you wish to revoke your vote;
- deliver to us another signed proxy card with a later date or vote by telephone or over the internet at a later date; or

- attend the Special Meeting and vote online at the Special Meeting. Note that virtual attendance at the Special Meeting alone will not revoke your vote; you must vote online during the Special Meeting.

If you own shares in street name, your bank or brokerage firm should provide you with instructions for changing or revoking your vote.

How is a quorum reached?

In order for business to be conducted at the Special Meeting, a quorum must be present. A quorum consists of the holders of at least one-third of the shares of our Common Stock issued and outstanding and entitled to vote at the Special Meeting. Shares of Series B Preferred Stock are not counted for purposes of determining whether or not a quorum is present at the Special Meeting.

Shares of Common Stock present or represented by proxy (including broker non-votes and shares that are abstained or withheld or with respect to which no voting instructions are provided for one or more of the matters to be voted upon) will be counted for the purpose of determining whether a quorum exists.

If a quorum is not present, the Special Meeting will be adjourned until a quorum is obtained.

What proposals will be voted on at the Special Meeting?

There are four proposals scheduled to be voted on at the Special Meeting:

- **Proposal No. 1** — Approval of the issuance of shares of Common Stock upon conversion of the Series Z Preferred Stock.
- **Proposal No. 2** — Approval of the amendment of the Restated Certificate of Incorporation to effect the Reverse Stock Split.
- **Proposal No. 3** — Approval of the Idera Pharmaceuticals, Inc. 2022 Stock Incentive Plan.
- **Proposal No. 4** — Approval of the adjournment or postponement of the Special Meeting, if necessary, to continue to solicit votes for Proposal Nos. 1, 2, and/or 3.

What vote is required to approve each item at the Special Meeting?

You may vote "for," "against," or "abstain" on each of the Proposals being presented before our stockholders. Under our Second Amended and Restated Bylaws ("Bylaws"), any proposal other than an election of directors is decided by a majority of the votes present or represented and voting on the matter, except where a larger vote is required by law or by our Restated Certificate of Incorporation or our Bylaws.

- **Proposal No. 1** — The affirmative vote of the holders of shares of Common Stock representing a majority of the votes present or represented and voting on the matter is required for the approval of the Conversion Proposal. Broker non-votes (if any) and abstentions will not be counted as votes cast on the matter and will have no effect on the outcome of this proposal.
- **Proposal No. 2** — The affirmative vote of the holders of shares of Common Stock and Series B Preferred Stock, voting together as a single class, representing a majority of the Common Stock and Series B Preferred Stock issued and outstanding is required for the approval of the Reverse Stock Split Proposal. Broker non-votes (if any) and abstentions will have the same effect as votes cast against the proposal.
- **Proposal No. 3** — The affirmative vote of the holders of shares of Common Stock representing a majority of the votes present or represented and voting on the matter is required for the approval of the Equity Compensation Plan Proposal. Broker non-votes (if any) and abstentions will not be counted as votes cast on the matter and will have no effect on the outcome of this proposal.
- **Proposal No. 4** — If a quorum is present at the Special Meeting, the affirmative vote of the holders of shares of Common Stock and Series B Preferred Stock representing a majority of the votes present or represented and voting on the matter is required for the approval of the Adjournment Proposal. If a quorum is not present at the Special Meeting, the affirmative vote of the holders of a majority of the shares of Common Stock present at the Special Meeting or represented by proxy is required for

the approval of the Adjournment Proposal. Broker non-votes (if any) and abstentions will not be counted as votes cast on the matter and will have no effect on the outcome of this proposal.

Please refer to the discussion above under "*How many votes can be cast by all stockholders?*" for a description of the Series B Preferred Stock, which is entitled to be voted together with the Common Stock as a single class on the Reverse Stock Split Proposal and the Adjournment Proposal. Shares of Series B Preferred Stock that are not present in person or by proxy as of immediately prior to the opening of the polls will be automatically redeemed in the Initial Redemption and, therefore, will not be outstanding or entitled to vote on either the Reverse Stock Split Proposal or the Adjournment Proposal and will be excluded from the calculation as to whether such proposals pass at the Special Meeting. Due to the voting power of the shares of Series B Preferred Stock that are not redeemed pursuant to the Initial Redemption on the Reverse Stock Split Proposal and the Adjournment Proposal, the holders of Common Stock that submit a proxy to vote their shares at the Special Meeting or virtually attend the Special Meeting will effectively have enhanced voting power on the three proposals over holders of Common Stock that are not represented in person or by proxy at the Special Meeting. This means that the Reverse Stock Split Proposal and the Adjournment Proposal could each be approved by the affirmative vote of the holders of less than a majority of the outstanding shares of our Common Stock.

Do I have appraisal rights?

No. Our stockholders are not entitled to dissenters' or appraisal rights under the Delaware General Corporation Law with respect to any of the Proposals being voted on.

How is the vote counted?

If you are a stockholder of record, you have the right to direct the voting of your shares by voting over the Internet, by telephone, by returning your proxy by mail, or by virtually attending the Special Meeting and voting online during the Special Meeting. In contrast, if you are a beneficial owner and your shares are held in an account at a bank or at a brokerage firm or other nominee hold, you must tell your bank, broker or other nominee how you would like your shares to be voted, which you can do by following the instructions provided to you by the bank, broker, or other nominee.

Who will count the vote?

The votes will be counted, tabulated, and certified by an inspector of elections appointed by the Board of Directors.

How does the Board of Directors recommend that I vote on the Proposals?

The Board of Directors recommends that you vote:

- **Proposal No. 1** — FOR the approval of the Conversion Proposal.
- **Proposal No. 2** — FOR the approval of the Reverse Stock Split Proposal.
- **Proposal No. 3** — FOR the approval of the Equity Compensation Plan Proposal.
- **Proposal No. 4** — FOR the approval of the Adjournment Proposal.

Who is making and paying for the solicitation of proxies and how is it made?

We are making the solicitation and will bear the costs of soliciting proxies. In addition to solicitations by mail, our directors, officers, and employees, without additional remuneration, may solicit proxies by telephone, text message, facsimile, email, personal interviews, and other means. We have engaged MacKenzie Partners, Inc. ("MacKenzie") to serve as our proxy solicitor to distribute our proxy materials and solicit proxies, and the estimated fee for these services is $15,000, plus reimbursement for reasonable disbursements. We have requested that brokerage houses, custodians, nominees, and fiduciaries forward copies of the proxy materials to the persons for whom they hold shares and request instructions for voting the proxies. We will reimburse the brokerage houses and other persons for their reasonable out-of-pocket expenses in connection with this distribution.

How can I know the voting results?

We plan to announce preliminary voting results at the Special Meeting and will report the final results in a Current Report on Form 8-K to be filed with the Securities and Exchange Commission ("SEC") within four business days following the Special Meeting.

Will stockholders have the ability to unwind the Acquisition if they do not approve the Conversion Proposal?

No, the Acquisition closed on September 28, 2022, and stockholder approval of the Conversion Proposal was not a condition to the Acquisition. If we do not receive stockholder approval for the Conversion Proposal, the Series Z Preferred Stock will not convert into Common Stock, but this will not have the effect of unwinding the Acquisition. If stockholders have not approved the conversion of the Series Z Preferred Stock into Common Stock by March 28, 2023 (six months from the closing date of the Acquisition), then, upon any attempted conversion, holders of Series Z Preferred Stock may thereafter require the Company to repurchase the Series Z Preferred Stock at the then-current fair value (as such term is defined in the Series Z Certificate of Designation) of the underlying Common Stock.

Will the Common Stock issuable upon the conversion of the Series Z Preferred Stock have preemptive rights?

No, if the Conversion Proposal is approved the addition of shares of Common Stock issuable upon the conversion of the Series Z Preferred Stock will not have preemptive rights.

Who can provide me with additional information and help answer my questions?

If you would like additional copies, without charge, of this proxy statement or if you have questions about the proposals being considered at the Special Meeting, including the procedures for voting your shares, you should contact MacKenzie, the Company's proxy solicitor, by telephone at (212) 929-5500.

RISK FACTOR SUMMARY

The following summarizes the principal factors that make an investment in the Company speculative or risky, all of which are more fully described in the Risk Factors section below. This summary should be read in conjunction with the Risk Factors section and should not be relied upon as an exhaustive summary of the material risks facing our business. The occurrence of any of these risks could harm our business, financial condition, results of operations and/or growth prospects or cause our actual results to differ materially from those contained in forward-looking statements we have made in this proxy statement and those we may make from time to time. You should consider all of the risk factors described in our public filings when evaluating our business.

Risks Relating to Our Financial Position and Need for Additional Capital

- We may not be able to comply with Nasdaq's initial listing standards, which we are required to meet as a result of the Acquisition.
- There is no guarantee that the Acquisition of Aceragen by us will increase stockholder value.
- Our stock price has been and may continue to be volatile, and the value of an investment in our Common Stock may decline.
- We will need additional financing, which may be difficult to obtain on terms attractive to us or at all. Raising additional capital may cause dilution to our stockholders, restrict our operations, or require us to relinquish rights.
- If we are unable to raise capital when needed, we could be forced to delay, reduce, or eliminate our product development programs or commercialization efforts.
- Holders of our Series X Preferred Stock have rights, preferences, and privileges that are not held by, and are preferential to, the rights of our Common Stock, which could adversely affect our liquidity and financial condition, and may result in the interests of the holders of our Series X Preferred Stock differing from those of the holders of Common Stock.
- We expect that we will continue to incur net losses in the foreseeable future.

Risks Relating to Our Business and Strategy

- As a small biopharmaceutical-focused company with limited resources, we may be unable to attract and retain qualified personnel.
- If we lose any of our officers or key employees, our management and technical expertise could be weakened significantly.
- We are depending heavily on the development, regulatory approval, U.S. federal funding, and commercialization of drug candidates. If we are unable to successfully develop and commercialize drug candidates, or experience significant delays in doing so, our business may be materially harmed.
- Our recent organizational changes undertaken to align to our focus on business strategy and business development may not be successful.
- If we experience delays or difficulties in the enrollment of patients in clinical trials, our receipt of necessary regulatory approvals could be delayed or prevented entirely.
- If our clinical trials are unsuccessful, delayed, or terminated for any reason, we may not be able to develop and commercialize our drug candidates.
- The technologies on which we rely are unproven and may not result in any approved and marketable products.
- We face substantial competition, which may result in others discovering, developing, or commercializing drugs before or more successfully than us.
- Our business could be adversely affected by the effects of health epidemics, such as the ongoing COVID-19 global pandemic, including disruptions to our clinical trials or the delay of regulatory approvals.

Risks Related to Regulatory Approval and Marketing and Other Compliance Matters

- Even if we complete the necessary preclinical studies and clinical trials, the marketing approval process is expensive, time-consuming, and uncertain and may prevent us from obtaining approvals for the commercialization of some or all of our drug candidates.
- Our failure to obtain marketing approval in foreign jurisdictions would prevent our drug candidates from being marketed abroad, which subjects us to additional business risks that could adversely affect our operations.
- Even if we, or any future collaborators, obtain marketing approvals for our drug candidates, the terms of approvals and ongoing regulation of our drugs may limit how we, or they, manufacture and market our drugs, which could materially impair our ability to generate revenue.
- Any of our drug candidates for which we, or our future collaborators, obtain marketing approval in the future could be subject to post-approval restrictions or withdrawal from the market and we, and our future collaborators, may be subject to substantial penalties if we, or they, fail to comply with regulatory requirements or if we, or they, experience unanticipated problems with our drugs following approval.
- We may not be able to obtain or maintain orphan drug exclusivity for applications of our drug candidates.
- Breakthrough Therapy Designation ("BTD"), Fast Track designation, or Rare Pediatric Disease designation by the United States Federal Drug Administration ("FDA"), and equivalents granted by other regulatory authorities, even if granted for any of our product candidates developed for therapeutic indications, may not lead to a faster development, regulatory review, or approval process, and it does not increase the likelihood that any of our product candidates will receive marketing approval in any jurisdiction.
- We may seek priority review designation for one or more of our product candidates for therapeutic indications, but we might not receive such designation, and even if we do, such designation may not lead to a faster regulatory review or approval process.
- A Fast Track designation, Qualified Infectious Disease Product ("QIDP"), BTD, or other expedited designation for our drug candidates may not lead to a faster development or regulatory review or approval process, and it does not increase the likelihood that those drug candidates will receive marketing approval.
- We have only limited experience in regulatory affairs and our drug candidates are based on new technologies; these factors may affect our ability or the time we require to obtain necessary regulatory approvals.
- We are subject to extensive and costly governmental regulation, the violation of which could expose us to criminal sanctions, civil penalties, contractual damages, reputational harm, and diminished profits and future earnings.
- We depend on information technology, infrastructure, and data to conduct our business. Any significant disruption, or cyberattacks, could have a material adverse effect on our business.

Risks Relating to Collaborators

- Our existing collaborations and any collaborations we enter into in the future may not be successful.
- If we are unable to establish additional collaborative alliances, our business may be materially harmed.

Risks Relating to Intellectual Property & Exclusivity

- If we are unable to obtain and maintain patent protection for our discoveries, the value of our technology and products will be adversely affected.
- Third parties may own or control patents or patent applications and require us to seek licenses, which could increase our development and commercialization costs, or prevent us from developing or marketing products.

- Our intellectual property may be infringed by a third party.
- We may not be able to obtain orphan drug designation or obtain or maintain the benefits associated with orphan drug designation, such as orphan drug exclusivity and, even if they do, that exclusivity may not prevent the FDA or other comparable foreign regulatory authorities from approving competing products.

Risks Relating to Product Manufacturing Marketing and Sales, and Reliance on Third Parties

- Even if the compounds we may develop are successful in clinical trials and receive regulatory approvals, we or our collaboration partners may not be able to successfully commercialize them.
- Because we have limited manufacturing experience, and no manufacturing facilities or infrastructure, we are dependent on third-party manufacturers to manufacture drug candidates for us.
- We have no experience selling, marketing, or distributing potential products and no internal capability to do so.
- If third parties on whom we rely for clinical and preclinical trials do not perform as contractually required or as we expect, we may not be able to obtain regulatory approval for or commercialize our drug candidates and our business may suffer.
- The commercial success of any drug candidates that we may develop will depend upon the degree of market acceptance by physicians, patients, third-party payors, and others in the medical community.
- If we are unable to obtain adequate reimbursement from third-party payors for any products that we may develop or acceptable prices for those products, our revenues and prospects for profitability will suffer.
- We face a risk of product liability claims and may not be able to obtain insurance.

Risks Relating to Ownership of Our Common Stock

- Pursuant to the terms of the Agreement and Plan of Merger, dated September 28, 2022, by and among the Company, Bell Merger Sub I, Inc., Bell Merger Sub II, LLC and Aceragen, Inc. (the "Merger Agreement"), we are required to recommend that our stockholders approve the conversion of all outstanding shares of our Series Z Preferred Stock into shares of our Common Stock. We cannot guarantee that our stockholders will approve this matter, and if they fail to do so, our operations may be materially harmed.
- Nasdaq may delist our Common Stock from its exchange, which could limit your ability to make transactions in our securities and subject us to additional trading restrictions.
- Provisions in our Restated Certificate of Incorporation and Bylaws, and Delaware law may prevent a change in control that stockholders may consider desirable.
- The Company's Bylaws provide, to the fullest extent permitted by law, that the Court of Chancery of the State of Delaware will be the exclusive forum for certain legal actions between the Company and its stockholders, which could increase costs to bring a claim, discourage claims, or limit the ability of the Company's stockholders to bring a claim in a judicial forum viewed by the stockholders as more favorable for disputes with the Company or the Company's directors, officers, or other employees.
- Approximately 16% of our outstanding Common Stock is held (19.9% beneficially owned) by one stockholder. If this significant stockholder chooses to act, they could exert substantial influence over our business, and the interests of this stockholder may conflict with those of other stockholders.
- Our principal stockholders own a significant percentage of our capital stock and will be able to exert significant control over matters subject to stockholder approval.
- The issuance or sale of shares of our Common Stock could depress the trading price of our Common Stock.
- Because we do not intend to pay dividends on our Common Stock, investor returns will be limited to any increase in the value of our stock.

Risks Relating to the Reverse Stock Split

- Our expected appeal to Nasdaq may not be successful.
- We cannot assure you that the proposed Reverse Stock Split will increase the price of the Common Stock.
- We may not satisfy the Nasdaq continued listing requirements following the Reverse Stock Split.
- The proposed Reverse Stock Split may decrease the liquidity of the Common Stock and result in higher transaction costs.

DESCRIPTION OF THE TRANSACTIONS

Acquisition of Aceragen, Inc.

On September 28, 2022 (the "Effective Date"), the Company acquired Aceragen, pursuant to the Merger Agreement, after which time Aceragen became a wholly-owned subsidiary of the Company (the "Acquisition"). Following the Acquisition, the Company shifted its focus to advancing transformational therapeutics for rare and orphan diseases, including ACG-701, an oral small molecule candidate for cystic fibrosis pulmonary exacerbations, melioidosis, and potentially other diseases. The Company also plans to focus on developing ACG-801 (rhAC), an investigational enzyme replacement therapy for the treatment of patients with Farber disease and potentially other diseases associated with the dysregulation of ceramide metabolism. Following the Acquisition, the Company's principal executive offices remain in Exton, Pennsylvania.

Aceragen was incorporated on January 19, 2021. Prior to the Acquisition, Aceragen had seven (7) stockholders. The Company has included a pro forma balance sheet reflecting the net assets acquired as if the net assets were acquired on September 30, 2022 as *Annex D* to this proxy statement.

The estimated consideration for the Acquisition of Aceragen was approximately $55.7 million.

Under the terms of the Merger Agreement, Idera issued to the common stockholders of Aceragen 7,677,411 shares of Common Stock and 80,656 shares of Series Z Preferred Stock, which was a newly designated series of preferred stock that is intended to have economic rights equivalent to the Common Stock, but with limited voting rights. Additionally, the Company allocated 80,656,000 shares of Common Stock for issuance in connection with the Acquisition. The rights of the Series Z Preferred Stock are set forth in a Certificate of Designation of Preferences, Rights and Limitations that Idera filed with the Secretary of State of the State of Delaware (the "Series Z Certificate of Designation") on September 28, 2022. Please see "Description of Series Z Preferred Stock" under Proposal No. 1 for a complete description of the Series Z Certificate of Designation and the rights of the Series Z Preferred Stock.

Additionally, under the terms of the Merger Agreement, at the closing of the Acquisition, Idera also issued to NovaQuest Co-Investment Fund XV, L.P., a Delaware limited partnership and stockholder of Aceragen ("NovaQuest"), five shares of Idera's Series X Non-Voting Preferred Stock. The rights of the Series X Preferred Stock are set forth in a Certificate of Designation of Preferences, Rights and Limitations that Idera filed with the Secretary of State of the State of Delaware (the "Series X Certificate of Designation") on September 28, 2022.

Conversion of Series Z Preferred Stock

Subject to stockholder approval of Proposal No. 1, each share of Series Z Preferred Stock will be convertible into approximately 1,000 shares of Common Stock. If stockholders have not approved the conversion of the Series Z Preferred Stock into Common Stock by March 28, 2023 (six months from the closing date of the Acquisition), then, upon any attempted conversion, holders of Series Z Preferred Stock may thereafter require the Company to repurchase the Series Z Preferred Stock at the then-current fair value (as such term is defined in the Series Z Certificate of Designation) of the underlying Common Stock.

Regulatory Approval

No state or federal regulatory approval is required in connection with the terms of the transactions described above or under the terms of the Merger Agreement.

BACKGROUND AND REASONS FOR THE TRANSACTIONS

During calendar year 2021 through April 2022 (the "2021 Outreach"), Idera evaluated 92 total strategic opportunities, which spanned across a number of therapeutic areas, from oncology, hematology, immunology, and rare diseases, involving a number of technologies, such as cell therapy, vaccines, biologics, and drugs. During this period Idera made several announcements between March and May of 2021 relating to the ILLUMINATE-301, Idera's pivotal registration trial of tilsotolimod in combination with ipilimumab versus ipilimumab alone in patients with anti-PD-1 refractory advanced melanoma (the "ILLUMINATE-301 Trial"), including that it did not meet its primary endpoint of objective response rate. On each of the opportunities, various levels of assessment were conducted. Although certain parties entered into confidentiality agreements with Idera, conducted two-way due diligence, and/or exchanged term sheets with Idera with respect to these strategic opportunities, all such opportunities were eventually declined (and none resulted in any definitive transaction) by Idera after consultation with its Business Development Committee of the Board for multiple reasons. These reasons ranged from Idera's lack of clinical conviction, the stage of development, regulatory uncertainty, CMC (manufacturing) concerns, and competition in the therapeutic area being developed, all of which demonstrated that the potential to enhance stockholder value with such opportunities was unlikely.

On March 31, 2022, Idera publicly announced it was evaluating strategic alternatives and that it had engaged JMP Securities LLC ("JMP") to explore additional strategic alternatives for Idera beyond traditional acquisition or in-licensing opportunities. These additional strategic alternatives included the potential for a reverse merger, a transaction in which one or more Idera subsidiaries would merge with and into another company, with Idera surviving as the parent company and the other company continuing as an Idera subsidiary. A reverse merger was considered as a potential transaction structure, given Idera's cash position and its status as a public company. Idera engaged JMP, among other reasons, because JMP is nationally recognized as having investment banking professionals with significant experience in investment banking and mergers and acquisitions transactions involving life sciences companies.

JMP commenced initial 2022 outreach activities (the "2022 Outreach") during the first week of April 2022, with outreach being made to 60 companies (one of which had been contacted previously during the 2021 Outreach), 28 service providers (investment banks, lawyers, accountants, etc.), and 26 institutional investors.

As part of the 2022 Outreach process, Idera and various counterparties entered into a total of 23 nondisclosure agreements containing customary terms regarding protections of confidentiality. All of the nondisclosure agreements included standstill provisions, but, in each instance, such conditions were subject to automatic termination upon the occurrence of certain events and are no longer in effect.

The 2022 Outreach process culminated in 14 first-round proposals submitted on May 13, 2022.

On May 17, 2022, Idera's management discussed all of the parties that had submitted proposals and selected Aceragen and three other potential targets to advance to the second round of the process.

Starting the week of May 23, 2022, Aceragen and the three other potential targets each presented to Idera's management on their pipeline product(s), development path to approval and ongoing capital needs. The targets proceeded to conduct a mutual diligence exercise with Idera.

On June 14, 2022, Idera's management made presentations regarding its assessment of Aceragen and the other three second-round targets' pipeline product(s), development path and ongoing capital needs to the Board of Directors based on the ongoing diligence processes.

By June 24, 2022, JMP received three second-round proposals, one from Aceragen and two of the other three second-round targets in the form of non-binding letters-of-intent. On July 11, 2022, Idera's management made presentations regarding its assessment of Aceragen and the two other second-round targets to the Board of Directors based on the ongoing diligence processes.

On July 28, 2022, Idera's management presented to the Board of Directors their recommendation to select Aceragen as the target of the Acquisition and to enter into exclusivity with Aceragen due to various factors, including but not limited to, its clinical stage of development, lack of near-term requisite capital to

fund operations, and near-term inflection points. Idera's management recommended to discontinue discussions with the two remaining other potential targets, only one of which was given serious consideration as a potential reverse merger partner in addition to Aceragen, because Idera's management did not believe that continuing such discussions would enhance stockholder value. This belief was based on a number of factors, including but not limited to, the required capital to fund operations and the lack of inflection points over a certain duration.

From August 2022 through late-September 2022, Morgan, Lewis & Bockius LLP, counsel to Idera ("MLB"), and Fenwick & West LLP, counsel to Aceragen ("Fenwick"), prepared and exchanged numerous drafts of the Merger Agreement and related transaction documents. During this period, Idera's management presented three times to the Board of Directors to provide updates on developments and progress relating to the proposed merger with Aceragen. During this period, Idera and Aceragen explored a potential private placement financing transaction with third parties but concluded that such a financing within the parties desired timing and on reasonably acceptable terms was not feasible.

During the course of negotiations on the Merger Agreement during September 2022, the parties engaged in dialogue with the holder of Aceragen's preferred stock. These negotiations resulted in Idera's agreement to issue a new series of Series X Preferred Stock to such holder containing several comparable terms to their existing shares of Aceragen preferred stock. On September 23, 2022, MLB exchanged a draft of the Merger Agreement with Fenwick, which added the terms of the issuance of the Series X Preferred Stock.

Between September 23, 2022 and September 28, 2022, the parties finalized the terms of the Merger Agreement and the other related transaction documents and submitted the final Merger Agreement and terms of the Acquisition to the Board of Directors for approval on September 27, 2022 and again on September 28, 2022. In approving the Merger Agreement and the Acquisition, the Board of Directors considered the pros and cons of the Acquisition versus other alternatives, including continuing to focus Idera's resources on Idera's legacy research and development pipeline, other potential business development opportunities reviewed by the Board of Directors, and the opportunities and risks presented with the Acquisition. In particular, the Board of Directors took into account the following events, facts and circumstances in approving the Acquisition:

- In light of the paucity of other potentially compelling opportunities and Idera's limited capital resources, the Board of Directors initiated a process to explore strategic options intended to maximize stockholder value. The Board of Directors engaged financial advisors to assist in the review and evaluation of strategic options, including an acquisition, merger, business combination, in-licensing, or other strategic transactions.
- The Board of Directors believes, after a thorough review of strategic alternatives and discussions with Idera senior management, financial advisors and legal counsel, that the Acquisition is more favorable to Idera's stockholders than the potential value that might have resulted from other strategic options available to Idera, including a liquidation of Idera and the distribution of any available cash. Based on an analysis of estimated cash balances and post-liquidation costs, the liquidation of Idera would result in a payment of $0.20 per fully diluted share, representing $0.17 less per share than the value of the equity split on a per share basis at close on September 28, 2022.
- The Board of Directors believes that, as a result of arm's length negotiations with Aceragen, Idera and its management team negotiated the most favorable equity split for Idera stockholders that Aceragen was willing to agree to, and that the terms of the Merger Agreement include the most favorable terms to Idera in the aggregate to which Aceragen was willing to agree.

On September 28, 2022, the Board of Directors approved the Merger Agreement and the terms of the Acquisition and the Merger Agreement was signed and the Acquisition closed.

MATERIAL CONTRACTS ENTERED INTO AND ASSUMED IN THE ACQUISITION

Lock-up Agreements

Concurrently and in connection with the execution of the Merger Agreement, certain stockholders of Aceragen and of the Company as of immediately prior to the Acquisition, and the directors and officers of the Company (solely in their capacity as stockholders), entered into customary lock-up agreements with the Company and Aceragen, pursuant to which each such stockholder will be subject to a 180-day lock-up on the sale or transfer of shares of Common Stock held by each such stockholder at the closing of the Acquisition, including those shares received by Aceragen stockholders in the Acquisition (the "Lock-up Agreements"), subject to certain customary exceptions (including that Pillar Partners Foundation, L.P. and its affiliates ("Pillar Partners") shall have, pursuant to its individual Lock-up Agreement, the right to sell up to 450,000 shares of Common Stock in between the execution date of the Merger Agreement and the Special Meeting).

The foregoing description of the Lock-up Agreements does not purport to be complete and is qualified in its entirety by reference to the form of the Lock-up Agreement, which is provided as Exhibit B to the Merger Agreement, which was filed as Exhibit 2.1 to the Company's Current Report on Form 8-K filed with the SEC on September 30, 2022.

Support Agreements

In connection with the execution of the Merger Agreement, the Company and Aceragen entered into stockholder support agreements (the "Support Agreements") with the Company's directors and officers (solely in their capacity as stockholders) and Pillar Partners as of immediately prior to the Acquisition. The Support Agreements provide that, among other things, each of such stockholders has agreed to vote or cause to be voted all of the shares of Common Stock owned by such stockholder in favor of the Conversion Proposal and the Reverse Stock Split Proposal (together, the "Merger Agreement Meeting Proposals") at the Special Meeting to be held in connection therewith. The Support Agreement with Pillar Partners also contains an exception allowing Pillar Partners to sell up to 450,000 shares of Common Stock in between the execution date of the Merger Agreement and the Special Meeting.

The foregoing description of the Support Agreements does not purport to be complete and is qualified in its entirety by reference to the form of the Support Agreement, which is provided as Exhibit C to the Merger Agreement, which was filed as Exhibit 2.1 to the Company's Current Report on Form 8-K filed with the SEC on September 30, 2022.

NovaQuest Side Letter

In addition, on the Effective Date, the Company, Bell Merger Sub II, LLC, a Delaware limited liability company and wholly-owned subsidiary of the Company, and NovaQuest entered into a side letter agreement (the "NovaQuest Side Letter"), pursuant to which: (i) NovaQuest was granted customary observer rights to have a managing director or investment professional of NovaQuest Capital Management, L.L.C. attend all meetings of the Board of Directors and all meetings of the Audit Committee, Compensation Committee, and Nominating and Corporate Governance Committee thereof in a non-voting capacity until such time as NovaQuest no longer beneficially owns shares of Series X Preferred Stock; (ii) the Company agreed to grant NovaQuest customary registration rights in the event the Company in the future grants registration rights to any investor or equity holder with respect to shares of the Company's capital stock; and (iii) the Company acknowledged and agreed that pursuant to the terms of the Series X Preferred Stock Certificate of Designation, the Company shall not authorize or issue shares of its capital stock unless the same ranks junior to the Series X Preferred Stock, or increase the authorized number of shares of Series X Preferred Stock or any additional class of capital stock unless the same ranks junior to the Series X Preferred Stock, in each case until such time as NovaQuest no longer beneficially owns shares of Series X Preferred Stock.

The foregoing description of the NovaQuest Side Letter does not purport to be complete and is qualified in its entirety by reference to the NovaQuest Side Letter, which was filed as Exhibit 10.7 to the Company's Quarterly Report on Form 10-Q filed with the SEC on November 14, 2022.

Purchase Agreement

Holders of Series X Preferred Stock are entitled to receive distributions on shares of Series X Preferred Stock as set forth in (a) that certain Stock and Warrant Purchase Agreement, dated as of March 24, 2021, by and between Aceragen and NovaQuest, as amended by that Amendment, dated October 25, 2021, and as such agreement may be amended from time to time (the "Purchase Agreement"), and (b) that certain Sales Distribution and PRV Agreement, dated as of October 25, 2021, by and between Aceragen and NovaQuest, as such agreement may be amended from time to time (the "PRV Agreement"), prior and in preference to any declaration or payment of any other distribution or dividend (other than dividends on shares of Common Stock payable in shares of Common Stock).

Pursuant to the terms and conditions of the Purchase Agreement, Aceragen must make a distribution to NovaQuest of 35% of the net proceeds Aceragen receives in connection with a transaction (a "PRV Sale Transaction"), pursuant to which Aceragen sells any of its right, title, and interest in and to a priority review voucher ("PRV") granted by the FDA in connection with regulatory approval of a Product (as defined therein). Further, in the event that Aceragen does not receive a PRV in connection with regulatory approval of the Product by the FDA, or does not complete a PRV Sale Transaction within 12 months after Aceragen's receipt of a PRV, then Aceragen shall make a distribution to NovaQuest equal to $35,000,000 in two equal installments, the first of which shall be effected within 45 days after the date Aceragen receives regulatory approval of a Product from the FDA (the "U.S. Approval Date") and the second of which shall be effected within one year after the U.S. Approval Date.

In addition, pursuant to the terms and conditions of the Purchase Agreement, after first commercial sale of the Product and continuing for each fiscal quarter until the Distribution End Date (as defined therein), Aceragen shall make a distribution to NovaQuest (the "Required Net Sales Distribution") equal to the product of the Required Net Sales Distribution Rate (as defined below) multiplied by the aggregate total of the net sales of the Product for such fiscal quarter. The Required Net Sales Distribution Rate shall initially be 15%; provided that once the aggregate of all distributions paid to NovaQuest equals $140,000,000, the Required Net Sales Distribution Rate shall decrease to 5%. The Required Net Sales Distribution shall end after the date on which the last of the following has occurred: (i) Aceragen pays $140,000,000 to NovaQuest; (ii) the last valid patent covering the Product in the United States and European Union has expired; and (iii) regulatory exclusivity for the Product in both the United States and the European Union has expired.

Pursuant to the terms and conditions of the Purchase Agreement, Aceragen must use commercially reasonable efforts to (i) develop the Product in a manner that ensures that Aceragen is reasonably likely to obtain regulatory approval from the FDA no later than September 1, 2024 and to obtain regulatory approval from the European Medicines Agency no later than October 1, 2024; (ii) identify a third-party purchaser of a PRV, if Aceragen receives a PRV, and consummate a PRV Sales Transaction (as defined therein) within 12 months of receipt of the PRV; and (iii) commercialize the Product in each jurisdiction in which regulatory approval is received.

The foregoing description of the Purchase Agreement does not purport to be complete and is qualified in its entirety by reference to the Purchase Agreement, which was filed as Exhibits 10.8 and 10.9 to the Company's Quarterly Report on Form 10-Q filed with the SEC on November 14, 2022.

PRV Agreement

Pursuant to the terms and conditions of the PRV Agreement, Aceragen must make a distribution to NovaQuest of 10% of the net proceeds Aceragen receives in connection with a PRV Sales Transaction pursuant to which Aceragen sells any of its right, title, and interest in and to a PRV in connection with regulatory approval of a Product (as defined therein). Further, in the event that Aceragen does not receive a PRV in connection with regulatory approval of the Product by the FDA, or does not complete a PRV Sales Transaction within 12 months after Aceragen's receipt of a PRV, then Aceragen must make certain satisfaction milestone payments in favor of NovaQuest.

Pursuant to the terms and conditions of the PRV Agreement, Aceragen must use commercially reasonable efforts to (i) develop the Product in a manner that ensures that Aceragen is reasonably likely to obtain regulatory approval from the FDA for the Product by no later than December 31, 2024, (ii) if Aceragen

receives a PRV in connection with regulatory approval of a Product, identify a third-party purchaser of the PRV and consummate a PRV Sales Transaction within 12 months of receipt of the PRV, and (iii) commercialize the Product in each jurisdiction for which regulatory approval is received. After first commercial sale of the Product and continuing for each fiscal quarter until the Distribution End Date (as defined therein), Aceragen shall make the Required Net Sales Distribution equal to product of 5% multiplied by the aggregate total of net sales of the Product for such fiscal quarter. The Required Net Sales Distribution shall end after Aceragen pays $50,000,000 to NovaQuest.

The foregoing description of the PRV Agreement does not purport to be complete and is qualified in its entirety by reference to the PRV Agreement, which was filed as Exhibit 10.10 to the Company's Quarterly Report on Form 10-Q filed with the SEC on November 14, 2022.

Vincent Milano Employee Separation Agreement

In connection with the execution of the Merger Agreement, the Company entered into an employee separation agreement with Vincent Milano, the Company's former Chief Executive Officer (the "Milano Separation Agreement"). Pursuant to the Milano Separation Agreement, Mr. Milano transitioned from Chief Executive Officer to the role of non-employee Chair of the Board and is entitled to receive: (i) any earned and unpaid base salary through the date of the Acquisition; (ii) any earned and unpaid annual incentive cash bonus payable with respect to any fiscal year that ended prior to the date of the Acquisition; (iii) any accrued but unused personal time off days; (iv) reimbursement for any outstanding expenses for which Mr. Milano has not been reimbursed and which are authorized; and (v) any vested benefits under the Company's employee benefit plans in accordance with the terms of such plans, as accrued through the date of the Acquisition (collectively, the "Accrued Obligations"). The Accrued Obligations will be paid following the closing of the Acquisition at such times and in accordance with such plans and policies as would normally apply to such amounts or benefits.

In addition, provided that Mr. Milano does not revoke the Milano Separation Agreement (including the general release of claims in favor of the Company as set forth therein) and that Mr. Milano continues to comply with the restrictive covenants incorporated into the Milano Separation Agreement, Mr. Milano is entitled to receive: (i) a cash payment of $225,000, representing a prorated portion of the 2022 calendar year annual cash incentive award, at target, based on the period that Mr. Milano was employed through the date of the Acquisition (paid in a lump sum within 30 days following the Effective Date); (ii) $606,357, payable in substantially equal installments in accordance with the Company's payroll practices, over the 12 months following the Effective Date and starting with the first payroll date following such date; and (iii) fully vested shares of Common Stock with a value of $800,000, based on the volume-weighted average price of Common Stock on the 20 days prior to the grant date, as soon as practicable, but in no event more than 30 days following the approval of the Reverse Stock Split Proposal.

The foregoing description of the Milano Separation Agreement does not purport to be complete and is qualified in its entirety by reference to the Milano Separation Agreement, which was filed as Exhibit 10.1 to the Company's Current Report on Form 8-K filed with the SEC on September 30, 2022.

John Taylor Employment Agreement

In connection with the execution of the Merger Agreement, John Taylor's "at will" employment agreement with Aceragen (the "Taylor Employment Agreement"), dated February 25, 2021, was assumed by the Company on the same terms as entered into by Aceragen except as otherwise described herein. Pursuant to certain approvals by Aceragen prior to the Acquisition, Mr. Taylor's annual base salary was increased to $450,000, effective as of the Effective Date. In addition, Mr. Taylor is eligible for a discretionary annual incentive bonus, which will be determined by the Board. Additionally, the target bonus will be 50% of Mr. Taylor's annual base salary. All other terms of the Taylor Employment Agreement remain the same.

Pursuant to the Taylor Employment Agreement, if the Company terminates Mr. Taylor's employment for any reason other than Cause or Permanent Disability (each as defined by the Taylor Employment Agreement) (such termination, a "Taylor Separation"), provided that Mr. Taylor returns all Company property in his possession and executes a general release of claims in favor of the Company, Mr. Taylor will be entitled to severance benefits in the form of: (i) continued payment of his base salary for a period of up

to 12 months from the date of Taylor Separation; (ii) if Mr. Taylor elects to continue his health insurance coverage under the Consolidated Omnibus Budget Reconciliation Act ("COBRA"), payment of the Company portion of the monthly COBRA premiums for the Company's medical benefit plan for 12 months; and (iii) 12 additional months of service-based vesting (in addition to vesting determined by the actual period of service that has been completed with the Company or with Aceragen, as applicable) on any equity positions in the Company Mr. Taylor owns or controls. Such vested portion of the equity positions will be exercisable by Mr. Taylor for 12 months following the Taylor Separation. In the event of a change of control, any unvested portions of equity position owned or controlled by Mr. Taylor shall, as of the closing of such transaction, accelerate and become fully vested.

Mr. Taylor is also entitled to participate in the Company-sponsored employee benefit plans, including its medical, dental, vision, and 401(k) plans or similar arrangements. Additionally, the Company has agreed to provide an allowance, not to exceed $2,500 per month, for the cost of the health, dental, and vision plans. Mr. Taylor is entitled to use paid time off, in accordance with the Company policies. Mr. Taylor is also entitled to receive equity-based awards under the Company's equity incentive plans.

The foregoing description of the Taylor Employment Agreement does not purport to be complete and is qualified in its entirety by reference to the Taylor Employment Agreement, which was filed as Exhibit 10.2 to the Company's Current Report on Form 8-K filed with the SEC on September 30, 2022.

Daniel Salain Employment Agreement

In connection with the execution of the Merger Agreement, Daniel Salain's employment agreement with Aceragen (the "Salain Employment Agreement"), dated February 25, 2021, was assumed by the Company on the same terms as entered into by Aceragen except as otherwise described herein. Pursuant to certain approvals by Aceragen prior to the Acquisition, Mr. Salain's annual base salary was increased to $400,000, effective as of the Effective Date. In addition, Mr. Salain is eligible for a discretionary annual incentive bonus, which will be determined by our Board of Directors. Additionally, the target bonus will be 40% of Mr. Salain's annual base salary. All other terms of the Salain Employment Agreement remain the same.

Pursuant to the Salain Employment Agreement, if the Company terminates Mr. Salain's employment for any reason other than Cause or Permanent Disability (each as defined by the Salain Employment Agreement) (such termination, "Salain Separation"), provided that Mr. Salain returns all Company property in his possession and executes a general release of claims in favor of the Company, Mr. Salain will be entitled to severance benefits in the form of: (i) continued payment of his base salary for a period of up to 12 months from the date of the Salain Separation; (ii) if Mr. Salain elects to continue his health insurance coverage under COBRA payment of the company portion of the monthly COBRA premiums for the Company's medical benefit plan for 12 months; and (iii) 12 additional months of service-based vesting (in addition to the vesting determined by the actual period of service that had been completed with the Company or with Aceragen, as applicable) on any equity positions in the Company Mr. Salain owns or controls. Such vested portion of the equity positions will be exercisable by Mr. Salain for 12 months following the Salain Separation. In the event of a change of control, any unvested portions of equity position owned or controlled by Mr. Salain shall, as of the closing of such transaction, accelerate and become fully vested.

Mr. Salain is entitled to participate in the Company-sponsored employee benefit plans, including its medical, dental, vision, and 401(k) plans or similar arrangements. Additionally, the Company has agreed to provide an allowance, not to exceed $2,500 per month, for the cost of the health, dental, and vision plans. Mr. Salain is entitled to use paid time off, in accordance with the Company policies. Mr. Salain is also entitled to received equity-based awards under the Company's equity incentive plans.

The foregoing description of the Salain Employment Agreement does not purport to be complete and is qualified in its entirety by reference to the Salain Employment Agreement, which was filed as Exhibit 10.3 to the Company's Current Report on Form 8-K filed with the SEC on September 30, 2022.

John Kirby Retention Agreement

In connection with the execution of the Merger Agreement, the Company and John Kirby entered into an employment continuation and retention bonus letter agreement (the "Kirby Employee Retention

Agreement"), pursuant to which Mr. Kirby's annual base salary increased to $400,000, less applicable taxes and withholdings, and Mr. Kirby's current target bonus will be prorated to reflect the increase in his annual base salary. Mr. Kirby had previously entered into an individual severance agreement (the "Kirby Severance Agreement") with the Company based on the Company's form Severance and Change of Control Agreement (the "Severance Agreement Form"), pursuant to which he is eligible to receive certain severance payments and benefits upon certain terminations of employment with the Company, including for Good Reason (as defined in the Kirby Severance Agreement). Pursuant to the Kirby Employee Retention Agreement, Mr. Kirby has agreed to waive his right to resign for Good Reason solely in connection with the closing of the Acquisition. The remaining terms of the Kirby Severance Agreement remain in full force and effect.

Pursuant to the Kirby Employee Retention Agreement, Mr. Kirby is eligible to receive an amount in stock and/or cash with an aggregate value equal to $766,500 (the "Kirby Retention Bonus"), which will be paid in two installments. Mr. Kirby will receive fully vested shares of Common Stock in a number of shares calculated by dividing (a) one-third of the Kirby Retention Bonus by (b) the volume-weighted average price of the Common Stock based on the 20 trading days prior to the first business day that is within the next available trading window following the Effective Date under the Company's applicable trading policies. If Mr. Kirby's employment with the Company terminates for any reason (other than by the Company for Cause (as defined in the Kirby Severance Agreement)) prior to the six-month anniversary of the approval of the Reverse Stock Split Proposal (the "Six-Month Anniversary"), Mr. Kirby will receive a lump sum amount in cash equal to two-thirds of the Kirby Retention Bonus, less applicable taxes and withholdings (the "Kirby Cash Retention Bonus"). If Mr. Kirby's employment with the Company continues following such Six-Month Anniversary, or if the Company terminates Mr. Kirby's employment for Cause (as defined in the Kirby Severance Agreement) prior to such date, Mr. Kirby's right to receive the Kirby Cash Retention Bonus will terminate.

If Mr. Kirby's employment with the Company continues past the Six-Month Anniversary, in lieu of the Kirby Cash Retention Bonus, Mr. Kirby will receive: (a) a number of restricted shares of Common Stock calculated by dividing (1) two-thirds of the Kirby Retention Bonus by (2) the volume-weighted average price per share of Common Stock based on the 20 trading days prior to the date of grant, rounded down to the nearest full share (the "Restricted Stock") or (b) a restricted cash award in an amount equal to two-thirds of the Retention Bonus, less applicable taxes and withholding ("Restricted Cash") within 30 days of the Six Month Anniversary. The Restricted Stock or Restricted Cash will vest over two years, with 50% vesting upon the first anniversary and the remainder vesting in equal quarterly installments thereafter (each, a "Kirby Vesting Date"). Upon termination of Mr. Kirby's employment or service with the Company for any reason prior to the final Kirby Vesting Date, Mr. Kirby will forfeit the unvested portion of the Restricted Stock or Restricted Cash, as applicable.

The foregoing description of the Kirby Employee Retention Agreement and Kirby Severance Agreement does not purport to be complete and is qualified in its entirety by reference to the Kirby Employee Retention Agreement and the Severance Agreement Form, which were filed as Exhibit 10.4 to the Company's Current Report on Form 8-K filed with the SEC on September 30, 2022 and as Exhibit 10.2 to the Company's Quarterly Report on Form 10-Q filed with the SEC on May 4, 2017, respectively.

Bryant Lim Retention Agreement

In connection with the execution of the Merger Agreement, the Company and Bryant Lim entered into an employment continuation and retention bonus letter agreement (the "Lim Employee Retention Agreement"), pursuant to which Mr. Lim's annual base salary increased to $400,000, less applicable taxes and withholdings, and Mr. Lim's current target bonus will be prorated to reflect the increase in his annual base salary. Mr. Lim and the Company previously entered into a severance agreement (the "Lim Severance Agreement") based on the Severance Agreement Form, pursuant to which he is eligible to receive certain severance payments and benefits upon certain terminations of employment with the Company, including for Good Reason (as defined in the Lim Severance Agreement). Pursuant to the Lim Employee Retention Agreement, Mr. Lim has agreed to waive his right to resign for Good Reason, as defined in the Lim Severance Agreement, solely in connection with the closing of the Acquisition. The remaining terms of the Lim Severance Agreement remain in full force and effect.

Pursuant to the Lim Employee Retention Agreement, Mr. Lim will be eligible to receive an amount in stock and/or cash with an aggregate value equal to $766,500 (the "Lim Retention Bonus"), which will be paid in two installments. Mr. Lim will receive fully vested shares of Common Stock in a number of shares calculated by dividing (a) one-third of the Lim Retention Bonus by (b) the volume-weighted average price of the Common Stock based on the 20 trading days prior to the first business day that is within the next available trading window following the Effective Date under the Company's applicable trading policies. If Mr. Lim's employment with the Company terminates for any reason (other than by the Company for Cause (as defined in the Lim Severance Agreement)) prior to the Six-Month Anniversary, Mr. Lim will receive a lump sum amount in cash equal to two-thirds of the Lim Retention Bonus, less applicable taxes and withholdings (the "Lim Cash Retention Bonus"). If Mr. Lim's employment with the Company continues following the Six-Month Anniversary, or if the Company terminates Mr. Lim's employment for Cause (as defined in the Lim Severance Agreement) prior to such date, Mr. Lim's right to receive the Lim Cash Retention Bonus will terminate.

If Mr. Lim's employment with the Company continues past the Six-Month Anniversary, in lieu of the Lim Cash Retention Bonus, Mr. Lim will receive (a) Restricted Stock or (b) Restricted Cash within 30 days of the Six-Month Anniversary. The Restricted Stock or Restricted Cash will vest over two years, with 50% vesting upon the first anniversary and the remainder vesting in equal quarterly installments thereafter (each, a "Lim Vesting Date"). Upon termination of Mr. Lim's employment or service with the Company for any reason prior to the final Lim Vesting Date, Mr. Lim will forfeit the unvested portion of the Restricted Stock or Restricted Cash, as applicable.

The foregoing description of the Lim Employee Retention Agreement and the Lim Severance Agreement does not purport to be complete and is qualified in its entirety by reference to the Lim Employee Retention Agreement and the Severance Agreement Form, which were filed as Exhibit 10.5 to the Company's Current Report on Form 8-K filed with the SEC on September 30, 2022 and as Exhibit 10.2 to the Company's Quarterly Report on Form 10-Q filed with the SEC on May 4, 2017, respectively.

Daniel Soland Separation Agreement

In connection with the execution of the Merger Agreement, the Company entered into an executive transition and separation agreement (the "Soland Separation Agreement") with Daniel Soland, who until the Effective Date served as the Company's Senior Vice President and Chief Operating Officer. Under the Soland Separation Agreement, Mr. Soland will provide certain advisory and transition services to the Company from the Effective Date through the period of 30 days following the approval of the Reverse Stock Split Proposal. Further, Mr. Soland is entitled to receive: (i) any earned and unpaid base salary through the Effective Date; (ii) any earned and unpaid annual incentive bonus payable with respect to any fiscal year that ended prior to the Effective Date; (iii) any accrued but unused personal time-off days; (iv) reimbursement for any outstanding expenses for which Mr. Soland has not been reimbursed and which are authorized; and (v) any vested benefits under the Company's employee benefit plans in accordance with the terms of such plans, as accrued through the Effective Date.

Under the terms of the Soland Separation Agreement, Mr. Soland has agreed to provide certain advisory and transition services to the Company for a period of 30 days following the approval of the Merger Agreement Meeting Proposals. In consideration for his services during such period, Mr. Soland will be entitled to $500 per hour performed for services requested by the Company in an independent contractor capacity.

In addition, provided that Mr. Soland does not revoke the Soland Separation Agreement (including the general release of claims in favor of the Company as set forth therein) and Mr. Soland continues to comply with the restrictive covenants incorporated into the Soland Separation Agreement, Mr. Soland is entitled to receive (i) a cash payment of $127,500, representing the prorated portion of the 2022 calendar year annual cash incentive award, measured at target performance, based on the period Mr. Soland was employed through the Effective Date (the prorated award will be paid in a lump sum within 30 days following the Effective Date); (ii) $459,754, payable in substantially equal installments over the 12-month period starting on the first payroll date following the Effective Date; and (iii) fully vested shares of Common Stock equal to a number of shares, calculated by dividing $500,000 based on the volume-weighted average price of

Common Stock on the 20 days prior to the grant date, rounded down to the nearest full share (to be granted as soon as practicable, but in no event more than 30 days following the approval of the Reverse Stock Split Proposal).

The foregoing description of the Soland Separation Agreement does not purport to be complete and is qualified in its entirety by reference to the Soland Separation Agreement, which was filed as Exhibit 10.6 to the Company's Current Report on Form 8-K filed with the SEC on September 30, 2022.

RISK FACTORS

Risks Relating to Our Financial Position and Need for Additional Capital

We may not be able to comply with Nasdaq's initial listing standards.

Our Common Stock trades on The Nasdaq Capital Market ("Nasdaq") under the symbol "IDRA." We cannot assure you that our securities will continue to be listed on Nasdaq.

As previously reported, on November 26, 2021, we received a deficiency letter (the "First Nasdaq Letter") from the Nasdaq Listing Qualifications Department (the "Staff"), notifying us that we were not in compliance with Nasdaq Listing Rule 5550(a)(2), which requires us to maintain a minimum bid price of at least $1 per share for continued listing (the "Minimum Bid Requirement"). Our failure to comply with the Minimum Bid Requirement was based on the Common Stock per share price being below the $1.00 threshold for a period of 30 consecutive business days. Pursuant to the First Nasdaq Letter, we had 180 calendar days from November 26, 2021 to regain compliance with the Minimum Bid Requirement.

Also as previously reported, on May 26, 2022, we received a second notice (the "Second Nasdaq Letter") from the Staff indicating that, while we had not regained compliance with the Minimum Bid Requirement, the Staff had determined that we were eligible for an additional 180-day period, or until November 21, 2022, to regain compliance with the Minimum Bid Requirement. Pursuant to the Second Nasdaq Letter, if compliance cannot be demonstrated by November 21, 2022, the Staff would provide written notification that the Common Stock will be subject to delisting, at which point we would then be entitled to appeal the Staff's determination to a Nasdaq hearings panel.

The Company is currently working with the Staff, but expects to receive a written notification from Nasdaq stating that we had not regained compliance with the Minimum Bid Requirement. We are aware that such written notification will provide the Company with the opportunity to request a hearing before the Nasdaq Hearings Panel (the "Panel") within a specified date from the written notice. If the Company has not met the Minimum Bid Requirement by November 21, 2022, it fully expects to submit an appeal of such written notification to the Panel as soon as practicable and prior to any deadline. Under Nasdaq rules, the delisting of our Common Stock will be stayed during the pendency of the appeal and during such time our Common Stock will continue to be listed on Nasdaq. There can be no assurance that such an appeal will be successful, or that we will be able to regain compliance with the Minimum Bid Price requirement or maintain compliance with other Nasdaq listing requirements. If our appeal is denied or if we fail to regain compliance with Nasdaq's continued listing standards during any period granted by the Panel, our Common Stock will be subject to delisting from Nasdaq.

Furthermore, on October 21, 2022, we received a letter from the Staff notifying us that our acquisition of Aceragen will, upon stockholder approval of Proposal No. 1, be considered a "change of control" transaction under Nasdaq rules. As such, the Company must meet Nasdaq's initial listing requirements. Accordingly, the Company must meet all the requirements set forth in Nasdaq Rule 5505(a) and at least one of the standards set forth in Nasdaq Rule 5505(b).

The listing standards of Nasdaq Rule 5505(a) require the Company to have, among other things:

- a minimum bid price that is greater than or equal to $4.00 per share;
- at least 1,000,000 unrestricted publicly held shares;
- at least 300 round-lot holders, and at least 50% of such round lot holders must each hold unrestricted securities with a market value of at least $2,500;
- at least three registered and active market makers; and
- a minimum average daily trading volume of 2,000 shares over the 30 trading day period prior to listing, with trading occurring on more than half of those 30 days, unless such security is listed on Nasdaq in connection with a firm commitment underwritten public offering of at least $4 million.

The Company must also satisfy at least one of the following Rule 5505(b) requirements:

- stockholders' equity of at least $5 million, a market value of unrestricted publicly held shares of at least $15 million, and two years of operating history;

- a market value of listed securities of at least $50 million, stockholders' equity of at least $4 million, and a market value of unrestricted publicly held shares of at least $15 million; or
- net income from continuing operations of $750,000 in the most recently completed fiscal year or in two of the three most recently completed fiscal years, stockholders' equity of at least $4 million, and a market value of unrestricted publicly held shares of at least $5 million.

There is no assurance that we will be able to comply with the requisite Nasdaq requirements to maintain our listing of Common Stock on Nasdaq. If Nasdaq delists our securities from trading on its exchange and we are not able to list our securities on Nasdaq or any other national securities exchange, we could face significant material adverse consequences, including:

- a limited availability of market quotations for our Common Stock;
- reduced liquidity for our Common Stock;
- a determination that our Common Stock is a "penny stock," which will require brokers trading in our Common Stock to adhere to more stringent rules and possibly result in a reduced level of trading activity in the secondary trading market for its securities;
- a limited amount of news and analyst coverage for us;
- a decreased ability to issue additional securities or obtain additional financing in the future; and
- the incurring of additional costs under state blue sky laws in connection with any sales of our securities.

If our Common Stock is delisted by Nasdaq, our Common Stock may be eligible to trade on an over-the-counter quotation system, such as the OTCQB Market, where an investor may find it more difficult to sell our stock or obtain accurate quotations as to the market value of our Common Stock. In the event our Common Stock is delisted from Nasdaq, we may not be able to list our Common Stock on another national securities exchange or obtain quotation on an over-the counter quotation system.

There is no guarantee that the Acquisition of Aceragen by us will increase stockholder value.

In September 2022, we acquired Aceragen. See *"Description of the Transactions"* and *"Background and Reasons for the Transactions."* We cannot guarantee our integration efforts as a result of the Acquisition and the related transactions will not impair stockholder value or otherwise adversely affect our business. The Acquisition poses significant integration challenges between our businesses and management teams that could result in management and business disruptions, any of which could harm our results of operation, business prospects, and impair the value of such Acquisition to our stockholders.

Our stock price has been and may continue to be volatile, and the value of an investment in our Common Stock may decline.

We historically have experienced significant volatility in our stock price. In the last 52 weeks, our Common Stock has traded as low as $0.30 per share. The realization of any of the risks described in these risk factors or other unforeseen risks could have an adverse effect on the market price of our Common Stock. The trading price of our Common Stock is likely to continue to be highly volatile and could be subject to declines in response to numerous factors, including disappointing results in a clinical program, as was the case following the announcement of topline results for ILLUMINATE-301. Other risk factors include results from clinical trials; FDA regulatory actions; announcements by us or our competitors of acquisitions, regulatory approvals, clinical milestones, new products, significant contracts, commercial relationships, or capital commitments; additions or departures of key personnel; commencement of, or our involvement in, litigation; and any major change in our Board of Directors or management.

From time to time, we estimate the timing of the potential accomplishment of clinical and other development goals or milestones. These estimated milestones may include the commencement or completion of clinical trials. Also, from time to time, we expect that we will publicly announce the anticipated timing of some of these milestones. All these estimated milestones are based on numerous assumptions. These milestones may change and the actual timing of meeting these milestones may vary dramatically from our

estimates, in some cases for reasons beyond our control. If we do not meet these estimated milestones, or the anticipated timing thereof, as publicly announced, our stock price may decline.

We will need additional financing, which may be difficult to obtain on terms attractive to us or at all. If we are unable to raise capital when needed, we could be forced to delay, reduce, or eliminate our product development programs or commercialization efforts.

We expect that we will need to raise additional funds in order to complete the development of, seek regulatory approvals for, and commercialization of our drug candidates for rare disease and to continue to fund our operations. We are seeking and expect to continue to seek additional funding through financings of equity or debt securities, collaborations, or the sale or license of assets. We believe the key factors that will affect our ability to obtain funding are: (i) the results of our clinical development activities in our drug candidates we develop on the timelines anticipated; (ii) the time and expense required to submit a new drug application ("NDA") for our drug candidates; (iii) the cost, timing, and outcome of regulatory reviews; (iv) the receptivity of the capital markets to financings by biotechnology companies generally and companies with drug candidates and technologies similar to ours specifically; (v) receptivity of the capital markets to any in-licensing, product acquisition or other transaction we may enter into; and (vi) ability to enter into additional collaborations and the success of such collaborations.

Financing may not be available to us when we need it, or on favorable or acceptable terms, or at all. We could be required to seek funds through collaborative alliances or through other means that may require us to relinquish rights to some of our technologies, drug candidates or drugs that we would otherwise pursue on our own. In addition, if we raise additional funds by issuing equity securities, our existing stockholders may experience dilution, or an equity financing that involves existing stockholders may cause a concentration of ownership. Debt financing, if available, may involve agreements that include covenants limiting or restricting our ability to take specific actions, such as incurring additional debt, making capital expenditures, or declaring dividends, and are likely to include rights that are senior to the holders of our Common Stock. Any additional debt or equity financing may contain terms that are not favorable to us or to our stockholders, such as liquidation and other preferences, or liens or other restrictions on our assets. Additional equity financings may also result in cumulative changes in ownership over a three-year period in excess of 50% which would limit the amount of net operating loss and tax credit carryforwards that we may utilize in any one year. If we are unable to obtain adequate funding on a timely basis or at all, we will be required to terminate, modify, or delay clinical trials of our drug candidates, or relinquish rights to portions of our technology, drug candidates, and/or products.

Raising additional capital may cause dilution to our stockholders, restrict our operations, or require us to relinquish rights.

Until such time, if ever, as we can generate substantial revenue from the sale of our product candidates, we expect to finance our cash needs through a combination of equity offerings, debt financings, and license and development agreements. To the extent that we raise additional capital through the sale of equity securities or convertible debt securities, the ownership interest of our stockholders will be diluted, and the terms of these securities may include liquidation or other preferences that adversely affect the rights of holders of Common Stock. Debt financing and preferred equity financing, if available, may involve agreements that include covenants limiting or restricting our ability to take specific actions, such as incurring additional debt, making capital expenditures, or declaring dividends.

If we raise additional funds through collaborations, strategic alliances, or marketing, distribution, or licensing arrangements with third parties, we may be required to relinquish valuable rights to our research programs or product candidates or grant licenses on terms that may not be favorable to us. If we are unable to raise additional funds through equity or debt financings or other arrangements with third parties when needed, we may be required to delay, limit, reduce, or terminate our product development or future commercialization efforts or grant rights to third parties to develop and market product candidates that we would otherwise prefer to develop and market ourselves.

Our Series X Preferred Stock have rights, preferences and privileges that are not held by, and are preferential to, the rights of our Common Stock, which could adversely affect our liquidity and financial condition, and may result in the interests of the holders of our Series X Preferred Stock differing from those of the holders of Common Stock.

The Series X Preferred Stock ranks senior to our Common Stock with respect to dividend rights on the distribution of assets on any voluntary or involuntary liquidation, dissolution, or winding up of our affairs. The holders of our Series X Preferred Stock are entitled to receive distributions on shares of Series X Preferred Stock as set forth in (a) the Purchase Agreement, and (b) the PRV Agreement (any such distributions under the Purchase Agreement and the PRV Agreement, the "Preferred Distributions"), prior and in preference to any declaration or payment of any other distribution or dividend (other than dividends on shares of Common Stock payable in shares of Common Stock).

In addition, holders of Series X Preferred Stock are entitled to receive a distribution in the event that either (i) Aceragen receives any proceeds from the sale of a PRV granted by the FDA in connection with regulatory approval of an ACG-801 (recombinant human acid ceramidase) or ACG-701 (sodium fusidate) product or (ii) Aceragen does not receive such a PRV or does not complete a PRV sale within a certain period after receipt. The holders of Series X Preferred Stock are also entitled to net sales distributions based upon future net sales of the ACG-801 and ACG-701.

The holders of our Series X Preferred Stock also have the right, subject to certain exceptions, to require us to repurchase all or any portion of the Series X Preferred Stock upon certain change of control events or Product Divestiture (as defined in the PRV Agreement) of an ACG-701 product, and Aceragen may, and NovaQuest may require us to, redeem the Series X Preferred Stock at a price equal to the fair market value thereof or make certain distributions to the holders of Series X Preferred Stock.

These dividend, distribution, and share repurchase obligations could impact our liquidity and reduce the amount of cash flows available for general corporate purposes. Our obligations to the holders of the Series X Preferred Stock could also limit our ability to obtain additional financing or increase our borrowing costs, which could have an adverse effect on our financial condition. These preferential rights could also result in divergent interests between the holders of shares of Series X Preferred Stock and holders of our Common Stock.

We expect that we will continue to incur net losses in the foreseeable future.

As of September 30, 2022, we had an accumulated deficit of $748.0 million and a cash and cash equivalents balance of $26.8 million. We expect to incur substantial operating losses in future periods and will require additional capital as we seek to advance any future drug candidates through development to commercialization. We do not expect to generate product revenue, sales-based milestones, or royalties until we successfully complete development of and obtain marketing approval for any future drug candidates, either alone or in collaboration with third parties, which may not occur or may take a number of years. To commercialize any future drug candidates, we need to complete clinical development and comply with comprehensive regulatory requirements. We are subject to numerous risks and uncertainties similar to those of other companies of the same size within the biotechnology industry, such as uncertainty of clinical trial outcomes, uncertainty of additional funding, and history of operating losses.

Even if we succeed in receiving marketing approval for and commercializing any product candidate, we will continue to incur substantial research and development and other expenditures to develop and market additional potential indications or products. The size of our future net losses will depend, in part, on the rate of future growth of our expenses and our ability to generate revenue. Our prior losses and expected future losses have had and will continue to have an adverse effect on our stockholders' equity and working capital.

Risks Relating to Our Business and Strategy

As a small biopharmaceutical-focused company with limited resources, we may be unable to attract and retain qualified personnel.

We are a small company with 29 full-time employees as of December 8, 2022. Any future growth will require hiring additional qualified personnel. Also, because of the specialized scientific nature of our business,

we face intense competition for qualified employees and consultants from biopharmaceutical companies, research organizations, and academic institutions. Failure to attract and retain qualified personnel would materially harm our ability to compete effectively and grow our business.

If we lose any of our officers or key employees, our management and technical expertise could be weakened significantly.

Our success largely depends on the skills, experience, and efforts of our executive officers, especially our President and Chief Executive Officer ("CEO"), Mr. John Taylor. In connection with its Acquisition, the Company now holds key man life insurance policies for John Taylor and Daniel Salain in the amount of $1 million each. The Company holds no other key man life insurance policies. The loss of any of our executive officers could weaken our management and technical expertise significantly and harm our business.

We are depending heavily on the development, regulatory approval, U.S. federal funding, and commercialization of drug candidates. If we are unable to successfully develop and commercialize drug candidates, or experience significant delays in doing so, our business may be materially harmed.

We have made and intend to continue to make a significant investment of our time and financial resources in the development and commercialization of our drug candidates. Our ability to generate product revenues will depend heavily on our ability to successfully develop, obtain regulatory approval for, and commercialize our drug candidates. If we fail to obtain regulatory approval and successfully commercialize our drug candidates, our business would be materially and adversely impacted. Even if our drug candidates receive regulatory approval, we will incur significant expenses to support its commercialization and launch, which investment may never be realized if sales are insufficient.

Our recent organizational changes undertaken to align to our focus on business strategy and business development may not be successful.

In April 2021, following the announcement that ILLUMINATE-301 did not meet its primary endpoint of Objective Response Rate ("ORR"), we decided to implement a reduction-in-force affecting approximately 50% of our workforce beginning in the second quarter of 2021. The objective of this workforce reduction was to realign our workforce to meet our needs in light of the outcome of ILLUMINATE-301's ORR endpoint. In May 2021, we announced that we would not continue ILLUMINATE-301 toward its Overall Survival ("OS") endpoint. In connection with these actions, we have incurred termination costs, which include severance, benefits, and related costs, totaling $1.3 million in 2021. In September 2022, in connection with the Acquisition, we restructured our operations and reduced the workforce by approximately 38% of the Company's pre-Acquisition employees.

We believe these changes were needed to streamline our organization and reallocate our resources to better align with our current strategic goals, including our current focus on new portfolio opportunities. However, these restructuring activities may yield unintended consequences and costs, such as the loss of institutional knowledge and expertise, attrition beyond our intended reduction-in-force, a reduction in morale among our remaining employees, and the risk that we may not achieve the anticipated benefits, all of which may have an adverse effect on our results of operations or financial condition. In addition, while positions have been eliminated, certain functions necessary to our reduced operations remain, and we may be unsuccessful in distributing the duties and obligations of departed employees among our remaining employees. We may also discover that the reductions in workforce and cost-cutting measures will make it difficult for us to pursue new opportunities and initiatives and require us to hire qualified replacement personnel, which may require us to incur additional and unanticipated costs and expenses. Moreover, there is no assurance we will be successful in our pursuit of any new business development opportunities, including additional strategic alternatives. Our failure to successfully accomplish any of the above activities and goals may have a material adverse impact on our business, financial condition, and results of operations.

If we experience delays or difficulties in the enrollment of patients in clinical trials, our receipt of necessary regulatory approvals could be delayed or prevented entirely.

We may not be able to initiate or continue clinical trials for our drug candidates if we are unable to locate and enroll a sufficient number of eligible patients to participate in these trials as required by the FDA or similar regulatory authorities outside the United States.

In addition, some of our competitors have ongoing clinical trials for drug candidates that treat the same indications as our drug candidates, and patients who would otherwise be eligible for our clinical trials may instead enroll in clinical trials of our competitors' drug candidates. Our inability to enroll a sufficient number of patients for our clinical trials could also require us to abandon one or more clinical trials altogether. Enrollment delays may result in increased development costs for our drug candidates, which would cause the value of our Company to decline and limit our ability to obtain additional financing.

If our clinical trials are unsuccessful, delayed, or terminated for any reason, we may not be able to develop and commercialize our drug candidates.

Clinical trials are lengthy, complex, and expensive processes with uncertain results. We may not be able to complete any clinical trial of an investigational product within any specified time period. Moreover, clinical trials may not show our investigational products to have an acceptable safety and efficacy profile. The FDA, independent institutional review boards ("IRBs"), or other equivalent foreign regulatory agencies may not allow us to complete these trials or commence and complete any other clinical trials.

Numerous unforeseen events may occur during, or as a result of, preclinical testing, nonclinical testing or the clinical trial process that could delay or inhibit the ability to receive regulatory approval or to commercialize drug products. For example, setbacks in clinical trials may result in enhanced scrutiny by regulators or IRBs of clinical trials of our drug candidates, which could result in regulators or IRBs prohibiting the commencement of clinical trials, requiring additional nonclinical studies as a precondition to commencing clinical trials or imposing restrictions on the design or scope of clinical trials that could slow enrollment of trials, increase the costs of trials or limit the significance of the results of trials. Such setbacks could also adversely impact the desire of investigators to enroll patients in, and the desire of patients to enroll in, clinical trials of our drug candidates.

Other events that could delay or inhibit conduct of our clinical trials include: (i) nonclinical or clinical data may not be readily interpreted, which may lead to delays and/or misinterpretation; (ii) our nonclinical tests, including toxicology studies, or clinical trials may produce negative or inconclusive results; (iii) we might have to suspend or terminate our clinical trials if the participating subjects experience serious adverse events or undesirable side effects or are exposed to unacceptable health risks; (iv) regulators or IRBs may hold, suspend, or terminate clinical research for various reasons, including noncompliance with regulatory requirements, issues identified through inspections of manufacturing or clinical trial operations or clinical trial sites; (v) we, along with our collaborators and subcontractors, may not employ, in any capacity, persons who have been debarred under the FDA or similar foreign regulatory authorities; (vi) we or our contract manufacturers may be unable to manufacture sufficient quantities of our drug candidates for use in clinical trials; (vii) the cost of our clinical trials may be greater than we currently anticipate making continuation and/or completion improbable; (viii) our investigators and contract research organizations may not follow the applicable regulatory requirements; and (ix) our drug candidates may not cause the desired effects or may cause undesirable side effects or our drug candidates may have other unexpected characteristics.

In conducting clinical trials, we cannot be certain that any planned clinical trial will begin on time, if at all. Delays in commencing clinical trials of potential products could increase our drug candidate development costs, delay any potential revenues, reduce the potential length of patent exclusivity, and reduce the probability that a potential product will receive regulatory approval. Significant clinical trial delays also could allow our competitors to bring products to market before we do and impair our ability to commercialize our drug candidates.

The technologies on which we rely are unproven and may not result in any approved and marketable products.

Our technologies or therapeutic approaches are relatively new and unproven. Further, the chemical and pharmacological properties of our drug candidates may not be fully recognized in preclinical studies and small-scale clinical trials, and such compounds may interact with human biological systems in unforeseen, ineffective, or harmful ways that we have not yet identified. Preclinical trials and early-stage clinical trials may not be indicative of results that may be obtained in later-stage trials. As a result of these factors, we may never succeed in obtaining regulatory approval to market any product.

We face substantial competition, which may result in others discovering, developing, or commercializing drugs before or more successfully than us.

There are many other companies, public and private, actively engaged in discovery, development, and commercializing products and technologies that may compete with our drug candidate and program. Some potentially competitive products have been in development or commercialized for years. Many of the marketed products have been accepted by the medical community, patients, and third-party payors. Our ability to compete may be affected by the previous adoption of such products by the medical community, patients, and third-party payors.

We recognize that other companies, including large pharmaceutical companies, may be developing or have plans to develop products and technologies that may compete with ours. Many of our competitors have substantially greater financial, technical, and human resources than we have and/or may have significantly greater experience than we have in undertaking preclinical studies and human clinical trials of new pharmaceutical products, obtaining FDA and other regulatory approvals of products for use in healthcare and manufacturing, and marketing and selling approved products. We anticipate that the competition with our drug candidates and technologies will be based on a number of factors including product efficacy, safety, availability, and price. The timing of market introduction of our drug candidates and competitive products will also affect competition among products. We expect the relative speed with which we can develop products, complete the clinical trials and approval processes, and supply commercial quantities of the products to the market to be important competitive factors.

Our business could be adversely affected by the effects of health epidemics, such as the ongoing COVID-19 global pandemic, including disruptions to our clinical trials or the delay of regulatory approvals.

Our business may be adversely affected by the effects of health epidemics, including the ongoing worldwide COVID-19 pandemic. The COVID-19 pandemic has caused significant volatility and uncertainty globally. This has resulted in an economic downturn and may disrupt our business and delay our clinical trials and regulatory approvals. This may also result in an interruption or issues with respect to the manufacture and supply of our product candidates. Quarantines and similar government orders have been enacted in each of the geographies in which we are conducting our clinical trials and may impact the ability of patients to participate in our trials. The patient populations that are eligible for our clinical trials may be immune-compromised and at higher risk for becoming infected with COVID-19. As COVID-19 affects the parts of the world where we are conducting our clinical trials, and the patients involved with these clinical trials become infected with COVID-19, we may have more adverse events and deaths in our clinical trials. The COVID-19 pandemic may also require that changes be made to any clinical trials or product manufacturing that may ultimately have an adverse impact. Additionally, if global health concerns continue to prevent the FDA from conducting its regular inspections, reviews, or other regulatory activities, it could significantly impact the ability of the FDA to timely review and process our regulatory submissions, which could have a material adverse effect on our business. Such concerns could also affect the ability of our personnel to perform their normal responsibilities and could result in temporary closures of our facilities.

The COVID-19 pandemic continues to evolve, with different jurisdictions having higher levels of infections than others and new variants of the SARS-CoV-2 virus (such as the Omicron variant) emerging and spreading more easily and quickly than other variants. As the COVID-19 pandemic continues to ebb and flow, its ultimate impact is highly uncertain and subject to change. We do not yet know the full extent of potential delays or impacts on our business, our clinical trials, healthcare systems, or the global economy. However, any one or a combination of these events could have an adverse effect on the operation of and results from our clinical trials, which could prevent or delay us from obtaining approval for our drug candidates, or on our employee resources.

Risks Related to Regulatory Approval and Marketing and Other Compliance Matters

Even if we complete the necessary preclinical studies and clinical trials, the marketing approval process is expensive, time-consuming, and uncertain and may prevent us from obtaining approvals for the commercialization of some or all of our drug candidates.

We are not permitted to market our drug candidates in the United States, or in other countries until we, or any future collaborators, receive approval of a new drug application, or NDA, from the FDA or

marketing approval from applicable regulatory authorities outside of the United States. The approval process is lengthy, often taking a number of years, and it is uncertain, and expensive. Securing marketing approval requires the submission of extensive preclinical and clinical data and supporting information to regulatory authorities for each therapeutic indication to establish the drug candidate's safety and efficacy. Information about the product manufacturing process to, and inspection of manufacturing facilities by, the regulatory authorities is also required. Any delay in obtaining or failure to obtain required approvals could materially adversely affect our ability or that of any collaborators we may have to generate revenue from the particular drug candidate, which likely would result in significant harm to our financial position and adversely impact our stock price.

Our failure to obtain marketing approval in foreign jurisdictions would prevent our drug candidates from being marketed abroad, which subjects us to additional business risks that could adversely affect our operations.

We, and any future collaborators, must obtain separate marketing approvals and comply with numerous and varying regulatory requirements in foreign jurisdictions. The approval procedure varies among countries and can involve additional studies. The time required to obtain approval may differ substantially from that required to obtain FDA approval. In addition, in many countries outside of the United States, it is required that the drug be approved for reimbursement before the drug can be approved for sale in that country. We, and any future collaborators, may not obtain approvals from regulatory authorities outside of the United States on a timely basis, if at all. Approval by the FDA does not ensure approval by regulatory authorities in foreign jurisdictions, and approval by one regulatory authority outside of the United States does not ensure approval by regulatory authorities in other jurisdictions or by the FDA.

Even if we, or any future collaborators, obtain marketing approvals for our drug candidates, the terms of approvals and ongoing regulation of our drugs may limit how we, or they, manufacture and market our drugs, which could materially impair our ability to generate revenue.

We, and any future collaborators, must comply with requirements concerning advertising and promotion for any of our drug candidates for which we or they obtain marketing approval. Such promotional communications are subject to a variety of legal and regulatory restrictions and must be consistent with the information in the drug's approved labeling. Thus, we, and any future collaborators, will not be able to promote any drugs we develop for indications or uses for which they are not approved.

In addition, manufacturers of approved drugs and those manufacturers' facilities are required to comply with extensive FDA requirements, including ensuring that quality control and manufacturing procedures conform to current Good Manufacturing Practices ("cGMPs"), which include requirements relating to quality control and quality assurance as well as the corresponding maintenance of records and documentation and reporting requirements. We, our contract manufacturers, our future collaborators, and their contract manufacturers could be subject to periodic unannounced inspections by the FDA, and other regulatory authorities to monitor and ensure compliance with cGMPs.

Accordingly, assuming we, or our future collaborators, receive marketing approval for one or more of our drug candidates, we, and our future collaborators, and our and their contract manufacturers will continue to expend time, money, and effort in all areas of regulatory compliance, including manufacturing, production, product surveillance, and quality control.

If we, and our future collaborators, are not able to comply with post-approval regulatory requirements, we, and our future collaborators, could have the marketing approvals for our drugs withdrawn by regulatory authorities and our, or our future collaborators', ability to market any future drugs could be limited, which could adversely affect our ability to achieve or sustain profitability. Further, the cost of compliance with post-approval regulations may have a negative effect on our operating results and financial condition.

Moreover, legislative and regulatory proposals have been made to expand post-approval requirements and restrict promotional activities relating to our drugs. We cannot be sure whether additional legislative changes will be enacted, or whether FDA regulations, guidance, or interpretations will be changed, or what the impact of such changes on the marketing approvals of our drug candidates, if any, may be. In addition, increased scrutiny by Congress of the FDA's approval process may significantly delay or prevent marketing

approval, as well as subject us and any collaborators to more stringent product labeling and post-marketing testing and other requirements.

Any of our drug candidates for which we, or our future collaborators, obtain marketing approval in the future could be subject to post-approval restrictions or withdrawal from the market and we, and our future collaborators, may be subject to substantial penalties if we, or they, fail to comply with regulatory requirements or if we, or they, experience unanticipated problems with our drugs following approval.

Any of our drug candidates for which we, or our future collaborators, obtain marketing approval in the future, as well as the manufacturing processes, post-approval studies and measures, labeling, advertising, and promotional activities for such drug, among other things, will be subject to continual requirements of and review by the FDA and other regulatory authorities. These requirements include submissions of safety and other post-marketing information and reports, registration and listing requirements, requirements relating to manufacturing, quality control, quality assurance and corresponding maintenance of records and documents, requirements regarding the distribution of samples to physicians and recordkeeping. Even if marketing approval of a drug candidate is granted, the approval may be subject to limitations on the indicated uses for which the drug may be marketed or to the conditions of approval, including the requirement to implement a Risk Evaluation and Mitigation Strategy, which could include requirements for a restricted distribution system.

The FDA may also impose requirements for costly post-marketing studies or clinical trials and surveillance to monitor the safety or efficacy of a drug. The FDA and other agencies, including the Department of Justice ("DOJ"), closely regulate and monitor the post-approval marketing and promotion of drugs to ensure that they are manufactured, marketed and distributed only for the approved indications and in accordance with the provisions of the approved labeling. The FDA imposes stringent restrictions on manufacturers' communications regarding off-label use and if we, or our future collaborators, do not market any of our drug candidates for which we, or they, receive marketing approval for only their approved indications, we, or they, may be subject to warnings or enforcement action for off-label promotion.

In addition, later discovery of previously unknown adverse events or other problems with our drugs or their manufacturers or manufacturing processes, or failure to comply with regulatory requirements both before and after product approval, may yield various results, including: (i) litigation involving patients taking our drug; (ii) restrictions on such drugs, manufacturers or manufacturing processes; (iii) restrictions on the labeling or marketing of a drug; (iv) restrictions on drug distribution or use; (v) requirements to conduct post-marketing studies or clinical trials; (vi) warning letters or untitled letters, as well as other enforcement and adverse actions; (vii) withdrawal of the drugs from the market; (viii) refusal to approve pending applications or supplements to approved applications that we submit; (ix) recall of drugs; (x) fines, restitution, or disgorgement of profits or revenues; (xi) suspension or withdrawal of marketing approvals; (xii) damage to relationships with any potential collaborators; (xiii) unfavorable press coverage and damage to our reputation; (xiv) refusal to permit the import or export of drugs; (xv) drug seizure; or (xvi) injunctions or the imposition of civil or criminal penalties.

We may not be able to obtain or maintain orphan drug exclusivity for applications of our drug candidates.

The FDA may designate a product as an orphan drug if it is a drug intended to treat a rare disease or condition, which is generally defined as a patient population of fewer than 200,000 individuals in the United States. Generally, if a product with an orphan drug designation subsequently receives the first marketing approval for the indication for which it has such designation, the product is entitled to a period of seven years of marketing exclusivity. Orphan drug exclusivity may be lost if the FDA determines that the request for designation was materially defective or if the manufacturer is unable to ensure sufficient quantity of the drug to meet the needs of patients with the rare disease or condition.

In June 2017, the FDA granted us orphan drug designation for tilsotolimod for the treatment of melanoma Stages IIb to IV. However, there can be no assurance that we will obtain orphan drug designation or exclusivity for any other disease indications for which we develop tilsotolimod, or for any other drug candidates. There is also no guarantee that we will be able to obtain orphan drug exclusivity if any product candidates with orphan designation are approved. Even if we obtain orphan drug exclusivity for a product, that exclusivity may not effectively protect the product from competition because different drugs can be

approved for the same condition or the same drug can be approved for different conditions. Even after an orphan drug is approved, the FDA can subsequently approve the same drug for the same condition if the FDA concludes that the later drug is clinically superior in that it is shown to be safer, more effective or makes a major contribution to patient care.

BTD, Fast Track designation, or Rare Pediatric Disease designation by the FDA, and equivalents granted by other regulatory authorities, even if granted for any of our product candidates developed for therapeutic indications, may not lead to a faster development, regulatory review, or approval process, and it does not increase the likelihood that any of our product candidates will receive marketing approval in any jurisdiction.

We may seek a BTD for some of our product candidates. A breakthrough therapy is defined as a therapy that is intended, alone or in combination with one or more other therapies, to treat a serious or life-threatening disease or condition, and preliminary clinical evidence indicates that the therapy may demonstrate substantial improvement over existing therapies on one or more clinically significant endpoints, such as substantial treatment effects observed early in clinical development. For therapies that have been designated as breakthrough therapies, interaction and communication between the FDA and the sponsor of the trial can help to identify the most efficient path for clinical development while minimizing the number of patients placed in ineffective control regimens. Therapies designated as breakthrough therapies by the FDA may also be eligible for priority review and accelerated approval. Designation as a breakthrough therapy is within the discretion of the FDA. Accordingly, even if we believe one of our product candidates meets the criteria for designation as a breakthrough therapy, the FDA may disagree and instead determine not to make such designation. In any event, the receipt of a BTD for a product candidate may not result in a faster development process, review, or approval compared to therapies considered for approval under conventional FDA procedures and does not ensure ultimate approval by the FDA. In addition, even if one or more of our product candidates qualify as breakthrough therapies, the FDA may later decide that such product candidates no longer meet the conditions for qualification or decide that the time period for FDA review or approval will not be shortened.

We may seek Fast Track designation for some of our product candidates for therapeutic indications. If a therapy is intended for the treatment of a serious or life-threatening condition and the therapy demonstrates the potential to address unmet medical needs for this condition, the therapy sponsor may apply for Fast Track designation. The FDA has broad discretion whether or not to grant this designation, so even if we believe a particular product candidate is eligible for this designation; we cannot assure you that the FDA would decide to grant it. Even if we do receive Fast Track designation, we may not experience a faster development process, review, or approval compared to conventional FDA procedures. The FDA may withdraw Fast Track designation if it believes that the designation is no longer supported by data from our clinical development program. Fast Track designation alone does not guarantee qualification for the FDA's priority review procedures.

We may seek Rare Pediatric Disease designation and conditional designation of our marketing application as a "Rare Pediatric Disease product application" for some of our product candidates for therapeutic indications, which, if granted, could qualify us to receive a rare pediatric priority review voucher. The FDA has broad discretion whether or not to grant this designation, so even if we believe a particular product candidate is eligible for this designation, we cannot assure you that the FDA would decide to grant it, and determination whether to issue such a voucher is made by the FDA only at the time of its review and approval of a marketing application. A rare pediatric priority review voucher can be redeemed to receive a priority review of a subsequent marketing application for a different product.

We may seek priority review designation for one or more of our product candidates for therapeutic indications, but we might not receive such designation, and even if we do, such designation may not lead to a faster regulatory review or approval process.

If the FDA determines that a product candidate offers a treatment for a serious condition and, if approved, the product would provide a significant improvement in safety or effectiveness, the FDA may designate the product candidate for priority review. A priority review designation means that the goal for the FDA to review an application is six months, rather than the standard review period of 10 months. We may request priority review for our product candidates. The FDA has broad discretion with respect to whether or

not to grant priority review status to a product candidate, so even if we believe a particular product candidate is eligible for such designation or status, the FDA may decide not to grant it. Moreover, a priority review designation does not necessarily result in an expedited regulatory review or approval process or necessarily confer any advantage with respect to approval compared to conventional FDA procedures. Receiving priority review from the FDA does not guarantee approval within the six-month review cycle or at all.

A Fast Track designation, QIDP, BTD, or other expedited designation for our drug candidates may not lead to a faster development or regulatory review or approval process, and it does not increase the likelihood that those drug candidates will receive marketing approval.

We may seek a breakthrough therapy, Fast Track, or other designation for appropriate drug candidates. Designations such as these are within the discretion of the FDA. The receipt of a designation for a drug candidate may not result in a faster development process, review, or approval compared to drugs considered for approval under conventional FDA procedures and does not ensure ultimate approval by the FDA. In addition, even if one or more of our drug candidates qualify under one of the FDA's designation programs, the FDA may later decide that the products no longer meet the conditions for qualification or decide that the time period for FDA review or approval will not be shortened.

We have only limited experience in regulatory affairs and our drug candidates are based on new technologies; these factors may affect our ability or the time we require to obtain necessary regulatory approvals.

We have never obtained regulatory approval for, or commercialized, a drug. It is possible that the FDA may refuse to accept any or all of our planned NDAs for substantive review or may conclude, after review of our data, that our applications are insufficient to obtain regulatory approval of any of our drug candidates. The FDA may also require that we conduct additional clinical or manufacturing validation studies, which may be costly and time-consuming, and submit that data before it will reconsider our applications. Depending on the extent of these or any other FDA required studies, approval of any NDA that we submit may be significantly delayed, possibly for years, or may require us to expend more resources than we have available or can secure.

We are subject to extensive and costly governmental regulation, the violation of which could expose us to criminal sanctions, civil penalties, contractual damages, reputational harm, and diminished profits and future earnings.

Our product candidates are subject to and any future commercial products will be subject to costly, extensive and rigorous domestic and foreign government regulation. These requirements are continually evolving, which will require us to adapt our practices and processes, which we may not be able to do.

In addition, our future arrangements with third-party payors, healthcare providers, and physicians may expose us to broadly applicable fraud and abuse and other healthcare laws and regulations that may constrain the business or financial arrangements and relationships through which we market, sell, and distribute any drugs for which we obtain marketing approval. These include, but are not limited to, the following: the Anti-Kickback Statute; the Foreign Corrupt Practices Act; the False Claims Act; privacy laws such as HIPAA; transparency requirements; and analogous state and foreign laws. Additionally, some state laws require pharmaceutical companies to comply with the pharmaceutical industry's voluntary compliance guidelines and the relevant compliance guidance promulgated by the federal government and require drug manufacturers to report information related to drug pricing and to certain payments and other transfers of value to physicians, other healthcare providers, and healthcare entities, or marketing expenditures.

Efforts to ensure that our business arrangements with third parties will comply with applicable healthcare laws and regulations will involve substantial costs. It is possible that governmental authorities will conclude that our business practices may not comply with current or future statutes, regulations, or case law involving applicable fraud and abuse or other healthcare laws and regulations. If our operations are found to be in violation of any of these laws or any other governmental regulations that may apply to us, we may be subject to significant civil, criminal, and administrative penalties, damages, fines, imprisonment, exclusion from participation in government funded healthcare programs, such as Medicare and Medicaid, suspension and debarment from procurement and non-procurement transactions, and the curtailment or

restructuring of our operations. If any of the physicians or other healthcare providers or entities with whom we expect to do business are found to be not in compliance with applicable laws, they may be subject to criminal, civil, or administrative sanctions, including exclusions from government-funded healthcare programs.

We depend on information technology, infrastructure, and data to conduct our business. Any significant disruption, or cyberattacks, could have a material adverse effect on our business.

We are dependent upon information technology, infrastructure, and data. Computer systems, including ours and those of our suppliers, partners, and service providers, contain sensitive confidential information or intellectual property, and are vulnerable to service interruption or destruction, cyberattacks (both malicious and random) and other natural or man-made incidents or disasters, which may be prolonged or go undetected. Such events are increasing in their frequency, sophistication, and intensity, and have become increasingly difficult to detect. A significant interruption of our information technology could adversely affect our ability to manage and keep our operations running efficiently and effectively. An incident that results in a wider or sustained disruption to our business or products could have a material adverse effect on our business, financial condition, and results of operations.

Likewise, data privacy or security breaches by employees or others may pose a risk that sensitive data, including our intellectual property, trade secrets, or personal information of our employees, patients, or other business partners may be exposed to unauthorized persons or to the public. There can be no assurance that our efforts, or the efforts of our partners and vendors, will prevent service interruptions, or identify breaches in our systems, that could adversely affect our business and operations and/or result in the loss of critical or sensitive information, which could result in financial, legal, business, or reputational harm to us. In addition, our liability insurance may not be sufficient in type or amount to cover us against claims related to security breaches, cyberattacks, and other related breaches.

Risks Relating to Collaborators

Our existing collaborations and any collaborations we enter into in the future may not be successful.

Our current collaboration agreements, or any collaborations we may enter into in the future, may not be successful. The success of our collaborative alliances, if any, will depend heavily on the efforts and activities of our collaborators. Our existing collaborations and any potential future collaborations have risks, including the following: (i) our collaborators may control the development (and timing thereof) of the drug candidates being developed with our technologies and compounds and/or the companion diagnostic to be developed for use in conjunction with our drug candidates; (ii) our collaborators may control the public release of information regarding the developments; (iii) disputes may arise in the future with respect to the ownership of or right to use technology and intellectual property developed with our collaborators; (iv) disagreements with our collaborators could delay or terminate the development of our products, or result in litigation or arbitration; (v) we may have difficulty enforcing the contracts if any of our collaborators fail to perform; (vi) our collaborators may terminate their collaborations with us, which could make it difficult for us to attract new collaborators or adversely affect the perception of us in the business or financial communities; (vii) our collaboration agreements are likely to be for fixed terms and subject to termination by our collaborators in the event of a material breach or lack of scientific progress by us; (viii) our collaborators may challenge our intellectual property rights or utilize our intellectual property rights in such a way as to invite litigation that could jeopardize or invalidate our intellectual property rights or expose us to potential liability; (ix) our collaborators may not comply with all applicable regulatory requirements; (x) our collaborators may underfund or not commit sufficient resources to the testing or development of our drug candidates; and (xi) our collaborators may develop alternative products either on their own or in collaboration with others, or encounter conflicts of interest or changes in business strategy or other business issues. Additionally, our collaborators will face the same development risks that we do and may not be successful in their efforts. Given these risks, it is possible that any collaborative alliance into which we enter may not be successful.

If we are unable to establish additional collaborative alliances, our business may be materially harmed.

Collaborators provide the necessary resources and drug development experience to advance our compounds in their programs. We have entered into and expect to continue to seek to enter into collaborative

alliances with pharmaceutical companies. Upfront payments and milestone payments received from collaborations help to provide us with the financial resources for our internal research and development programs. We believe additional resources will be required to advance compounds. If we do not reach agreements with additional collaborators in the future or if the terms of such a collaborative alliance are not favorable to us, we may not be able to obtain the expertise and resources necessary to achieve our business objectives, our ability to advance our compounds will be jeopardized, and we may fail to meet our business objectives. Moreover, collaborations are complex and time-consuming to negotiate, document, and implement. We may not be successful in our efforts to establish and implement collaborations on a timely basis.

Risks Relating to Intellectual Property & Exclusivity

If we are unable to obtain and maintain patent protection for our discoveries, the value of our technology and products will be adversely affected.

Our ability to develop and commercialize drugs depends in significant part on our ability to: (i) obtain and maintain valid and enforceable patents; (ii) obtain licenses to the proprietary rights of others on commercially reasonable terms; (iii) operate without infringing upon the proprietary rights of others; (iv) prevent others from infringing on our proprietary rights; and (v) protect our trade secrets.

We do not know whether any of our currently pending patent applications or those patent applications that we license will result in the issuance of any patents. Our issued patents and those that may be issued in the future, or those licensed to us, may be challenged, invalidated, held unenforceable, narrowed in the course of a post-issuance proceeding or circumvented, and the rights granted thereunder may not provide us proprietary protection or competitive advantages against competitors with similar technology. Moreover, intellectual property laws may change and negatively impact our ability to obtain issued patents covering our technologies or to enforce any patents that issue. Because of the extensive time required for development, testing, and regulatory review of a potential product, it is possible that, before any of our products can be commercialized, any related patent may expire or remain in force for only a short period following commercialization, thus reducing any advantage provided by the patent.

Because patent applications in the United States and many foreign jurisdictions are typically not published until 18 months after filing, or in some cases not at all, and because publications of discoveries in the scientific literature often lag behind actual discoveries, neither we nor our licensors can be certain that we or they were the first to make the inventions claimed in issued patents or pending patent applications, or that we or they were the first to file for protection of the inventions set forth in these patent applications.

Third parties may own or control patents or patent applications and require us to seek licenses, which could increase our development and commercialization costs, or prevent us from developing or marketing products.

Although we have many issued patents and pending patent applications in the United States and other countries, we may not have rights under certain third-party patents or patent applications related to our compounds under development. Third parties may own or control these patents and patent applications in the United States and abroad. In particular, we are aware of certain third-party U.S. patents that contain claims related to immunostimulatory polynucleotides and their use to stimulate an immune response, as well as to antisense technology. Although we do not believe any of our toll-like receptor or antisense compounds under development infringe any valid claim of these patents, we cannot be assured that the holder of such patents would not seek to assert such patents against us or, if the holder did, that the courts would not interpret the claims of such patents more broadly than we believe appropriate and determine that we are in infringement of such patents. In addition, there may be other patents and patent applications related to our current or future drug candidates of which we are not aware. Therefore, in some cases, in order to develop, manufacture, sell, or import some of our drug candidates, we or our collaborators may choose to seek, or be required to seek, licenses under third-party patents issued in the United States and abroad or under third-party patents that might issue from U.S. and foreign patent applications. In such an event, we would be required to pay license fees or royalties or both to the licensor. If licenses are not available to us on acceptable terms, we or our collaborators may not be able to develop, manufacture, sell, or import these products, or may be delayed in doing so. Either of these results could have a material adverse effect on our business.

We may become involved in expensive patent litigation or other proceedings, which could result in our incurring substantial costs and expenses or substantial liability for damages, require us to stop our development and commercialization efforts or result in our patents being invalidated, interpreted narrowly, or limited.

There has been substantial litigation and other proceedings regarding patent and other intellectual property rights in the biotechnology industry. We may become a party to various types of patent litigation or other proceedings regarding intellectual property rights from time to time even under circumstances where we are not practicing and do not intend to practice any of the intellectual property involved in the proceedings. In addition to litigation, we may become involved in patent office proceedings, including oppositions, reexaminations, supplemental examinations, and *inter partes* reviews involving our patents or the patents of third parties. We may initiate such proceedings or have such proceedings brought against us. An adverse determination in any such proceeding, or in litigation, could reduce the scope of, or invalidate, our patent rights, allow third parties to commercialize our technology or products and compete directly with us, without payment to us, or result in our inability to manufacture or commercialize products without infringing third-party patent rights. In addition, if the breadth or strength of protection provided by our patents and patent applications is threatened, it could dissuade companies from collaborating with us to license, develop, or commercialize current or future drug candidates. An adverse determination in a proceeding involving a patent in our portfolio could result in the loss of protection or a narrowing in the scope of protection provided by that patent.

The cost to us of any patent litigation or other proceeding, even if resolved in our favor, could be substantial. Some of our competitors may be able to sustain the cost of such litigation or proceedings more effectively than we can because of their substantially greater financial resources. If any patent litigation or other proceeding is resolved against us, we or our collaborators may be enjoined from developing, manufacturing, selling, or importing our drugs without a license from the other party and we may be held liable for significant damages. We may not be able to obtain any required license on commercially acceptable terms or at all. In a patent office proceeding, such as an opposition, reexamination, or *inter partes* review, our patents may be narrowed or invalidated. Uncertainties resulting from the initiation and continuation of patent litigation or other proceedings could have a material adverse effect on our ability to compete in the marketplace. Patent litigation and other proceedings may also absorb significant management time.

Our intellectual property may be infringed by a third party.

Third parties may infringe one or more of our issued patents or trademarks. We cannot predict if, when, or where a third party may infringe one or more of our issued patents or trademarks. To counter infringement, we may be required to file infringement claims, which can be expensive and time-consuming. Moreover, there is no assurance that we would be successful in proving that a third party is infringing one or more of our issued patents or trademarks. Any claims we assert against perceived infringers could also provoke these parties to assert counterclaims against us, alleging that we infringe their intellectual property. In addition, in a patent infringement proceeding, a court may decide that a patent of ours is invalid or unenforceable, in whole or in part, construe the patent's claims narrowly and/or refuse to stop the other party from using the technology at issue on the grounds that our patents do not cover the technology in question, any of which may adversely affect our business. Even if we are successful in proving in a court of law that a third party is infringing one or more of our issued patents or trademarks, there can be no assurance that we would be successful in halting their infringing activities.

We may not be able to obtain orphan drug designation or obtain or maintain the benefits associated with orphan drug designation, such as orphan drug exclusivity and, even if they do, that exclusivity may not prevent the FDA or other comparable foreign regulatory authorities from approving competing products.

As part of our business strategy, we may seek orphan drug designation, or ODD, for any eligible product candidates we develop, but we may be unsuccessful in obtaining or maintaining the benefits of such designations.

Regulatory authorities in some jurisdictions, including the United States, may designate drugs for relatively small patient populations as orphan drugs. Under the Orphan Drug Act, the FDA may designate a product as an orphan drug if it is a drug intended to treat a rare disease or condition, which is generally defined as a patient population of fewer than 200,000 individuals annually in the United States, or a

patient population greater than 200,000 in the United States where there is no reasonable expectation that the cost of developing and making available the drug will be recovered from sales in the United States.

In the United States, ODD entitles a party to financial incentives such as opportunities for grant funding towards clinical trial costs, tax advantages and user-fee waivers. In addition, if a product that has ODD subsequently receives the first FDA approval for a particular active ingredient for the rare disease for which it has such designation, the product is entitled to orphan drug exclusivity. Orphan drug exclusivity in the United States provides that the FDA may not approve any other applications, including a full NDA or other comparable submission, to market the same drug for the same indication for seven years, except in limited circumstances such as a showing of clinical superiority to the product with orphan product exclusivity, or if the FDA withdraws exclusive approval or revokes orphan drug designation, or if the marketing application (NDA or biologics license application) for the orphan drug is withdrawn for any reason, or if the FDA finds that the holder of the orphan exclusivity has not shown that it can ensure the availability of sufficient quantities of the orphan product to meet the needs of patients with the disease or condition for which the product was designated.

Even if we obtain ODD for a product candidate, we may not be able to obtain or maintain orphan drug exclusivity for that product candidate. We may not be the first to obtain regulatory approval of any product candidate for which we have obtained ODD for the orphan-designated indication due to the uncertainties associated with developing pharmaceutical products. In addition, exclusive marketing rights in the United States may be limited if we seek approval for an indication broader than the orphan-designated indication or may be lost if the FDA later determines that the request for designation was materially defective or if we are unable to ensure that we will be able to manufacture sufficient quantities of the product to meet the needs of patients with the rare disease or condition.

Further, even if we obtain orphan drug exclusivity for a product, that exclusivity may not effectively protect the product from competition because different drugs with different active ingredients be approved for the same condition, and competitors also potentially could secure approval of the same drug for different non-orphan conditions. Even after an orphan drug is approved, the FDA can subsequently approve the same drug for the same condition if the FDA concludes that the later drug is clinically superior in that it is shown to be safer, more effective or makes a major contribution to patient care or the manufacturer of the product with orphan exclusivity is unable to maintain sufficient product quantity. Orphan drug designation neither shortens the development time or regulatory review time of a drug nor gives the product candidate any advantage in the regulatory review or approval process.

Risks Relating to Product Manufacturing Marketing and Sales, and Reliance on Third Parties

Even if the compounds we may develop are successful in clinical trials and receive regulatory approvals, we or our collaboration partners may not be able to successfully commercialize them.

Even if the compounds were successful in clinical development and receive regulatory approvals, they may never reach or remain on the market, be successfully developed into commercial products or gain market acceptance among physicians, patients, healthcare payors, or the medical community for a number of reasons including: (i) they may be found ineffective or cause harmful side effects; (ii) they may be difficult to manufacture on a scale necessary for commercialization; (iii) they may experience excessive product loss due to contamination, equipment failure, inadequate transportation or storage, improper installation or operation of equipment, vendor or operator error, natural disasters or other catastrophic events, inconsistency in yields, or variability in product characteristics; (iv) they may be uneconomical to produce; (v) the timing of market introduction of the compounds we may develop and competitive products may be inopportune; (vi) political and legislative changes may make the commercialization of any product candidates we may develop in the future, more difficult; (vii) we may fail to obtain reimbursement approvals or pricing that is cost effective for patients as compared to other available forms of treatment or that covers the cost of production and other expenses; (viii) they may not compete effectively with existing or future alternatives; (ix) we may be unable to develop commercial operations and to sell marketing rights; (x) they may fail to achieve market acceptance; or (xi) we may be precluded from commercialization of a product due to proprietary rights of third parties.

Because we have limited manufacturing experience, and no manufacturing facilities or infrastructure, we are dependent on third-party manufacturers to manufacture drug candidates for us.

We have limited manufacturing experience and no manufacturing facilities, infrastructure, or clinical or commercial scale manufacturing capabilities. In order to continue to develop our drug candidates, apply for regulatory approvals, and ultimately commercialize products, we need to develop, contract for, or otherwise arrange for the necessary manufacturing capabilities. We currently rely upon third parties to produce material for nonclinical and clinical testing purposes and expect to continue to do so in the future. We also expect to rely upon third parties to produce materials that may be required for the commercial production of our drug candidates, if approved. Our current and anticipated future dependence upon others for the manufacture of our drug candidates may adversely affect our future profit margins and our ability to develop drug candidates and commercialize any drug candidates on a timely and competitive basis. We currently do not have any long-term supply contracts.

There are a limited number of manufacturers who operate under the FDA's cGMP regulations capable of manufacturing our drug candidates. As a result, we may have difficulty finding manufacturers for our drug candidates suitable for our needs. If we are unable to arrange for third-party manufacturing of our drug candidates on a timely basis, or on acceptable terms, we may not be able to complete development of our drug candidates or market them.

Any contract manufacturers with which we enter into manufacturing arrangements will be subject to extensive regulatory requirements and ongoing periodic, unannounced inspections by the FDA, or foreign equivalent, and corresponding state and foreign agencies or their designees to ensure compliance with cGMP requirements and other governmental regulations and corresponding foreign standards. Any failure by our third-party manufacturers to comply with such requirements, regulations, or standards could lead to a delay in the conduct of our clinical trials, or a delay in, or failure to obtain, regulatory approval of any of our drug candidates. Such failure could also result in sanctions being imposed, including fines, injunctions, civil penalties, delays, suspension or withdrawal of approvals, product seizures or recalls, imposition of operating restrictions, total or partial suspension of production or distribution, or criminal prosecution.

Additionally, contract manufacturers may not be able to manufacture our drug candidates at a cost or in quantities necessary to make them commercially viable. Furthermore, changes in the manufacturing process or procedure, including a change in the location where the drug substance or drug product is manufactured or a change of a third-party manufacturer, may require prior FDA review and approval in accordance with the FDA's cGMP and NDA regulations. Contract manufacturers may also be subject to comparable foreign requirements. This review may be costly and time-consuming and could delay or prevent the launch of a drug candidate. The FDA or similar foreign regulatory agencies at any time may also implement new standards or change their interpretation and enforcement of existing standards for manufacture, packaging, or testing of products. If we or our contract manufacturers are unable to comply, we or they may be subject to regulatory action, civil actions, or penalties.

We have no experience selling, marketing, or distributing potential products and no internal capability to do so.

Advancing compounds through Phase 3 development and regulatory approval will require us to begin commercialization preparation activities and incur related expenses. These activities will include, among other things, the development of an in-house marketing organization and sales force, a market access and payor reimbursement strategy, and a distribution function, which will require significant capital expenditures, management resources, and time. If we are unable to adequately prepare the market for the potential future commercialization of compounds, we may not be able to generate product revenue once marketing authorization is obtained.

If we are unable or decide not to establish internal sales, marketing, and distribution capabilities, we will pursue collaborative arrangements regarding the sales and marketing of our products; however, there can be no assurance that we will be able to establish or maintain such collaborative arrangements on commercially reasonable terms, or if we are able to do so, that they will have effective sales forces. Any revenue we receive will depend upon the efforts of such third parties, which may not be successful. We may have little or no control over the marketing and sales efforts of such third parties and our revenue from product sales may be lower than if we had commercialized our product candidates ourselves. We also face

competition in our search for third parties to assist us with the sales and marketing efforts of our product candidates. Finally, regardless of whether we contract out our sales and marketing functions, we will be responsible for the marketing and promotion of our products and may be held responsible should any products be improperly marketed or promoted.

If third parties on whom we rely for clinical and preclinical trials do not perform as contractually required or as we expect, we may not be able to obtain regulatory approval for or commercialize our drug candidates and our business may suffer.

We do not have the ability to independently conduct the clinical or preclinical trials required to obtain regulatory approval for our drug candidates. We depend on independent investigators, contract research organizations ("CROs"), and other third-party service providers in the conduct of the trials of our drug candidates and expect to continue to do so. We expect to contract with CROs for future clinical trials. We rely heavily on these parties for successful execution of our trials, but do not control many aspects of their activities. We are responsible for ensuring that each of our trials is conducted in accordance with the applicable regulations and protocols for the trial. Third parties may not complete activities on schedule, or at all, or may not conduct our trials in accordance with regulatory requirements or our protocols. If these third parties fail to carry out their obligations, we may need to enter into new arrangements with alternative third parties. This could be difficult, costly, or impossible, and our preclinical or clinical trials may need to be extended, delayed, terminated, or repeated, and we may not be able to obtain regulatory approval in a timely fashion, or at all, for the applicable drug candidate, or to commercialize such drug candidate being tested in such trials. If we seek to conduct any of these activities ourselves in the future, we will need to recruit appropriately trained personnel and add to our research, clinical, quality, and corporate infrastructure. Moreover, if we need to replace any third parties, we may not be able to do so in a timely fashion or on commercially reasonable terms.

The commercial success of any drug candidates that we may develop will depend upon the degree of market acceptance by physicians, patients, third-party payors, and others in the medical community.

Any products that we ultimately bring to the market, if they receive marketing approval, may not gain market acceptance by physicians, patients, third-party payors, or others in the medical community. For example, current cancer treatments, including chemotherapy and radiation therapy, are well-established in the medical community, and doctors may continue to rely on these treatments. If our products do not achieve an adequate level of acceptance, we may not generate product revenue and we may not become profitable. The degree of market acceptance of our products, if approved for commercial sale, will depend on a number of factors, including: (i) the prevalence and severity of any side effects; (ii) the efficacy and potential advantages over alternative treatments; (iii) the ability to offer our drug candidates for sale at competitive prices; (iv) relative convenience and ease of administration; (v) the willingness of the target patient population to try new therapies and of physicians to prescribe these therapies; (vi) the strength of marketing and distribution support and the timing of market introduction of competitive products; and (vii) publicity concerning our products or competing products and treatments.

Even if a potential product displays a favorable efficacy and safety profile, market acceptance of the product will not be known until after it is launched. Our efforts to educate patients, the medical community, and third-party payors about our drug candidates may require significant resources and may never be successful. Such efforts to educate the marketplace may require more resources than are required by conventional methods used by our competitors.

If we are unable to obtain adequate reimbursement from third-party payors for any products that we may develop or acceptable prices for those products, our revenues and prospects for profitability will suffer.

Most patients rely on Medicare, Medicaid, private health insurers, and other third-party payors to pay for their medical needs, including any drugs we may market. If third-party payors do not provide adequate coverage or reimbursement for any products that we may develop, our revenues and prospects for profitability will suffer.

Third-party payors are challenging the prices charged for medical products and services, and many third-party payors limit reimbursement for newly-approved products. These third-party payors may base

their coverage and reimbursement on the coverage and reimbursement rate paid by carriers for Medicare beneficiaries. Furthermore, many such payors are investigating or implementing methods for reducing health care costs, such as the establishment of capitated or prospective payment systems. Cost-containment pressures have led to an increased emphasis on the use of cost-effective products by healthcare providers, which could limit the price we might establish for products that we or our current or future collaborators may develop or sell, which would result in lower product revenues or royalties payable to us. In particular, third-party payors may limit the indications for which they will reimburse patients who use any products that we may develop or impose other patient access or utilization controls or limitations.

We face a risk of product liability claims and may not be able to obtain insurance.

Our business exposes us to the risk of product liability claims that is inherent in the manufacturing, testing, and marketing of prescription drugs. We face a risk of product liability exposure related to the testing of our drug candidates in clinical trials and will face an even greater risk if we commercially sell any products. Regardless of merit or eventual outcome, liability claims and product recalls may result in: (i) decreased demand for our drug candidates and products; (ii) damage to our reputation; (iii) regulatory investigations that could require costly recalls or product modifications; (iv) withdrawal of clinical trial participants; (v) costs to defend related ligation; (vi) substantial monetary awards to clinical trial participants or patients; (vii) loss of revenue; (viii) the diversion of management's attention away from managing our business; and (ix) the inability to commercialize any products that we may develop.

Although we have product liability and clinical trial liability insurance that we believe is adequate, this insurance is subject to deductibles and coverage limitations. We may not be able to obtain or maintain adequate protection against potential liabilities. If we are unable to obtain insurance at acceptable cost or otherwise protect against potential product liability claims, we will be exposed to significant liabilities, which may materially and adversely affect our business and financial position. These liabilities could also prevent or interfere with our commercialization efforts.

Risks Relating to Ownership of Our Common Stock

Pursuant to the terms of the Merger Agreement, we are required to recommend that our stockholders approve the conversion of all outstanding shares of our Series Z Preferred Stock into shares of our Common Stock. We cannot guarantee that our stockholders will approve this matter, and if they fail to do so our operations may be materially harmed.

Under the terms of the Merger Agreement, we agreed to use reasonable best efforts to call and hold a meeting of our stockholders to obtain the requisite approval for the conversion of all outstanding shares of Series Z Preferred Stock issued in the Acquisition into shares of our Common Stock, as required by the Nasdaq listing rules, within 90 days after the date of the Merger Agreement and, if such approval is not obtained at that meeting, to seek to obtain such approval at an annual or special stockholders meeting to be held at least every six months thereafter until such approval is obtained, which would be time-consuming and costly. Additionally, if our stockholders do not timely approve the conversion of our Series Z Preferred Stock, then the holders of our Series Z Preferred Stock may be entitled to require us to redeem their shares of Series Z Preferred Stock for cash at a price per share equal to the then-current fair value (as such term is defined in the Series Z Certificate of Designation) of the Series Z Preferred Stock, as described in the Series Z Certificate of Designation. If we are forced to redeem a significant amount of shares of Series Z Preferred Stock for cash as described above, such cash settlement could materially affect our results of operations, including raising a substantial doubt about our ability to continue as a going concern.

Nasdaq may delist our Common Stock from its exchange, which could limit your ability to make transactions in our securities and subject us to additional trading restrictions.

If our Common Stock is delisted from Nasdaq, our Common Stock would likely then trade only 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, transactions could be delayed, and we could face significant material adverse consequences, including: a limited availability of market quotations for our securities; reduced liquidity with respect to our securities;

a determination that our shares are a "penny stock," which will require brokers trading in our securities to adhere to more stringent rules, possibly resulting in a reduced level of trading activity in the secondary trading market for our securities; a reduced amount of news and analyst coverage for our Company; and a decreased ability to issue additional securities or obtain additional financing in the future. These factors could result in lower prices and larger spreads in the bid and ask prices for our Common Stock and would substantially impair our ability to raise additional funds and could result in a loss of institutional investor interest and fewer development opportunities for us.

In addition to the foregoing, if our Common Stock is delisted from Nasdaq and it trades on the over-the-counter market, the application of the "penny stock" rules could adversely affect the market price of our Common Stock and increase the transaction costs to sell those shares. The SEC has adopted regulations which generally define a "penny stock" as an equity security that has a market price of less than $5.00 per share, subject to specific exemptions. If our Common Stock is delisted from Nasdaq and it trades on the over-the-counter market at a price of less than $5.00 per share, our Common Stock would be considered a penny stock. The SEC's penny stock rules require a broker-dealer, before a transaction in a penny stock not otherwise exempt from the rules, to deliver a standardized risk disclosure document that provides information about penny stocks and the risks in the penny stock market. The broker-dealer must also provide the customer with current bid and offer quotations for the penny stock, the compensation of the broker-dealer and the salesperson in the transaction, and monthly account statements showing the market value of each penny stock held in the customer's account. In addition, the penny stock rules generally require that before a transaction in a penny stock occurs, the broker-dealer must make a special written determination that the penny stock is a suitable investment for the purchaser and receive the purchaser's agreement to the transaction. If applicable in the future, these rules may restrict the ability of brokers-dealers to sell our Common Stock and may affect the ability of investors to sell their shares, until our Common Stock no longer is considered a penny stock.

Provisions in our Restated Certificate of Incorporation, Bylaws, and Delaware law may prevent a change in control that stockholders may consider desirable.

Section 203 of the General Corporation Law of the State of Delaware (the "DGCL") and our Restated Certificate of Incorporation and Bylaws contain provisions that might enable our management to resist a takeover of our Company or discourage a third party from attempting a takeover of our Company. These provisions include: (i) a classified Board of Directors; (ii) limitations on the removal of directors; (iii) limitations on stockholder proposals at meetings of stockholders; (iv) the inability of stockholders to act by written consent or to call special meetings; and (v) the ability of our Board of Directors to designate the terms of and issue new series of preferred stock without stockholder approval. These provisions could: (i) have the effect of delay, defer, or prevent a change in control of us or a change in our management that stockholders may consider favorable or beneficial, or (ii) discourage proxy contests and make it more difficult for stockholders to elect directors and take other corporate actions.

The Company's Bylaws provide, to the fullest extent permitted by law, that the Court of Chancery of the State of Delaware will be the exclusive forum for certain legal actions between the Company and its stockholders, which could increase costs to bring a claim, discourage claims, or limit the ability of the Company's stockholders to bring a claim in a judicial forum viewed by the stockholders as more favorable for disputes with the Company or the Company's directors, officers, or other employees.

Our Bylaws provide to the fullest extent permitted by law that unless the Company consents in writing to the selection of an alternative forum, the Court of Chancery of the State of Delaware will be the sole and exclusive forum for any: (i) derivative action or proceeding brought on behalf of the Company; (ii) any action asserting a claim of breach of a fiduciary duty owed by any director, officer, other employee, or stockholder of the Company to the Company or its stockholders; (iii) any action arising pursuant to any provision of the DGCL, the Company's Restated Certificate of Incorporation or the Bylaws; (iv) any action to interpret, apply, enforce, or determine the validity of the Restated Certificate of Incorporation or the Bylaws; or (v) any action asserting a claim governed by the internal affairs doctrine. The choice-of-forum provision may increase costs to bring a claim, discourage claims, or limit a stockholder's ability to bring a claim in a judicial forum that it finds favorable for disputes with the Company or its directors, officers, or other employees, which may discourage such lawsuits against the Company or its directors, officers, and

other employees. Alternatively, if a court were to find the choice-of-forum provision contained in our Bylaws to be inapplicable or unenforceable in an action, the Company may incur additional costs associated with resolving such action in other jurisdictions. The exclusive forum provision in our Bylaws would not apply to claims brought under the Securities Exchange Act of 1934, as amended (the "Exchange Act"), or the Securities Act of 1933, as amended, or any other claim for which the federal courts have exclusive jurisdiction. Additionally, such provision will not relieve us of our duty to comply with the federal securities laws and the rules and regulations thereunder, and stockholders will not be deemed to have waived our compliance with these laws, rules, and regulations.

Approximately 16% of our outstanding Common Stock is held (19.9% beneficially owned) by one stockholder. If this significant stockholder chooses to act, they could exert substantial influence over our business, and the interests of this stockholder may conflict with those of other stockholders.

There is a concentration of ownership of our outstanding Common Stock because approximately 16% of our outstanding Common Stock is owned by one stockholder. As of October 6, 2022, entities affiliated with Pillar Partners (collectively, the "Pillar Investment Entities") beneficially owned approximately 19.9% of our outstanding Common Stock. If any of the Pillar Investment Entities acted together, they could be able to exert substantial influence over our business. Additionally, the interests of the Pillar Investment Entities may be different from or conflict with the interests of our other stockholders. This concentration of voting power with the Pillar Investment Entities could delay, defer, or prevent a change of control, entrench our management and the Board of Directors, or delay or prevent a merger, consolidation, takeover, or other business combination involving us on terms that other stockholders may desire. In addition, conflicts of interest could arise in the future between us, on the one hand, and the Pillar Investment Entities on the other hand, concerning potential competitive business activities, business opportunities, the issuance of additional securities and other matters.

Our principal stockholders own a significant percentage of our capital stock and will be able to exert significant control over matters subject to stockholder approval.

Our directors, officers, 5% stockholders, and their affiliates currently beneficially own a substantial portion of our outstanding voting capital stock. Therefore, these stockholders have the ability and may continue to have the ability to influence us through this ownership position. These stockholders may be able to determine some or all matters requiring stockholder approval. For example, these stockholders, acting together, may be able to control elections of directors, amendments of organizational documents, or approval of any merger, sale of assets, or other major corporate transaction. This may prevent or discourage unsolicited acquisition proposals or offers for our Common Stock that you may believe are in your best interest as one of our stockholders.

The issuance or sale of shares of our Common Stock could depress the trading price of our Common Stock.

If (i) we issue additional shares of our Common Stock or rights to acquire shares of our Common Stock in other future transactions, (ii) any of our existing stockholders sells a substantial amount of our Common Stock, or (iii) the market perceives that such issuances or sales may occur, then the trading price of our Common Stock may significantly decrease. In addition, our issuance of additional shares of Common Stock will dilute the ownership interests of our existing common stockholders.

Because we do not intend to pay dividends on our Common Stock, investor returns will be limited to any increase in the value of our stock.

We have never declared or paid any cash dividends on our Common Stock. We currently intend to retain all available funds and any future earnings to support our operations and finance the growth and development of our business and do not anticipate declaring or paying any cash dividends on our Common Stock for the foreseeable future.

Certain Risks with the Reverse Stock Split Proposal

Our expected appeal to Nasdaq may not be successful.

There can be no assurance that we will be able to regain compliance with Nasdaq Listing Rule 5550(a)(2), which requires the Company to maintain a minimum bid price of at least $1 per share for continued listing

on Nasdaq (the "Minimum Bid Requirement") or maintain compliance with other Nasdaq listing requirements, even if the Reverse Stock Split Proposal is approved by our stockholders. If we are required to appeal any notification of delisting, and such appeal is denied or if we fail to regain compliance with Nasdaq's continued listing standards during any period granted by Nasdaq, our Common Stock will be subject to delisting from Nasdaq.

We cannot assure you that the proposed Reverse Stock Split will increase the price of the Common Stock.

We expect that the Reverse Stock Split will increase the market price of the Common Stock. However, the effect of the Reverse Stock Split on the market price of the Common Stock cannot be predicted with any certainty, and the history of reverse stock splits for other companies in our industry is varied, particularly since some investors may view a reverse stock split negatively. It is possible that the per share price of the Common Stock after the Reverse Stock Split will not increase in the same proportion as the reduction in the number of outstanding shares of Common Stock following the Reverse Stock Split, and the Reverse Stock Split may not result in a per share price that would attract investors who do not trade in lower priced stocks. In addition, we cannot assure you that the Common Stock will be more attractive to investors. Even if we implement the Reverse Stock Split, the market price of the Common Stock may decrease due to factors unrelated to the Reverse Stock Split, including our future performance. If the Reverse Stock Split is consummated and the trading price of our Common Stock declines, the percentage decline as an absolute number and as a percentage of our overall market capitalization may be greater than would occur in the absence of the Reverse Stock Split.

We may not satisfy the Nasdaq continued listing requirements following the Reverse Stock Split.

While we intend to monitor the average closing price of the Common Stock and consider available options if it does not continue to trade at a level likely to result in us maintaining compliance with applicable Nasdaq listing standards, no assurances can be made that we will in fact be able to comply with such applicable Nasdaq listing standards and that our Common Stock will remain listed on Nasdaq. If the Common Stock ultimately were to be delisted from Nasdaq for any reason, in addition to the effects noted above under "Background and Reasons for the Reverse Stock Split — Maintain Listing on Nasdaq," it could negatively impact us as it would reduce the liquidity and market price of the Common Stock; reduce the number of investors willing to hold or acquire the Common Stock; negatively impact our ability to access equity markets, issue additional securities and obtain additional financing in the future; affect our ability to provide equity incentives to our employees; and negatively impact our reputation and, as a consequence, our business.

The proposed Reverse Stock Split may decrease the liquidity of the Common Stock and result in higher transaction costs.

The liquidity of the Common Stock may be negatively impacted by the Reverse Stock Split, given the reduced number of shares that would be outstanding after the Reverse Stock Split, particularly if the stock price does not increase as a result of the Reverse Stock Split. In addition, if the Reverse Stock Split is implemented, it may increase the number of our stockholders who own "odd lots" of fewer than 100 shares of Common Stock, which may be more difficult to sell. Brokerage commissions and other costs of transactions in odd lots are generally higher than the costs of transactions of more than 100 shares or of even multiples of 100 shares of Common Stock. Accordingly, the Reverse Stock Split may not achieve the desired results of increasing marketability of the Common Stock as described above.

DESCRIPTION OF BUSINESS OF IDERA PHARMACEUTICALS, INC.

Company Overview

We are a biopharmaceutical company with a business strategy focused on the clinical development, and ultimately the commercialization, of drug candidates for rare disease indications characterized by small, well-defined patient populations with serious unmet medical needs. Our current focus is to identify and potentially acquire rights to novel development and commercial-stage rare disease programs through new business development opportunities, including additional strategic alternatives. We have in the past and may in the future explore collaborative alliances to support development and commercialization of any of our drug candidates.

Until December 2021, we were developing tilsotolimod, via intratumoral injection, for the treatment of solid tumors in combination with nivolumab, an anti-PD1 antibody marketed as Opdivo® by Bristol Myers Squibb Company ("BMS"), and/or ipilimumab, an anti-CTLA4 antibody marketed as Yervoy® by BMS. Due to Phase 3 results in anti-PD-1 refractory advanced melanoma (ILLUMINATE-301), reported in March 2021, which showed the study failed to meet its primary endpoint, as well as a decision in December 2021 to discontinue enrollment in ILLUMINATE-206, our Phase 2 study in solid tumors, Company-sponsored development of tilsotolimod in oncology has been discontinued. Although clinical trials with tilsotolimod have not yet translated into a new treatment alternative for patients, we believe that data supporting tilsotolimod's mechanism of action and encouraging safety profile from across the array of pre-clinical and clinical work to date, together with its intellectual property protection, are noteworthy. As a result, in December 2021, we announced that we would consider an out-licensing arrangement so that tilsotolimod's full potential might continue to be explored on behalf of patients who did not respond to traditional immunotherapy, together with other alternatives.

In September 2022, we acquired Aceragen, Inc. ("Aceragen"), a privately-held biotechnology company addressing rare, orphan pulmonary, and rheumatic diseases for which there are limited or no available treatments. Aceragen owned or controlled the intellectual property related to ACG-701 (patented formulation of sodium fusidate) and ACG-801 (recombinant human acid ceramidase (rhAC)). As a result of our acquisition of Aceragen, our business strategy is to develop and optimize commercial value of ACG-701 and ACG-801 for appropriate patients. Accordingly, we are developing ACG-701 to treat cystic fibrosis pulmonary exacerbations ("CF") and melioidosis, a severe, life-threatening infection, and ACG-801 to treat patients suffering from a genetic mutation in the ASAH 1 gene, also known as Farber disease.

Market Opportunity

We plan to develop ACG-701 for two indications: (1) CF PEx (as defined below) and (2) melioidosis. We are currently focused on developing ACG-801 to treat patients living with Farber disease.

Clinical Development

As discussed above, we are currently developing ACG-701 to treat CF and melioidosis and ACG-801 to treat Farber disease, each of which is discussed in greater detail below.

ACG-701 for Cystic Fibrosis Pulmonary Exacerbations

ACG-701 is a proprietary formulation of sodium fusidate being developed as a potential treatment for acute pulmonary exacerbations ("PEx") associated with CF. CF is a progressive, genetic disease hallmarked by the inflammatory and infectious pulmonary exacerbations that are the primary cause of morbidity and mortality for CF patients. There are over 70,000 patients living with CF globally, with approximately 30,000 patients in the United States. If approved, ACG-701 would represent the first oral product in the United States indicated for the treatment of CF PEx, a major factor behind lung function decline in patients living with CF.

The Phase 2 trial of ACG-701 in CF PEx (the REPRIEVE study) is a randomized, double-blinded, placebo-controlled study evaluating ACG-701 in newly diagnosed pulmonary exacerbations in CF patients. This study, which is funded in part by an award from the Cystic Fibrosis Foundation, will capture multiple

clinical events inclusive of patient-reported outcomes, FEV1, and antimicrobial regimen changes through day 14. The REPRIEVE study is expected to begin in the fourth quarter of 2022. The active component of ACG-701, sodium fusidate, has never been approved in the United States, but has been used for 50+ years with an established clinical efficacy and safety profile ex-US, including as part of CF PEx treatment guidelines in the United Kingdom and Australia.

ACG-701 has received Orphan drug and Fast Track designations for the treatment of CF patients from the FDA. In addition, we have also received a Qualified Infectious Disease Product ("QIDP") designation for ACG-701 for the treatment of CF PEx. If approved, QIDP will provide an additional 5-year extension of regulatory exclusivity.

ACG-701 for Melioidosis

ACG-701 is also being developed for the treatment of melioidosis, a life-threatening infection that can affect numerous organ systems, including the lungs. The pathogen that causes melioidosis, B. pseudomallei, is endemic in Southeast Asia and is classified as a Category A biothreat agent by the U.S. government. The U.S. Department of Defense's Defense Threat Reduction Agency ("DTRA") is supporting the development of ACG-701 as a potential medical countermeasure against this pathogen with funding up to $49.7 million, of which $13.2 million has been received by the Company.

We are conducting the TERRA study (NCT05105035), a phase 2 randomized, double-blind, placebo-controlled study for the treatment of melioidosis in hospitalized patients with melioidosis. The TERRA study will capture multiple clinical events inclusive of mortality, organ failure, sepsis, and treatment modifications through day 14. An independent data monitoring committee has responsibility for overseeing the safety and efficacy data from the TERRA study, and will meet by the end of 2022 to determine whether the study should continue as planned or, if efficacy and safety data are compelling, to be unblinded for full analysis.

ACG-801 for Farber Disease

ACG-801, recombinant human acid ceramidase, is an investigational biological enzyme replacement therapy being developed for the treatment of Farber disease. Farber disease is a severe, progressive monogenic lysosomal storage disorder, involving mutations in the acid ceramidase gene that lead to toxic levels of ceramide accumulation. Acid ceramidase acts in the lysosome to metabolize ceramide, a pro-inflammatory lipid. Loss of acid ceramidase function leads to abnormal accumulation of ceramide, causing macrophage-driven inflammation and multi-organ disease affecting bone, cartilage, the immune system, central nervous system, and the lungs. Patients with the most severe phenotype of Farber disease die early in life, most commonly from respiratory failure. The worldwide prevalence of Farber disease is expected to exceed 1,000 patients. We are not aware of any competitive development programs seeking to treat Farber disease and there are no Farber disease-specific treatments currently approved by the FDA.

We are planning a single, harmonized trial for regulatory submission for both FDA and EMA approval, known as the ADVANCE study, which, as discussed in greater detail below, is partially funded by NovaQuest. A randomized, double-blind, placebo-controlled study of Farber patients, the ADVANCE study will measure nodule changes and capture patient-specific disease burden improvement through week 28. We have had regular interactions with the FDA, and most recently, had our request for a clinical-focused Type C meeting granted. Following resolution of the clinical hold pertaining to manufacturing and quality issued, we expect to initiate the ADVANCE clinical study for ACG-801 in Farber disease in the second half of 2023.

The FDA has granted Orphan, Fast Track, and Rare Pediatric Disease designations for ACG-801, which is anticipated to be eligible for a Rare Pediatric Disease priority review voucher. Additionally, ACG-801 was granted Orphan Drug Designation by the EMA for Farber disease.

Tilsotolimod (IMO-2125)

Tilsotolimod is a synthetic phosphorothioate oligonucleotide that acts as a direct agonist of TLR9 to stimulate the innate and adaptive immune systems. It was developed for administration via intratumoral

injection in combination with systemically administered checkpoint inhibitors and costimulation therapies for the treatment of various solid tumors. We referred to our tilsotolimod development program as the ILLUMINATE development program. All Company-sponsored development in oncology has been discontinued and study-related activities are in the process of being concluded.

ILLUMINATE-301 — Phase 3 Trial of Tilsotolimod (IMO-2125) in Combination with Ipilimumab in Patients with Anti-PD1 Refractory Melanoma

In the first quarter of 2018, we initiated a Phase 3 trial of intratumoral tilsotolimod in combination with ipilimumab in patients with anti-PD-1 refractory melanoma, which we referred to as ILLUMINATE-301. This trial compared the results of the tilsotolimod — ipilimumab combination to those of ipilimumab alone in a 1:1 randomization. The family of primary endpoints of the trial consisted of ORR by blinded independent central review RECIST v1.1 and median OS.

As discussed above, in March 2021, we reported that ILLUMINATE-301 did not meet its primary endpoint of ORR. In May 2021, following evaluation of the full data set, we announced we would not continue ILLUMINATE-301 to its OS primary endpoint.

ILLUMINATE-206 — Phase 2 Trial of Tilsotolimod (IMO-2125) in Combination with Nivolumab and Ipilimumab for the treatment of Solid Tumors

In September 2019, we initiated a Phase 2, open-label, global, multicohort study to evaluate the safety and effectiveness of tilsotolimod administered intratumorally in combination with nivolumab and ipilimumab for the treatment of solid tumors. We refer to this study as ILLUMINATE-206. The first solid tumor investigated under ILLUMINATE-206 was relapsed/refractory Microsatellite-Stable Colorectal Cancer (“MSS-CRC”) in immunotherapy-naïve patients (the “MSS-CRC Study”).

In December 2021, we announced that preliminary data from the second ten patients dosed in the safety cohort of ILLUMINATE-206 showed a safety profile consistent with the first ten patients in ILLUMINATE-206 and with prior studies. Of the eight patients who had a post-baseline disease assessment evaluated per RECIST v1.1, one experienced SD with disease control for more than six months; the remaining patients experienced Progressive Disease (“PD”).

Clinical Funding and Collaborative Alliances

Our clinical funding and current alliances include collaborations with the Cystic Fibrosis Foundation, DTRA, NovaQuest, and Scriptr Global, Inc. (“Scriptr”). We may seek to enter into new funding arrangements or collaborative alliances to support development and commercialization of additional drug candidates.

Cystic Fibrosis Foundation

In 2021, the Cystic Fibrosis Foundation (“CFF”) provided us a Therapeutic Development Award Agreement in the amount of $3,500,000 of which $1,000,000 has been received to date. Pursuant to this agreement, the CFF will provide us payments in line with certain development program milestones estimated to begin in 2022 and through 2023.

Defense Threat Reduction Agency

As discussed above, in 2021, we were awarded a contract by the DTRA to develop ACG-701 as a potential medical countermeasure against the pathogen that causes melioidosis, B. Pseudomallei. This contract will fund clinical and regulatory development of ACG-701 up to $49.7 million, of which $13.2 million has been received by the Company as of September 30, 2022. The term of this contract extends through December 2026.

NovaQuest

Pursuant to the Purchase Agreement, NovaQuest agreed to provide up to $20 million in capital contributions for development funding relating to the treatment of Farber disease (“Capital Contributions”). The Capital Contributions are to be paid by NovaQuest in quarterly installments for our eligible expenses

associated with the development of ACG-801 for Farber disease. The NovaQuest transaction includes tiered royalty payments on net sales based on a mid-double-digit percentage which drops to mid-single digits after reaching a predetermined milestone cap, and a required 35% share of the proceeds from the possible sale of a PRV, which may be awarded by the FDA upon regulatory approval in the U.S. for ACG-801.

Collaboration with Scriptr

In February 2021, we entered into a collaboration and option agreement with Scriptr, pursuant to which (i) Scriptr and Idera will conduct a research collaboration utilizing Scriptr Platform Technology ("SPT") to identify, research and develop gene therapy candidates (each, a "Collaboration Candidate") for the treatment, palliation, diagnosis or prevention of (a) myotonic dystrophy type 1 ("DM1 Field") and (b) Friedreich's Ataxia ("FA Field") on a Research Program-by-Research Program basis, as applicable, and (ii) we were granted an exclusive option, in our sole discretion, to make effective the Scriptr License Agreement, as defined below, for a given Research Program, as defined below, to make use of Collaboration Candidates and related intellectual property (collectively, the "Scriptr Agreement").

Pursuant to the Scriptr Agreement, Scriptr will use commercially reasonable efforts to carry out research activities set forth in accordance with the applicable DM1 Field and FA Field research plans, including certain pre-clinical proof of concept studies, to identify research Collaboration Candidates utilizing SPT (each, a "Research Program"). Following the completion of activities under a given Research Program, Scriptr will prepare and submit to us a comprehensive data package (each, a "Data Package") that summarizes, on a Research Program-by-Research Program basis, any Collaboration Candidates researched under the Research Program, including any data and results. Upon receipt of a Data Package, we have, in our sole discretion, up to two-hundred seventy (270) calendar days to make effective the exclusive license agreement entered into by and between Scriptr and us, pursuant to which, among other things, Scriptr grants us exclusive rights and licenses with respect to the development, manufacture and commercialization of licensed candidates and products, subject to certain conditions and limitations (the "Scriptr License Agreement"), for a given Research Program (each licensed Research Program, a "Licensed Program"). The Scriptr License Agreement provides for customary development milestones on candidates developed under a Licensed Program and royalties on licensed products, if any.

In partial consideration of the rights granted by Scriptr to us under the Scriptr Agreement, we made a one-time, non-creditable and non-refundable payment to Scriptr during the first quarter of 2021. In order to fund the Research Programs, we will reimburse Scriptr for costs incurred by or on behalf of Scriptr in connection with the conduct of each Research Program during the research term in accordance with the applicable Research Program budget and payment schedule.

Academic and Research Collaborations

We have entered into research collaborations with scientists at leading academic research institutions. These research collaborations allow us to augment our internal research capabilities and obtain access to specialized knowledge and expertise. In general, our research collaborations may require us to supply compounds and pay various amounts to support the research. Under these research agreements, if a collaborator, solely or jointly with us, creates any invention, we may own exclusively such invention, have an automatic paid-up, royalty-free non-exclusive license, or have an option to negotiate an exclusive, worldwide, royalty-bearing license to such invention. Inventions developed solely by our scientists in connection with research collaborations are owned exclusively by us. These collaborative agreements are non-exclusive and may be terminated with limited notice.

Recent Developments

Reduction-in-Force

In April 2021, following the announcement that the ILLUMINATE-301 trial did not meet its primary endpoint of ORR, we implemented a reduction-in-force that affected approximately 50% of our workforce through September 30, 2021, primarily in the area of research and development. The decision was made in order to align our workforce with our needs in light of the outcome of ILLUMINATE-301's ORR endpoint,

our ongoing ILLUMINATE development program, and other business development activities focused on identifying new portfolio opportunities.

In connection with these actions, we incurred and paid termination costs for the reduction in workforce, which includes severance, benefits and related costs, of approximately $1.3 million during the year ended December 31, 2021. In September 2022, in connection with the Acquisition, we restructured our operations and reduced the workforce by approximately 38% of the Company's pre-Acquisition employees.

Nasdaq Compliance — Minimum Bid Requirement

As previously reported, on November 26, 2021, we received a deficiency letter (the "First Nasdaq Letter") from the Nasdaq Listing Qualifications Department (the "Staff"), notifying us that we were not in compliance with Nasdaq Listing Rule 5550(a)(2), which requires us to maintain a minimum bid price of at least $1 per share for continued listing (the "Minimum Bid Requirement"). Our failure to comply with the Minimum Bid Requirement was based on the Common Stock per share price being below the $1.00 threshold for a period of 30 consecutive business days. Pursuant to the First Nasdaq Letter, we had 180 calendar days from November 26, 2021 to regain compliance with the Minimum Bid Requirement.

Also as previously reported, on May 26, 2022, we received a second notice (the "Second Nasdaq Letter") from the Staff indicating that, while we had not regained compliance with the Minimum Bid Requirement, the Staff had determined that we were eligible for an additional 180-day period, or until November 21, 2022, to regain compliance with the Minimum Bid Requirement. Pursuant to the Second Nasdaq Letter, if compliance cannot be demonstrated by November 21, 2022, the Staff would provide written notification that the Common Stock will be subject to delisting, at which point we would then be entitled to appeal the Staff's determination to a Nasdaq hearings panel.

We are currently working with the Staff but expect to receive a written notification from Nasdaq stating that we had not regained compliance with the Minimum Bid Requirement. We are aware that such written notification will provide us with the opportunity to request a hearing before the Nasdaq Hearings Panel (the "Panel") within a specified date from the written notice. If we have not met the Minimum Bid Requirement by November 21, 2022, it fully expects to submit an appeal of such written notification to the Panel as soon as practicable and prior to any deadline. Under Nasdaq rules, the delisting of our Common Stock will be stayed during the pendency of the appeal and during such time our Common Stock will continue to be listed on Nasdaq. There can be no assurance that such an appeal will be successful, or that we will be able to regain compliance with the Minimum Bid Price requirement or maintain compliance with other Nasdaq listing requirements. If our appeal is denied or if we fail to regain compliance with Nasdaq's continued listing standards during any period granted by the Panel, our Common Stock will be subject to delisting from Nasdaq.

Nasdaq Compliance — Initial Listing Requirements

On October 21, 2022, we received a letter from the Staff notifying us that our acquisition of Aceragen will, upon stockholder approval of Proposal No. 1, be considered a "change of control" transaction under Nasdaq rules. As such, we must meet Nasdaq's initial listing requirements. Accordingly, we must meet all the requirements set forth in Nasdaq Rule 5505(a) and at least one of the standards set forth in Nasdaq Rule 5505(b).

The listing standards of Nasdaq Rule 5505(a) requires us to have, among other things:

- a minimum bid price that is greater than or equal to $4.00 per share;
- at least 1,000,000 unrestricted publicly held shares;
- at least 300 round lot holders, and at least 50% of such round lot holders must each hold unrestricted securities with a market value of at least $2,500;
- at least three registered and active market makers; and
- a minimum average daily trading volume of 2,000 shares over the 30-trading day period prior to listing, with trading occurring on more than half of those 30 days, unless such security is listed on Nasdaq in connection with a firm commitment underwritten public offering of at least $4 million.

We must also satisfy at least one of the following Rule 5505(b) requirements:

- stockholders' equity of at least $5 million, a market value of unrestricted publicly held shares of at least $15 million, and two years of operating history;
- a market value of listed securities of at least $50 million, stockholders' equity of at least $4 million, and a market value of unrestricted publicly held shares of at least $15 million; or
- net income from continuing operations of $750,000 in the most recently completed fiscal year or in two of the three most recently completed fiscal years, stockholders' equity of at least $4 million, and a market value of unrestricted publicly held shares of at least $5 million.

Corporate Information

We were incorporated in Delaware in 1989 and our office headquarters is located at 505 Eagleview Boulevard, Suite 212, Exton, Pennsylvania 19341.

SUMMARY DISCUSSION AND ANALYSIS OF FINANCIAL CONDITION AND RESULTS OF OPERATION OF ACERAGEN, INC.

Set forth below is a summary of Management's Discussion and Analysis of Financial Condition and Results of Operations of Aceragen ("MD&A") for the year ended December 31, 2021 and the periods ended June 30, 2022 and 2021. The complete MD&A for this period is attached to this proxy statement as *Annex F*. The MD&A should be read in conjunction with the audited financial statements and notes of Aceragen for the period from March 2, 2021 through December 31, 2021, attached as *Annex C*, and the unaudited financial statements and accompanying notes of Aceragen for the six months ended June 30, 2022 and 2021, attached as *Annex D*. In addition to historical information, this MD&A contains forward-looking statements within the meaning of Section 27A of the Securities Act of 1933, as amended, and Section 21E of the Securities Exchange Act of 1934, as amended, which are intended to be covered by the safe harbors created thereby. *See* "Cautionary Information Regarding Forward-Looking Statements."

Results of Operations

Aceragen has received two significant contracts for funding up to $49.7 million from the United States government, funded by the Defense Threat Reduction Agency ("DTRA"). Additionally, the Company has received a $3.5 million award from the Cystic Fibrosis Foundation, of which $2.5 million remains available to be billed as certain developmental milestones are achieved.

Since beginning operations, Aceragen has generated approximately $10.4 million in revenues. However, its expenses for research and development and general and administrative activities have been $41.8 million. Research and development expenses for government sponsored and non-government sponsored activities include both outsourced services such as, drug product and substance manufacturing with a contract manufacturing organization, analytical services, and clinical studies related activities and internal personal related costs.

Liquidity and Capital Resources

Similar to other development stage biotechnology companies, Aceragen's products that are being developed have not generated adequate revenue to achieve profitability. As a result, we have historically suffered recurring losses and we have required significant cash resources to execute Aceragen's business plans. These losses are expected to continue for the foreseeable future.

To date, Aceragen's operations have been financed primarily by its DTRA funded government contracts, product financing, net proceeds from the sale of preferred and common stock, and cash received from grants. As of June 30, 2022, Aceragen had cash of $7.9 million, consisting of readily available cash in bank accounts.

Aceragen recognizes that it will need to raise additional capital in order to continue to execute its business plan in the future. There is no assurance that additional financing will be available when needed or that Aceragen will be able to obtain financing on terms acceptable to it or whether Aceragen will become profitable and generate positive operating cash flow. If Aceragen is unable to raise sufficient additional funds, it will have to further scale back its operations. Aceragen believes it has sufficient capital to fund its obligations, as they become due, in the ordinary course of business into the third quarter of 2023. Aceragen based this estimate on assumptions that may prove to be incorrect, and it could use currently available capital resources sooner than currently expected.

The entirety of Management's Discussion and Analysis of Financial Condition and Results of Operations is attached as *Annex F* hereto.

IDERA MANAGEMENT FOLLOWING THE ACQUISITION

Board of Directors

The following table provides information about those persons who serve as directors of the Company following completion of the Acquisition.

Name	Age		Committees[1]			Class – Election Year
			Audit	Comp	N&CG	
Vincent J. Milano	59	Chair of the Board				Class I – 2023
Dr. Cristina Csimma	63	Director		X	**C**	Class I – 2023
Michael Dougherty	64	Director	**C**		X	Class I – 2023
James Geraghty	68	Director				Class II – 2024
Dr. Maxine Gowen	64	Director	X	**C**		Class II – 2024
Ronald Wooten	63	Director	X			Class III – 2025
John C. Taylor	52	Director				Class III – 2025

(1) "C" indicates Chair of the applicable committee.

Vincent J. Milano is the Chair of our Board, having previously served as our President and CEO from 2014 to September 2022 and has been a member of our Board of Directors since 2014. Prior to joining us, Mr. Milano served as Chairman, President, and CEO of ViroPharma Incorporated ("ViroPharma"), a pharmaceutical company that was acquired by Shire plc in 2014, from 2008 to 2014, as its Vice President, Chief Financial Officer, and Chief Operating Officer from 2006 to 2008, and as its Vice President, Chief Financial Officer, and Treasurer from 1996 to 2005. Mr. Milano also served on the board of directors of ViroPharma from 2008 to 2014. Prior to joining ViroPharma, Mr. Milano served in increasingly senior roles, most recently senior manager, at KPMG LLP, an independent registered public accounting firm, from 1985 to 1996.

Mr. Milano currently serves on the board of directors of Aclaris Therapeutics, Inc. (Nasdaq: ACRS) and Biocryst Pharmaceuticals, Inc. (Nasdaq: BCRX), each a publicly traded company, since 2020 and 2021, respectively. Mr. Milano previously served as a director of Spark Therapeutics, Inc., Vanda Pharmaceuticals Inc., and privately held VenatoRx Pharmaceuticals, Inc. from 2014 to 2019, from 2010 to 2019, and from 2013 to 2022, respectively. Mr. Milano holds a Bachelor of Science degree in Accounting from Rider College.

We believe that Mr. Milano's qualifications to sit on our Board of Directors include his significant public company management and board experience and knowledge of our industry.

Dr. Cristina Csimma is a biopharmaceutical leader and strategic advisor with decades of experience in biotechnology, large pharma, and venture capital. Dr. Csimma currently serves on the board of directors of Syncona Partners, LLP (LON: SYNC), having been elected to its board of directors in February 2022. She also serves as a board director and a member of the compensation committee of Palisade Bio, Inc. (Nasdaq: PALI), having been elected to its board of directors in 2017. She also serves as the chair of the board of directors of Caraway Therapeutics, Inc. since 2019 (executive chair in 2019). Dr. Csimma also serves on advisory boards, including the Muscular Dystrophy Association Venture Philanthropy Scientific Advisory Committee since 2006; the Harvard and Brigham and Women's Hospital MRCT Center External Advisory Board since 2015; the TREAT-NMD Advisory Committee for Therapeutics (TACT) since 2009; and the Executive Oversight Board to the National Institutes of Health (NIH) NeuroNext Network since 2013.

Dr. Csimma previously served as chair of the board of directors of Forendo Pharma between 2020 and 2021 (executive chair in 2021) when it was acquired by Organon & Co. Dr. Csimma also previously served as a director on the boards of Seneca Biopharma, Inc. (Nasdaq: SNCA; formerly Neuralstem Inc., from 2017 until 2021 when it merged with Leading BioSciences Inc. to form Palisade Bio), Juniper Pharmaceuticals, Inc. (from 2010 until its acquisition by Catalent, Inc. in 2018), and Vtesse Inc. (from 2014 until its acquisition by Sucampo Pharmaceuticals, Inc. in 2017). Dr. Csimma was the executive chair and a senior advisor of Exonics Therapeutics, Inc. (from 2016 to 2017), and was President, founding CEO, and

board director of Cydan Inc. from 2012 to 2014. She also served on the board of directors of T1D Exchange (non-profit Type 1 Diabetes) from 2018 to 2020 and the NIH Blueprint Neurotherapeutics Network External Oversight Committee from 2014 to 2018, was Vice President of Drug Development at Virdante Pharmaceuticals Inc. from 2009 to 2011, Principal at Clarus Ventures LLC (now Blackstone Life Science), and held roles of increasing responsibility in Clinical Development and Translational Research at Wyeth (now Pfizer Inc.), Genetics Institute, and Dana Farber Cancer Institute. Dr. Csimma holds both a Doctor of Pharmacy and a Bachelor of Science in Pharmacy from the Massachusetts College of Pharmacy and Allied Health Sciences, as well as a Master of Health Professions from Northeastern University.

We believe that Dr. Csimma's qualifications to sit on our Board of Directors include her significant public company management and board experience and knowledge of our industry.

Michael Dougherty has served on our Board of Directors since 2019, and as chair of our Board of Directors from 2021 until 2022. Mr. Dougherty currently serves on the board of directors of Trevena, Inc. (Nasdaq: TRVN). Mr. Dougherty was executive chairman of Celator Pharmaceuticals, Inc., or Celator, from 2015 until its acquisition by Jazz Pharmaceuticals plc in 2016; he also served as a director of Celator from 2013 to 2016. Mr. Dougherty previously served in a variety of senior positions in the biopharmaceutical industry, including as CEO, President, Chief Operating Officer, and Chief Financial Officer. He also previously served as a member of the board of directors of and Marinus Pharmaceuticals, Inc. (Nasdaq: MRNS), Foundation Medicine, Inc., Adolor Corporation, Genaera Corporation, Aviragen Therapeutics, Inc., Cempra, Inc., and ViroPharma Incorporated. Mr. Dougherty received a Bachelor of Science in Accounting from Villanova University.

We believe that Mr. Dougherty's qualifications to sit on our Board of Directors include his significant public company management and board experience and knowledge of our industry.

James A. Geraghty has served on our Board of Directors since 2013 and as chair of our Board of Directors from that time until 2021. Mr. Geraghty is an industry leader with over 35 years of strategic and leadership experience, including more than 25 years as a senior member of executive teams at biotechnology companies developing and commercializing innovative therapies. From 2013 to 2016, Mr. Geraghty was an Entrepreneur in Residence at Third Rock Ventures, a leading biotech venture fund. From 2011 to 2012, he served as a Senior Vice President of Sanofi S.A., a global healthcare company. Prior to that, he served in various senior management roles at Genzyme Corporation, or Genzyme, a biotechnology company, from 1992 to 2011, including as Senior Vice President of International Development and President of Genzyme Europe. Mr. Geraghty currently serves as chairman of the board of Orchard Therapeutics plc and Pieris Pharmaceuticals, Inc. and as a member of the board of Voyager Therapeutics, Inc., and Fulcrum Therapeutics, Inc. He also previously served as a director of bluebird bio, Inc. and GTC Biotherapeutics, Inc.

We believe that Mr. Geraghty's qualifications to sit on our Board of Directors include his public company board and management experience and his broad and deep knowledge of our industry.

Dr. Maxine Gowen served as the CEO and a board director of TamuroBio Inc., a privately held drug development company, from 2019 to 2021, and she remains on the board of directors. She was the founding President and CEO of Trevena, Inc., or Trevena, (Nasdaq: TRVN), a publicly traded biopharmaceutical company, from 2007 until her retirement in 2018; she remained a member of its board of directors until 2021. Prior to joining Trevena, Dr. Gowen was Senior Vice President for the Center of Excellence for External Drug Discovery at GlaxoSmithKline plc, or GSK, where she held a variety of leadership positions during her tenure of 15 years. Before GSK, Dr. Gowen was Senior Lecturer and Head, Bone Cell Biology Group, Department of Bone and Joint Medicine, of the University of Bath, U.K. Dr. Gowen has served as a director of Aclaris Therapeutics, Inc. (Nasdaq: ACRS) since 2019, Passage Bio, Inc. (Nasdaq: PASG), and as its Chairwoman, since 2021, and Merus NV (Nasdaq: MRUS) since 2021, each a publicly traded company. She previously held a board seat in the state biotechnology industry association, Life Sciences of Pennsylvania from 2015 until 2021 and in the national biotechnology industry association, BIO, from 2008 until 2018. Dr. Gowen previously served as a director of Human Genome Sciences, Inc., from 2008 until 2012, and Akebia Therapeutics, Inc. (Nasdaq: AKBA) from 2014 until 2021, both publicly traded companies, as well as Panorama Medicine, from 2020 until 2021, a privately held biotechnology company. She received her Ph.D. from the University of Sheffield, U.K., an M.B.A. with academic honors from The Wharton School of the University of Pennsylvania, and a B.Sc. with Honors in Biochemistry from the University of Bristol, U.K.

We believe that Dr. Gowen's qualifications to sit on our Board of Directors include her significant public company management and board experience and knowledge of our industry.

Ronald Wooten was appointed to our Board of Directors in connection with the closing of the Acquisition. Prior to the closing of the Acquisition, Mr. Wooten served as a member of the board of directors of Aceragen since May 2021. Mr. Wooten has been a partner of NovaQuest Capital Management, L.L.C., an investment firm that focuses on the biopharmaceutical sector, since its inception in 2010. Since 2010, Mr. Wooten has been a member of the investment committee of NovaQuest Pharma Opportunities Fund III, NovaQuest Pharma Opportunities Fund IV, NovaQuest Pharma Opportunities Fund V, NovaQuest Private Equity Fund I, and NovaQuest Animal Health Fund I. From 2000 to 2010, he was President of the NovaQuest business unit of Quintiles Inc., a contract research company ("Quintiles"). Mr. Wooten was previously Executive Vice President at Quintiles and served on its board of directors from 2008 to 2010. Mr. Wooten's previous experience includes nine years with First Union Securities, where he served as a Managing Director of Investment Banking. Mr. Wooten holds a B.A. degree in Chemistry from the University of North Carolina at Chapel Hill and an M.B.A. from Boston University.

We believe that Mr. Wooten's qualifications to sit on our Board of Directors include his significant public company management and board experience and knowledge of our industry.

John C. Taylor was appointed as our Chief Executive Officer and to our Board of Directors in connection with the closing of the Acquisition. Mr. Taylor was a co-founder and previously served as the Chief Executive Officer of Aceragen since its founding in 2021. Since 2018, Mr. Taylor has served as the Entrepreneur In Residence for the North Carolina Biotechnology Center. From 2013 to 2018, Mr. Taylor served as the Chief Executive Officer for Spyryx Biosciences, Inc., a company focused on developing therapies targeting novel regulation of ENaC for lung complications associated with cystic fibrosis. Prior to this, Mr. Taylor served as the Vice President, Corporate Development for Synageva BioPharma Corp. from 2009 to 2013 and Vice President, Business Development for Javelin Pharmaceuticals, Inc. from 2008 to 2009. Mr. Taylor holds a Bachelor of Science in Biological Sciences from Clemson University and a Master of Science in Technology Management from the University of Pennsylvania.

We believe that Mr. Taylor's qualifications to sit on our Board of Directors include his significant public company management and board experience and knowledge of our industry.

Executive Management

The following table provides information about those persons who serve as executive officers of the Company following completion of the Acquisition.

Name	Age	Position(s) Held in Company Following the Acquisition
Andy Jordan	75	Chief Strategy Officer
John J. Kirby	50	Chief Financial Officer
Dr. Carl Kraus	53	Chief Medical Officer
Bryant D. Lim	51	Chief Business Officer and General Counsel
Daniel Salain	55	Chief Operating Officer
John C. Taylor*	52	Chief Executive Officer

* Mr. Taylor is a member of our Board of Directors. *See* "Idera Management Following the Acquisition — *Board of Directors*" above for more information about Mr. Taylor.

Andy Jordan was appointed as the Chief Strategy Officer of Idera in connection with the closing of the Acquisition. Previously, Mr. Jordan served as the Chief Financial Officer of Aceragen from 2021 to September 2022. Prior to joining Aceragen, Mr. Jordan founded AR Jordan Consulting, working primarily with biotechnology companies, focusing on bringing to market drugs to treat orphan/rare diseases, serving as its principal from 2008 to 2021. Prior to this, Mr. Jordan held executive-level positions with Guildford Pharmaceuticals, Inc., Odyssey Pharmaceuticals, Inc., and InfraReDx, Inc. Mr. Jordan served as a member of the board of directors for Gemin X BioPharmaceuticals, Inc. from 2003 to 2011 and Spyryx Biosciences,

Inc. from 2013 to 2018. Mr. Jordan holds a Bachelor of Arts in Liberal Arts from Rutgers University and an M.B.A. in Professional Accounting from Rutgers University — Newark.

John J. Kirby has served as the Chief Financial Officer of Idera since 2019. Mr. Kirby joined the Company in 2015 as our Vice President of Corporate Accounting. He served as Vice President of Finance from 2018 to 2019 and has served as Senior Vice President and Chief Financial Officer since 2019 (and as principal financial officer and principal accounting officer since 2018). Prior to joining us, Mr. Kirby served as Assistant Controller at Endo Pharmaceuticals, Inc. from 2014 to 2015. From 2012 to 2014, Mr. Kirby served as Vice President, Chief Accounting Officer and Corporate Controller at ViroPharma Incorporated, which was acquired by Shire Plc in 2014. Mr. Kirby began his career at KPMG, LLP in its Healthcare and Life Science Practice and served as a Regional Audit Director at AstraZeneca Pharmaceuticals L.P. prior to joining ViroPharma Incorporated. Mr. Kirby received his B.S. in Accountancy from Villanova University and is a licensed certified public accountant in the Commonwealth of Pennsylvania. Mr. Kirby has also served on the board of trustees of the Delaware Museum of Nature & Science (formerly the Delaware Museum of Natural History) since 2018.

Dr. Carl Kraus was appointed as the Chief Medical Officer of Idera in connection with the closing of the Acquisition. Prior to this appointment, Dr. Kraus served as the Chief Medical Officer of Aceragen from 2021 to September 2022. Prior to this, in 2017, Dr. Kraus founded Arrevus, Inc. ("Arrevus"), a clinical-stage biotechnology company developing novel therapies for orphan diseases, and served as its Chief Executive Officer from 2017 to 2020. Prior to founding Arrevus, Dr. Kraus served as the Chief Medical Officer of Nanotherapeutics, Inc. from 2013 to 2017, the Vice President, Medical Affairs, Risk Management/REMS of Medscape, LLC from 2010 to 2013, and the Vice President, Infectious Diseases, Scientific Affairs of PRA International from 2008 to 2010. Prior to joining industry, Dr. Kraus was a medical officer in the Center for Drug Evaluation and Research at the Food & Drug Administration from 2002 to 2005. Dr. Kraus holds a Bachelor of Arts in Biology from Washington University in St. Louis, and received his M.D. in Medicine from Washington University School of Medicine in St. Louis.

Bryant D. Lim was appointed as the Chief Business Officer and General Counsel of Idera in connection with the closing of the Acquisition. Mr. Lim previously served as the Senior Vice President, Chief Business Officer and General Counsel of Idera from June 2022 to September 2022, and Senior Vice President from 2018 to June 2022. Prior to joining us, Mr. Lim served as Vice President, Assistant General Counsel and, prior to that, Global Chief Compliance Officer at Incyte Corporation from 2014 to 2018. Prior to his time at Incyte Corporation, Mr. Lim held roles of increasing responsibility at ViroPharma Incorporated from 2009 until its acquisition by Shire Plc in 2014. Prior to that, Mr. Lim served as Assistant Counsel at Merck & Co., Inc. and was associated with Morgan, Lewis & Bockius, LLP. Mr. Lim began his legal career as a law clerk for a federal judge. Mr. Lim received his J.D. from Villanova University School of Law, where he served on its adjunct faculty teaching about the Law of Drugs and Biologics. Mr. Lim received his B.A. from the University of Rochester. Mr. Lim has served on the board of directors of the state biotechnology industry association, Life Sciences of Pennsylvania, since 2019.

Daniel Salain was appointed as the Chief Operating Officer of Idera in connection with the closing of the Acquisition. Prior to this appointment, Mr. Salain served as Chief Operating Officer of Aceragen from 2020 to September 2022. Previously, Mr. Salain was the Chief Operating Officer of Graybug Vision, Inc., a clinical-stage biopharmaceutical company focused on developing medicines for ocular diseases, from 2017 to 2020, and was the Senior Vice President, Global Head of Manufacturing & Supply Chain at Ophthotech, a clinical-stage biotechnology company, from 2015 to 2017. Prior to working at Ophthotech, Mr. Salain was the Vice President of Global Operations, Manufacturing & Supply Chain at Aptalis Pharmaceuticals Inc., a company that focused on developing products to treat gastrointestinal diseases and disorders, from 1999 to 2014. Mr. Salain has a Bachelor of Science degree in Chemistry and Marketing from the University of Indianapolis.

PROPOSALS

PROPOSAL NO. 1:
APPROVAL OF CONVERSION PROPOSAL

Overview

As described above, the Company issued 80,656 shares of Series Z Preferred Stock in the Acquisition. The Series Z Preferred Stock is intended to have rights that are generally equivalent to our Common Stock, provided that the Series Z Preferred Stock does not have the right to vote on most matters (including the election of directors). Upon conversion of the above-described Series Z Preferred Stock, 80,656,000 shares of Common Stock are issuable, assuming approval of this Proposal No. 1 and subject to certain beneficial ownership limitations.

Subject to stockholder approval, each share of Series Z Preferred Stock is convertible into approximately 1,000 shares of Common Stock. This Proposal No. 1 would provide the necessary approval to permit such conversion. In the event that stockholders do not elect to permit conversion of the Series Z Preferred Stock, then the holders of the Series Z Preferred Stock may, commencing in March 2023, elect to have such shares redeemed by the Company at the then-current fair value (as such term is defined in the Series Z Certificate of Designation) of the Series Z Preferred Stock. *See* "Risk Factors — *Risks Relating to Ownership of Our Common Stock*." Pursuant to the terms of the Merger Agreement, we are required to recommend that our stockholders approve the conversion of all outstanding shares of our Series Z Preferred Stock into shares of our Common Stock. We cannot guarantee that our stockholders will approve this matter, and if they fail to do so our operations may be materially harmed.

Shares Issuable Upon Conversion

As described above, the Company issued 80,656 shares of Series Z Preferred Stock in the Acquisition. There are 80,656,000 shares of Common Stock that are potentially issuable upon conversion of the Series Z Preferred Stock. The sale into the public market of the underlying Common Stock could materially and adversely affect the market price of our Common Stock. *See* "Risk Factors — Risks Relating to Ownership of Our Common Stock."

Assuming the approval of this Proposal No. 1, the total number of shares of Common Stock issued and outstanding or reserved for issuance (determined on an as-converted basis) will be approximately 143,011,434.

Description of Series Z Preferred Stock

Conversion. Subject to stockholder approval of this Proposal No. 1, the Series Z Preferred Stock is convertible into Common Stock at a rate of approximately 1,000 shares of Common Stock for every one share of Series Z Preferred Stock that is converted. Following stockholder approval of the Conversion Proposal, each share of Series Z Preferred Stock then outstanding shall automatically convert into 1,000 of shares of Common Stock (subject to adjustments set forth in the Series Z Certificate of Designation), subject to certain limitations, including that Idera shall not effect any conversion of shares of Series Z Preferred Stock into shares of Common Stock if, as a result of such conversion, such holder, together with its affiliates, would beneficially own more 19.99% of the total number of shares of Common Stock issued and outstanding immediately after giving effect to such conversion.

Voting Rights. Except as otherwise required by law, the Series Z Preferred Stock does not have voting rights. However, as long as any shares of Series Z Preferred Stock are outstanding, the Company will not, without the affirmative vote of the holders of a majority of the then-outstanding shares of the Series Z Preferred Stock, (a) alter or change adversely the powers, preferences or rights given to the Series Z Preferred Stock, (b) alter or amend the Series Z Certificate of Designation, (c) amend its certificate of incorporation or other charter documents in any manner that adversely affects any rights of the holders of Series Z Preferred Stock, (d) issue further shares of Series Z Preferred Stock or increase the number of authorized shares of Series Z Preferred Stock, (e) prior to the stockholder approval of this Conversion Proposal or at any time while at least 30% of the originally issued Series Z Preferred Stock remains issued and outstanding,

consummate a Fundamental Transaction (as defined in the Series Z Certificate of Designation) or any merger or consolidation of the Company with or into another entity or any stock sale to, or other business combination in which the stockholders of the Company immediately before such transaction do not hold at least a majority of the capital stock of the Company immediately after such transaction, or (f) enter into any agreement with respect to any of the foregoing. The Series Z Preferred Stock shall rank on parity with the Common Stock as to distributions of assets upon liquidation, dissolution or winding up of the Company, whether voluntarily or involuntarily.

Dividends. Holders of Series Z Preferred Stock are entitled to receive dividends on shares of Series Z Preferred Stock equal, on an as-if-converted-to-Common-Stock basis, and in the same form as dividends actually paid on shares of the Common Stock.

Liquidation and Dissolution. The Series Z Preferred Stock ranks on parity with our Common Stock upon any liquidation, dissolution or winding up of the Company.

Reasons for Stockholder Approval

The Company's Common Stock is listed on the Nasdaq Capital Market and, as such, the Company is subject to the applicable Nasdaq rules, including Nasdaq Listing Rule 5635(a), which requires stockholder approval in connection with the acquisition of another company if the Nasdaq-listed company will issue more than 20% of its common stock. While stockholder approval of the Acquisition was not required under Nasdaq rules, in order to permit the issuance of Common Stock upon conversion of the Series Z Preferred Stock, the Company must first obtain stockholder approval of this issuance.

Beneficial Ownership Limitations

Assuming that Proposal No. 1 is approved, the Series Z Preferred Stock will continue to have a beneficial ownership conversion limit that would prevent a stockholder from converting their shares if, as a result of such conversion, they would beneficially own a number of shares above their applicable conversion blocker (which cannot exceed 19.9% of the outstanding Common Stock).

Interests of Certain Parties

As a result of the Acquisition, the former stockholders of Aceragen hold all of the shares of Series Z Preferred Stock. The Company's Chief Executive Officer, Chief Operating Officer, and Chief Strategy Officer all hold Series Z Preferred Stock and may be deemed to have an interest in the outcome of Proposal No. 1. Subject to the conversion blocker if Proposal No. 1 is approved, these three executive officers will hold 57,456,792 shares of Common Stock equaling approximately 40.2% of the issued and outstanding shares of Common Stock.

Ron Wooten, a director of the Company, is a member of the investment committee of NQ POF V GP, Ltd. ("NovaQuest GP"). NovaQuest GP has the power to vote and dispose of any securities directly owned by NovaQuest. NovaQuest GP's investment committee makes voting and investment decisions regarding securities held by NovaQuest. NovaQuest owns all outstanding shares of the Series X Preferred Stock. The Series X Preferred Stock ranks senior to the Series Z Preferred Stock, the existing Series A Convertible Preferred Stock and Common Stock as to distributions of assets upon liquidation, dissolution or winding up of the Company, whether voluntarily or involuntarily.

Vote Required; Recommendation of Board of Directors

The affirmative vote of the holders of shares of Common Stock representing a majority of the votes present or represented and voting on the matter is required for the approval of this Proposal No. 1 (subject to the separate tabulation of votes described in "*How many votes can be cast by all stockholders?*" set forth above). Broker non-votes (if any) and abstentions will not be counted as votes cast on the matter and will have no effect on the outcome of this proposal.

THE BOARD OF DIRECTORS RECOMMENDS THAT IDERA'S STOCKHOLDERS VOTE "FOR" THIS PROPOSAL NO. 1: THE APPROVAL OF, UNDER APPLICABLE NASDAQ LISTING RULES, THE ISSUANCE OF SHARES OF COMMON STOCK UPON CONVERSION OF THE SERIES Z PREFERRED STOCK.

PROPOSAL NO. 2
APPROVAL OF THE AMENDMENT TO THE RESTATED CERTIFICATE OF INCORPORATION TO EFFECT THE REVERSE STOCK SPLIT (WITHOUT REDUCING THE AUTHORIZED NUMBER OF SHARES OF OUR COMMON STOCK), IF AND WHEN DETERMINED BY THE IDERA BOARD OF DIRECTORS

Overview

Our Board has deemed it advisable, has approved and is hereby soliciting stockholder approval of, an amendment to our Restated Certificate of Incorporation to effect a reverse stock split (the "Reverse Stock Split") at a ratio between one-for-seventeen (1:17) and one-for-twenty-three (1:23) (the "Split Ratio Range"), in the form set forth in *Annex A* to this proxy statement. The Reverse Stock Split Proposal, if approved by stockholders, would not immediately cause a reverse stock split, but rather would grant authorization to our Board to effect a reverse stock split (without reducing the number of authorized shares of our Common Stock), if, and when determined by our Board.

If we receive the required stockholder approval, our Board would have the sole authority to elect, at any time within one year of the date of the Special Meeting, whether or not to effect a reverse stock split. Even with stockholder approval of the Reverse Stock Split Proposal, our Board will not be obligated to pursue the Reverse Stock Split. Rather, our Board will have the flexibility to decide whether or not a reverse stock split (and at what ratio within the Split Ratio Range) is in the best interests of the Company.

If approved by our stockholders and, following such approval, our Board determines that effecting a reverse stock split is in the best interests of the Company and our stockholders, the Reverse Stock Split would become effective upon filing an amendment to our Restated Certificate of Incorporation with the Secretary of State of the State of Delaware. As filed, the amendment would state the number of outstanding shares to be combined into one share of our Common Stock, at the ratio approved by our Board within the Split Ratio Range. The amendment would not change the par value of our Common Stock and would not impact the total number of authorized shares of our Common Stock. Therefore, upon effectiveness of a reverse stock split, the number of shares of our Common Stock that are authorized and unissued will increase relative to the number of issued and outstanding shares of our Common Stock.

Although we presently intend to effect the Reverse Stock Split to regain compliance with Nasdaq's minimum bid price requirement, as further described below, under Section 242(c) of the Delaware General Corporation Law, our Board has reserved the right, notwithstanding our stockholders' approval of the proposed amendment of the Restated Certificate of Incorporation at the annual meeting, to abandon the proposed amendment at any time (without further action by our stockholders) before the amendment of the Certificate of Incorporation is filed with the Secretary of State of the State of Delaware. Our Board may consider a variety of factors in determining whether or not to proceed with the proposed amendment of the Certificate of Incorporation, including overall trends in the stock market, recent changes and anticipated trends in the per-share market price of our common stock, business developments, and our actual and projected financial performance. If the closing bid price of our common stock on the Nasdaq Capital Market reaches a minimum of $4.00 per share and remains at or above that level for a minimum of ten consecutive trading days (or longer, if required by the Nasdaq Listing Qualifications Panel), as discussed more fully below, our Board may decide to abandon the filing of the proposed amendment of the Restated Certificate of Incorporation.

Purpose of the Reverse Stock Split

Our primary objective in effectuating the Reverse Stock Split would be to attempt to raise the per-share trading price of our Common Stock to meet Nasdaq's initial listing requirements, which requires, among other things, that our Common Stock have a per share bid price that is greater than or equal to $4.00 per share. On December 7, 2022, the closing bid price for our Common Stock on the Nasdaq Capital Market was $0.30 per share. The Board of Directors also believes that a higher stock price may help generate investor interest in Idera and help Idera attract and retain employees.

If the Reverse Stock Split successfully increases the per share price of our Common Stock, the Board of Directors also believes this increase may increase trading volume in our Common Stock and facilitate future financings by the Company.

Nasdaq Listing Requirements

Minimum Bid Requirement — Continued Listing

As previously reported, on November 26, 2021, we received a deficiency letter (the "First Nasdaq Letter") from the Nasdaq Listing Qualifications Department (the "Staff"), notifying us that we were not in compliance with Nasdaq Listing Rule 5550(a)(2), which requires us to maintain a minimum bid price of at least $1 per share for continued listing (the "Minimum Bid Requirement"). Our failure to comply with the Minimum Bid Requirement was based on the Common Stock per share price being below the $1.00 threshold for a period of 30 consecutive business days. Pursuant to the First Nasdaq Letter, we had 180 calendar days from November 26, 2021, to regain compliance with the Minimum Bid Requirement.

Also as previously reported, on May 26, 2022, we received a second notice (the "Second Nasdaq Letter") from the Staff indicating that, while we had not regained compliance with the Minimum Bid Requirement, the Staff had determined that we were eligible for an additional 180-day period, or until November 21, 2022, to regain compliance with the Minimum Bid Requirement. Pursuant to the Second Nasdaq Letter, if compliance cannot be demonstrated by November 21, 2022, the Staff would provide written notification that the Common Stock will be subject to delisting, at which point we would then be entitled to appeal the Staff's determination to the Nasdaq Hearings Panel (the "Panel").

The Company is currently working with the Staff but expects to receive a written notification from Nasdaq stating that we had not regained compliance with the Minimum Bid Requirement. We are aware that such written notification will provide the Company with the opportunity to request a hearing before the Panel within a specified date from the written notice. If the Company has not met the Minimum Bid Requirement by November 21, 2022, it fully expects to submit an appeal of such written notification to the Panel as soon as practicable and prior to any deadline. Under Nasdaq rules, the delisting of our Common Stock will be stayed during the pendency of the appeal, and during such time our Common Stock will continue to be listed on Nasdaq. There can be no assurance that such an appeal will be successful, or that we will be able to regain compliance with the Minimum Bid Price requirement or maintain compliance with other Nasdaq listing requirements. If our appeal is denied or if we fail to regain compliance with Nasdaq's continued listing standards during any period granted by the Panel, our Common Stock will be subject to delisting from Nasdaq.

Change of Control — Initial Listing Criteria

On October 21, 2022, we received a letter from the Staff notifying us that our acquisition of Aceragen will, upon stockholder approval of Proposal No. 1, be considered a "change of control" transaction under Nasdaq rules. As such, the Company must meet Nasdaq's initial listing requirements. Accordingly, the Company must meet all the requirements set forth in Nasdaq Rule 5505(a) and at least one of the standards in set forth in Nasdaq Rule 5505(b).

The listing standards of Nasdaq Rule 5505(a) requires the Company to have, among other things:

- a minimum bid price that is greater than or equal to $4.00 per share;
- at least 1,000,000 unrestricted publicly held shares;
- at least 300 round lot holders, and at least 50% of such round lot holders must each hold unrestricted securities with a market value of at least $2,500;
- at least three registered and active market makers; and
- a minimum average daily trading volume of 2,000 shares over the 30-trading day period prior to listing, with trading occurring on more than half of those 30 days, unless such security is listed on Nasdaq in connection with a firm commitment underwritten public offering of at least $4 million.

The Company must also satisfy at least one of the following Rule 5505(b) requirements:

- stockholders' equity of at least $5 million, a market value of unrestricted publicly held shares of at least $15 million, and two years of operating history;

- a market value of listed securities of at least $50 million, stockholders' equity of at least $4 million, and a market value of unrestricted publicly held shares of at least $15 million; or
- net income from continuing operations of $750,000 in the most recently completed fiscal year or in two of the three most recently completed fiscal years, stockholders' equity of at least $4 million, and a market value of unrestricted publicly held shares of at least $5 million.

Failure to approve the Reverse Stock Split may have serious, adverse effects on the Company and its stockholders. Our Common Stock could be delisted from Nasdaq because shares of our Common Stock may continue to trade below the requisite $4.00 per share price needed to maintain our listing in accordance with Nasdaq Listing Rule 5505(a). Our shares may then be quoted on the OTC Bulletin Board or other small trading markets, which are generally considered to have less volume and be less efficient markets. We believe an investor likely would find it less convenient to sell, or to obtain accurate quotations in seeking to buy, our Common Stock on an over-the-counter market. Many investors likely would not buy or sell our Common Stock due to difficulty in accessing over-the-counter markets, policies preventing them from trading in securities not listed on a national exchange, or other reasons. In that event, the Common Stock could trade thinly as a microcap or penny stock, adversely decrease to nominal levels of trading and may be avoided by retail and institutional investors, resulting in the impaired liquidity of our Common Stock.

As of the record date, our Common Stock closed at $0.32 per share on Nasdaq. The Reverse Stock Split, if effected, should have the immediate effect of increasing the price of our Common Stock as reported on Nasdaq, therefore reducing the risk that our Common Stock could be delisted from Nasdaq.

Our Board strongly believes that the Reverse Stock Split is necessary to maintain our listing on Nasdaq. Accordingly, the Board recommended that our stockholders approve the Reverse Stock Split Proposal to effect the Reverse Stock Split and directed that this proposal be submitted to our stockholders for approval at the Special Meeting.

In addition, an investment in our Common Stock may not appeal to brokerage firms that are reluctant to recommend lower-priced securities to their clients. Investors may also 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 research coverage of lower-priced stocks. Also, the Company's Board of Directors believes that most investment funds are reluctant to invest in lower-priced stocks.

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 an increase in the per share price of our Common Stock.

The Company cannot predict whether the Reverse Stock Split will increase the market price for our Common Stock. The history of similar stock split combinations for companies in like circumstances is varied. There is no assurance that:

- the market price per share will achieve the $4.00 minimum bid price requirement for a sufficient period for our Common Stock to be approved for listing by Nasdaq;
- we would otherwise meet the initial listing requirements that would allow continued listing of our Common Stock on Nasdaq;
- 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 Effective Time;
- the Reverse Stock Split will result in a per share price that will attract brokers and investors who do not trade in lower-priced stocks;
- the Reverse Stock Split will result in a per share price that will increase the ability of the Company to attract and retain employees; and
- the Reverse Stock Split would promote greater liquidity for our stockholders with respect to their shares.

In addition, the Reverse Stock Split would reduce the number of outstanding shares of our common stock without reducing the number of shares of available but unissued Common Stock, increasing the number of authorized but unissued shares of Common Stock. Therefore, the number of shares of our Common Stock that are authorized and unissued will increase relative to the number of issued and outstanding shares of our Common Stock following the Reverse Stock Split. The Board may authorize the issuance of the remaining authorized and unissued shares without further stockholder action for a variety of purposes, except as such stockholder approval may be required in particular cases by our Restated Certificate of Incorporation, applicable law, or the rules of any stock exchange on which our securities may then be listed. The issuance of additional shares would be dilutive to our existing stockholders and may cause a decline in the trading price of our Common Stock.

The market price of our Common Stock will also be based on the performance of the Company and other factors, some of which are unrelated to the number of shares outstanding. If the Reverse Stock Split is effected and the market price of our Common Stock declines, the percentage decline as an absolute number and as a percentage of the overall market capitalization of the Company may be greater than would occur in the absence of the Reverse Stock Split.

Principal Effects of the Reverse Stock Split on the Market for Our Common Stock

On the record date, the closing bid price for our Common Stock on the Nasdaq Capital Market was $0.32 per share. By decreasing the number of shares of our Common Stock outstanding without altering the aggregate economic interest represented by the shares, we believe the market price would be increased. The greater the market price rises above $4.00 per share, the less risk there would be that we would fail to meet the initial listing requirements and be able to maintain the listing of our Common Stock on the Nasdaq Capital Market. However, there can be no assurance that the market price of the Common Stock would rise to or maintain any particular level or that we would at all times be able to meet the requirements for maintaining the listing of our Common Stock on the Nasdaq Capital Market.

Principal Effects of the Reverse Stock Split on Our Common Stock and Series B Preferred Stock

If our stockholders approve this Proposal No. 2, and if the Board determines to amend our Restated Certificate of Incorporation to effect the Reverse Stock Split, the principal effect of the amendment would be to reduce the number of issued and outstanding shares of our Common Stock, in accordance with the Split Ratio Range, from 62,355,434 shares as of the record date to between and including 3,667,967 shares and 2,711,106 shares. If the Reverse Stock Split is effectuated, the total number of shares of our Common Stock that each stockholder holds would be reclassified automatically into the number of shares of our Common Stock equal to the number of shares of our Common Stock that each stockholder held immediately before the Reverse Stock Split divided by the ratio approved by Board within the Split Ratio Range.

Effecting the Reverse Stock Split will not change the total authorized number of shares of our Common Stock. However, the reduction in the issued and outstanding shares would provide more authorized shares available for future issuance.

All shares of Series B Preferred Stock that are not present in person or by proxy at the Special Meeting as of immediately prior to the opening of the polls at the Special Meeting will be automatically redeemed in the Initial Redemption. Any outstanding shares of Series B Preferred Stock that were not redeemed pursuant to the Initial Redemption will be redeemed in whole, but not in part, (i) if and when ordered by our Board or (ii) automatically upon the approval of the amendment to our Restated Certificate of Incorporation effecting the Reverse Stock Split. Please refer to the discussion in the Questions and Answers About the Special Meeting section under "*How many votes can be cast by all stockholders*?" and "*What vote is required to approve each item at the Special Meeting*?" for a description of the voting power of the Series B Preferred Stock.

The Reverse Stock Split will be realized simultaneously for all shares of our Common Stock outstanding immediately prior to the Reverse Stock Split Effective Time. The Reverse Stock Split will affect all holders of shares of our Common Stock outstanding immediately prior to the Reverse Stock Split Effective Time uniformly, and each such stockholder will hold the same percentage of our Common Stock outstanding immediately following the Reverse Stock Split as that stockholder held immediately prior to the Reverse Stock

Split, except for immaterial adjustments that may result from the treatment of fractional shares as described below. The Reverse Stock Split will not change the par value of our Common Stock or Preferred Stock and will not reduce the number of authorized shares of our Common Stock or Preferred Stock. Our 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's continuing to be subject to the periodic reporting requirements of the Exchange Act.

Pursuant to the Certificate of Designation of Series B Preferred Stock (the "Certificate of Designation"), each share of Series B Preferred Stock redeemed in any redemption shall be redeemed in consideration for the right to receive an amount equal to $0.01 in cash for each one hundred whole shares of Series B Preferred Stock that are "beneficially owned" by the "beneficial owner" (as such terms are defined in the Certificate of Designation) thereof as of the applicable redemption time and redeemed pursuant to such redemption, payable upon receipt by the Company of a written request submitted by the applicable holder to our corporate secretary (each a "Redemption Payment Request") following the applicable redemption time. Such Redemption Payment Request shall (i) be in a form reasonably acceptable to the Company, (ii) set forth in reasonable detail the number of shares of Series B Preferred Stock beneficially owned by the holder at the applicable redemption time and include evidence reasonably satisfactory to the Company regarding the same, and (iii) set forth a calculation specifying the amount in cash owed to such holder by the Company with respect to the shares of Series B Preferred Stock that were redeemed at the applicable redemption time.

Principal Effects of the Reverse Stock Split on Outstanding Options and Warrants

As of the record date, we had outstanding (a) stock options to purchase an aggregate of 7,334,129 shares of our Common Stock with exercise prices ranging from $0.13 to $37.36 per share, and (b) warrants to purchase an aggregate of 8,552,214 shares of our Common Stock with exercise prices ranging from $0.08 to $2.71 per share. Under the terms of the stock options and warrants, when the Reverse Stock Split becomes effective, the number of shares of our Common Stock covered by each of them would be divided by the number of shares being combined into one share of our Common Stock in the Reverse Stock Split, and the exercise or conversion price per share would be increased to a dollar amount equal to the current exercise or conversion price, multiplied by the number of shares being combined into one share of our Common Stock in the Reverse Stock Split. This results in the same aggregate price being required to be paid upon exercise as was required immediately preceding the Reverse Stock Split. The number of shares reserved under our 2013 Stock Incentive Plan would decrease by the ratio approved by Board within the Split Ratio Range.

Principal Effects of the Reverse Stock Split on Legal Ability to Pay Dividends

Historically, our Board has not declared, nor does it have any plans to declare in the foreseeable future, any distributions of cash, dividends or other property, and we are not in arrears on any dividends. Therefore, we do not believe that the Reverse Stock Split would have any effect with respect to future distributions, if any, to holders of our Common Stock.

Accounting Matters

The Reverse Stock Split would not affect the par value of our Common Stock or Preferred Stock, which would remain unchanged at $0.001 and $0.01 per share, respectively. As a result, at the Reverse Stock Split Effective Time, the stated capital on our balance sheet attributable to our Common Stock would be reduced by the ratio approved by the Board within the Split Ratio Range. In other words, stated capital would be reduced by the ratio approved by the Board within the Split Ratio Range, and the additional paid-in capital account would be credited with the amount by which the stated capital is reduced. The per-share net income or loss and net book value of our Common Stock would be increased because there would be fewer shares of our Common Stock outstanding.

Procedure for Effecting Reverse Stock Split and Exchange of Stock Certificates

If the Idera stockholders approve the amendment to the Restated Certificate of Incorporation, effecting the Reverse Stock Split, and if the Company's Board of Directors still believes that the Reverse Stock Split is in the best interests of the Company and its stockholders, the Company will file the amendment

to the Restated Certificate of Incorporation with the Secretary of State of the State of Delaware following the determination by the Company's Board of Directors of the appropriate split ratio. The Company has agreed with the purchasers of the Preferred Stock that it will file such amendment with the Secretary of State of the State of Delaware as soon as practicable, but in no event later than one (1) business day following stockholder approval of the amendment. Beginning at the Reverse Stock Split Effective Time, each stock certificate representing pre-split shares will be deemed for all corporate purposes to evidence ownership of post-split shares.

As soon as practicable after the Reverse Stock Split Effective Time, stockholders will be notified that the Reverse Stock Split has been effected. The Company expects that the Company's transfer agent will act as exchange agent for purposes of implementing the exchange of stock certificates. Holders of pre-split shares will be asked to surrender to the exchange agent stock certificates representing pre-split shares in exchange for stock certificates (or book-entry positions) representing post-split shares in accordance with the procedures to be set forth in a letter of transmittal to be sent by the Company. No new certificates (or book-entry positions) will be issued to a stockholder until such stockholder has surrendered such stockholder's outstanding certificate(s) together with the properly completed and executed letter of transmittal to the exchange agent. Shares held in book-entry form will be automatically exchanged. Any pre-split shares submitted for transfer, whether pursuant to a sale or other disposition, or otherwise, will automatically be exchanged for post-split shares. **Stockholders should not destroy any stock certificate(s) and should not submit any certificate(s) unless and until requested to do so.**

Outstanding Shares

Our Restated Certificate of Incorporation currently authorizes us to issue a maximum of 140,000,000 shares of Common Stock and 5,000,000 shares of Preferred Stock. Our issued and outstanding securities as of December 8, 2022, are as follows:

- 62,355,434 shares of Common Stock;
- 655 shares of Series A Preferred Stock;
- 80,656 shares of Series Z Preferred Stock;
- Five shares of Series X Preferred Stock; and
- 62,355 shares of Series B Preferred Stock.

Fractional Shares

No fractional shares will be issued in connection with the Reverse Stock Split. Stockholders of record who otherwise would be entitled to receive fractional shares because they hold a number of pre-split shares not evenly divisible by the number of pre-split shares for which each post-split share is to be reclassified, will be entitled, upon surrender to the exchange agent of certificates representing such shares, to a cash payment in lieu of any fractional shares they would otherwise be entitled to at a price equal to the fraction to which the stockholder would otherwise be entitled multiplied by the closing price of our Common Stock on the Nasdaq on the date of the filing of the amendment to the Restated Certificate of Incorporation effecting the Reverse Stock Split. For the foregoing purposes, all shares of Common Stock held by a holder will be aggregated (thus resulting in no more than one fractional share per holder). The ownership of a fractional interest will not give the holder thereof any voting, dividend, or other rights except to receive payment therefor as described herein.

Stockholders should be aware that, under the escheat laws of the various jurisdictions where stockholders reside, where the Company is domiciled and where the funds will be deposited, sums due for fractional interests that are not timely claimed after the effective date of the split may be required to be paid to the designated agent for each such jurisdiction, unless correspondence has been received by the Company or the exchange agent concerning ownership of such funds within the time permitted in such jurisdiction. Thereafter, stockholders otherwise entitled to receive such funds will have to seek to obtain them directly from the state to which they were paid.

No Going Private Transaction

Notwithstanding the decrease in the number of outstanding shares following the Reverse Stock Split, our Board of Directors does not intend for this transaction to be the first step in a "going private transaction" within the meaning of Rule 13e-3 of the Securities Exchange Act of 1934, as amended.

No Appraisal Rights

Under Delaware law, our Restated Articles of Incorporation and our Bylaws, stockholders have no rights to exercise dissenters' rights of appraisal with respect to the Reverse Stock Split.

Potential Anti-Takeover Effect

Although the increased proportion of unissued authorized shares to issued shares could, under certain circumstances, have an anti-takeover effect, for example, by permitting issuances that would dilute the stock ownership of a person seeking to effect a change in the composition of the Company's Board of Directors, or contemplating a tender offer or other transaction for the combination of the Company with another company, the Reverse Stock Split Proposal is not being proposed in response to any effort of which the Company is aware to accumulate shares of our Common Stock or obtain control of the Company, nor is it part of a plan by management to recommend a series of similar amendments to the Company's Board of Directors and stockholders. The Company's Board of Directors does not currently contemplate recommending the adoption of any actions that could be construed to affect the ability of third parties to take over or change control of the Company.

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

The following is a discussion of certain material U.S. federal income tax consequences of the Reverse Stock Split that are applicable to U.S. Holders (as defined below) of our Common Stock. This discussion does not purport to be a complete analysis of all potential tax consequences and is based upon current provisions of the Internal Revenue Code of 1986, as amended (the "Code"), existing Treasury Regulations, judicial decisions and published rulings and administrative pronouncements of the Internal Revenue Service (the "IRS"), all in effect as of the date hereof and all of which are subject to differing interpretations or change. Any such change or differing interpretation, which may be retroactive, could alter the tax consequences to holders of our Common Stock as described in this summary. We have not obtained a ruling from the IRS or an opinion of legal or tax counsel with respect to the tax consequences of the Reverse Stock Split, and there can be no assurance the IRS will not challenge the statements set forth below or that a court would not sustain any such challenge. The following discussion is for information purposes only and is not intended as tax or legal advice.

This discussion does not address all U.S. federal income tax consequences relevant to holders of our Common Stock. In addition, it does not address consequences relevant to holders of our Common Stock that are subject to particular U.S. or non-U.S. tax rules, including, without limitation, to holders of our Common Stock that are:

- persons who do not hold our Common Stock as a "capital asset" within the meaning of Section 1221 of the Code;
- brokers, dealers, or traders in securities, banks, insurance companies, other financial institutions, or mutual funds;
- real estate investment trusts, regulated investment companies, tax-exempt organizations, or governmental organizations;
- pass-through entities such as partnerships, S corporations, disregarded entities for federal income tax purposes and limited liability companies (and investors therein);
- subject to the alternative minimum tax provisions of the Code;
- persons who hold their shares as part of a hedge, wash sale, synthetic security, conversion transaction, or other integrated transaction;

- persons that have a functional currency other than the U.S. dollar;
- traders in securities who elect to apply a mark-to-market method of accounting;
- persons who hold shares of our Common Stock that may constitute "qualified small business stock" under Section 1202 of the Code or as "Section 1244 stock" for purposes of Section 1244 of the Code;
- persons who acquired their shares of Common Stock in a transaction subject to the gain rollover provisions of Section 1045 of the Code;
- persons subject to special tax accounting rules as a result of any item of gross income with respect to Idera stock being taken into account in an "applicable financial statement" (as defined in the Code);
- persons deemed to sell our Common Stock under the constructive sale provisions of the Code;
- persons who actually or constructively own capital stock representing 10% or more of the combined voting power of all classes of our capital stock;
- persons who acquired their shares of our Common Stock pursuant to the exercise of options or otherwise as compensation or through a tax-qualified retirement plan or through the exercise of a warrant or conversion rights under convertible instruments; and
- certain expatriates or former citizens or long-term residents of the United States.

Holders of our Common Stock subject to particular U.S. or non-U.S. tax rules, including those that are described in this paragraph, are urged to consult their own tax advisors regarding the consequences to them of the Reverse Stock Split.

If an entity that is treated as a partnership for U.S. federal income tax purposes holds our Common Stock, the U.S. federal income tax treatment of a partner in the partnership or other pass-through entity will generally depend upon the status of the partner, the activities of the partnership or other pass-through entity and certain determinations made at the partner level.

In addition, the following discussion does not address the tax consequences of the Reverse Stock Split under state, local, and foreign tax laws. 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.

STOCKHOLDERS SHOULD CONSULT THEIR TAX ADVISORS WITH RESPECT TO THE APPLICATION OF THE U.S. FEDERAL INCOME TAX LAWS TO THEIR PARTICULAR SITUATIONS, AS WELL AS ANY TAX CONSEQUENCES OF THE REVERSE STOCK SPLIT ARISING UNDER THE U.S. FEDERAL ESTATE OR GIFT TAX LAWS OR UNDER THE LAWS OF ANY STATE, LOCAL, OR NON-U.S. TAXING JURISDICTION OR UNDER ANY APPLICABLE INCOME TAX TREATY.

This discussion is limited to holders of our Common Stock that are U.S. Holders. For purposes of this discussion, a "U.S. Holder" is a beneficial owner of our Common Stock that, for U.S. federal income tax purposes, is or is treated as:

- an individual who is a citizen or resident of the United States;
- a corporation or any other entity taxable as a corporation created or organized in or 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 if either (i) a court within the United States is able to exercise primary supervision over the administration of such trust, and one or more United States persons (within the meaning of Section 7701(a)(30) of the Code) is authorized or has the authority to control all substantial decisions of such trust, or (ii) the trust was in existence on August 20, 1996, and has a valid election in effect under applicable Treasury Regulations to be treated as a United States person for U.S. federal income tax purposes.

Tax Consequences of the Reverse Stock Split

We believe that the proposed Reverse Stock Split should constitute a "recapitalization" for U.S. federal income tax purposes pursuant to Section 368(a)(1)(E) of the Code. As a result, a U.S. Holder generally should not recognize gain or loss upon the proposed Reverse Stock Split, except with respect to cash received in lieu of a fractional share of our Common Stock, as discussed below. A U.S. Holder's aggregate adjusted tax basis in the shares of our Common Stock received pursuant to the proposed Reverse Stock Split should equal the aggregate adjusted tax basis of the shares of our 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 our Common Stock received should include the holding period in the shares of our Common Stock surrendered. U.S. Treasury Regulations provide detailed rules for allocating the tax basis and holding period of the shares of our Common Stock surrendered to the shares of our Common Stock received in a recapitalization pursuant to the proposed Reverse Stock Split. U.S. Holders of shares of our Common Stock 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.

Cash in Lieu of Fractional Shares

A U.S. Holder that receives cash in lieu of a fractional share of our Common Stock pursuant to the proposed Reverse Stock Split should recognize capital gain or loss in an amount equal to the difference between the amount of cash received and the U.S. Holder's tax basis in the shares of our Common Stock surrendered that is allocated to such fractional share of our Common Stock. Such capital gain or loss should be long-term capital gain or loss if the U.S. Holder's holding period for our Common Stock surrendered exceeded one year at the effective time of the Reverse Stock Split.

Information Reporting and Backup Withholding

Payments of cash made in lieu of a fractional share of our Common Stock may, under certain circumstances, be subject to information reporting and backup withholding. To avoid backup withholding, each holder of our Common Stock that does not otherwise establish an exemption should furnish its taxpayer identification number and comply with the applicable certification procedures.

Backup withholding is not an additional tax. Any amounts withheld will be allowed as a credit against the holder's U.S. federal income tax liability and may entitle such holder to a refund, provided the required information is timely furnished to the IRS. Holders of our Common Stock should consult their tax advisors regarding their qualification for an exemption from backup withholding and the procedures for obtaining such an exemption.

Vote Required; Recommendation of Board of Directors

The affirmative vote of the holders of shares of Common Stock and Series B Preferred Stock representing a majority of the shares issued and outstanding as of the record date is required to approve the Reverse Stock Split Proposal. The holders of Common Stock have the right to cast one vote per share of Common Stock on this proposal. The holders of Series B Preferred Stock have the right to cast 1,000,000 votes per share of Series B Preferred Stock, or an aggregate of 62,355,000,000 votes, on this proposal, provided, that such votes must be counted by the Company in the same proportion as the aggregate shares of Common Stock that are voted on this proposal, without regard to abstentions by holders of Common Stock or broker non-votes. As an example, if 60% of the votes cast by holders of Common Stock present, by virtual participation or proxy, and entitled to vote are voted at the Special Meeting in favor of this proposal, the Company can count 60% of the votes cast by the holders of the Series B Preferred Stock as votes in favor of this Proposal No. 2. Because the voting standard for this Proposal No. 2 is a majority of the outstanding shares of Common Stock and Series B Preferred Stock entitled to vote on the proposal, voting together and counted as a single class, abstentions and broker non-votes will, in one sense, have the effect of a vote "AGAINST" the proposal. However, if you prefer that this Proposal No. 2 not be approved, you should cast your vote against the proposal. Since the Series B Preferred Stock has 1,000,000 votes per share on this Proposal No. 2 and such votes must be counted by the Company in the same proportion as the aggregate shares of Common Stock that are voted on this Proposal No. 2 at the Special Meeting, the failure of a share of Common Stock to be voted will effectively have no impact on the outcome of the vote of the Series B

Preferred Stock. However, shares of Common Stock voted against this Proposal No. 2 will have the effect of causing the proportion of Series B Preferred Stock voted against the proposal to increase accordingly and vice versa. If the proposal is approved, it will become effective upon the filing of the Certificate of Amendment with the Delaware Secretary of State, which will occur at the sole discretion of the Board of Director's within one year of such approval.

THE BOARD OF DIRECTORS RECOMMENDS THAT IDERA'S STOCKHOLDERS VOTE "FOR" THIS PROPOSAL NO. 2: TO APPROVE THE AMENDMENT TO THE RESTATED CERTIFICATE OF INCORPORATION TO EFFECT THE REVERSE STOCK SPLIT.

PROPOSAL NO. 3:
APPROVAL OF THE ADOPTION OF THE IDERA PHARMACEUTICAL, INC. 2022 STOCK INCENTIVE PLAN

Overview

At the Special Meeting, our stockholders will be asked to consider and vote upon a proposal to approve by ordinary resolution the Idera Pharmaceuticals, Inc. 2022 Stock Incentive Plan (the "Equity Plan"), a copy of which is attached to this proxy statement/prospectus as *Annex B*.

A total of 25,518,742 shares of Common Stock will be reserved for issuance under the Equity Plan. As of December 7, 2022, the closing price on Nasdaq Capital Market per share of Common Stock was $0.30. Subject to stockholder approval, the Board of Directors approved the Equity Plan on November 17, 2022. The Equity Plan will be effective upon approval by the Company's stockholders.

The Equity Plan is intended to replace the Idera Pharmaceuticals, Inc. 2013 Stock Incentive Plan, as amended and restated (the "Prior Plan"). No additional grants shall be made under the Prior Plan after the effective date of the Equity Plan. Outstanding grants under the Prior Plan shall continue in effect according to their terms.

Key Features of the Equity Plan

The following features of the Equity Plan will protect the interests of our stockholders:

- *Limitation on terms of stock options and stock appreciation rights*. The maximum term of each stock option and stock appreciation right ("SAR") is ten years.
- *No repricing or grant of discounted stock options or SARs*. The Equity Plan does not permit the repricing of options or SARs either by amending an existing award or by substituting a new award at a lower price. The Equity Plan prohibits the granting of stock options or SARs with an exercise price less than the fair market value of the Common Stock on the date of grant.
- *No single-trigger acceleration*. Under the Equity Plan, we do not automatically accelerate vesting of awards in connection with a change in control on the Company.
- *Dividends*. We do not pay dividends or dividend equivalents on stock options or SARs. We also do not pay dividends or dividend equivalents on unearned restricted stock units or other stock-based awards, except to the extent the award actually becomes vested.
- *Clawback*. Awards granted under the Equity Plan and the right to receive shares or cash payments with respect to awards are subject to rescission, cancellation or recoupment under any clawback, recoupment or similar policy.
- *Director Limits*. The Equity Plan imposes an aggregate limit on the value of awards that may be granted, and cash fees that may be paid, to each non-employee director in any year.

The following is a summary of the material features of the Equity Plan. This summary is qualified in its entirety by reference to the complete text of the Equity Plan, which is attached as *Annex B*. To the extent the description below differs from the text of the Equity Plan, the text of the Equity Plan shall control.

Summary of Equity Plan

Type of Awards

The Equity Plan provides for the issuance of stock options (including non-statutory stock options and incentive stock option), stock appreciation rights ("SARs"), restricted stock, restricted stock units ("RSUs"), stock bonuses and other stock-based awards to officers, employees, non-employee directors, independent contractors and consultants of Idera or its affiliates.

Purpose and Types of Grants

The purpose of the Equity Plan is to attract and retain employees (including officers), non-employee directors, and certain consultants and advisors. The Equity Plan provides for the issuance of incentive stock

options, non-qualified stock options, stock awards, stock units, stock appreciation rights and other stock-based awards. The Equity Plan is intended to provide an incentive to participants to contribute to our economic success by aligning the economic interests of participants with those of our stockholders.

Administration of the Equity Plan

The Equity Plan will be administered by the Compensation Committee of the Board of Directors (the "Compensation Committee"), and the Compensation Committee will determine all of the terms and conditions applicable to grants under the Equity Plan. The Compensation Committee will also determine who will receive grants under the Equity Plan, the terms applicable to grants under the Equity Plan and the number of shares of Common Stock that will be subject to grants, except that grants to members of the Board of Directors must be authorized by a majority of the Board of Directors. The Compensation Committee may delegate authority under the Equity Plan to one or more subcommittees as it deems appropriate. Subject to compliance with applicable law and stock exchange requirements, the Compensation Committee (or the Board of Directors or a subcommittee, as applicable) may delegate all or part of its authority to our Chief Executive Officer, as it deems appropriate, with respect to grants to employees or key advisors who are not "executive officers" or directors under Section 16 of the Securities Exchange Act of 1934, as amended. The Compensation Committee, the Board of Directors, any subcommittee or the Chief Executive Officer, as applicable, that has authority with respect to a specific grant will be referred to as the "Committee" in this description of the Equity Plan. The Compensation Committee's interpretations of the Equity Plan and all determinations made by the Compensation Committee will be conclusive and binding on all persons having any interest in the Equity Plan or any awards granted under the Equity Plan.

Shares Subject to the Equity Plan

Subject to the adjustment provisions of the Equity Plan, the Equity Plan authorizes the issuance or transfer of up to 25,518,742 shares of Common Stock, which is equal to the sum of: (i) 23,600,000 shares of Common Stock, plus (ii) 3,806,601 shares of Common Stock, which is the number of shares of Common Stock reserved for issuance under the Prior Plan that remain available for grant under the Prior Plan as of November 4, 2022; provided that such number will be reduced by the number of shares of Common Stock underlying any grants made under the Prior Plan after November 4, 2022 and before the effective date of the Equity Plan. In addition, shares of the Common Stock underlying any outstanding award granted under the Prior Plan that, following the effective date of the Equity Plan, expires, or is terminated, surrendered or forfeited for any reason without issuance of such shares shall be available for new grants under the Equity Plan.

If any options or stock appreciation rights expire or are canceled, forfeited, exchanged, or surrendered without having been exercised, or if any stock awards, stock units or other stock-based awards are forfeited, terminated, or otherwise not paid in full, the shares of Common Stock subject to such awards will again be available for purposes of the Equity Plan. If shares of Common Stock are surrendered in payment of the exercise price of an option, the number of shares of Common Stock available for issuance under the Equity Plan will be reduced only by the net number of shares actually issued by us upon such exercise and not by the gross number of shares as to which such option is exercised. Upon the exercise of any SAR under the Equity Plan, the number of shares of Common Stock available for issuance will be reduced only by the net number of shares actually issued by us upon such exercise.

If shares of Common Stock are withheld by us in satisfaction of the withholding taxes incurred in connection with the issuance, vesting or exercise of any grant or the issuance of Common Stock under the Equity Plan, the number of shares of Common Stock available for issuance will be reduced by the net number of shares issued, vested or exercised under such grant, calculated in each instance after payment of such share withholding. If any awards are paid in cash, and not in shares of Common Stock, any shares of Common Stock subject to such awards will also be available for future awards. If we repurchase shares of Common Stock on the open market with the proceeds from the exercise price we receive from options, the repurchased shares will not be available for issuance under the Equity Plan.

Individual Limits for Non-Employee Directors

The maximum aggregate grant date value of shares of Common Stock granted to any non-employee director in any one calendar year, taken together with any cash fees earned by such non-employee director for services rendered during the calendar year, shall not exceed $750,000 in total value.

Adjustments

In connection with stock splits, stock dividends, recapitalizations and certain other events affecting Common Stock, the Committee will make adjustments as it deems appropriate in: the maximum number and kind of shares of Common Stock reserved for issuance as grants; the maximum amount of awards that may be granted to any individual non-employee director in any year; the number and kind of shares covered by outstanding grants; the number and kind of shares that may be issued under the Equity Plan; the price per share or market value of any outstanding grants; the exercise price of options; the base amount of SARs; and the performance goals or other terms and conditions as the Committee deems appropriate. In addition, the Committee is authorized to make adjustments in the terms and conditions of, and the criteria included in, grants in recognition of unusual or nonrecurring events (including, without limitation, events described in the preceding sentence, and acquisitions and dispositions of businesses and assets) affecting the Company, any subsidiary or business unit, or the financial statements of the Company or any subsidiary, or in response to changes in applicable laws, regulations, or accounting principles.

Eligibility and Vesting

All of our employees (including officers) are eligible to receive grants under the Equity Plan. In addition, our non-employee directors and certain consultants and advisors who perform services for us may receive grants under the Equity Plan. As of December 8, 2022, approximately 29 employees, including six executive officers, and six non-employee directors were eligible to receive awards under the Equity Plan. Because our executive officers and non-employee directors are eligible to receive awards under the Equity Plan, they may be deemed to have a personal interest in the approval of this Proposal No. 3.

The Committee determines the vesting and exercisability terms of awards granted under the Equity Plan.

Options

Under the Equity Plan, the Committee will determine the exercise price of the options granted and may grant options to purchase shares of Common Stock in such amounts as it determines. The Committee may grant options that are intended to qualify as incentive stock options under Section 422 of the Code, or non-qualified stock options, which are not intended to so qualify. Incentive stock options may only be granted to our employees. Anyone eligible to participate in the Equity Plan may receive a grant of non-qualified stock options. The exercise price of a stock option granted under the Equity Plan cannot be less than the fair market value of a share of Common Stock on the date the option is granted. If an incentive stock option is granted to a 10% stockholder of the total combined voting power of all classes of our stock (a "10% Stockholder"), the exercise price cannot be less than 110% of the fair market value of a share of Common Stock on the date the option is granted. The aggregate number of shares of Common Stock that may be issued or transferred under the Equity Plan pursuant to incentive stock options under Section 422 of the Code may not exceed 25,518,742 of the number of shares of Common Stock outstanding on the effective date of the Equity Plan.

The exercise price for any option is generally payable in cash or by check. In certain circumstances as permitted by the Committee, the exercise price may be paid: by the surrender of shares of Common Stock with an aggregate fair market value, on the date the option is exercised, equal to the exercise price; by payment through a broker in accordance with procedures established by the Federal Reserve Board; by withholding shares of Common Stock subject to the exercisable option that have a fair market value on the date of exercise equal to the aggregate exercise price; or by such other method as the Committee approves.

The term of an option cannot exceed ten years from the date of grant, except that if an incentive stock option is granted to a 10% Stockholder, the term cannot exceed five years from the date of grant. In the event that on the last day of the term of a non-qualified stock option, the exercise is prohibited by applicable law, including a prohibition on purchases or sales of Common Stock under our insider trading policy, the term of the non-qualified option will be extended for a period of 30 days following the end of the legal prohibition, unless the Committee determines otherwise.

Except as provided in the grant instrument, an option may only be exercised while a participant is employed by or providing service to us. The Committee will determine in the grant instrument under what circumstances and during what time periods a participant may exercise an option after termination of employment.

Stock Awards

Under the Equity Plan, the Committee may grant stock awards. A stock award is an award of Common Stock that may be subject to restrictions as the Committee determines. The restrictions, if any, may lapse over a specified period of employment or based on the satisfaction of pre-established criteria, in installments or otherwise, as the Committee may determine, including, but not limited to, restrictions based on the achievement of performance goals. Except to the extent restricted under the grant instrument relating to the stock award, a participant will have all of the rights of a stockholder as to those shares, including the right to vote and the right to receive dividends or distributions on the shares. All unvested stock awards are forfeited if the participant's employment or service is terminated for any reason, unless the Committee determines otherwise.

Stock Units

Under the Equity Plan, the Committee may grant stock units to anyone eligible to participate in the Equity Plan. Stock units represent hypothetical shares of Common Stock. Stock units become payable on terms and conditions determined by the Committee, including specified performance goals, and will be payable in cash, shares of Common Stock, or a combination thereof, as determined by the Committee. All unvested stock units are forfeited if the participant's employment or service is terminated for any reason, unless the Committee determines otherwise.

Stock Appreciation Rights

Under the Equity Plan, the Committee may grant SARs, which may be granted separately or in tandem with any option. SARs granted in tandem with a non-qualified stock option may be granted either at the time the non-qualified stock option is granted or any time thereafter while the option remains outstanding. SARs granted in tandem with an incentive stock option may be granted only at the time the grant of the incentive stock option is made. The Committee will establish the base amount of the stock appreciation right at the time the SAR is granted, which will be equal to or greater than the fair market value of a share of Common Stock as of the date of grant.

If an SAR is granted in tandem with an option, the number of SARs that are exercisable during a specified period will not exceed the number of shares of Common Stock that the participant may purchase upon exercising the related option during such period. Upon exercising the related option, the SARs will terminate, and upon the exercise of a stock appreciation right, the related option will terminate to the extent of an equal number of shares of Common Stock. Generally, SARs may only be exercised while the participant is employed by, or providing services to, us. When a participant exercises an SAR, the participant will receive the excess of the fair market value of the underlying Common Stock over the base amount of the SAR. The appreciation of an SAR will be paid in shares of Common Stock, cash or both.

The term of an SAR cannot exceed 10 years from the date of grant. In the event that on the last day of the term of an SAR, the exercise is prohibited by applicable law, including a prohibition on purchases or sales of Common Stock under our insider trading policy, the term of the SAR will be extended for a period of 30 days following the end of the legal prohibition, unless the Committee determines otherwise.

Other Stock-Based Awards

Under the Equity Plan, the Committee may grant other types of awards that are based on, or measured by, Common Stock, and granted to anyone eligible to participate in the Equity Plan. The Committee will determine the terms and conditions of such awards. Other stock-based awards may be payable in cash, shares of Common Stock or a combination of the two, as determined by the Committee.

Dividend Equivalents

Under the Equity Plan, the Committee may grant dividend equivalents in connection with grants of stock units or other stock-based awards made under the Equity Plan. Dividend equivalents entitle the participant to receive amounts equal to ordinary dividends that are paid on the shares underlying a grant while the grant is outstanding. The Committee will determine whether dividend equivalents will be paid currently or accrued as contingent cash obligations. Dividend equivalents may be paid in cash or shares of Common Stock. The Committee will determine the terms and conditions of the dividend equivalent grants, including whether the grants are payable upon the achievement of specific performance goals. For the avoidance of doubt, dividends or dividend equivalents shall not be granted in connection with options or SARs. Additionally, notwithstanding anything to the contrary in the Equity Plan, any dividends or dividend equivalents granted in connection with grants under the Equity Plan will vest and be paid only if and to the extent the underlying grants vest and are paid.

Prohibition on Repricing

Under the terms of the Equity Plan, the Committee may not (i) amend the terms of any outstanding stock options or SARs to reduce the exercise price or base price, as applicable, (ii) cancel outstanding stock options or SARs in exchange for stock options or SARs with an exercise price or base price, as applicable, that is less than the exercise price or base price of the original stock options or SARs, or (iii) cancel outstanding stock options or SARs with an exercise price or base price, as applicable, above the current stock price in exchange for cash or other securities, except in connection with a corporate transaction involving the Company, without in each such instance obtaining the approval of our stockholders.

Change of Control

If the Company experiences a change of control where it is not the surviving corporation (or survives only as a subsidiary of another corporation), unless the Committee determines otherwise, all outstanding grants that are not exercised or paid at the time of the change of control will be assumed by, or replaced with grants (which may be in respect to cash, securities or a combination thereof) that have comparable terms by, the surviving corporation (or a parent or subsidiary of the surviving corporation). For the purposes of the foregoing, a grant under the Equity Plan will not be treated as continued, assumed, or replaced on comparable terms unless it is continued, assumed, or replaced with substantially equivalent terms, including, without limitation, the same vesting terms. Unless a grant agreement provides otherwise, if a participant's employment is terminated by us without cause upon or within 12 months following a change in control, the participant's outstanding grants will become fully vested as of the date of such termination; provided, that any outstanding grants which are subject to performance vesting terms will not accelerate but will be governed by the terms set forth in the applicable grant agreement.

If there is a change of control and all outstanding grants are not assumed by, or replaced with grants that have comparable terms by, the surviving corporation, the Committee may (but is not obligated to) make adjustments to the terms and conditions of outstanding grants, including, without limitation, taking any of the following actions (or combination thereof) without the consent of any participant:

- determine that outstanding options and SARs will accelerate and become fully exercisable and the restrictions and conditions on outstanding stock awards, stock units, other stock-based awards, and dividend equivalents immediately lapse;
- pay participants, in an amount and form determined by the Committee, in settlement of outstanding stock units or dividend equivalents;
- require that participants surrender their outstanding stock options and SARs in exchange for a payment by us, in cash or shares of Common Stock, equal to the difference between the exercise price and the fair market value of the underlying shares of Common Stock; provided, however, if the per share fair market value of Common Stock does not exceed the per share stock option exercise price or SAR base amount, as applicable, we will not be required to make any payment to the participant upon surrender of the stock option or SAR; or
- after giving participants an opportunity to exercise all of their outstanding stock options and SARs, terminate any unexercised stock options and SARs on the date determined by the Committee.

In general terms, a change of control under the Equity Plan occurs if:

- a person, entity or affiliated group, with certain exceptions, acquires more than 50% of our then-outstanding voting securities;
- we merge into another entity unless the holders of our voting shares immediately prior to the merger have at least 50% of the combined voting power of the securities in the merged entity or its parent;
- we merge into another entity and the members of the Board of Directors prior to the merger would not constitute a majority of the board of the merged entity or its parent;
- we sell or dispose of all or substantially all of our assets;
- we consummate a complete liquidation or dissolution; or
- a majority of the members of the Board of Directors is replaced during any 12-month period by directors whose appointment or election is not endorsed by a majority of the incumbent directors.

Deferrals

The Committee may permit or require participants to defer receipt of the payment of cash or the delivery of shares of Common Stock that would otherwise be due to the participant in connection with a grant under the Equity Plan. The Committee will establish the rules and procedures applicable to any such deferrals, consistent with the requirements of Section 409A of the Code.

Withholding

All grants under the Equity Plan are subject to applicable U.S. federal (including the Federal Insurance Contributions Act ("FICA")), state and local, foreign or other tax withholding requirements. We may require participants or other persons receiving grants or exercising grants to pay an amount sufficient to satisfy such tax withholding requirements with respect to such grants, or we may deduct from other wages and compensation paid by us the amount of any withholding taxes due with respect to such grant, or we may take such other action as the Committee may deem advisable to enable us to satisfy obligations for the payment of withholding taxes and other tax obligations relating to any grant.

The Committee may permit or require that our tax withholding obligation with respect to grants paid in Common Stock be paid by having shares withheld up to an amount that does not exceed the participant's minimum applicable withholding tax rate for United States federal (including FICA), state and local tax liabilities, or as otherwise determined by the Committee. In addition, the Committee may, in its discretion, and subject to such rules as the Committee may adopt, allow participants to elect to have such share withholding applied to all or a portion of the tax withholding obligation arising in connection with any particular grant.

Transferability

Except as permitted by the Committee with respect to non-qualified stock options, only a participant may exercise rights under a grant during the participant's lifetime. Upon death, the personal representative or other person entitled to succeed to the rights of the participant may exercise such rights. A participant cannot transfer those rights except by will or by the laws of descent and distribution or, with respect to grants other than incentive stock options, pursuant to a domestic relations order. The Committee may provide in a grant instrument that a participant may transfer non-qualified stock options and stock award to family members, or one or more trusts or other entities for the benefit of or owned by family members, consistent with applicable securities laws.

Amendment; Termination

The Board of Directors may amend or terminate the Equity Plan at any time, except that our stockholders must approve an amendment if such approval is required in order to comply with the Code, applicable laws or applicable stock exchange requirements. Unless terminated sooner by the Board of Directors or extended with stockholder approval, the Equity Plan will terminate on the day immediately preceding the tenth anniversary of the effective date of the Equity Plan.

Stockholder Approval

Except in connection with certain corporate transactions, including stock dividends, stock splits, a recapitalization, a change in control, a reorganization, a merger and a spin-off, stockholder approval is required (i) to reduce the exercise price or base price of outstanding stock options or SARs, (ii) to cancel outstanding stock options or SARs in exchange for the same type of grant with a lower exercise price or base price, and (iii) to cancel outstanding stock options or SARs that have an exercise price or base price above the current price of a share of Common Stock, in exchange for cash or other securities, each as applicable.

Establishment of Sub-Plans

The Board of Directors may, from time to time, establish one or more sub-plans under the Equity Plan to satisfy applicable blue sky, securities or tax laws of various jurisdictions. The Board of Directors may establish such sub-plans by adopting supplements to the Equity Plan setting forth limitations on the Committee's discretion and such additional terms and conditions not otherwise inconsistent with the Equity Plan as the Board of Directors deems necessary or desirable. All such supplements will be deemed part of the Equity Plan, but each supplement will only apply to participants within the affected jurisdiction, and we will not be required to provide copies of any supplement to such unaffected participants.

Clawback

Subject to applicable law, the Committee may provide in any grant instrument that if a participant breaches any restrictive covenant obligation or agreement between the participant and us, or otherwise engages in activities that constitute cause (as defined in the Equity Plan) either while employed by, or providing services to, us or within a specified period of time thereafter, all grants held by the participant will terminate, and we may rescind any exercise of an option or SAR and the vesting of any other grant and delivery of shares upon such exercise or vesting, as applicable on such terms as the Committee will determine, including the right to require that in the event of any rescission:

- the participant must return the shares received upon the exercise of any option or SAR or the vesting and payment of any other grants; or
- if the participant no longer owns the shares, the participant must pay to us the amount of any gain realized or payment received as a result of any sale or other disposition of the shares (if the participant transferred the shares by gift or without consideration, then the fair market value of the shares on the date of the breach of the restrictive covenant agreement or activity constituting cause), net of the price originally paid by the participant for the shares.

The Committee may also provide for clawbacks pursuant to a clawback policy, which the Board of Directors may in the future adopt and amend from time to time. Payment by the participant will be made in such manner and on such terms and conditions as may be required by the Committee. We will be entitled to set off against the amount of any such payment any amounts that we otherwise owe to the participant.

Certain United States Federal Income Tax Aspects

The following is a summary of certain U.S. federal income tax consequences of awards under the Equity Plan. It does not purport to be a complete description of all applicable rules, and those rules (including those summarized here) are subject to change.

Options

An optionee generally will not recognize taxable income upon the grant of a non-statutory option. Rather, at the time of exercise of the option, the optionee will recognize ordinary income for income tax purposes in an amount equal to the excess, if any, of the fair market value of the shares purchased over the exercise price. We generally will be entitled to a tax deduction at such time and in the same amount, if any, that the optionee recognizes as ordinary income. The optionee's tax basis in any shares received upon exercise of an option will be the fair market value of the shares on the date of exercise, and if the shares are later sold or exchanged, then the difference between the amount received upon such sale or exchange and the fair market value of such shares on the date of exercise will generally be taxable as long-term or short-term capital

gain or loss (if the shares are a capital asset of the optionee) depending upon the length of time such shares were held by the optionee.

Incentive stock options are eligible for favorable U.S. federal income tax treatment if certain requirements are satisfied. An incentive stock option must have an option price that is not less than the fair market value of the stock at the time the option is granted and must be exercisable within ten years from the date of grant. An employee granted an incentive stock option generally does not realize compensation income for U.S. federal income tax purposes upon the grant of the option. At the time of exercise of an incentive stock option, no compensation income is realized by the optionee other than tax preference income for purposes of the federal alternative minimum tax on individual income. If the shares acquired on exercise of an incentive stock option are held for at least two years after grant of the option and one year after exercise, the excess of the amount realized on the sale over the exercise price will be taxed as capital gain. If the shares acquired on exercise of an incentive stock option are disposed of within less than two years after grant or one year of exercise, the optionee will realize taxable compensation income equal to the lesser of (i) the excess of the fair market value of the shares on the date of exercise over the option price or (ii) the excess of the amount realized on the sale over the option price. Any additional amount realized will be taxed as capital gain.

Stock Awards

A participant generally will not be taxed upon the grant of stock awards subject to restrictions, but rather will recognize ordinary income in an amount equal to the fair market value of the shares at the time the shares are no longer subject to a "substantial risk of forfeiture" (within the meaning of the Code). We generally will be entitled to a deduction at the time when, and in the amount that, the participant recognizes ordinary income on account of the lapse of the restrictions. A participant's tax basis in the shares will equal their fair market value at the time the restrictions lapse, and the participant's holding period for capital gains purposes will begin at that time. Any cash dividends paid on the restricted stock before the restrictions lapse will be taxable to the participant as additional compensation (and not as dividend income). Under Section 83(b) of the Code, a participant may elect to recognize ordinary income at the time the shares of stock are awarded in an amount equal to their fair market value at that time, notwithstanding the fact that such shares of stock are subject to restrictions and a substantial risk of forfeiture. If such an election is made, no additional taxable income will be recognized by such participant at the time the restrictions lapse, the participant will have a tax basis in the shares equal to their fair market value on the date of their award, and the participant's holding period for capital gains purposes will begin at that time. We generally will be entitled to a tax deduction at the time when, and to the extent that, ordinary income is recognized by such participant.

Stock Units

In general, the grant of stock units will not result in income for the participant or in a tax deduction for us. Upon the settlement of such an award in cash or shares, the participant will recognize ordinary income equal to the aggregate value of the payment received, and we generally will be entitled to a tax deduction at the same time and in the same amount.

Stock Appreciation Rights

A participant who is granted a SAR generally will not recognize ordinary income upon receipt of the SAR. Rather, at the time of exercise of such SAR, the participant will recognize ordinary income for U.S. federal income tax purposes in an amount equal to the value of any cash received and the fair market value on the date of exercise of any shares received. We generally will be entitled to a tax deduction at such time and in the same amount, if any, that the participant recognizes as ordinary income. The participant's tax basis in any shares received upon exercise of a SAR will be the fair market value of the shares on the date of exercise, and if the shares are later sold or exchanged, then the difference between the amount received upon such sale or exchange and the fair market value of such shares on the date of exercise will generally be taxable as long-term or short-term capital gain or loss (if the shares are a capital asset of the participant) depending upon the length of time such shares were held by the participant.

Other Awards

With respect to other stock-based awards granted under the Equity Plan, generally when the participant receives payment with respect to an award, the amount of cash and/or the fair market value of any shares or other property received will be ordinary income to the participant, and we generally will be entitled to a tax deduction at the same time and in the same amount.

Impact of Section 409A

Section 409A of the Code applies to deferred compensation, which is generally defined as compensation earned currently, the payment of which is deferred to a later taxable year. Awards under the Equity Plan are intended to be exempt from the requirements of Section 409A or to satisfy its requirements. An award that is subject to Section 409A and fails to satisfy its requirements will subject the holder of the award to immediate taxation, interest and an additional 20% tax on the vested amount underlying the award.

Section 162(m) of the Code

Prior to 2018, Section 162(m) of the Code imposed a $1 million limit on the amount that a public company may deduct for compensation paid to a company's chief executive officer or any of the company's three other most highly compensated executive officers (other than the chief financial officer) who are employed as of the end of the year. This limitation did not apply to compensation that meets the tax code requirements for "qualifying performance-based" compensation (i.e., compensation paid only if the individual's performance meets pre-established objective goals based on performance criteria approved by stockholders, including stock options).

The performance-based compensation exemption and the exemption of the chief financial officer from Section 162(m)'s deduction limit have been repealed, among other changes, effective for taxable years beginning after December 31, 2017, such that awards paid to our covered executive officers (including our chief executive officer) in excess of $1 million will not be deductible in future years, unless they qualify for transition relief applicable to certain arrangements that were in effect as of November 2, 2017 and are not materially modified thereafter. As in prior years, while deductibility of executive compensation for federal income tax purposes is among the factors the Committee considers when structuring our executive compensation arrangements, it is not the sole or primary factor considered. We retain the flexibility to authorize compensation that may not be deductible if we believe it is in the best interests of the Company.

New Plan Benefits

Future benefits under the Equity Plan generally will be granted at the discretion of the Committee and are therefore not currently determinable.

Because future grants of awards under the Equity Plan, if approved, would be subject to the discretion of the Board of Directors or Compensation Committee, the amount and terms of future awards to particular participants or groups of participants are not determinable at this time. No awards have been previously granted that are contingent on the approval of the Equity Plan.

Vote Required; Recommendation of Board of Directors

The affirmative vote of the holders of shares of Common Stock representing a majority of the votes present or representing and voting on the matter is required for approval of this Proposal No. 3. Broker non-votes (if any) and abstentions will not be counted as votes cast on the matter and will have no effect on the outcome of this proposal.

THE BOARD OF DIRECTORS RECOMMENDS THAT IDERA'S STOCKHOLDERS VOTE "FOR" THIS PROPOSAL NO. 3: TO APPROVE OF THE EQUITY COMPENSATION PLAN.

PROPOSAL NO. 4:
APPROVAL OF ADJOURNMENT OF THE SPECIAL MEETING

General

If the Company fails to receive a sufficient number of votes to approve Proposal Nos. 1, 2, and/or 3, the Company may propose to adjourn or postpone the Special Meeting. The Company currently does not intend to propose adjournment or postponement at the Special Meeting if there are sufficient votes to approve Proposal Nos. 1, 2, and/or 3.

Vote Required; Recommendation of Board of Directors

The affirmative vote of the holders of shares of Common Stock and Series B Preferred Stock representing a majority of the votes present or represented and voting on the matter is required for approval of this Proposal No. 4 (for the purpose of soliciting additional proxies to approve Proposal Nos. 1, 2, and/or 3), if a quorum is present at the Special Meeting. If a quorum is not present at the Special Meeting, the affirmative vote of the stockholders holding a majority of the voting power present in person or by proxy at the Special Meeting is required for approval of this Proposal No. 4. The holders of Common Stock have the right to cast one vote per share of Common Stock on this Proposal No. 4. The holders of Series B Preferred Stock have the right to cast 1,000,000 votes per share of Series B Preferred Stock on this proposal; provided, that such votes must be counted by the Company in the same proportion as the aggregate shares of Common Stock that are voted on this Proposal No. 4, without regard to abstentions by holders of Common Stock or any applicable broker non-votes. Broker non-votes (if any) and abstentions will not be counted as votes cast on the matter and will have no effect on the outcome of this proposal.

THE BOARD OF DIRECTORS RECOMMENDS THAT IDERA'S STOCKHOLDERS VOTE "FOR" THIS PROPOSAL NO. 4: TO ADJOURN THE SPECIAL MEETING, IF NECESSARY, TO SOLICIT ADDITIONAL PROXIES.

OTHER INFORMATION

DESCRIPTION OF COMMON STOCK

The following description sets forth certain material terms and provisions of the Company's securities that are registered under Section 12 of the Securities Exchange Act of 1934, as amended.

The following description is a summary and does not purport to be complete. It is subject to, and qualified in its entirety by reference to, the Company's Restated Certificate of Incorporation, as amended, and our Bylaws. The terms of these securities also may be affected by the DGCL.

Unless otherwise indicated, any share and per share amounts included in the description of our securities, reflect, as applicable, the occurrence of a 1-for-8 reverse split of our Common Stock that occurred on June 29, 2006, and a 1-for-8 reverse split of our Common Stock that occurred on July 27, 2018.

Authorized Capital Stock

We are authorized to issue a total of 145,000,000 shares of capital stock consisting of 140,000,000 shares of common stock, par value $0.001 per share, and 5,000,000 shares of preferred stock, par value $0.01. Our Common Stock is listed on the Nasdaq Capital Market under the trading symbol "IDRA."

As of the date of this proxy statement, 62,355,434 shares of Common Stock are issued and outstanding and shares of Common Stock were reserved for the issuance upon the exercise of outstanding warrants and options to purchase Common Stock, outstanding restricted stock units, the conversion of the Series A Preferred Stock and the Series Z Preferred Stock, shares required to be reserved pursuant to the Merger Agreement, shares available for grant under our 2013 Stock Incentive Plan, shares available for purchase under our 2017 Employee Stock Purchase Plan, and the assumed Aceragen 2021 Stock Incentive Plan.

Description of Common Stock

Voting

Each outstanding share of Common Stock is entitled to one vote per share on all matters submitted to a vote of our stockholders, except as set forth in the Restated Certificate of Incorporation. Holders of Common Stock do not have cumulative voting rights.

Dividends; Liquidation and Dissolution

Subject to the preferences that may be applicable to any then-outstanding shares of preferred stock, holders of Common Stock are entitled to receive ratably on a per share basis such dividends and other distributions in cash, stock, or property of Idera as may be declared by our Board of Directors from time to time out of the legally available assets or funds of Idera. Upon our voluntary or involuntary liquidation, dissolution or winding up, holders of Common Stock are entitled to receive ratably all assets of Idera available for distribution to its stockholders after payment of any amounts due to creditors and any amounts due to the holders of our preferred stock.

Other Rights and Restrictions

Holders of our Common Stock have no preemptive rights and no right to convert their Common Stock into any other securities. There are no redemption or sinking fund provisions applicable to our Common Stock. The Restated Certificate of Incorporation and Bylaws do not restrict the ability of holders of Common Stock to transfer their shares of Common Stock. Our Board of Directors may authorize the issuance of preferred stock with voting, conversion, dividend, liquidation, and other rights that may adversely affect the rights of the holder of our Common Stock.

Put Right

Pursuant to the terms of that certain Unit Purchase Agreement, dated May 5, 1998 (the "UPA"), we issued and sold a total of 149,960 shares of Common Stock (the "Put Shares") at a price of $128.00 per

share. Under the UPA, the initial purchasers of the Put Shares (the "Put Holders") have the right to require us to repurchase the put shares (the "Put Right"). In order for the Put Right to be exercised by any Put Holder, all of the following must occur: (1) we liquidate, dissolve or wind up our affairs pursuant to applicable bankruptcy law, whether voluntarily or involuntarily; (2) all of our indebtedness and obligations, including without limitation the indebtedness under our outstanding notes, has been paid in full; and (3) all rights of the holders of any series or class of capital stick raking prior and senior to the Common Stock with respect to liquidation have been satisfied in full. We may terminate the Put Right upon written notice to the Put Holders if the closing sales price of our Common Stock exceeds $256.00 per share for the 20 consecutive trading days prior to the date of notice of termination. Because the Put Right is not transferable, in the event that a Put Holder has transferred Put Shares since May 5, 1998, the Put Right with respect to those Put Shares has terminated. As a consequence of the Put Right, in the event we are liquidated, holders of shares of Common Stock that do not have a Put Right with respect to such shares may receive smaller distributions per share upon our liquidation than if there was no Put Right outstanding. As of the date of this proxy statement, we had repurchased or received documentation of the transfer of 49,993 Put Shares and 4,472 of the Put Shares continued to be held in the name of the Put Holders. We cannot determine at this time what portion of the Put Rights of the remaining 95,494 Put Shares have terminated.

Description of Preferred Stock and Preferred Stock Convertible Into Common Stock

We are authorized to issue 5,000,000 shares of preferred stock, of which 1,500,000 shares have been designated Series A Preferred Stock, 200,000 shares have been designated Series B Preferred Stock, 150,000 shares have been designated Series Z Preferred Stock, and five shares have been designated as Series X Preferred Stock.

Shares of Series A Preferred Stock, in whole or in part, at the option of the holder, are convertible into fully paid and nonassessable shares of Common Stock at $272.00 per share, subject to adjustment. Subject to the Conversion Proposal discussed in this proxy statement, shares of Series Z Preferred Stock, in whole or in part, at the option of the holder, are convertible into fully paid and nonassessable shares of 1,000 shares of Common Stock, subject to adjustment. Shares of Series X Preferred Stock are not convertible into Common Stock.

The holders of Series B Preferred Stock have 1,000,000 votes per whole share of Series B Preferred Stock (i.e., 1,000 votes per one one-thousandth of a share of Series B Preferred Stock) and are entitled to vote with the Common Stock, together as a single class, on the Reverse Stock Split Proposal and Adjournment Proposal, but are not otherwise entitled to vote on the other proposals to be presented at the Special Meeting. All shares of Series B Preferred Stock that are not present in person or by proxy at the Special Meeting as of immediately prior to the opening of the polls at the Special Meeting will be automatically redeemed. Any outstanding shares of Series B Preferred Stock that have not been redeemed pursuant to the Initial Redemption will be redeemed in whole, but not in part, (i) if and when ordered by our Board or (ii) automatically upon the approval by the Company's stockholders of the Reverse Stock Split at any meeting of the stockholders held for the purpose of voting on such proposal.

As of the date of this proxy statement, there were 655 shares of Series A Preferred Stock outstanding, 62,355 shares of Series B Preferred Stock outstanding, 80,656 shares of Series Z Preferred Stock outstanding, and five shares of Series X Preferred Stock outstanding. No other shares of preferred stock were outstanding.

Common Stock Issuable Upon Exercise of Warrants

In connection with the Merger Agreement, we have agreed to assume all issued and outstanding warrants, held by certain former stockholders of Aceragen, to purchase shares of Common Stock and Series Z Preferred Stock on the same terms and conditions as applied to such warrants immediately prior to the Acquisition (but with such changes as Idera in good faith determined was necessary to reflect such assumption and conversion).

As of the date of this proxy statement, there were 8,552,214 warrants to purchase shares of Common Stock outstanding and 14,215 warrants to purchase shares of Series Z Preferred Stock outstanding.

Certain Anti-Takeover Provisions of Our Restated Certificate Incorporation and Bylaws

The following is a summary of certain provisions of our Restated Certificate of Incorporation and Bylaws that may have the effect of delaying, deterring, or preventing hostile takeovers or changes in control or management of Idera. Such provisions could deprive our stockholders of opportunities to realize a premium on their stock. At the same time, these provisions may have the effect of inducing any persons seeking to acquire or control us to negotiate terms acceptable to our Board of Directors.

Undesignated Preferred Stock

Our Restated Certificate of Incorporation authorizes our Board of Directors to issue shares of preferred stock and set the voting powers, designations, preferences, and other rights related to that preferred stock without stockholder approval. Any such designation and issuance of shares of preferred stock could delay, defer, or prevent any attempt to acquire or control us.

Staggered Board of Directors

Our Restated Certificate of Incorporation and our Bylaws provide for the division of our Board of Directors into three classes as nearly equal in size as possible with staggered three-year terms. The classification of the Board of Directors could have the effect of making it more difficult for a third party to acquire, or of discouraging a third party from acquiring, control of us. Our Restated Certificate of Incorporation and Bylaws require the affirmative vote of the holders of at least 75% of the shares of our capital stock issued and outstanding and entitled to vote to amend or repeal this provision.

Vacancies on the Board of Directors; Removal of Directors

Our Restated Certificate of Incorporation and our Bylaws provide that, subject to any rights of holders of our preferred stock, any vacancies in our Board of Directors for any reason will be filled only by a majority of our directors remaining in office, and directors so elected will hold office until the next election of directors. The inability of our stockholders to fill vacancies on the Board of Directors may make it more difficult to change the composition of our Board of Directors. Additionally, our Restated Certificate of Incorporation and Bylaws provide that a director may be removed from office by our stockholders only for cause and by the affirmative vote of at least two-thirds of our outstanding voting stock. Our Restated Certificate of Incorporation and Bylaws require the affirmative vote of the holders of at least 75% of the shares of our capital stock issued and outstanding and entitled to vote to amend or repeal these provisions.

Cumulative Voting

Our Restated Certificate of Incorporation and Bylaws do not provide for cumulative voting. Accordingly, the holders of a majority of the shares of Common Stock entitled to vote in any election of directors may elect all of the directors standing for election. As a result, subject to the voting rights, of which there currently are none, of any outstanding preferred stock, persons who hold more than 50% of the outstanding Common Stock entitled to elect members of our Board of Directors can elect all of the directors who are up for election in a particular year.

Business Combinations

We are subject to Section 203 of the DGCL. Subject to certain exceptions, Section 203 prevents a publicly-held Delaware corporation from engaging in a "business combination" with any "interested stockholder" for three years following the date that such person became an interested stockholder, unless either the interested stockholder attained such status with the approval of our Board of Directors, the business combination was approved by our Board of Directors and stockholders in a prescribed manner or the interested stockholder acquired at least 85% of our outstanding voting stock in the transaction in which such person became an interested stockholder. A "business combination" includes, among other things, a merger or consolidation involving us and the "interested stockholder" and the sale of more than 10% of our assets. In general, an "interested stockholder" is any entity or person beneficially owning 15% or more of our outstanding voting stock and any entity or person affiliated with or controlling or controlled by such entity or person.

No Stockholder Action by Written Consent; Special Meeting of Stockholders

Our Restated Certificate of Incorporation and our Bylaws does not provide for action by written consent in lieu of a meeting by stockholders, which may require our stockholders to wait for a regularly scheduled annual meeting to change the composition of our Board of Directors. Our Restated Certificate of Incorporation and our Bylaws also provide that special meetings of our stockholders may be called only by the Board of Directors or by our chief executive officer or, if the office the chief executive officer is vacant, our president. In no event may our stockholders call a Special Meeting of stockholders. Our Restated Certificate of Incorporation and Bylaws require the affirmative vote of the holders of at least 75% of the shares of our capital stock issued and outstanding and entitled to vote to amend or repeal these provisions.

Advance Notification of Stockholder Nominations and Proposals

Our Bylaws provide that stockholders seeking to bring business before an annual meeting of stockholders, or to nominate candidates for election as directors at an annual meeting of stockholders, must meet specified procedural requirements. These provisions may preclude stockholders from bringing matters before an annual meeting of stockholders or from making nominations for directors at an annual or special meeting of stockholders.

Listing

Our Common Stock is listed on The Nasdaq Capital Market under the symbol “IDRA.”

Transfer Agent and Registrar

The transfer agent and registrar for our Common Stock is Computershare Trust Company, N.A. The transfer agent and registrar’s address is 250 Royall Street, Canton, MA 02021.

PRINCIPAL STOCKHOLDERS

The following table sets forth information, to the extent known by us or ascertainable from public filings, with respect to the beneficial ownership of our Common Stock as of December 4, 2022 by:

- each of our directors;
- each of our executive officers;
- all of our directors and executive officers as a group; and
- each person, or group of affiliated persons, who is known by us to beneficially own greater than 5.0% of our Common Stock.

The column titled "Shares Beneficially Owned" is based on a total of 62,355,434 shares of our Common Stock outstanding as of December 4, 2022.

We have determined beneficial ownership in accordance with the rules of the SEC, and the information in the table below is not necessarily indicative of beneficial ownership for any other purpose. The SEC has defined "beneficial" ownership of a security to mean the possession, directly or indirectly, of voting power and/or investment power. In computing the percentage ownership of each person, shares of Common Stock subject to options, warrants, or rights held by that person that are currently exercisable, or exercisable within 60 days of December 4, 2022, are deemed to be outstanding and beneficially owned by that person. These shares, however, are not deemed outstanding for the purpose of computing the percentage ownership of any other person.

To our knowledge and except as indicated in the notes to this table and pursuant to applicable community property laws, each stockholder named in the table has sole voting and investment power with respect to the shares set forth opposite such stockholder's name. All fractional common share amounts have been rounded to the nearest whole number. To our knowledge, except as noted below, no person or entity is the beneficial owner of more than 5% of the voting power of the Company's stock.

	Shares beneficially owned	
Name and Address of Beneficial Owner[1]	**Number**	**Percentage**
5% Stockholders:		
Pillar Investment Entities co/ Stuarts Corporate Services Ltd. Kensington House, 69 Dr. Roy's Drive Georgetown, Grand Cayman KY1-1104 Cayman Islands	16,748,500[2]	19.99
Company Officers and Directors:		
John Taylor	2,171,214	3.5
Daniel Salain	2,171,214	3.5
Vincent J. Milano	1,091,983[3]	1.8
Andrew Jordan	651,364	1.0
John J. Kirby	370,666[4]	*
Bryant D. Lim	443,996[5]	*
Ronald Wooten	1,343,547[6]	2.2
Carl Kraus	203,551[7]	*
Michael R. Dougherty	355,116[8]	*
Cristina Csimma	72,000[9]	*
James A. Geraghty	271,229[10]	*
Maxine Gowen	75,500[11]	*
All current directors and executive officers as a group (12 individuals)	9,221,380[12]	14.8

* Denotes less than 1% beneficial owner.

(1) Except as otherwise noted, the address for each person listed above is c/o Idera Pharmaceuticals, Inc., 505 Eagleview Boulevard, Suite 212, Exton, PA 19341.

(2) On October 5, 2022, Pillar Pharmaceuticals 6, L.P. ("Pillar 6"), together with Pillar Invest Corporation ("Pillar GP"), Pillar Partners Foundation, L.P. ("Pillar Foundation," and, together with Pillar 6 and Pillar GP, the "Pillar Entities"), Abude Umari and Youssef El Zein (together with the Pillar Entities and Mr. Umari, the "Reporting Persons") filed Amendment No. 13 to a Schedule 13D with the SEC reporting the following beneficial ownership: (i) sole voting power with respect to zero shares; (ii) shared voting power with respect to 16,748,500 shares; (iii) sole dispositive power with respect to zero shares; and (iv) shared dispositive power with respect 16,748,500 shares. The percentage reported for the shares of Common Stock is capped at 19.99% as a result of blocker provisions that limit the number of warrants exercisable for shares of Common Stock that are held by certain of the Pillar Entities.

The Reporting Persons expressly disclaim status as a "group" for purposes of Amendment No. 10 to the Schedule 13D. The Pillar Entities exercise no voting or dispositive power over and expressly disclaim beneficial ownership of any shares held directly by Messrs. Umari and El Zein, and Messrs. Umari and El Zein expressly disclaim beneficial ownership of any shares of Common Stock held directly by Pillar 6 or Pillar Foundation and indirectly by Pillar GP.

(3) Includes 910,310 shares of Common Stock subject to outstanding stock options and restricted shares that are exercisable within 60 days after December 4, 2022.

(4) Includes 333,034 shares of Common Stock subject to outstanding stock options that are exercisable within 60 days after December 4, 2022.

(5) Includes 413,562 shares of Common Stock subject to outstanding stock options that are exercisable within 60 days after December 4, 2022.

(6) Includes 1,343,547 shares of Common Stock subject to outstanding warrants held by NovaQuest. Mr. Wooten, a director of the Company, is a member of the investment committee of NovaQuest GP. NovaQuest GP has the power to vote and dispose of any securities directly owned by NovaQuest. NovaQuest GP's investment committee makes voting and investment decisions regarding securities held by NovaQuest.

(7) Includes 203,551 shares of Common Stock subject to outstanding stock options that are exercisable within 60 days after December 4, 2022.

(8) Includes 72,000 shares of Common Stock subject to outstanding stock options that are exercisable within 60 days after December 4 2022.

(9) Includes 72,000 shares of Common Stock subject to outstanding stock options that are exercisable within 60 days after December 4, 2022.

(10) Includes 151,686 shares of Common Stock subject to outstanding stock options that are exercisable within 60 days after December 4, 2022.

(11) Includes 74,625 shares of Common Stock subject to outstanding stock options that are exercisable within 60 days after December 4, 2022.

(12) Includes 2,230,768 shares of Common Stock subject to outstanding stock options held by the directors and executive officers as a group that are exercisable within 60 days after December 4, 2022 and 1,343,547 shares of Common Stock subject to outstanding warrants.

WHERE YOU CAN FIND ADDITIONAL INFORMATION

We file annual and quarterly reports and other reports and information with the SEC. The SEC maintains an Internet web site that contains reports, proxy and information statements, and other information regarding issuers, including us, that file electronically with the SEC. The public can obtain any documents that we file electronically with the SEC at http://www.sec.gov. We will provide without charge to you, upon written or oral request, a copy of the reports and other information filed with the SEC.

Any requests for copies of information, reports or other filings with the SEC should be directed to Idera Pharmaceuticals, Inc., 505 Eagleview Blvd., Suite 212, Exton, Pennsylvania 19341, Attention: Corporate Secretary.

In order to receive timely delivery of the documents in advance of the Special Meeting, you must make your request for information no later than January 5, 2023.

HOUSEHOLDING

Some banks, brokers, and other nominee record holders may be participating in the practice of "house holding" proxy statements and annual reports. This means that only one copy of our proxy statement, may have been sent to multiple stockholders sharing the same household. We will promptly deliver a separate copy of the proxy statement to you upon written request to Idera Pharmaceuticals, Inc., 505 Eagleview Blvd., Suite 212, Exton, Pennsylvania 19341, Attention: Corporate Secretary. If you want to receive separate copies of the proxy statement or annual reports to stockholders in the future, or if you are receiving multiple copies and would like to receive only one copy per household, you should contact your bank, broker, or other nominee record holder, or you may contact us at the above address and phone number.

OTHER MATTERS

Our Board of Directors does not know of any other matters to be brought before the Special Meeting. If any other matters not mentioned in this proxy statement are properly brought before the Special Meeting, the individuals named in the enclosed proxy intend to use their discretionary voting authority under the proxy to vote the proxy in accordance with their best judgment on those matters.

ANNEX A

CERTIFICATE OF AMENDMENT TO THE RESTATED CERTIFICATE OF INCORPORATION

OF

IDERA PHARMACEUTICALS, INC.

Idera Pharmaceuticals, Inc. (the "Corporation"), organized and existing under and by virtue of the General Corporation Law of the State of Delaware, does hereby certify as follows:

By action of the Board of Directors of the Corporation (the "Board") at a meeting held on September 21, 2022, the Board duly adopted a resolution, pursuant to Section 242 of the General Corporation Law of the State of Delaware, setting forth a proposed amendment to the Restated Certificate of Incorporation of the Corporation, as amended to date (the "Certificate of Incorporation") and declaring said amendment to be advisable. The stockholders of the Corporation duly approved said proposed amendment in accordance with Section 242 of the General Corporation Law of the State of Delaware at a meeting of stockholders held on , 2023. The resolution setting forth the amendment is as follows:

RESOLVED: That the first paragraph of Article FOURTH of the Certificate of Incorporation be and hereby is amended and restated in its entirety so that the same shall read as follows:

"FOURTH. That, effective at , eastern time, on the filing date of this Certificate of Amendment of Restated Certificate of Incorporation, as amended, (the "Effective Time"), a one-for- reverse stock split of the Corporation's Common Stock (as defined below) shall become effective, pursuant to which each 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 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. No fractional shares of Common Stock shall be issued as a result of such reclassification and combination. In lieu of any fractional shares to which the stockholder would otherwise be entitled, the Corporation shall pay cash equal to such fraction multiplied by the average of the high and low trading prices of the Common Stock on the Nasdaq Capital Market during regular trading hours for the five trading days immediately preceding the Effective Time.

The total number of shares of all classes of stock which the Corporation shall have authority to issue is ( ) shares, consisting of (i) ( ) shares of Common Stock, $.001 par value per share ("Common Stock"), and (ii) Five Million (5,000,000) shares of Preferred Stock, $.01 par value per share ("Preferred Stock"), which may be issued from time to time in one or more series as set forth in Part B of this Article FOURTH."

IN WITNESS WHEREOF, the Corporation has caused this Certificate of Amendment to be signed by its duly authorized officer this day of , 202 .

IDERA PHARMACEUTICALS, INC.

By: _____

Chief Executive Officer

ANNEX B

IDERA PHARMACEUTICALS, INC. 2022 STOCK INCENTIVE PLAN

Section 1. Effectiveness and Purpose.

Effective as of the Effective Date, the Idera Pharmaceuticals, Inc. 2022 Equity Incentive Plan (as may be amended from time to time, the "**Plan**") is hereby established.

The purpose of the Plan is to provide employees of Idera Pharmaceuticals, Inc., a Delaware corporation (together with its successors, the "**Company**"), and its subsidiaries, certain consultants and advisors who perform services for the Company or its subsidiaries, and non-employee members of the Board of Directors of the Company, with the opportunity to receive grants of equity awards in the form of incentive stock options, nonqualified stock options, stock appreciation rights, stock awards, stock units, and other stock-based awards. Capitalized terms used in the Plan and not therein defined shall have the meaning assigned to them in Section 2.

The Company believes that the Plan will encourage the participants to contribute materially to the growth of the Company, thereby benefitting the Company's stockholders, and will align the economic interests of the participants with those of the stockholders.

The Plan is intended to replace the Prior Plan. No additional grants shall be made under the Prior Plan on or after the Effective Date. Outstanding grants under the Prior Plan shall continue in effect according to their terms.

Section 2. Definitions.

The following terms shall have the meanings set forth below for purposes of the Plan:

(a) "**Affiliate**" means, when used with reference to any Person, any other Person that directly or indirectly, through one or more intermediaries, controls, is controlled by or is under common control with, or owns greater than fifty percent (50%) of the voting power in, the specified Person (the term "control" for this purpose means the ability, whether by the ownership of shares or other equity interest, by contract or otherwise, to elect a majority of the directors of a corporation, independently to select the managing partner of a partnership or the managing member or the majority of the managers, as applicable, of a limited liability company, or otherwise to have the power independently to remove and then select a majority of those Persons exercising governing authority over an entity, and control shall be conclusively presumed in the case of the direct or indirect ownership of fifty percent (50%) or more of the voting equity interests in the specified Person).

(b) "**Board**" means the Board of Directors of the Company.

(c) "**Cause**" has the meaning given to that term in any written employment agreement, offer letter or severance agreement between the Employer and the Participant, or if no such agreement exists or if such term is not defined therein, and unless otherwise defined in the Grant Instrument, Cause means a finding by the Committee that the Participant (i) has breached his or her employment or service contract with the Employer, (ii) has engaged in disloyalty to the Employer, including, without limitation, fraud, embezzlement, theft, commission of a felony or proven dishonesty, (iii) has disclosed trade secrets or confidential information of the Employer to Persons not entitled to receive such information, (iv) has breached any written non-competition, non-solicitation, invention assignment or confidentiality agreement between the Participant and the Employer or (v) has engaged in such other behavior detrimental to the interests of the Employer as the Committee determines.

(d) "**CEO**" means the Chief Executive Officer of the Company.

(e) "**Change of Control**" means, unless otherwise set forth in a Grant Instrument, the occurrence of any of the following:

(i) Any "person" (as such term is used in sections 13(d) and 14(d) of the Exchange Act) becomes a "beneficial owner" (as defined in Rule 13d-3 under the Exchange Act), directly or

indirectly, of securities of the Company representing more than 50% of the voting power of the then outstanding securities of the Company; *provided* that a Change of Control shall not be deemed to occur as a result of a transaction in which the Company becomes a direct or indirect subsidiary of another Person and in which the stockholders of the Company, immediately prior to the transaction, will beneficially own, immediately after the transaction, shares of such other Person representing more than 50% of the voting power of the then outstanding securities of such other Person.

(ii) The consummation of (A) a merger or consolidation of the Company with another Person where, immediately after the merger or consolidation, the stockholders of the Company, immediately prior to the merger or consolidation, will not beneficially own, in substantially the same proportion as ownership immediately prior to the merger or consolidation, shares entitling such stockholders to more than 50% of all votes to which all stockholders of the surviving Person would be entitled in the election of directors, or where the members of the Board, immediately prior to the merger or consolidation, will not, immediately after the merger or consolidation, constitute a majority of the board of directors of the surviving Person or (B) a sale or other disposition of all or substantially all of the assets of the Company.

(iii) A change in the composition of the Board over a period of 12 consecutive months or less such that a majority of the Board members ceases, by reason of one or more contested elections, or threatened election contests, for Board membership, to be comprised of individuals who either (A) have been Board members continuously since the beginning of such period or (B) have been elected or nominated for election as Board members during such period by at least a majority of the Board members described in clause (A) who were still in office at the time the Board approved such election or nomination.

(iv) The consummation of a complete dissolution or liquidation of the Company.

The Committee may modify the definition of Change of Control for a particular Grant as the Committee deems appropriate to comply with section 409A of the Code or otherwise. Notwithstanding the foregoing, if a Grant constitutes deferred compensation subject to section 409A of the Code and the Grant provides for payment upon a Change of Control, then, for purposes of such payment provisions, no Change of Control shall be deemed to have occurred upon an event described in items (i) – (iv) above unless the event would also constitute a change in ownership or effective control of, or a change in the ownership of a substantial portion of the assets of, the Company under section 409A of the Code.

(f) "**Code**" means the Internal Revenue Code of 1986, as amended, and the regulations promulgated thereunder.

(g) "**Committee**" means the Compensation Committee of the Board or another committee appointed by the Board to administer the Plan. The Committee shall consist of directors who are "non-employee directors" as defined under Rule 16b-3 promulgated under the Exchange Act and "independent directors," as determined in accordance with the independence standards established by the stock exchange on which the Company Stock is at the time primarily traded.

(h) "**Company Stock**" means common stock, par value $0.001 per share, of the Company, and such other securities as may be substituted for Company Stock pursuant to Section 5(c).

(i) "**Disability**" or "**Disabled**" means, unless otherwise set forth in the Grant Instrument, a Participant's becoming disabled within the meaning of the Employer's long-term disability plan applicable to the Participant.

(j) "**Dividend Equivalent**" means an amount determined by multiplying the number of shares of Company Stock subject to a Stock Unit or Other Stock-Based Award by the per-share cash dividend paid by the Company on its outstanding Company Stock, or the per-share Fair Market Value of any dividend paid on its outstanding Company Stock in consideration other than cash. If interest is credited on accumulated divided equivalents, the term "Dividend Equivalent" shall include the accrued interest.

(k) "**Effective Date**" means the date the Plan is approved by the Company's stockholders.

(l) "**Employed by, or providing service to, the Employer**" means employment or service as an Employee, Key Advisor or member of the Board (so that, for purposes of exercising Options and SARs and satisfying conditions with respect to Stock Awards, Stock Units, and Other Stock-Based Awards, a Participant shall not be considered to have terminated employment or service until the Participant ceases to be an Employee, Key Advisor and member of the Board), unless the Committee determines otherwise. If a Participant's relationship is with a subsidiary of the Company and that entity ceases to be a subsidiary of the Company, the Participant will be deemed to cease employment or service when the entity ceases to be a subsidiary of the Company, unless the Participant transfers employment or service to an Employer. If a Participant has military, sick leave or other bona fide leave, the Participant will not be deemed to cease employment or service solely as a result of such leave; *provided* that such leave does not exceed the longer of 90 days or the period during which the absent Participant's reemployment rights, if any, are guaranteed by statute or contract. To the extent consistent with applicable law, the Committee may provide that Grants continue to vest for all or a portion of the period of such leave, or that vesting shall be tolled during such leave and only recommence upon the Participant's return from such leave.

(m) "**Employee**" means an employee of the Employer (including an officer or director who is also an employee), but excluding any person who is classified by the Employer as a "contractor" or "consultant," no matter how characterized by the Internal Revenue Service, other governmental agency or a court. Any change of characterization of an individual by the Internal Revenue Service or any court or government agency shall have no effect upon the classification of an individual as an Employee for purposes of this Plan, unless the Committee determines otherwise.

(n) "**Employer**" means the Company and its subsidiaries.

(o) "**Exchange Act**" means the Securities Exchange Act of 1934, as amended.

(p) "**Exercise Price**" means the per share price at which shares of Company Stock may be purchased under an Option, as designated by the Committee.

(q) "**Fair Market Value**" means:

(i) If the Company Stock is publicly traded, the Fair Market Value per share shall be determined as follows: (A) if the principal trading market for the Company Stock is a national securities exchange, the closing sales price during regular trading hours on the relevant date or, if there were no trades on that date, the latest preceding date upon which a sale was reported, or (B) if the Company Stock is not principally traded on any such exchange, the last reported sale price of a share of Company Stock during regular trading hours on the relevant date, as reported by the OTC Bulletin Board.

(ii) If the Company Stock is not publicly traded or, if publicly traded, is not subject to reported transactions as set forth above, the Fair Market Value per share shall be determined by the Committee through any reasonable valuation method authorized under the Code.

(r) "**Grant**" means an Option, SAR, Stock Award, Stock Unit or Other Stock-Based Award granted under the Plan.

(s) "**Grant Instrument**" means the written agreement that sets forth the terms and conditions of a Grant, including all amendments thereto.

(t) "**Incentive Stock Option**" means an Option that is intended to meet the requirements of an incentive stock option under section 422 of the Code.

(u) "**Key Advisor**" means a consultant or advisor of the Employer.

(v) "**Non-Employee Director**" means a member of the Board who is not an Employee.

(w) "**Nonqualified Stock Option**" means an Option that is not intended to be taxed as an incentive stock option under section 422 of the Code.

(x) "**Option**" means an option to purchase shares of Company Stock, as described in Section 7.

(y) "**Other Stock-Based Award**" means any Grant based on, measured by or payable in Company Stock (other than an Option, Stock Unit, Stock Award, or SAR), as described in Section 11.

(z) "**Participant**" means an Employee, Key Advisor or Non-Employee Director designated by the Committee to participate in the Plan.

(aa) "**Performance Goals**" means the business criteria selected by the Company to measure the level of performance of the Company or an Affiliate during a performance period, which may include, but are not limited to, one or more of the following criteria: cash flow; free cash flow; earnings (including gross margin, earnings before interest and taxes, earnings before taxes, earnings before interest, taxes, depreciation, amortization and charges for stock-based compensation, earnings before interest, taxes, depreciation and amortization, adjusted earnings before interest, taxes, depreciation and amortization and net earnings); earnings per share; growth in earnings or earnings per share; book value growth; stock price; return on equity or average stockholder equity; total stockholder return or growth in total stockholder return either directly or in relation to a comparative group; return on capital; return on assets or net assets; revenue, growth in revenue or return on sales; sales; expense reduction or expense control; expense to revenue ratio; income, net income or adjusted net income; operating income, net operating income, adjusted operating income or net operating income after tax; operating profit or net operating profit; operating margin; gross profit margin; return on operating revenue or return on operating profit; regulatory filings; regulatory approvals, litigation and regulatory resolution goals; other operational, regulatory or departmental objectives; budget comparisons; growth in stockholder value relative to established indexes, or another peer group or peer group index; development and implementation of strategic plans and/or organizational restructuring goals; development and implementation of risk and crisis management programs; improvement in workforce diversity; compliance requirements and compliance relief; safety goals; productivity goals; workforce management and succession planning goals; economic value added (including typical adjustments consistently applied from generally accepted accounting principles required to determine economic value added performance measures); measures of customer satisfaction, employee satisfaction or staff development; development or marketing collaborations, formations of joint ventures or partnerships or the completion of other similar transactions intended to enhance the Company's revenue or profitability or enhance its customer base; merger and acquisitions; strategic goals or objectives (including objectives related to qualitative or quantitative environmental, social or governance metrics); and other similar criteria as determined by the Committee. Performance Goals applicable to a Grant shall be determined by the Committee, and may be established on an absolute or relative basis and may be established on a corporate-wide basis or with respect to one or more business units, divisions, subsidiaries or business segments. Relative performance may be measured against a group of peer companies, a financial market index or other objective and quantifiable indices.

(bb) "**Person**" means any natural person, corporation, limited liability company, partnership, trust, joint stock company, business trust, unincorporated association, joint venture, governmental authority or other legal entity of any nature whatsoever.

(cc) "**Prior Plan**" means the Company's 2013 Stock Incentive Plan, as amended through the Effective Date.

(dd) "**SAR**" means a stock appreciation right, as described in Section 10.

(ee) "**Stock Award**" means an award of Company Stock, as described in Section 8.

(ff) "**Stock Unit**" means an award of a contractual right to receive one or more shares of Company Stock, cash or combination thereof, as described in Section 9, and denominated in a number of shares of Company Stock specified in a Grant Instrument.

Section 3. Administration.

(a) Committee. The Plan shall be administered and interpreted by the Committee; *provided, however*, that any Grants to members of the Board must be authorized by a majority of the Board. The

Committee may delegate authority to one or more subcommittees, as it deems appropriate. Subject to compliance with applicable law and the applicable stock exchange rules, the Board, in its discretion, may perform any action of the Committee hereunder. To the extent that the Board, the Committee, a subcommittee or the CEO, as described below administers the Plan, references in the Plan to the "Committee" shall be deemed to refer to the Board, Committee, or such subcommittee or the CEO.

(b) Delegation to CEO. Subject to compliance with applicable law and applicable stock exchange requirements, the Committee may delegate all or part of its authority and power to the CEO, as it deems appropriate, with respect to Grants to Employees or Key Advisors who are not executive officers or directors under section 16 of the Exchange Act.

(c) Committee Authority. The Committee shall have the sole authority to (i) determine the individuals to whom Grants shall be made under the Plan, (ii) determine the type, size, terms and conditions of the Grants to be made to each such individual, (iii) determine the time when the Grants will be made and the duration of any applicable exercise or restriction period, including the criteria for exercisability and the acceleration of exercisability, (v) amend the terms of any previously issued Grant, subject to the provisions of Section 18 below, (vi) determine and adopt terms, guidelines, and provisions, not inconsistent with the Plan and applicable law, that apply to individuals residing outside of the United States who receive Grants under the Plan, and (vii) deal with any other matters arising under the Plan.

(d) Committee Determinations. The Committee shall have full power and express discretionary authority to administer and interpret the Plan, to make factual determinations and to adopt or amend such rules, regulations, agreements and instruments for implementing the Plan and for the conduct of its business as it deems necessary or advisable, in its sole discretion. The Committee's interpretations of the Plan and all determinations made by the Committee pursuant to the powers vested in it hereunder shall be conclusive and binding on all persons having any interest in the Plan or in any awards granted hereunder. All powers of the Committee shall be executed in its sole discretion, in the best interest of the Company, not as a fiduciary, and in keeping with the objectives of the Plan and need not be uniform as to similarly situated individuals.

(e) Indemnification. No member of the Committee or the Board, and no employee of the Company or any Affiliate shall be liable for any act or failure to act with respect to the Plan, except in circumstances involving his or her bad faith or willful misconduct, or for any act or failure to act hereunder by any other member of the Committee or employee or by any agent to whom duties in connection with the administration of this Plan have been delegated. The Company shall indemnify members of the Committee and the Board and any agent of the Committee or the Board who is an employee of the Company or a subsidiary against any and all liabilities or expenses to which they may be subjected by reason of any act or failure to act with respect to their duties on behalf of the Plan, except in circumstances involving such person's bad faith or willful misconduct.

Section 4. Grants.

(a) General. Grants under the Plan may consist of Options as described in Section 7, Stock Awards as described in Section 8, Stock Units as described in Section 9, SARs as described in Section 10, and Other Stock-Based Awards as described in Section 11. All Grants shall be subject to the terms and conditions set forth herein and to such other terms and conditions consistent with this Plan as the Committee deems appropriate and as are specified in writing by the Committee to the individual in the Grant Instrument. All Grants shall be made conditional upon the Participant's acknowledgement, in writing or by acceptance of the Grant, that all decisions and determinations of the Committee shall be final and binding on the Participant, his or her beneficiaries and any other person having or claiming an interest under such Grant. Grants under a particular Section of the Plan need not be uniform as among the Participants.

(b) Dividends and Dividend Equivalents. Notwithstanding anything to the contrary herein, any dividends or Dividend Equivalents granted in connection with Grants under the Plan shall vest and be paid only if and to the extent the underlying Grants vest and are paid.

Section 5. Shares Subject to the Plan.

(a) Shares Authorized. Subject to adjustment as described below in Sections 5(b) and 5(e) below, the aggregate number of shares of Company Stock that may be issued or transferred under the Plan shall be 25,518,742 shares of Company Stock, which is equal to the sum of: (i) 23,600,000 shares of Company Stock, plus (ii) 3,806,601 shares of Company Stock, which is the number of shares of Company Stock reserved for issuance under the Prior Plan that remain available for grant under the Prior Plan as of November 4, 2022; *provided* that such number will be reduced by the number of shares of Company Stock underlying any Grants made under the Prior Plan after 2022 and before the Effective Date. In addition, shares of the Company Stock underlying any outstanding award granted under the Prior Plan that, following the Effective Date, expires, or is terminated, surrendered or forfeited for any reason without issuance of such shares shall be available for the award of new Grants under this Plan. Subject to adjustment as described below in Sections 5(b) and 5(e) below, the aggregate number of shares of Company Stock that may be issued or transferred under the Plan pursuant to Incentive Stock Options shall not exceed 25,518,742 shares of Company Stock.

(b) Source of Shares; Share Counting. Shares issued or transferred under the Plan may be authorized but unissued shares of Company Stock or reacquired shares of Company Stock, including shares purchased by the Company on the open market for purposes of the Plan. If and to the extent Options or SARs granted under the Plan, expire or are canceled, forfeited, exchanged or surrendered without having been exercised, or if any Stock Awards, Stock Units or Other Stock-Based Awards are forfeited, terminated or otherwise not paid in full, the shares subject to such Grants shall again be available for purposes of the Plan. If shares of Company Stock otherwise issuable under the Plan are surrendered in payment of the Exercise Price of an Option, then the number of shares of Company Stock available for issuance under the Plan shall be reduced only by the net number of shares actually issued by the Company upon such exercise and not by the gross number of shares as to which such Option is exercised. Upon the exercise of any SAR under the Plan, the number of shares of Company Stock available for issuance under the Plan shall be reduced by only by the net number of shares actually issued by the Company upon such exercise. If shares of Company Stock otherwise issuable under the Plan are withheld by the Company in satisfaction of the withholding taxes incurred in connection with the issuance, vesting or exercise of any Grant or the issuance of Company Stock thereunder, then the number of shares of Company Stock available for issuance under the Plan shall be reduced by the net number of shares issued, vested or exercised under such Grant, calculated in each instance after payment of such share withholding. To the extent any Grants are paid in cash, and not in shares of Company Stock, any shares previously subject to such Grants shall again be available for issuance or transfer under the Plan. For the avoidance of doubt, if shares are repurchased by the Company on the open market with the proceeds of the Exercise Price of Options, such shares may not again be made available for issuance under the Plan.

(c) Substitute Awards. Shares issued or transferred under Grants made pursuant to an assumption, substitution or exchange for previously granted awards of a company acquired by the Company in a transaction ("Substitute Awards") shall not reduce the number of shares of Company Stock available under the Plan and available shares under a stockholder approved plan of an acquired company (as appropriately adjusted to reflect the transaction) may be used for Grants under the Plan and shall not reduce the Plan's share reserve (subject to applicable stock exchange listing and Code requirements).

(d) Individual Limits for Non-Employee Directors. Subject to adjustment as described below in Section 5(e), the maximum aggregate grant date value of shares of Company Stock subject to Grants granted to any Non-Employee Director during any calendar year, taken together with any cash fees earned by such Non-Employee Director for services rendered during the calendar year, shall not exceed $750,000 in total value. For purposes of this limit, the value of such Grants shall be calculated based on the grant date fair value of such Grants for financial reporting purposes.

(e) Adjustments. If there is any change in the number or kind of shares of Company Stock outstanding by reason of (i) a stock dividend, spinoff, recapitalization, stock split, or combination or exchange of shares, (ii) a merger, reorganization or consolidation, (iii) a reclassification or change in par value, or (iv) any other extraordinary or unusual event affecting the outstanding Company Stock as a

class without the Company's receipt of consideration, or if the value of outstanding shares of Company Stock is substantially reduced as a result of a spinoff or the Company's payment of an extraordinary dividend or distribution, the maximum number and kind of shares of Company Stock available for issuance under the Plan, the maximum amount of Grants which a Non-Employee Director may receive in any year, the number and kind of shares covered by outstanding Grants, the number and kind of shares issued and to be issued under the Plan, and the price per share or the applicable market value of such Grants shall be equitably adjusted by the Committee to reflect any increase or decrease in the number of, or change in the kind or value of, the issued shares of Company Stock to preclude, to the extent practicable, the enlargement or dilution of rights and benefits under the Plan and such outstanding Grants; *provided, however*, that any fractional shares resulting from such adjustment shall be eliminated. In addition, the Committee is authorized to make adjustments in the terms and conditions of, and the criteria included in, Grants in recognition of unusual or nonrecurring events (including, without limitation, events described in the preceding sentence, and acquisitions and dispositions of businesses and assets) affecting the Company, any subsidiary or any business unit, or the financial statements of the Company or any subsidiary, or in response to changes in applicable laws, regulations, or accounting principles. In addition, in the event of a Change of Control, the provisions of Section 13 of the Plan shall apply. Any adjustments to outstanding Grants shall be consistent with section 409A or 424 of the Code, to the extent applicable. Subject to Section 18(b), the adjustments of Grants under this Section 5(e) shall include adjustment of shares, Exercise Price of Options, base amount of SARs, Performance Goals or other terms and conditions, as the Committee deems appropriate. The Committee shall have the sole discretion and authority to determine what appropriate adjustments shall be made and any adjustments determined by the Committee shall be final, binding and conclusive.

Section 6. Eligibility for Participation

(a) Eligible Persons. All Employees and Non-Employee Directors shall be eligible to participate in the Plan. Key Advisors shall be eligible to participate in the Plan if the Key Advisors render bona fide services to the Employer, the services are not in connection with the offer and sale of securities in a capital-raising transaction and the Key Advisors do not directly or indirectly promote or maintain a market for the Company's securities.

(b) Selection of Participants. The Committee shall select the Employees, Non-Employee Directors and Key Advisors to receive Grants and shall determine the number of shares of Company Stock subject to a particular Grant in such manner as the Committee determines.

Section 7. Options

The Committee may grant Options to an Employee, Non-Employee Director or Key Advisor upon such terms as the Committee deems appropriate. The following provisions are applicable to Options:

(a) Number of Shares. The Committee shall determine the number of shares of Company Stock that will be subject to each Grant of Options to Employees, Non-Employee Directors and Key Advisors.

(b) Type of Option and Exercise Price.

(i) The Committee may grant Incentive Stock Options or Nonqualified Stock Options or any combination of the two, all in accordance with the terms and conditions set forth herein. Incentive Stock Options may be granted only to employees of the Company or its parent or subsidiary corporations, as defined in section 424 of the Code. Nonqualified Stock Options may be granted to Employees, Non-Employee Directors and Key Advisors.

(ii) The Exercise Price of Company Stock subject to an Option shall be determined by the Committee and shall be equal to or greater than the Fair Market Value of a share of Company Stock on the date the Option is granted. However, an Incentive Stock Option may not be granted to an Employee who, at the time of grant, owns stock possessing more than 10% of the total combined voting power of all classes of stock of the Company, or any parent or subsidiary

corporation of the Company, as defined in section 424 of the Code, unless the Exercise Price per share is not less than 110% of the Fair Market Value of a share of Company Stock on the date of grant.

(c) Option Term. The Committee shall determine the term of each Option. The term of any Option shall not exceed ten years from the date of grant. However, an Incentive Stock Option that is granted to an Employee who, at the time of grant, owns stock possessing more than 10% of the total combined voting power of all classes of stock of the Company, or any parent or subsidiary corporation of the Company, as defined in section 424 of the Code, may not have a term that exceeds five years from the date of grant. Notwithstanding the foregoing, in the event that on the last business day of the term of an Option (other than an Incentive Stock Option), the exercise of the Option is prohibited by applicable law, including a prohibition on purchases or sales of Company Stock under the Company's insider trading policy, the term of the Option shall be extended for a period of 30 days following the end of the legal prohibition, unless the Committee determines otherwise.

(d) Exercisability of Options. Options shall become exercisable in accordance with such terms and conditions, consistent with the Plan, as may be determined by the Committee and specified in the Grant Instrument. The Committee may accelerate the exercisability of any or all outstanding Options at any time for any reason.

(e) Grants to Non-Exempt Employees. Notwithstanding the foregoing, Options granted to persons who are non-exempt employees under the Fair Labor Standards Act of 1938, as amended, may not be exercisable for at least six months after the date of grant (except that such Options may become exercisable, as determined by the Committee, upon the Participant's death, Disability or retirement, or upon a Change of Control or other circumstances permitted by applicable regulations).

(f) Termination of Employment or Service. Except as provided in the Grant Instrument, an Option may only be exercised while the Participant is employed by, or providing services to, the Employer. The Committee shall determine in the Grant Instrument under what circumstances and during what time periods a Participant may exercise an Option after termination of employment or service.

(g) Exercise of Options. A Participant may exercise an Option that has become exercisable, in whole or in part, by delivering a notice of exercise to the Company. The Participant shall pay the Exercise Price for an Option as specified by the Committee (i) in cash or by check, (ii) unless the Committee determines otherwise, by delivering shares of Company Stock owned by the Participant and having a Fair Market Value on the date of exercise at least equal to the Exercise Price or by attestation (on a form prescribed by the Committee) to ownership of shares of Company Stock having a Fair Market Value on the date of exercise at least equal to the Exercise Price, (iii) by payment through a broker in accordance with procedures permitted by Regulation T of the Federal Reserve Board, (iv) if permitted by the Committee, by withholding shares of Company Stock subject to the exercisable Option, which have a Fair Market Value on the date of exercise equal to the Exercise Price, or (v) by such other method as the Committee may approve. Shares of Company Stock used to exercise an Option shall have been held by the Participant for the requisite period of time necessary to avoid adverse accounting consequences to the Company with respect to the Option. Payment for the shares to be issued or transferred pursuant to the Option, and any required withholding taxes, must be received by the Company by the time specified by the Committee depending on the type of payment being made, but in all cases prior to the issuance or transfer of such shares.

(h) Limits on Incentive Stock Options. Each Incentive Stock Option shall provide that, if the aggregate Fair Market Value of the Company Stock on the date of the grant with respect to which Incentive Stock Options are exercisable for the first time by a Participant during any calendar year, under the Plan or any other stock option plan of the Company or a parent or subsidiary, exceeds $100,000, then the Option, as to the excess, shall be treated as a Nonqualified Stock Option.

Section 8. Stock Awards

The Committee may issue or transfer shares of Company Stock to an Employee, Non-Employee Director or Key Advisor under a Stock Award, upon such terms as the Committee deems appropriate. The following provisions are applicable to Stock Awards:

(a) General Requirements. Shares of Company Stock issued or transferred pursuant to Stock Awards may be issued or transferred for consideration or for no consideration, and subject to restrictions or no restrictions, as determined by the Committee. The Committee may, but shall not be required to, establish conditions under which restrictions on Stock Awards shall lapse over a period of time or according to such other criteria as the Committee deems appropriate, including, without limitation, restrictions based on the achievement of specific Performance Goals. The period of time during which the Stock Awards will remain subject to restrictions will be designated in the Grant Instrument as the "Restriction Period."

(b) Number of Shares. The Committee shall determine the number of shares of Company Stock to be issued or transferred pursuant to a Stock Award and the restrictions applicable to such shares.

(c) Requirement of Employment or Service. If the Participant ceases to be employed by, or provide service to, the Employer during a period designated in the Grant Instrument as the Restriction Period, or if other specified conditions are not met, the Stock Award shall terminate as to all shares covered by the Grant as to which the restrictions have not lapsed, and those shares of Company Stock must be immediately returned to the Company. The Committee may, however, provide for complete or partial exceptions to this requirement as it deems appropriate.

(d) Restrictions on Transfer and Legend on Stock Certificate. During the Restriction Period, a Participant may not sell, assign, transfer, pledge or otherwise dispose of the shares of a Stock Award except under Section 16 below. Unless otherwise determined by the Committee, the Company will retain possession of certificates for shares of Stock Awards until all restrictions on such shares have lapsed. Each certificate for a Stock Award, unless held by the Company, shall contain a legend giving appropriate notice of the restrictions in the Grant. The Participant shall be entitled to have the legend removed from the stock certificate covering the shares subject to restrictions when all restrictions on such shares have lapsed. The Committee may determine that the Company will not issue certificates for Stock Awards until all restrictions on such shares have lapsed.

(e) Right to Vote and to Receive Dividends. Unless the Committee determines otherwise, during the Restriction Period, the Participant shall have the right: (i) to vote shares of Stock Awards and (ii) subject to Section 4(b), to receive any dividends or other distributions paid on such shares, subject to any restrictions deemed appropriate by the Committee, including, without limitation, the achievement of specific Performance Goals.

(f) Lapse of Restrictions. All restrictions imposed on Stock Awards shall lapse upon the expiration of the applicable Restriction Period and the satisfaction of all conditions, if any, imposed by the Committee. The Committee may determine, as to any or all Stock Awards, that the restrictions shall lapse without regard to any Restriction Period.

Section 9. Stock Units

The Committee may grant Stock Units, each of which shall represent one hypothetical share of Company Stock, to an Employee, Non-Employee Director or Key Advisor upon such terms and conditions as the Committee deems appropriate. The following provisions are applicable to Stock Units:

(a) Crediting of Units. Each Stock Unit shall represent the right of the Participant to receive a share of Company Stock or an amount of cash based on the value of a share of Company Stock, if and when specified conditions are met. All Stock Units shall be credited to bookkeeping accounts established on the Company's records for purposes of the Plan.

(b) Terms of Stock Units. The Committee may grant Stock Units that vest and are payable if specified Performance Goals or other conditions are met, or under other circumstances. Stock Units may be paid at the end of a specified performance period or other period, or payment may be deferred to a date authorized by the Committee. The Committee may accelerate vesting or payment, as to any or all Stock Units at any time for any reason, provided such acceleration complies with section 409A of the Code. The Committee shall determine the number of Stock Units to be granted and the requirements applicable to such Stock Units.

(c) Requirement of Employment or Service. If the Participant ceases to be employed by, or provide service to, the Employer prior to the vesting of Stock Units, or if other conditions established by the Committee are not met, the Participant's Stock Units shall be forfeited. The Committee may, however, provide for complete or partial exceptions to this requirement as it deems appropriate.

(d) Payment With Respect to Stock Units. Payments with respect to Stock Units shall be made in cash, Company Stock or any combination of the foregoing, as the Committee shall determine.

Section 10. Stock Appreciation Rights

The Committee may grant SARs to an Employee, Non-Employee Director or Key Advisor separately or in tandem with any Option. The following provisions are applicable to SARs:

(a) General Requirements. The Committee may grant SARs to an Employee, Non-Employee Director or Key Advisor separately or in tandem with any Option (for all or a portion of the applicable Option). Tandem SARs may be granted either at the time the Option is granted or at any time thereafter while the Option remains outstanding; *provided, however*, that, in the case of an Incentive Stock Option, SARs may be granted only at the time of the grant of the Incentive Stock Option. The Committee shall establish the base amount of the SAR at the time the SAR is granted. The base amount of each SAR shall be equal to or greater than the Fair Market Value of a share of Company Stock as of the date of grant of the SAR. The term of any SAR shall not exceed ten years from the date of grant. Notwithstanding the foregoing, in the event that on the last business day of the term of a SAR, the exercise of the SAR is prohibited by applicable law, including a prohibition on purchases or sales of Company Stock under the Company's insider trading policy, the term shall be extended for a period of 30 days following the end of the legal prohibition, unless the Committee determines otherwise.

(b) Tandem SARs. In the case of tandem SARs, the number of SARs granted to a Participant that shall be exercisable during a specified period shall not exceed the number of shares of Company Stock that the Participant may purchase upon the exercise of the related Option during such period. Upon the exercise of an Option, the SARs relating to the Company Stock covered by such Option shall terminate. Upon the exercise of SARs, the related Option shall terminate to the extent of an equal number of shares of Company Stock.

(c) Exercisability. A SAR shall be exercisable during the period specified by the Committee in the Grant Instrument and shall be subject to such vesting and other restrictions as may be specified in the Grant Instrument. The Committee may accelerate the exercisability of any or all outstanding SARs at any time for any reason. SARs may only be exercised while the Participant is employed by, or providing service to, the Employer or during the applicable period after termination of employment or service as specified by the Committee. A tandem SAR shall be exercisable only during the period when the Option to which it is related is also exercisable.

(d) Grants to Non-Exempt Employees. Notwithstanding the foregoing, SARs granted to persons who are non-exempt employees under the Fair Labor Standards Act of 1938, as amended, may not be exercisable for at least six months after the date of grant (except that such SARs may become exercisable, as determined by the Committee, upon the Participant's death, Disability or retirement, or upon a Change of Control or other circumstances permitted by applicable regulations).

(e) Value of SARs. When a Participant exercises SARs, the Participant shall receive in settlement of such SARs an amount equal to the value of the stock appreciation for the number of SARs exercised. The stock appreciation for a SAR is the amount by which the Fair Market Value of the underlying Company Stock on the date of exercise of the SAR exceeds the base amount of the SAR as described in Section 10(a).

(f) Form of Payment. The appreciation in a SAR shall be paid in shares of Company Stock, cash or any combination of the foregoing, as the Committee shall determine. For purposes of calculating the number of shares of Company Stock to be received, shares of Company Stock shall be valued at their Fair Market Value on the date of exercise of the SAR.

Section 11. Other Stock-Based Awards

The Committee may grant Other Stock-Based Awards, which are awards (other than those described in Sections 7, 8, 9 and 10 of the Plan) that are based on or measured by Company Stock, to any Employee, Non-Employee Director or Key Advisor, on such terms and conditions as the Committee shall determine. Other Stock-Based Awards may be awarded subject to the achievement of Performance Goals or other criteria or other conditions and may be payable in cash, Company Stock or any combination of the foregoing, as the Committee shall determine.

Section 12. Dividend Equivalents

The Committee may grant Dividend Equivalents in connection with Stock Units or Other Stock-Based Awards. Dividend Equivalents, subject to Section 4(b), may be paid currently or accrued as contingent cash obligations and may be payable in cash or shares of Company Stock, and upon such terms and conditions as the Committee shall determine. For the avoidance of doubt, dividends or Dividend Equivalents shall not be granted in connection with Options or SARs.

Section 13. Consequences of a Change of Control

(a) Assumption of Outstanding Grants. Upon a Change of Control where the Company is not the surviving corporation (or survives only as a subsidiary of another corporation), unless the Committee determines otherwise, all outstanding Grants that are not exercised or paid at the time of the Change of Control shall be assumed by, or replaced with grants (which may be in respect to cash, securities, or a combination thereof) that have comparable terms by, the surviving corporation (or a parent or subsidiary of the surviving corporation). After a Change of Control, references to the "Company" as they relate to employment matters shall include the successor employer in the transaction, subject to applicable law. For purposes of the foregoing, a Grant under the Plan shall not be treated as continued, assumed, or replaced on comparable terms unless it is continued, assumed, or replaced with substantially equivalent terms, including, without limitation, the same vesting terms.

(b) Vesting Upon Certain Terminations of Employment. Unless the Grant Instrument provides otherwise, if a Participant's employment or services with the Employer is terminated by the Employer without Cause upon or within 12 months following a Change of Control, the Participant's outstanding Grants shall become fully vested as of the date of such termination; *provided* that if the vesting of any such Grants is based, in whole or in part, on performance, the applicable Grant Instrument shall specify how the portion of the Grant that becomes vested pursuant to this Section 13(b) shall be calculated.

(c) Other Alternatives. In the event of a Change of Control, if any outstanding Grants are not assumed by, or replaced with grants that have comparable terms by, the surviving corporation (or a parent or subsidiary of the surviving corporation), the Committee may (but is not obligated to) make adjustments to the terms and conditions of outstanding Grants, including, without limitation, taking any of the following actions (or combination thereof) with respect to any or all outstanding Grants, without the consent of any Participant: (i) the Committee may determine that outstanding Options and SARs shall automatically accelerate and become fully exercisable and the restrictions and conditions on outstanding Stock Awards, Stock Units, Other Stock-Based Awards and Dividend Equivalents shall immediately lapse; (ii) the Committee may determine that Participants shall receive a payment in settlement of outstanding Stock Units or Dividend Equivalents, in such amount and form as may be determined by the Committee; (iii) the Committee may require that Participants surrender their outstanding Options and SARs in exchange for a payment by the Company, in cash or Company Stock as determined by the Committee, in an amount equal to the amount, if any, by which the then Fair Market Value of the shares of Company Stock subject to the Participant's unexercised Options and SARs exceeds the Option Exercise Price or SAR base amount, and (iv) after giving Participants an opportunity to exercise all of their outstanding Options and SARs, the Committee may terminate any or all unexercised Options and SARs at such time as the Committee deems appropriate. Such surrender, termination or payment shall take place as of the date of the Change of Control or such other date as the Committee may specify. Without limiting the foregoing, if the per share Fair Market Value of the

Company Stock does not exceed the per share Option Exercise Price or SAR base amount, as applicable, the Company shall not be required to make any payment to the Participant upon surrender of the Option or SAR.

Section 14. Deferrals

The Committee may permit or require a Participant to defer receipt of the payment of cash or the delivery of shares that would otherwise be due to such Participant in connection with any Grant. If any such deferral election is permitted or required, the Committee shall establish rules and procedures for such deferrals and may provide for interest or other earnings to be paid on such deferrals. The rules and procedures for any such deferrals shall be consistent with applicable requirements of section 409A of the Code.

Section 15. Withholding of Taxes

(a) Required Withholding. All Grants under the Plan shall be subject to applicable United States federal (including FICA), state and local, foreign country or other tax withholding requirements. The Employer may require that the Participant or other person receiving Grants or exercising Grants pay to the Employer an amount sufficient to satisfy such tax withholding requirements with respect to such Grants, or the Employer may deduct from other wages and compensation paid by the Employer the amount of any withholding taxes due with respect to such Grants, or the Employer may take such other action as the Committee may deem advisable to enable the Employer to satisfy obligations for the payment of withholding taxes and other tax obligations relating to any Grant.

(b) Share Withholding. The Committee may permit or require the Employer's tax withholding obligation with respect to Grants paid in Company Stock to be satisfied by having shares withheld up to an amount that does not exceed the Participant's applicable withholding tax rate for United States federal (including FICA), state and local, foreign country or other tax liabilities. The Committee may, in its discretion, and subject to such rules as the Committee may adopt, allow Participants to elect to have such share withholding applied to all or a portion of the tax withholding obligation arising in connection with any particular Grant. Unless the Committee determines otherwise, share withholding for taxes shall not exceed the Participant's minimum applicable tax withholding amount.

Section 16. Transferability of Grants

(a) Nontransferability of Grants. Except as described in subsection (b) below, only the Participant may exercise rights under a Grant during the Participant's lifetime. A Participant may not transfer those rights except (i) by will or by the laws of descent and distribution or (ii) with respect to Grants other than Incentive Stock Options, pursuant to a domestic relations order. When a Participant dies, the personal representative or other person entitled to succeed to the rights of the Participant may exercise such rights. Any such successor must furnish proof satisfactory to the Company of his or her right to receive the Grant under the Participant's will or under the applicable laws of descent and distribution.

(b) Transfer of Nonqualified Stock Options and Stock Awards. Notwithstanding the foregoing, the Committee may provide, in a Grant Instrument or at such other time after the grant of an award, that a Participant may transfer Nonqualified Stock Options or Stock Awards to family members, or one or more trusts or other entities for the benefit of or owned by family members, consistent with the applicable securities laws, according to such terms as the Committee may determine; *provided* that the Participant receives no consideration for the transfer of an Option or Stock Award and the transferred Option or Stock Award shall continue to be subject to the same terms and conditions as were applicable to the Option or Stock Award immediately before the transfer.

Section 17. Requirements for Issuance or Transfer of Shares

No Company Stock shall be issued or transferred in connection with any Grant hereunder unless and until all legal requirements applicable to the issuance or transfer of such Company Stock have been complied with to the satisfaction of the Committee. The Committee shall have the right to condition any Grant on the Participant's undertaking in writing to comply with such restrictions on his or her subsequent disposition

of the shares of Company Stock as the Committee shall deem necessary or advisable, and certificates representing such shares may be legended to reflect any such restrictions. Certificates representing shares of Company Stock issued or transferred under the Plan may be subject to such stop-transfer orders and other restrictions as the Committee deems appropriate to comply with applicable laws, regulations and interpretations, including any requirement that a legend be placed thereon.

Section 18. Amendment and Termination of the Plan

(a) Amendment. The Board may amend or terminate the Plan at any time; *provided, however*, that the Board shall not amend the Plan without stockholder approval if such approval is required in order to comply with the Code or other applicable law, or to comply with applicable stock exchange requirements.

(b) No Repricing of Options or SARs. Except in connection with a corporate transaction involving the Company (including, without limitation, any stock dividend, distribution (whether in the form of cash, Company Stock, other securities or property), stock split, extraordinary cash dividend, recapitalization, change in control, reorganization, merger, consolidation, split-up, spin-off, combination, repurchase or exchange of shares of Company Stock or other securities, or similar transactions), the Company may not, without obtaining stockholder approval, (i) amend the terms of outstanding Options or SARs to reduce the Exercise Price of such outstanding Options or base price of such SARs, (ii) cancel outstanding Options or SARs in exchange for Options or SARs with an Exercise Price or base price, as applicable, that is less than the Exercise Price or base price of the original Options or SARs or (iii) cancel outstanding Options or SARs with an Exercise Price or base price, as applicable, above the current stock price in exchange for cash or other securities.

(c) Termination of Plan. The Plan shall terminate on the day immediately preceding the tenth anniversary of its Effective Date, unless the Plan is terminated earlier by the Board or is extended by the Board with the approval of the stockholders.

(d) Termination and Amendment of Outstanding Grants. A termination or amendment of the Plan that occurs after a Grant is made shall not materially impair the rights of a Participant with respect to such Grant unless the Participant consents or unless the Committee acts under Section 19(f) below. The termination of the Plan shall not impair the power and authority of the Committee with respect to an outstanding Grant. Whether or not the Plan has terminated, an outstanding Grant may be terminated or amended under Section 19(f) below or may be amended by agreement of the Company and the Participant consistent with the Plan.

Section 19. Miscellaneous

(a) Grants in Connection with Corporate Transactions and Otherwise. Nothing contained in the Plan shall be construed to (i) limit the right of the Committee to make Grants under the Plan in connection with the acquisition, by purchase, lease, merger, consolidation or otherwise, of the business or assets of any corporation, firm or association, including Grants to employees thereof who become Employees, or (ii) limit the right of the Company to grant stock options or make other awards outside of the Plan. The Committee may make a Grant to an employee of another corporation who becomes an Employee by reason of a corporate merger, consolidation, acquisition of stock or property, reorganization or liquidation involving the Company, in substitution for a stock option or stock awards grant made by such corporation. Notwithstanding anything in the Plan to the contrary, the Committee may establish such terms and conditions of the new Grants as it deems appropriate, including setting the Exercise Price of Options or the base price of SARs at a price necessary to retain for the Participant the same economic value as the prior options or rights.

(b) Governing Document. The Plan shall be the controlling document. No other statements, representations, explanatory materials or examples, oral or written, may amend the Plan in any manner. The Plan shall be binding upon and enforceable against the Company and its successors and assigns.

(c) Funding of the Plan. The Plan shall be unfunded. The Company shall not be required to establish any special or separate fund or to make any other segregation of assets to assure the payment of any Grants under the Plan.

(d) Rights of Participants. Nothing in the Plan shall entitle any Employee, Non-Employee Director, Key Advisor or other person to any claim or right to receive a Grant under the Plan. Neither the Plan nor any action taken hereunder shall be construed as giving any individual any rights to be retained by or in the employ of the Employer or any other employment rights.

(e) No Fractional Shares. No fractional shares of Company Stock shall be issued or delivered pursuant to the Plan or any Grant. Except as otherwise provided under the Plan, the Committee shall determine whether cash, other awards or other property shall be issued or paid in lieu of such fractional shares or whether such fractional shares or any rights thereto shall be forfeited or otherwise eliminated.

(f) Compliance with Law.

(i) The Plan, the exercise of Options and SARs and the obligations of the Company to issue or transfer shares of Company Stock under Grants shall be subject to all applicable laws and regulations, and to approvals by any governmental or regulatory agency as may be required. With respect to persons subject to section 16 of the Exchange Act, it is the intent of the Company that the Plan and all transactions under the Plan comply with all applicable provisions of Rule 16b-3 or its successors under the Exchange Act. In addition, it is the intent of the Company that Incentive Stock Options comply with the applicable provisions of section 422 of the Code, and that, to the extent applicable, Grants comply with the requirements of section 409A of the Code. To the extent that any legal requirement of section 16 of the Exchange Act or section 422 or 409A of the Code as set forth in the Plan ceases to be required under section 16 of the Exchange Act or section 422 or 409A of the Code, that Plan provision shall cease to apply. The Committee may revoke any Grant if it is contrary to law or modify a Grant to bring it into compliance with any valid and mandatory government regulation. The Committee may also adopt rules regarding the withholding of taxes on payments to Participants. The Committee may, in its sole discretion, agree to limit its authority under this Section.

(ii) The Plan is intended to comply with the requirements of section 409A of the Code, to the extent applicable. Each Grant shall be construed and administered such that the Grant either (A) qualifies for an exemption from the requirements of section 409A of the Code or (B) satisfies the requirements of section 409A of the Code. If a Grant is subject to section 409A of the Code, (I) distributions shall only be made in a manner and upon an event permitted under section 409A of the Code, (II) payments to be made upon a termination of employment or service shall only be made upon a "separation from service" under section 409A of the Code, (III) unless the Grant specifies otherwise, each installment payment shall be treated as a separate payment for purposes of section 409A of the Code, and (IV) in no event shall a Participant, directly or indirectly, designate the calendar year in which a distribution is made except in accordance with section 409A of the Code.

(iii) Any Grant that is subject to section 409A of the Code and that is to be distributed to a Key Employee (as defined below) upon separation from service shall be administered so that any distribution with respect to such Grant shall be postponed for six months following the date of the Participant's separation from service, if required by section 409A of the Code. If a distribution is delayed pursuant to section 409A of the Code, the distribution shall be paid within 15 days after the end of the six-month period. If the Participant dies during such six-month period, any postponed amounts shall be paid within 90 days of the Participant's death. The determination and identification of "**Key Employees**", including the number and identity of persons considered Key Employees and the identification date, shall be made by the Committee or its delegate each year in accordance with section 416(i) of the Code and the "specified employee" requirements of section 409A of the Code.

(iv) Notwithstanding anything in the Plan or any Grant agreement to the contrary, each Participant shall be solely responsible for the tax consequences of Grants under the Plan, and in no event shall the Company or any subsidiary or Affiliate of the Company have any responsibility or liability if a Grant does not meet any applicable requirements of section 409A of the Code. Although the Company intends to administer the Plan to prevent taxation under section 409A of

the Code, the Company does not represent or warrant that the Plan or any Grant complies with any provision of federal, state, local or other tax law.

(g) Grants in Foreign Countries; Establishment of Subplans. The Committee has the authority to award Grants to Participants who are foreign nationals or employed outside the United States on any different terms and conditions than those specified in the Plan that the Committee, in its discretion, believes to be necessary or desirable to accommodate differences in applicable law, tax policy, or custom, while furthering the purposes of the Plan. The Board may from time to time establish one or more sub-plans under the Plan for purposes of satisfying applicable blue sky, securities or tax laws of various jurisdictions. The Board shall establish such sub-plans by adopting supplements to the Plan setting forth (i) such limitations on the Committee's discretion under the Plan as the Board deems necessary or desirable and (ii) such additional terms and conditions not otherwise inconsistent with the Plan as the Board shall deem necessary or desirable. All supplements adopted by the Board shall be deemed to be part of the Plan, but each supplement shall apply only to Participants within the affected jurisdiction and the Employer shall not be required to provide copies of any supplement to Participants in any jurisdiction that is not affected. Notwithstanding the foregoing, the Committee may not approve any sub-plan inconsistent with the terms or share limits in the Plan or which would otherwise cause the Plan to cease to satisfy any conditions under Rule 16b-3 under the 1934 Act.

(h) Clawback Rights. Subject to the requirements of applicable law, the Committee may provide in any Grant Instrument that, if a Participant breaches any restrictive covenant obligation or agreement between the Participant and the Employer (which may be set forth in any Grant Instrument) or otherwise engages in activities that constitute Cause either while employed by, or providing service to, the Employer or within a specified period of time thereafter, all Grants held by the Participant shall terminate, and the Company may rescind any exercise of an Option or SAR and the vesting of any other Grant and delivery of shares upon such exercise or vesting (including pursuant to dividends and Dividend Equivalents), as applicable on such terms as the Committee shall determine, including the right to require that in the event of any such rescission, (i) the Participant shall return to the Company the shares received upon the exercise of any Option or SAR and/or the vesting and payment of any other Grant (including pursuant to dividends and Dividend Equivalents) or, (ii) if the Participant no longer owns the shares, the Participant shall pay to the Company the amount of any gain realized or payment received as a result of any sale or other disposition of the shares (or, in the event the Participant transfers the shares by gift or otherwise without consideration, the Fair Market Value of the shares on the date of the breach of the restrictive covenant agreement (including a Participant's Grant Instrument containing restrictive covenants) or activity constituting Cause), net of the price originally paid by the Participant for the shares. Payment by the Participant shall be made in such manner and on such terms and conditions as may be required by the Committee. The Employer shall be entitled to set off against the amount of any such payment any amounts otherwise owed to the Participant by the Employer. In addition, all Grants under the Plan shall be subject to any applicable clawback or recoupment policies, share trading policies and other policies that may be implemented by the Board from time to time.

(i) Governing Law; Jurisdiction. The validity, construction, interpretation and effect of the Plan and Grant Instruments issued under the Plan shall be governed and construed by and determined in accordance with the laws of the State of Delaware, without giving effect to the conflict of laws provisions thereof. Any action arising out of, or relating to, any of the provisions of the Plan and Grants made hereunder shall be brought only in the United States District Court for the District of Delaware, or if such court does not have jurisdiction or will not accept jurisdiction, in any court of general jurisdiction in the State of Delaware, and the jurisdiction of such court in any such proceeding shall be exclusive.

ANNEX C

AUDITED FINANCIAL STATEMENTS AND ACCOMPANYING NOTES OF ACERAGEN, INC.
(March 2, 2021 through December 31, 2021)

Aceragen, Inc.
Consolidated Financial Statements
December 31, 2021

Aceragen, Inc.

Index
December 31, 2021

Independent Auditor's Report

Board of Directors
Aceragen, Inc.

Opinion

We have audited the consolidated financial statements of Aceragen, Inc. (the "Company") which comprise the consolidated balance sheet as of December 31, 2021, and the related consolidated statements of operations and comprehensive loss, stockholders' equity, and cash flows for the period from March 2, 2021 (inception) to December 31, 2021, and the related notes to the financial statements. In our opinion, the accompanying consolidated financial statements present fairly, in all material respects, the financial position of the Company as of December 31, 2021, and the results of its operations and its cash flows for the period from March 2, 2021 (inception) to December 31, 2021 in accordance with accounting principles generally accepted in the United States of America.

Basis for Opinion

We conducted our audit in accordance with auditing standards generally accepted in the United States of America (GAAS). Our responsibilities under those standards are further described in the Auditors' Responsibilities for the Audit of the Consolidated Financial Statements section of our report. We are required to be independent of the Company and to meet our other ethical responsibilities, in accordance with the relevant ethical requirements relating to our audit. We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

Substantial Doubt about the Company's Ability to Continue as a Going Concern

The accompanying consolidated financial statements have been prepared assuming that the Company will continue as a going concern. As discussed in Note 2 to the consolidated financial statements, the Company incurred significant net losses during the period from March 2, 2021 (inception) to December 31, 2021 resulting in a significant accumulated deficit and has used significant cash from operating activities. The Company anticipates a need for additional funds to meet its obligations. These conditions raise substantial doubt about its ability to continue as a going concern. Management's plan regarding those matters are described in Note 2. The consolidated financial statements do not include any adjustments that might result from the outcome of this uncertainty. Our opinion is not modified with respect to that matter.

Responsibilities of Management for the Consolidated Financial Statements

Management is responsible for the preparation and fair presentation of the consolidated financial statements in accordance with accounting principles generally accepted in the United States of America, and for the design, implementation, and maintenance of internal control relevant to the preparation and fair presentation of consolidated financial statements that are free from material misstatement, whether due to fraud or error.

In preparing the consolidated financial statements, management is required to evaluate whether there are conditions or events, considered in the aggregate, that raise substantial doubt about the Company's ability to continue as a going concern for one year from the date of issuance of the consolidated financial statements.

Auditors' Responsibilities for the Audit of the Consolidated Financial Statements

Our objectives are to obtain reasonable assurance about whether the consolidated financial statements as a whole are free from material misstatement, whether due to fraud or error, and to issue an auditors' report that includes our opinion. Reasonable assurance is a high level of assurance, but is not absolute assurance, and, therefore is not a guarantee that an audit conducted in accordance with GAAS will always detect a material misstatement when it exists. The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control. Misstatements are considered material if

there is a substantial likelihood that, individually or in the aggregate, they would influence the judgment made by a reasonable user based on the consolidated financial statements.

In performing an audit in accordance with GAAS, we:

- Exercise professional judgment and maintain professional skepticism throughout the audit.
- Identify and assess the risks of material misstatement of the consolidated financial statements, whether due to fraud or error, and design and perform audit procedures responsive to those risks. Such procedures include examining, on a test basis, evidence regarding the amounts and disclosures in the consolidated financial statements.
- Obtain an understanding of internal control relevant to the audit in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the Company's internal control. Accordingly, no such opinion is expressed.
- Evaluate the appropriateness of accounting policies used and the reasonableness of significant accounting estimates made by management, as well as evaluate the overall presentation of the consolidated financial statements.
- Conclude whether, in our judgment, there are conditions or events, considered in the aggregate, that raise substantial doubt about the Company's ability to continue as a going concern for a reasonable period of time.

We are required to communicate with those charged with governance regarding, among other matters, the planned scope and timing of the audit, significant audit findings, and certain internal control-related matters that we identified during the audit.

FORVIS, LLP

(formerly, Dixon Hughes Goodman LLP)

Raleigh, NC
April 15, 2022
(except for Notes 2 and 6 related to Series X Preferred Stock and Note 14 which are dated as of November 18, 2022)

Aceragen, Inc.

Consolidated Balance Sheet
December 31, 2021

	2021
Assets	
Current assets	
Cash and cash equivalents	$ 5,010,224
Restricted cash	125,000
Accounts receivable	268,166
Unbilled accounts receivable	328,012
Funding receivable	6,315,637
Prepaid expenses and other current assets	798,376
Total current assets	12,845,415
Operating lease – right-of-use asset	96,212
Intangible asset	165,600
Total assets	$ 13,107,227
Liabilities, Preferred Equity and Stockholders' Deficit	
Current liabilities	
Accounts payable	$ 313,355
Accrued expenses	75,115
Accrued placement fee	442,095
Accrued bonuses	883,747
Operating lease liability, net	40,323
Acquisition obligation, less unamortized discount based on imputed interest rate of 9.2%, $567,765	5,798,919
Total current liabilities	7,553,554
Operating lease liability, net of current portion	55,889
Acquisition obligation, less current portion, less unamortized discount based on imputed interest rate of 9.2%, $10,824	1,489,176
Total liabilities	9,098,619
Commitments and contingencies (Note 13)	
Preferred equity	
Preferred stock, 5 shares authorized, $.001 par value; 5 shares issued and outstanding with a liquidation preference of $33,583,912 as of December 31, 2021	33,583,912
Stockholders' deficit	
Common stock, 10,000,000 shares authorized, $.001 par value; 3,536,000 shares issued and outstanding as of December 31, 2021	3,536
Additional paid-in capital	—
Accumulated deficit	(29,576,083)
Accumulated other comprehensive income	(2,757)
Total stockholders' deficit	(29,575,304)
Total liabilities preferred stock and stockholders' deficit	$ 13,107,227

The accompanying notes are an integral part of these consolidated financial statements.

Aceragen, Inc.

Consolidated Statement of Operations and Comprehensive Loss
Period from March 2, 2021 (inception) to December 31, 2021

	2021
Revenues	
Government sponsored product development	$ 897,002
Consulting services	107,944
Total revenues	1,004,946
Research and development expenses:	
Government sponsored product development	624,215
Consulting services	31,234
Non-sponsored research and development	8,542,309
In-process research and development	11,809,631
Total research and development expenses	21,007,389
General and administrative expenses	3,794,028
Total operating expenses	24,801,417
Operating loss	(23,796,471)
Other expense	
Interest expense	(108,631)
Foreign currency transaction loss	(1,785)
Total other expense	(110,416)
Loss before income taxes	(23,906,887)
Income tax benefit	—
Net loss	$(23,906,887)
Other comprehensive loss	
Currency translation adjustment	(2,757)
Comprehensive loss	$(23,909,644)

The accompanying notes are an integral part of these consolidated financial statements.

Aceragen, Inc.

Consolidated Statement of Preferred Stock and Stockholders' Deficit
Period Ended December 31, 2021

	Preferred Equity		Stockholders' Deficit					
	Preferred Stock – Series X		Common Stock		Additional Paid-in Capital	Accumulated Deficit	Accumulated Other Comprehensive Loss	Total
	Shares	Amount	Shares	Amount				
Series X preferred stock, net of issuance costs	5	$12,527,164	—	$ —	$ 1,422,836	$ —	$ —	$ 1,422,836
Preferred shareholder contributions, net of issuance costs	—	13,905,708	—	—	—	—	—	—
Preferred shares modification	—	7,151,040	—	—	(1,481,844)	(5,669,196)	—	(7,151,040)
Stock-based compensation	—	—	—	—	59,008	—	—	59,008
Issuance of common stock	—	—	3,536,000	3,536	—	—	—	3,536
Currency translation adjustment	—	—	—	—	—	—	(2,757)	(2,757)
Net loss	—	—	—	—	—	(23,906,887)	—	(23,906,887)
Balances at December 31, 2021	5	$33,583,912	3,536,000	$3,536	$ —	$(29,576,083)	$(2,757)	$(29,575,304)

The accompanying notes are an integral part of these consolidated financial statements.

Aceragen, Inc.

Consolidated Statement of Cash Flows
Period Ended December 31, 2021

	2021
Cash flows from operating activities	
Net loss	$(23,906,887)
Adjustments to reconcile net loss to net cash used in operating activities:	
Amortization of acquisition obligation discount	109,223
Amortization of right-of-use asset	12,609
Non-cash expense in connection with asset acquisition	6,918,772
Foreign currency transaction loss	(2,721)
Stock-based compensation	59,008
Changes in operating assets and liabilities:	
Accounts receivable	(237,177)
Unbilled accounts receivable	361,713
Funding receivable	(6,315,637)
Prepaid expenses and other current assets	(715,638)
Accounts payable	(83,951)
Accrued expenses and other liabilities	1,254,875
Operating lease liability, net	(12,609)
Net cash used in operating activities	(22,558,420)
Cash flows from investing activities	
Purchase of intangible asset	(165,600)
Net cash used in investing activities	(165,600)
Cash flows from financing activities	
Proceeds from issuance of preferred stock, net	27,855,708
Proceeds from issuance of common stock	3,536
Net cash provided by financing activities	27,859,244
Net change in cash, cash equivalents, and restricted cash	5,135,224
Cash and cash equivalents	
Consolidated cash and restricted cash at beginning of year	—
Consolidated cash and restricted cash at end of year	$ 5,135,224
Supplemental disclosure of cash flow information	
Cash paid for interest	$ —
Supplemental disclosure of noncash investing and financing activities	
Preferred stock modification dividend	$ 7,151,040

The accompanying notes are an integral part of these consolidated financial statements.

Aceragen, Inc.

Notes to the Consolidated Financial Statements
December 31, 2021

1. Nature of Business

Aceragen, Inc., together with its wholly-owned subsidiaries, Aceragen GmbH and Arrevus, Inc. (collectively, "the Company"), is a therapeutic development company focusing on rare and orphan diseases that frequently have limited or no treatment options. The Company's goal is to deliver therapies that will be important to patients and their families in addressing unmet medical needs utilizing the Company's distinct proprietary platforms. The Company was incorporated in Delaware in January 2021 and began operations in March 2021.

2. Summary of Significant Accounting Policies

Going Concern

The accompanying consolidated financial statements have been prepared assuming that the Company will continue as a going concern, which contemplates the realization of assets and satisfaction of liabilities in the normal course of business. The Company has losses from operations and negative cash flows from operations and anticipates that it will continue to do so for the foreseeable future as it continues to invest in advancing its later-stage product candidates.

The Company has plans in place to obtain sufficient additional fundraising to fulfill its operating and capital requirements for the next 12 months. The Company's plans include continuing to fund its operating losses and capital funding through private equity financing, product development financing, government contracts and/or grants or other possible financing arrangements. Although management believes such plans, if executed, should provide the Company sufficient financing to meet its needs, successful completion of such plans is dependent on factors outside the Company's control. As such, management cannot conclude that such plans will be effectively implemented within one year after the date that the consolidated financial statements are issued or issuable. As a result, management has concluded that the aforementioned conditions, among others, raise substantial doubt about the Company's ability to continue as a going concern within one year after the date the consolidated financial statements are issued or may be issuable.

If the Company is unable to raise additional capital in sufficient amounts or on acceptable terms, the Company may have to significantly delay, scale back or discontinue the development and/or commercialization of one or more of its product candidates. The consolidated financial statements do not reflect any adjustments that might be necessary if the Company is unable to continue as a going concern.

If the Company raises additional funds by issuing equity securities, substantial dilution to existing stockholders could result. If the Company raises additional funds by incurring debt financing, the terms of the debt instrument may involve significant cash payment obligations as well as possible financial and other covenants that may restrict the Company's ability to effectively operate its business.

Risks and Uncertainties

There are many uncertainties regarding the novel coronavirus (COVID-19) pandemic, and the Company is closely monitoring the impact of the pandemic on all aspects of its business, including how the pandemic is impacting its employees, suppliers, vendors, clinical trials, and distribution channels. The Company is unable to predict the impact that COVID-19 will have on its financial position and operating results in future periods due to numerous uncertainties. The Company will continue to assess the evolving impact of the COVID-19 pandemic and make adjustments to its operations and consolidated financial statements, as necessary.

The following is a summary of the Company's significant accounting policies and practices:

Basis of Consolidation

The accompanying consolidated financial statements include the accounts of the above mentioned wholly-owned subsidiaries. All intercompany transactions and accounts have been eliminated in consolidation.

The consolidated financial statements have been prepared in conformity with accounting principles generally accepted in the United States of America ("U.S. GAAP").

Use of Estimates

The preparation of consolidated financial statements in conformity with U.S. GAAP requires the Company to make estimates and assumptions that affect the reported amounts of assets and liabilities and disclosure of contingent assets and liabilities at the date of the consolidated financial statements. The reported amounts of revenues and expenses may be affected by estimates that the Company is required to make. Estimates that are critical to the accompanying consolidated financial statements relate principally to stock-based compensation expense (which is derived from a formula that uses various assumptions including the underlying fair value of the Company's common stock), acquisition accounting and revenues recognized using the cost-to-cost method for measuring progress. Estimates and assumptions are reviewed periodically, and the effects of revisions are reflected in the period that they are determined to be necessary. It is at least reasonably possible that the Company's estimates could change in the near term with respect to these matters.

Cash and Cash Equivalents

The Company considers all highly liquid investments with an original maturity of three months or less at the time of purchase to be cash equivalents for the purposes of reporting cash flows.

Restricted Cash

The Company had $125,000 of restricted cash held on December 31, 2021. The restricted cash balances as of December 31, 2021 represent cash deposited with two financial institutions which are held as collateral for the Company's corporate credit card programs. The restricted funds are maintained in traditional bank accounts.

The following table provides a reconciliation of cash, cash equivalents, and restricted cash reported within the consolidated balance sheet.

	2021
Cash and cash equivalents	$5,010,224
Restricted cash	125,000
Total cash, cash equivalents, and restricted cash	$5,135,224

Contract and Grant Receivables — Billed and Unbilled

Accounts receivable are contract and grant receivables that are carried at their estimated collectible amounts. An allowance for doubtful accounts is based on specific analysis of the receivables. At December 31, 2021, the Company had no allowance for doubtful accounts. Unbilled accounts receivable relate to various contracts and grants for which work has been performed, though invoicing has not yet occurred.

Credit Risk

The Company maintains cash balance deposit accounts that frequently exceed limits insured by the Federal Deposit Insurance Corporation. The Company has not experienced any losses in such accounts. The Company does not believe it is exposed to any significant credit risk on cash and cash equivalents.

Funding Receivable

Funding receivable represents eligible expenses to be reimbursed by NovaQuest Co-Investment Fund XV, L.P. ("NovaQuest"). The eligible expenses have been incurred and are associated with the development of a treatment for Farber disease (Note 6).

Prepaid Expenses and Other Current Assets

Prepaid expenses and other current assets consist primarily of prepaid materials, prepaid insurance, prepaid research fees, prepaid rent, and prepaid licenses. Prepaid materials and prepaid research fees consist

of advances for the Company's product development activities, including contracts and materials for pre-clinical studies, clinical trials and studies, product development, and regulatory affairs. Items are removed from prepaid expenses as the related goods are utilized or the related services are performed.

Fair Value of Financial Instruments

The carrying amount of the Company's short-term financial instruments, which include cash and cash equivalents, accounts receivable and accounts payable, approximate their fair value due to their short maturities. The fair value of the Company's acquisition obligation approximates carrying value given the nature of the agreement.

Acquisitions

The Company accounts for business combinations using the acquisition method of accounting, which required the assets acquired, including in-process research and development (IPR&D), and liabilities assumed be recorded at fair value as of the acquisition date. Any excess of the purchase price over the fair value of net assets acquired is recorded as goodwill. The determination of the estimated fair value of these items requires significant estimates and assumptions. Transaction costs associated with business combination are recorded in general and administrative expense as they are incurred.

If the Company determines the acquisition does not meet the definition of a business combination under the acquisition method of accounting, the transaction is accounted for as an asset acquisition. In an asset acquisition, up-front payments allocated to IPR&D are recorded in research and development expense if it is determined that there is no alternative future use, and subsequent milestone payments are recorded in research and development expense when achieved.

Intangible Asset

In conjunction with the asset acquisition of Arrevus, Inc. ("Arrevus") (Note 3), the Company recognized an indefinite-lived intangible asset relating to an assembled workforce in the amount of $165,600. Indefinite-lived intangible assets are reviewed at least annually as of the fourth quarter each calendar year and earlier if an event occurs or other circumstances occur indicating that the Company may not recover the carrying value of the asset. If a qualitative assessment indicates that it is not more likely than not that the fair value of the indefinite-lived intangible asset exceeds its carrying amount, the Company compares the estimated fair value of the intangible asset with its carrying value. If the carrying value of the intangible asset exceeds its fair value, an impairment loss is recognized in an amount equal to that excess. No impairment charges have been recognized on intangible assets.

Preferred Stock

The Company applies ASC 480 when determining the classification and measurement of its preferred stock. Preferred shares subject to mandatory redemption are classified as liability instruments and are measured at fair value. Conditionally redeemable preferred shares (including preferred shares that feature redemption rights that are either within the control of the holder or subject to redemption upon the occurrence of uncertain events not solely within the Company's control) are classified as temporary equity. At all other times, preferred shares are classified as stockholders' equity.

The Series X Preferred Stock is classified as temporary equity under ASC 480-10-S99 due to certain contingent redemption rights that are not solely within the Company's control. The carrying value of the Series X Preferred Stock is not being accreted to redemption value as redemption is not deemed probable at this time.

Foreign Currencies

Assets and liabilities of foreign subsidiaries that operate in a local currency environment, where the local currency is the functional currency, are translated to U.S. dollars at exchange rates in effect at the balance sheet date, with the resulting translation adjustments directly recorded to a separate component of accumulated other comprehensive income. Income and expense accounts are translated at average exchanged

rates for the period. Transactions which are not in the functional currency of the entity are remeasured into the functional currency and gains and losses resulting from the remeasurement are recorded in other income (expense).

Income Taxes

Deferred income tax assets and liabilities are recognized for temporary differences between the financial statement amounts and tax basis of existing assets and liabilities. Deferred tax assets and liabilities are measured using enacted rates expected to apply to taxable income in the years in which those temporary differences are expected to be recovered or settled. The Company is required to assess its needs for a valuation allowance at each balance sheet date and this assessment is based on the relative impact of all available evidence, both positive and negative, and requires management to exercise judgment and make assumptions regarding the weight given to potential effect of such negative and positive evidence.

The Company recognizes the benefit of uncertain tax positions taken on its return at the largest amount that is more likely than not to be sustained upon examination based on the technical merit of each position.

Revenue Recognition and Direct Costs of Revenue

The Company derives its revenue from services provided to commercial and government clients under two types of contracts: cost-plus-fixed-fee and time and material consulting agreements. The Company assesses each contract at its inception to determine whether it should be combined with other contracts when the contracts are executed with the same customer. When making this determination, the Company considers factors such as whether two or more contracts were negotiated and executed at or near the same time or were negotiated with an overall profit objective. The Company recognizes revenue when the Company's customers obtain control of promised goods or services, in an amount that reflects the consideration which the Company expects to receive in exchange for those goods or services by analyzing the following five steps: (1) identify the contract with a customer(s); (2) identify the performance obligations in the contract; (3) determine the transaction price; (4) allocate the transaction price to the performance obligations in the contract; and (5) recognize revenue when (or as) the entity satisfies a performance obligation. To indicate the transfer of control for the Company's cost-plus-fixed-fee arrangements and time and material consulting contracts, it must have a present right to payment, legal title must have passed to the customer, and the customer must have the significant risks and rewards of ownership. Revenue for cost-plus-fixed-fee development contracts is generally recognized based upon the cost-to-cost measure of progress relative to total estimated contract costs, provided that the Company meets the criteria associated with transferring control of the goods or services over time. On a cost-plus-fixed-fee contract, the Company is paid direct costs incurred to satisfy contractual scope, allowable incurred indirect costs, plus a profit, which is fixed, up to funding levels predetermined by our customers. On cost-plus-fixed-fee type contracts, we do not bear the risks of unexpected cost overruns, provided incurred costs do not exceed predetermined contractual price ceilings. Revenue for time and materials consulting contracts is generally recognized utilizing the input method of measuring progress (cost to cost) towards complete satisfaction of the identified performance obligation, provided that the Company meets the criteria associated with transferring control of the goods or services over time.

Transaction price and variable consideration:

Once the performance obligations in the contract have been identified, the Company estimates the transaction price of the contract. The estimate includes amounts that are fixed as well as those that can vary based on expected outcomes of the activities or contractual terms.

When a contract's transaction price includes variable consideration, the Company evaluates the estimate of the variable consideration to determine whether the estimate needs to be constrained; therefore, the Company includes the variable consideration in the transaction price only to the extent that it is probable that a significant reversal of the amount of cumulative revenue recognized will not occur when the uncertainty associated with the variable consideration is subsequently resolved. At the inception of a contract, the Company estimates the transaction price based on its current rights and does not contemplate future modifications (including unexercised options) or follow-on contracts until they become legally

enforceable. Contracts are often subsequently modified to include changes in specifications, requirements or price, which may create new or change existing enforceable rights and obligations. Depending on the nature of the modification, the Company considers whether to account for the modification as an adjustment to the existing contract or as a separate contract. Generally, modifications to the Company's contracts are not distinct from the existing contract due to the significant integration and interrelated tasks provided in the context of the contract. Therefore, such modifications are accounted for as if they were part of the existing contract and recognized as a cumulative adjustment to revenue.

Cost-Plus-Fixed-Fee Development Contracts:

The Company generates contract revenue primarily from cost-plus-fixed-fee contracts associated with development of certain product candidates. Revenues from cost-plus-fixed-fee contracts are recognized as costs are incurred, generally based on allowable costs incurred during the period, plus any recognizable earned fee. Billings by the Company to customers under cost-plus-fixed-fee contracts generally occur every month and include payment terms of 30 days. The Company uses this input method to measure progress as the customer has the benefit of access to the development research under these projects and therefore benefits from the Company's performance incrementally as research and development activities occur under each project. The Company considers fixed fees under cost-plus-fixed-fee contracts to be earned in proportion to the allowable costs incurred in performance of the contract. Revenue for long-term development contracts is considered variable consideration because the deliverable is dependent on the successful completion of development and is generally recognized based upon the cost-to-cost measure of progress, provided that the Company meets the criteria associated with satisfying the performance obligation over time. The U.S. Government contracts for the development of the government sponsored product development candidates in agreements that span multiple years because they contain options for the U.S. Government to continue development of the project over the course of more than one year.

Revenue associated with costs incurred yet not billed to the customer are presented as unbilled accounts receivable on the consolidated balance sheet as of December 31, 2021.

Time and Material Consulting Contracts:

The Company generates consulting service revenue primarily from fixed rate contracts with third parties associated with regulatory consulting for product development. Revenues from fixed rate contracts are recognized as services are provided on an as needed basis. The transaction price for consulting services is based on a cost build-up model inclusive of a mark-up. These contracts, with a duration that varies depending on the contracted scope, generally include a single performance obligation as the customer benefits from our performance as consulting services are provided on an as needed basis.

Customer Concentration Risk

The U.S. Government accounted for approximately 89% of the Company's revenues for the period ended December 31, 2021. Approximately 98% of contract receivables invoiced as of December 31, 2021, were due from the U.S. Government.

Research and Development Expenses

The Company expenses the cost of research and development as incurred. Research and development expenses are comprised of costs incurred in performing research and development activities, including clinical trial costs, manufacturing costs for both clinical and preclinical materials as well as other contracted services and other external costs. Nonrefundable advance payments for goods and services that will be used in future research and development activities are expensed when the activity is performed or when the goods have been received, rather when payment is made, in accordance with FASB ASC Topic 730, Research and Development.

In-Process Research and Development Expense

The Company has acquired, and may continue to acquire, the rights to develop and commercialize new drug candidates. The upfront payments to acquire new drug compounds are immediately expensed as

IPR&D, provided that the drug candidates have not achieved regulatory approval for marketing, and absent obtaining such approval, have no alternative use. For 2021, the Company expensed $11,809,631 through the Enyzvant and Arrevus asset acquisitions (Note 3) which is included in IPR&D expense in the consolidated statement of operations and comprehensive loss.

Upon marketing clearance of the relevant research and development project, the Company will amortize capitalized IPR&D's milestones over its estimated useful life.

General and Administrative Expenses

General and administrative expenses consist of personnel costs, including salaries, benefits, and non-cash stock-based compensation, for our employees in finance, human resources, executive, and other administrative functions, legal and consulting fees and recruiting costs not otherwise included in research and development expenses. Legal fees include those related to corporate and patent matters.

Stock-Based Compensation

The Company accounts for stock-based awards to employees and directors in accordance with the provisions of ASC 718, "Compensation — Stock Compensation". Under ASC 718, stock-based awards are valued at fair value on the date of grant and that fair value is recognized over the requisite service period on a straight-line basis, net of estimated forfeitures. The Company values its stock options using the Black-Scholes option pricing model. This valuation model requires the Company to make assumptions and judgments about variables used in the calculation. These variables and assumptions include the fair value of the Company's common stock, weighted average period of time that options are expected to be outstanding, the estimated volatility of comparable companies, the risk-free interest rate and the estimated forfeitures of unvested stock options. Forfeitures are estimated at the time of grant and adjusted, if necessary, in subsequent periods if actual forfeitures differ from those estimates. The Company generally utilizes the simplified method calculation of expected life and estimates the Company's stock volatility based on an average of historic volatilities of several entities with similar characteristics.

Determination of Fair Value of Common Stock

As there has been no public market for the Company's common stock to date, the estimated fair value of the Company's common stock has been determined by our board of directors as of the date of grant of each option or restricted stock award, with input from management, considering our most recently available third-party valuations of common stock and our board of directors' assessment of additional objective and subjective factors that it believed were relevant and which may have changed from the date of the most recent valuation through the date of the grant. These third-party valuations were performed in accordance with the guidance outlined in the American Institute of Certified Public Accountants' Accounting and Valuation Guide,*Valuation of Privately-Held-Company Equity Securities Issued as Compensation.* In order to arrive at a fair value for the total stockholders' equity of the Company, the third-party valuation firm considered the value indication provided by a discounted cash flow analysis.

Leases

In February 2016, the Financial Accounting Standards Board (FASB) issued Accounting Standards Update (ASU) 2016-02, Leases (ASC 842). The new guidance requires lessees to recognize assets and liabilities arising from leases with a term of greater than 12 months on the balance sheet and certain qualitative and quantitative disclosures are required. The Company adopted this standard on the date of incorporation in January 2021. The adoption of ASC 842 resulted in the recognition of an operating lease right-of-use (ROU) asset and operating lease liability of $96,212 on the Company's consolidated balance sheet.

At the inception of the arrangement, the Company determines whether the arrangement is or contains a lease based on the unique facts and circumstances present in the arrangement. Lease liabilities represent an obligation to make payments arising from a lease and are measured at the present value of the remaining future lease payments over the term of the lease. The present value of the lease payments is determined using an incremental borrowing rate (IBR) which reflects the fixed rate at which the Company could borrow

the amount of the lease payments, on a collateralized basis, for a similar term and economic environment. The lease terms may include the impact of options to extend or terminate the lease when it is reasonably certain that the Company will exercise the option. Assumptions made by the Company at the commencement date are re-evaluated upon the occurrence of certain events, including a lease modification. When a lease modification results in a separate contract, it is accounted for in the same manner as a new lease. ROU assets represent the right to use the underlying asset identified in the lease for the term of the agreement. The calculation of the ROU asset incorporates the value of the lease liability and excludes any lease incentives received and initial direct costs incurred.

The Company's lease portfolio consists of operating leases related to its facilities for its offices in Raleigh, North Carolina and Basel, Switzerland. The Company does not have any financing leases. Leases with a term of 12 months or less are considered short-term, and do not require recognition under ASC 842 on the consolidated balance sheet, and payments associated with short-term leases are expensed as incurred. Rent expense for operating leases is recognized on a straight-line basis over the lease term.

3. Acquisitions

Arrevus, Inc.

In October 2021, the Company entered into an Agreement and Plan of Merger (the "Merger Agreement") with Arrevus, Inc. ("Arrevus"), pursuant to which Aceragen Merger Sub, Inc., a wholly-owned subsidiary of the Company, merged with and into Arrevus, with Arrevus being the surviving entity. The $11,606,061 of consideration consisted of cash paid at closing of $3,739,377 which included professional fees of $109,576, a deferred amount of $7,500,000 and a working capital adjustment of $366,684 (Note 9). The deferred consideration of $6,000,000 and working capital adjustment of $366,684 is due on the day after the first anniversary of the Merger Agreement and the remaining $1,500,000 is due in January 2023.

The primary asset acquired in the acquisition was IPR&D related to Arrevus's sodium fusidate program, which could potentially be used for treatments of melioidosis, cystic fibrosis exacerbations and other potential indications.

The Company evaluated the acquisition and determined the screen test represented substantially all of the fair value of the gross assets acquired (excluding cash), as permitted under ASC 805, *Business Combinations*, was met as the $11,606,061 consideration paid represented a group of similar identifiable assets related to the compound sodium fusidate. The Company has concluded that, in accordance with U.S. GAAP, that the merger of Arrevus into Aceragen, Inc. did not qualify as a business combination and accordingly was considered an asset acquisition. In part, the Company considered the alternative uses of sodium fusidate and determined that other potential clinical indications were not currently approved and involved significant risk before achieving potential marketing approval by the U.S FDA. The transaction was accounted for as an asset acquisition and the allocated purchase price related to the IPR&D of $10,233,868 was recorded as IPR&D expense.

Enzyvant Therapeutics GmbH

In March 2021, the Company entered into an asset purchase agreement with Enzyvant Therapeutics GmbH ("Enzyvant") to acquire ACG-801, formerly known as RVT-801, a lipid hydrolase acid ceramidase. The Company made an up-front payment of $1,500,000 and incurred $75,763 in professional transaction costs as part of the acquisition, for a total consideration of $1,575,763.

The primary asset acquired in the acquisition was IPR&D related to Enzyvant's compound, ACG-801, which is an investigational enzyme replacement therapy (ERT) for acid ceramidase deficiency presenting as Farber disease, a lysosomal storage disease with a unique, severe inflammatory phenotype for which no disease-specific therapy exists.

The Company evaluated the acquisition and determined the screen test represented substantially all of the fair value of the gross assets acquired (excluding cash), was met as the $1,575,763 consideration paid represented a group of similar identifiable assets related to the compound acid ceramidase. The Company has concluded that, in accordance with U.S. GAAP, that the asset purchase agreement with Enzyvant did not

qualify as a business combination and accordingly was considered an asset acquisition. In part, the Company considered the alternative uses of acid ceramidase and determined that other potential clinical indications were not currently approved and involved significant risk before achieving potential marketing approval by the U.S FDA. The transaction was accounted for as an asset acquisition and the purchase price of $1,575,763 was recorded in IPR&D expense.

The Enzyvant acquisition includes certain commercial and development milestone obligations up to $172,500,000, tiered royalty payments on net sales based on percentages between mid-single digits to low double digits, and a required 50% share of proceeds from a possible sale of a priority review voucher (PRV) which may be awarded by the FDA upon regulatory approval in the U.S. for ACG-801. In addition, there is a milestone associated with dosing the first patient in a clinical study under an approved clinical protocol that would result in a payment from the Company in the amount of $1,500,000. Other possible milestone payments include a consummation of a go-public transaction or a program sale up to $5,000,000. Royalty obligations and a share of proceeds from a possible sale of a PRV will be treated as periodic events in the future should such costs be incurred. No contingent consideration was recorded as of December 31, 2021, since the related regulatory approval milestones are not deemed probable until they actually occur.

4. Prepaid Expenses and Other Current Assets

Prepaid expenses and other current assets consist of the following as of December 31:

	2021
Prepaid materials	$614,319
Prepaid licenses	61,581
Prepaid research fees	37,013
Prepaid insurance	23,984
Prepaid rent	11,352
Other	50,127
Total prepaid expenses and other current assets	$798,376

5. Leases

The Company leases office space in Raleigh, North Carolina and Basel, Switzerland under operating agreements expiring at various dates through 2024. Certain lease agreements include options for the Company to extend the lease for multiple renewal periods and also provide for annual increases in rent, based on a consumer price index. In the determination of the operating lease right-of-use asset and the operating lease liability, the Company considered it reasonably certain that the lease in Basel, Switzerland would be extended for 2 additional 12-month periods. The Company recognizes lease expense on a straight-line basis over the non-cancelable term of its operating leases.

The components of lease expense consisted of operating lease expense in the amount of $15,795.

Future minimum lease payments under non-cancelable leases as of December 31, 2021 were as follows:

	2021
2022	$ 47,502
2023	47,502
2024	11,876
Total lease payments	$106,880
Less: imputed interest	(10,668)
Total operating lease liabilities	$ 96,212

Operating lease liabilities are based on the net present value of the remaining lease payments over the remaining lease term. As of December 31, 2021, the weighted-average remaining operating lease terms was 2.25 years, and the weighted-average discount rates used to determine the lease liability for operating leases was 9.2%.

6. NovaQuest Transaction

In March 2021, the Company executed a Stock and Warrant Purchase Agreement ("SWPA") with NovaQuest to sell five shares of Series X preferred stock and a warrant to purchase up to 618,800 shares of common stock for an aggregate purchase price of $15,000,000 ("Purchase Price"). In addition, NovaQuest will provide up to $20,000,000 in capital contributions for development funding relating to the treatment of Farber disease ("Capital Contributions"). For each fiscal quarter, the Company submits a quarterly report to NovaQuest that includes the amount of eligible expenses incurred. The Capital Contributions are to be paid by NovaQuest in quarterly installments for the Company's eligible expenses associated with the development of a treatment for Farber disease. As of December 31, 2021, the remaining Capital Contributions to be provided by NovaQuest is $11,208,487, of which $6,315,637 of eligible expenses were incurred in Q4 of 2021 and recorded in the funding receivable on the consolidated balance sheet. As of December 31, 2021, the Purchase Price and Capital Contributions, less issuance costs and the fair market value of the warrant which was $1,422,836, was recorded in preferred stock on the consolidated balance sheet.

The NovaQuest transaction includes tiered royalty payments on net sales based on a mid-double-digit percentage which drops to mid-single digits after reaching a predetermined milestone cap, and a required 35% share of the proceeds from the possible sale of a priority review voucher (PRV) which may be awarded by the FDA upon regulatory approval in the U.S. for ACG-801. In addition, there are other financial and non-financial covenants including the Company's need to maintain a minimum aggregate cash balance of $2,000,000.

In October 2021, the Company entered into an amendment to the SWPA. This amendment provided approval from NovaQuest in order to allow the Company to use a portion of the Purchase Price and Capital Contributions provided by NovaQuest to acquire Arrevus. The Company accounted for the amendment as an extinguishment of the preferred shares which resulted in the Company recording a deemed dividend of $7,151,040.

In conjunction with the execution of the amendment to the SWPA, the Company entered into a Sales Distribution and PRV Agreement. As a result, the Company will be required to provide a minimum $10,000,000 share of the proceeds from the possible sale of a PRV which may be awarded by the FDA upon regulatory approval in the U.S. for ACG-701 as well as royalty payments on net sales based on a mid-single digit percentage up to $50,000,000.

7. Stock Option Plan

In March 2021, the Company's board of directors approved the Aceragen, Inc. 2021 Stock Incentive Plan ("Plan"). The terms of the Plan are determined by the Company's board of directors subject to provisions of the Plan. The Plan provides for the grant of incentive stock options, non-incentive stock options, restricted stock, restricted stock units and other stock-based awards to eligible recipients. Eligible recipients include employees, officers, directors, and individual consultants and advisors. Generally, awards granted by the Company have an exercise price equal to the estimated fair value of the common stock as determined by the board of directors with consideration given to contemporaneous valuations of the Company's common stock prepared by an independent third-party valuation firm in accordance with the guidance provided by the AICPA Guide. The maximum term of options granted under the Plan is ten years. Employee option grants generally vest 25% on the first anniversary of grant date, with the balance vesting proportionally for a duration of 36 months thereafter. Generally, non-employee option holders vest in quarterly increments over 24 months. As of December 31, 2021, there were 285,000 shares available for future issuance under the Plan.

In 2021, the Company recorded stock-based compensation expense related to the award and vesting of stock options totaling $59,008, net of estimated forfeitures. As of December 31, 2021, there was $566,352 of total unrecognized compensation cost related to unvested time vesting awards under the Plan, which is expected to be recognized over the remaining period up to 45 months.

As determined by an independent third-party valuation firm, the fair value of each option granted during 2021 were estimated on the date of grant using the Black-Scholes option-pricing valuation model with the following assumptions:

	2021
Expected stock price volatility	85.75% – 86.62%
Risk-free interest rate	0.84% – 1.22%
Expected term	5 years – 6 years
Estimated value of stock per share	$3.07
Estimated forfeiture rate	10%

Assumptions Were Determined as Follows

Expected Stock Price Volatility

Since there is no active market for the Company's common stock, the Company utilizes the average historical volatility of comparable publicly traded companies from the primary industry sector in which the Company operates over similar expected option terms.

Risk-Free Interest Rate

The Company based the risk-free interest rate on the interest rate payable on U.S. Treasury securities in effect at the time of grant for a period that is commensurate with the expected option term.

Expected Term of Options

The expected term of options represents the period of time options are expected to be outstanding. For options awarded during calendar year 2021, the Company has chosen to use the simplified method for computing the expected term. Under the simplified method, the expected option term is based on a formula which averages the vesting periods of the options and their remaining contractual terms.

The following is a summary of activity in options for the period ended December 31, 2021:

	Incentive Stock Options		Nonqualified Stock Options	
	Number of Shares	Weighted Average Exercise Prices	Number of Shares	Weighted Average Exercise Prices
Outstanding at December 31, 2020	—		—	
Granted	244,240	$3.07	70,760	$3.07
Exercised	—	—	—	—
Forfeited	—	—	—	—
Outstanding at December 31, 2021	244,240	$ —	70,760	$ —
Exercisable at December 31, 2021	—		6,250	

The weighted average remaining contractual life for the options outstanding and exercisable is 9 to 10 years.

The total fair value of stock options granted during the period ended December 31, 2021, was approximately $694,000.

As of December 31, 2021, the aggregate intrinsic value of all stock options outstanding and expected to vest was $2,901,150 and the aggregate intrinsic value of currently exercisable stock options was $57,563. The intrinsic value of each option is the difference between the fair market value of the common stock and the exercise price of such option to the extent it is "in-the-money".

8. Investment Banking Firm Transactions

In March 2021, the Company entered into an agreement with an investment banking firm to identify and introduce possible investors. As part of this agreement, the investment banking firm was paid a placement fee (consistent with industry standards for such engagements) on gross proceeds. The minimum placement fee is $1,000,000. As part of their compensation, the investment bank was issued a warrant to purchase 4,420 shares of common stock. The initial term of this engagement was for a period of 12 months after which the agreement could be terminated by either party. The result of these efforts led to the financing arrangement with NovaQuest (Note 6).

As of December 31, 2021, the Company has incurred $2,107,501 of placement fees under the aforementioned agreement and has made payments to the investment banking firm in the amount of $1,665,406. Additionally, at December 31, 2021, the Company recorded accrued placement fees in the amount of $442,095. All of these transaction costs were recorded as a reduction to additional paid in capital in the consolidated balance sheet.

Anticipating a second round of equity and/or product development financing, the Company, in November 2021, entered into a new agreement with the investment banking firm with similar terms and conditions but at a lower fee arrangement.

9. Acquisition Obligation

In October 2021, the Company entered into a Merger Agreement with Arrevus (Note 3). As a result of the Merger, the Company has an obligation to pay Arrevus's former shareholders deferred purchase consideration totaling $7,500,000, $6,000,000 of which is payable in October 2022 less any adjustments and $1,500,000 to be paid in January 2023. In addition to the deferred purchase consideration, the Company has an obligation to pay a working capital adjustment totaling $366,684 in October 2022. The Company imputed interest on the deferred purchase consideration at the date of the Merger Agreement in the amounts of $687,812. The Company will amortize the discount on a straight-line basis until the obligation becomes due. As of December 31, 2021, the Company had a total of $109,223 in amortization expense. As of December 31, 2021, the Company had $5,798,919 classified as short-term and $1,489,176 classified as long-term.

	Amounts
Years Ending December 31	
2022	$6,366,684
2023	1,500,000
Total	7,866,684
Less: Unamortized acquisition discount	(578,589)
Total acquisition obligation	$7,288,095

10. Income Taxes

No provision for U.S. federal or state income tax expense or benefit has been recorded as the Company has incurred net operating losses since inception.

Deferred income tax assets and liabilities are recognized for temporary differences between financial statement amounts and tax basis of existing assets and liabilities. Deferred tax assets and liabilities are measured using enacted rates expected to apply to taxable income in the years in which those temporary differences are expected to be recovered or settled. The Company is required to assess its needs for a valuation allowance at each balance sheet date and this assessment is based on the relative impact of all available evidence, both positive and negative, and requires management to exercise judgment and make assumptions regarding the weight given to potential effect of such negative and positive evidence.

The Company recognizes the benefit of uncertain tax positions taken on its return at the largest amount that is more likely than not to be sustained upon examination based on the technical merit of each position.

At December 31, 2021, the tax attributes giving rise to deferred tax assets and liabilities consisted of the following items:

	2021
Deferred tax assets	
Tax loss carryforwards	$ 3,041,100
Tax credits	391,500
Stock Compensation	10,400
Intangible asset	388,300
Total deferred tax assets	3,831,300
Valuation allowance	(3,698,400)
Net deferred tax assets	132,900
Deferred tax liabilities	
Debt discount	(132,900)
Total deferred tax liabilities	(132,900)
Net deferred tax assets	$ —

Income taxes computed at the statutory federal income tax rate of 21% are reconciled to the provision (benefit) for income taxes as follows:

	2021	
	Amount	Pretax Earnings
U.S. federal tax at statutory rate	$(5,020,400)	21.0%
State taxes, net of federal benefit	(455,300)	1.9%
Non-deductible expenses	4,500	0.0%
Non-deductible IPR&D expense	2,351,200	(9.9)%
Foreign rate differential	33,700	(0.1)%
Credits	(391,500)	1.6%
Other	100	0.0%
Change in valuation allowance	3,477,700	(14.5)%
Provision (benefit) for income taxes	$ —	0.0%

As of December 31, 2021, the Company provided a full valuation allowance against its net deferred tax assets since at that time, the Company could not assert that it was more likely than not that these deferred tax assets would be realized. The valuation allowance increased by $3,477,700 during 2021. The increase in 2021 was primarily due to an increase in the Company's net operating loss and R&D credits.

As of December 31, 2021, the Company had federal, state, and foreign net operating loss tax carryforwards of approximately $12,601,400, $12,597,300, and $855,800, respectively. $703,700 of the federal net operating losses begin to expire in 2037, while $11,897,700 carry forward indefinitely. The state net operating losses begin to expire in 2036. Foreign net operating losses begin to expire in 2028. As of December 31, 2021, the Company had U.S. federal credit carryforwards of $391,500, which begin to expire in 2041. The utilization of the federal and state net operating loss and credit carryforwards will depend on the Company's ability to generate sufficient taxable income prior to the expiration of the carryforwards. In addition, the maximum annual use of net operating loss and research credit carryforwards is limited in certain situations where changes occur in stock ownership.

In general, if the Company experiences a greater than 50% aggregate change in ownership of certain significant stockholders over a three-year period (a Section 382 ownership change), utilization of its pre-change net operating loss and credit carryforwards is subject to an annual limitation under Section 382 of the Internal Revenue Code of 1986, as amended (and similar state laws). The annual limitation generally is

determined by multiplying the value of the Company's stock at the time of such ownership change (subject to certain adjustments) by the applicable long-term tax-exempt rate. Such limitations may result in expiration of a portion of the net operating loss and credit carryforwards before utilization and may be substantial. The ability of the Company to use its net operating loss and credit carryforwards may be limited or lost if the Company experiences a Section 382 ownership change in connection with offerings or as a result of future changes in its stock ownership. Losses from a specific period may be subject to multiple limitations and would generally be limited by the lowest of those limitations. As of December 31, 2021, the Company has not completed a Section 382 study to determine the amount of any potential limitations.

Fiscal year 2021 remains subject to examination by major tax jurisdictions, and the Company has not been informed by any tax authorities for any jurisdiction that its current fiscal year is under examination. As of December 31, 2021, there are no known items which would result in a material accrual related to uncertain tax positions. The Company's policy is that any interest or penalties related to uncertain tax positions would be reported as a component of income tax expense.

11. Related Party Transactions

NovaQuest

In March 2021, the Company entered into a Stock and Warrant Purchase Agreement with NovaQuest (Note 6). As a result, the Company has incurred $15,107,150 of eligible expenses and has been reimbursed for $8,791,513 as of December 31, 2021, which resulted in a funding receivable from NovaQuest in the amount of $6,315,637 as of December 31,2021.

Board Members

In March 2021, the Company entered into a consulting agreement with Dr. Atul Chopra, a founder and a member of the Company's board of directors, pursuant to which Dr. Chopra will provide consulting and advisory services in exchange for (i) $16,667 per month and (ii) a right to purchase 1,000,000 fully vested shares of the Company's common stock at a price equivalent to par value $0.001 per share. Subsequent to the executed consulting agreement, Dr. Chopra purchased the 1,000,000 shares. The term of the agreement is to remain in effect for a period of one year and will automatically renew for successive one-year terms.

12. Active Awards

Cystic Fibrosis Foundation Award

In December 2021, the Cystic Fibrosis Foundation ("CFF") provided the Company a Therapeutic Development Award Agreement in the amount of $3,500,000 intended to support the clinical trial for cystic fibrosis pulmonary exacerbations. The CFF will provide the Company payments in line with certain development program milestones estimated to begin in 2022 and through 2023.

Government Awards

As of December 31, 2021, the Company has six active contracts with various agencies of the United States Government. The total contractual value of the active contracts as of December 31, 2021, is $52.3 million while the remaining and unused contractual value is $47.1 million. The Company anticipates consuming the remaining contractual values over the applicable lives of the active contracts. Of the $47.1 million in total contractual value remaining as of December 31, 2021, $45.4 million is attributable to a contract awarded by the Defense Threat Reduction Agency (DTRA) with a contractual term through December 2026.

13. Commitments and Contingencies

The Company is not a party to any outstanding material litigation and management is currently not aware of any legal proceedings that, individually or in the aggregate, are deemed to be material to the Company's financial condition or results of operations. Accordingly, the Company does not have contingency reserves established for any litigation liabilities as of December 31, 2021.

14. Subsequent Events

The Company has evaluated all subsequent events through November 18, 2022, the date the consolidated financial statements were available to be issued and determined that there were no subsequent events or transactions that required recognition or disclosure in the consolidated financial statements.

On September 28, 2022, the Company merged with Idera Pharmaceuticals, Inc. ("Idera"). The merger was structured as a stock-for-stock transaction whereby all of the Company's outstanding equity interests were exchanged for a combination of shares of Idera's common stock, shares of newly designated convertible Series Z preferred stock, and shares of the newly designated Series X preferred stock.

CONSENT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

We hereby consent to the incorporation by reference in the following Registration Statements:

(1) Registration Statement (Form S-8 No. 333-152669) pertaining to the 2008 Stock Incentive Plan of Idera Pharmaceuticals, Inc.

(2) Registration Statement (Form S-8 No. 333-176067) pertaining to the 2008 Stock Incentive Plan and 1995 Employee Stock Purchase Plan of Idera Pharmaceuticals, Inc.

(3) Registration Statement (Form S-8 No. 333-191076) pertaining to the 2013 Stock Incentive Plan of Idera Pharmaceuticals, Inc.

(4) Registration Statement (Form S-8 No. 333-197062) pertaining to the 2013 Stock Incentive Plan of Idera Pharmaceuticals, Inc.

(5) Registration Statement (Form S-8 No. 333-202691) pertaining to Inducement Stock Option Awards of Idera Pharmaceuticals, Inc.

(6) Registration Statement (Form S-8 No. 333-206129) pertaining to the 2013 Stock Incentive Plan, as amended, of Idera Pharmaceuticals, Inc.

(7) Registration Statement (Form S-8 No. 333-210090) pertaining to an Inducement Stock Option Award of Idera Pharmaceuticals, Inc.

(8) Registration Statement (Form S-1 as amended by Form S-3/A No. 333-136610) of Idera Pharmaceuticals, Inc.

(9) Registration Statement (Form S-1 as amended by Form S-3/A No. 333-187155) of Idera Pharmaceuticals, Inc.

(10) Registration Statement (Form S-2 as amended by Form S-3/A No. 333-109630) of Idera Pharmaceuticals, Inc.

(11) Registration Statement (Form S-3 No. 333-119943) of Idera Pharmaceuticals, Inc.

(12) Registration Statement (Form S-3 No. 333-126634) of Idera Pharmaceuticals, Inc.

(13) Registration Statement (Form S-3 No. 333-131804) of Idera Pharmaceuticals, Inc.

(14) Registration Statement (Form S-3 No. 333-133455) of Idera Pharmaceuticals, Inc.

(15) Registration Statement (Form S-3 No. 333-133456) of Idera Pharmaceuticals, Inc.

(16) Registration Statement (Form S-3 No. 333-139830) of Idera Pharmaceuticals, Inc.

(17) Registration Statement (Form S-3 as amended by Form S-3/A No. 333-185392) of Idera Pharmaceuticals, Inc.

(18) Registration Statement (Form S-3 No. 333-186312) of Idera Pharmaceuticals, Inc.

(19) Registration Statement (Form S-3 No. 333-189700) of Idera Pharmaceuticals, Inc.

(20) Registration Statement (Form S-3 No. 333-210140) of Idera Pharmaceuticals, Inc.

(21) Registration Statement (Form S-8 No. 333-217665) pertaining to an Inducement Stock Option Award of Idera Pharmaceuticals, Inc.

(22) Registration Statement (Form S-8 No. 333-219740) pertaining to the 2017 Employee Stock Purchase Plan of Idera Pharmaceuticals, Inc.

(23) Registration Statement (Form S-8 No. 333-219741) pertaining to the 2013 Stock Incentive Plan, as amended, of Idera Pharmaceuticals, Inc.

(24) Registration Statement (Form S-8 No. 333-232609) pertaining to the 2017 Employee Stock Purchase Plan of Idera Pharmaceuticals, Inc.

(25) Registration Statement (Form S-8 No. 333-232610) pertaining to the 2013 Stock Incentive Plan, as amended, of Idera Pharmaceuticals, Inc.

(26) Registration Statement (Form S-3 No. 333-238868) of Idera Pharmaceuticals, Inc.

(27) Registration Statement (Form S-3 No. 333-240361) of Idera Pharmaceuticals, Inc.

(28) Registration Statement (Form S-3 No. 333-240366) of Idera Pharmaceuticals, Inc.

(29) Registration Statement (Form S-3 No. 333-248560) of Idera Pharmaceuticals, Inc.

(30) Registration Statement (Form S-3 and S-3/A No. 333-253804) of Idera Pharmaceuticals, Inc.

(31) Registration Statement (Form S-8 No. 333-266038) pertaining to the 2013 Stock Incentive Plan, as amended, of Idera Pharmaceuticals, Inc.

(32) Registration Statement (Form S-8 No. 333-266039) pertaining to the 2017 Employee Stock Purchase Plan of Idera Pharmaceuticals, Inc.

of our report dated April 15, 2022 (except for Notes 2 and 6 related to Series X Preferred Stock and Note 14 which are dated as of November 18, 2022), with respect to the consolidated financial statements as of December 31, 2021 and for the period from March 2, 2021 (inception) to December 31, 2021 of Aceragen, Inc., included in this Proxy Statement on Schedule 14A of Idera Pharmaceuticals, Inc. Our audit report for the period from March 2, 2021 (inception) to December 31, 2021 contains an explanatory paragraph describing conditions that raise substantial doubt about Aceragen, Inc.'s ability to continue as a going concern as described in Note 2 to the consolidated financial statements.

/s/ FORVIS, LLP
(Formerly, Dixon Hughes Goodman LLP)

Raleigh, North Carolina
December 8, 2022

ANNEX D

UNAUDITED FINANCIAL STATEMENTS AND ACCOMPANYING NOTES OF ACERAGEN, INC.
(Six Months Ended June 30, 2022 and 2021)

Aceragen, Inc.

Unaudited Condensed Consolidated Financial Statements
Six Months Ending June 30, 2022

Aceragen, Inc.

Index

Period Ended June 30, 2022

Aceragen, Inc.

Unaudited Condensed Consolidated Balance Sheets

	As of	
	June 30, 2022	December 31, 2021 (audited)
Assets		
Current assets		
Cash and cash equivalents	$ 7,934,183	$ 5,010,224
Restricted cash	125,000	125,000
Accounts receivable	1,312,248	268,166
Unbilled accounts receivable	1,451,330	328,012
Funding receivable	701,249	6,315,637
Prepaid expenses and other current assets	564,128	798,376
Total current assets	12,088,138	12,845,415
Operating lease right-of-use asset	32,740	96,212
Intangible asset	165,600	165,600
Total assets	$ 12,286,478	$ 13,107,227
Liabilities and Stockholders' Deficit		
Current liabilities		
Accounts payable	$ 2,488,899	$ 313,355
Accrued expenses	307,782	75,115
Accrued placement fee	49,087	442,095
Accrued bonuses	688,579	883,747
Operating lease liability	32,740	40,323
Acquisition obligation, less unamortized discount of $250,919 and $567,765 as of June 30, 2022 and December 31, 2021	7,615,765	5,798,919
Total current liabilities	11,182,852	7,553,554
Operating lease liability, less current portion	—	55,889
Acquisition obligation, less current portion, less unamortized discount of $0 and $10,824 as of June 30, 2022 and December 31, 2021	—	1,489,176
Total liabilities	11,182,852	9,098,619
Commitments and Contingencies (Note 6)	—	—
Preferred equity		
Preferred stock, 5 shares authorized, $0.001 par value; 5 shares issued and outstanding with a liquidation preference of $38,134,262 as of June 30, 2022	38,134,262	33,583,912
Stockholders' deficit		
Common stock, 10,000,000 shares authorized, $.001 par value; 3,536,000 shares issued and outstanding as of June 30, 2022 and December 31, 2021	3,536	3,536
Additional paid-in capital	494,759	—
Accumulated deficit	(37,525,332)	(29,576,083)
Accumulated other comprehensive loss	(3,599)	(2,757)
Total stockholders' equity	(37,030,636)	(29,575,304)
Total liabilities, preferred equity and stockholders' deficit	$ 12,286,478	$ 13,107,227

The accompanying notes are an integral part of these unaudited condensed consolidated financial statements.

Aceragen, Inc.

Unaudited Condensed Consolidated Statements of Operations and Comprehensive Loss

	Six Months Ended June 30, 2022	Period from March 2, 2021 to June 30, 2021
Revenues		
Government sponsored product development	$ 8,393,491	$ —
Non-government sponsored product development	1,000,000	—
Total revenues	9,393,491	—
Research and development expenses:		
Government and non-government sponsored product development	6,363,077	—
Non-sponsored research and development	7,377,712	1,702,145
In-process research and development expenses	—	1,575,763
Total research and development expenses	13,740,789	3,277,908
General and administrative expenses	3,233,282	1,189,506
Total operating expenses	16,974,071	4,467,414
Operating loss	(7,580,580)	(4,467,414)
Other expense		
Interest expense, net	(330,513)	157
Foreign currency transaction loss	(1,292)	(523)
Total other expense	(331,805)	(366)
Loss before income taxes	(7,912,385)	(4,467,780)
Provision for income taxes	(36,864)	—
Net loss	(7,949,249)	(4,467,780)
Other comprehensive loss		
Currency translation adjustment	(842)	4,184
Comprehensive loss	$ (7,950,091)	$(4,463,596)

The accompanying notes are an integral part of these unaudited condensed consolidated financial statements.

Aceragen, Inc.

Unaudited Condensed Consolidated Statements of Preferred Stock and Stockholders' Deficit

	Preferred Equity		Stockholders' Deficit					
	Preferred Stock — Series X		Common Stock		Additional Paid-in Capital	Accumulated Deficit	Accumulated Other Comprehensive Income	Total Stockholders' Equity
	Shares	Amount	Shares	Amount				
Balances at March 2, 2021 (Inception)	—	$ —	—	$ —	$ —	$ —	$ —	$ —
Series X preferred stock, net of issuance costs	5	12,527,167	—	—	1,422,836	—	—	1,422,836
Preferred shareholder contributions, net of issuance costs	—	5,080,705	—	—	—	—	—	—
Stock-based compensation	—	—	—	—	1,000	—	—	1,000
Issuance of common stock	—	—	3,536,000	3,536	—	—	—	3,536
Currency translation adjustment	—	—	—	—	—	—	4,184	4,184
Net loss	—	—	—	—	—	(4,467,780)	—	(4,467,780)
Balances at June 30, 2021	5	$17,607,872	3,536,000	$3,536	$1,423,836	$ (4,467,780)	$4,184	$(3,036,224)

	Preferred Equity		Stockholders' Deficit					
	Preferred Stock — Series X		Common Stock		Additional Paid-in Capital	Accumulated Deficit	Accumulated Other Comprehensive Income	Total Stockholders' Equity
	Shares	Amount	Shares	Amount				
Balances at December 31, 2021 (audited)	5	$33,583,912	3,536,000	$3,536	$ —	$(29,576,083)	$ (2,757)	$(29,575,304)
Preferred shareholder contributions, net of issuance costs	—	4,550,350	—	—	—	—	—	$ —
Stock-based compensation	—	—	—	—	494,759	—	—	$ 494,759
Currency translation adjustment	—	—	—	—	—	—	(842)	$ (842)
Net loss	—	—	—	—	—	(7,949,249)	—	$ (7,949,249)
Balances at June 30, 2022	5	$38,134,262	3,536,000	$3,536	$ 494,759	$(37,525,332)	$ (3,599)	$(37,030,636)

The accompanying notes are an integral part of these unaudited condensed consolidated financial statements.

Aceragen, Inc.

Unaudited Condensed Consolidated Statements of Cash Flows

	Six Months Ended June 30, 2022	Period from March 2, 2021 to June 30, 2021
Cash flows from operating activities		
Net loss	$(7,949,249)	$ (4,467,780)
Adjustments to reconcile net loss to net cash provided by (used in) operating activities:		
Amortization of acquisition discount	327,670	—
Amortization of right-of-use asset	19,511	—
Foreign currency translation	320	(4,757)
Stock-based compensation	494,759	1,000
Changes in assets and liabilities, net of effects of acquisitions		
Accounts receivable	(1,044,082)	—
Unbilled accounts receivable	(1,123,318)	—
Prepaid expenses and other current assets	286,291	(50,010)
Accounts payable	2,103,318	1,345,292
Accrued expenses and other liabilities	68,969	(1,225,892)
Operating lease liability, net	(19,511)	—
Net cash used in operating activities	(6,835,322)	(4,402,147)
Cash flows from financing activities		
Proceeds from Series X preferred stock transaction, net	9,771,732	16,342,061
Proceeds from issuance of common stock	—	3,536
Effects of exchange rate changes on cash	(12,451)	49
Net cash provided by financing activities	9,759,281	16,345,646
Net change in cash, cash equivalents, and restricted cash	2,923,959	11,943,499
Consolidated cash and restricted cash at beginning of period	5,135,224	—
Consolidated cash and restricted cash at end of period	$ 8,059,183	$11,943,499
Supplemental disclosure of cash flow information		
Remeasurement of operating lease right-of-use asset for lease modification	$ 40,295	$ —
Cash paid for interest	3,914	—
Accrued capital contributions, net of issuance costs	652,162	2,688,647

The accompanying notes are an integral part of these unaudited condensed consolidated financial statements.

Aceragen, Inc.

Notes to the Unaudited Condensed Consolidated Financial Statements
Period Ended June 30, 2022

1. Nature of Business

Aceragen, Inc., together with its wholly-owned subsidiaries, Aceragen GmbH and Arrevus, Inc. (Arrevus) (collectively, "the Company"), is a therapeutic development company focusing on rare and orphan diseases that frequently have limited or no treatment options for patients. The Company's goal is to deliver therapies that will be important to patients and their families in addressing unmet medical need(s) utilizing the Company's distinct proprietary programs. The Company was incorporated in Delaware in January 2021 and began operations in March 2021.

Liquidity

Although the Company does generate revenue from cost reimbursement programs with the U.S. Government, the Company has no products approved for commercial sale, has not generated any revenue from product sales, and cannot guarantee when or if it will generate any revenue from product sales associated with its development programs. Substantially all the Company's operating losses resulted from expenses incurred in connection with its research and development programs and from general and administrative costs associated with its operations. The Company expects to incur significant expenses and operating losses for at least the next several years as it continues the development of, and seeks regulatory approval for, its product candidates. It is expected that operating losses will fluctuate significantly from quarter to quarter and year to year due to timing of development programs and efforts to achieve regulatory approval.

On September 28, 2022, the Company merged with Idera Pharmaceuticals, Inc. (see Note 7).

2. Summary of Significant Accounting Policies

The following is a summary of the Company's significant accounting policies and practices:

Basis of Consolidation

The accompanying unaudited condensed consolidated financial statements include the accounts of the Company and the Company's wholly-owned subsidiaries. All intercompany transactions and accounts have been eliminated in consolidation. The unaudited condensed consolidated financial statements included herein have been prepared in accordance with U.S. generally accepted accounting principles ("GAAP") for interim financial information. Certain information and note disclosures normally included in consolidated financial statements prepared in accordance with GAAP have been condensed or omitted pursuant to such rules and regulations. These unaudited condensed consolidated statements should be read in conjunction with the audited consolidated financial statements and notes thereto contained in the Company's audited financial statements for the period ended December 31, 2021.

All adjustments contained in the accompanying unaudited condensed consolidated financial statements are of a normal recurring nature and are necessary for the fair statement of the Company's financial position as of June 30, 2022, and its result of operations and cash flows for the six months ended June 30, 2022 and for the period from March 2, 2021 (inception) through June 30, 2021. Interim results are not necessarily indicative of results that may be expected for any other interim period or for an entire year.

Significant Accounting Policies

During the six months ended June 30, 2022, there have been no significant changes to the Company's summary of significant accounting policies contained in the Company's annual audited consolidated financial statements other than what is disclosed below.

Use of Estimates

The preparation of the unaudited condensed consolidated financial statements in conformity with U.S. GAAP requires the Company to make estimates and assumptions that affect the reported amounts of assets

and liabilities and disclosure of contingent assets and liabilities at the date of the unaudited condensed consolidated financial statements. The reported amounts of revenues and expenses may be affected by estimates that the Company is required to make. Estimates that are critical to the accompanying unaudited condensed consolidated financial statements relate principally to stock-based compensation expense (which is derived from a formula that uses various assumptions including the underlying fair value of the Company's common stock), acquisition accounting and revenues recognized using the cost-to-cost method for measuring progress. Estimates and assumptions are reviewed periodically, and the effects of revisions are reflected in the period that they are determined to be necessary. It is at least reasonably possible that the Company's estimates could change in the near term with respect to these matters.

Cash and Cash Equivalents

The Company considers all highly liquid investments with an original maturity of three months or less at the time of purchase to be cash equivalents for the purposes of reporting cash flows.

Restricted Cash

The Company had $125,000 of restricted cash held on June 30, 2022, and December 31, 2021. The restricted cash balances represent cash deposited with two financial institutions which are held as collateral for the Company's corporate credit card programs. The restricted funds are maintained in traditional bank accounts.

Contract and Grant Receivables — Billed and Unbilled

Accounts receivable are contract and grant receivables that are carried at their estimated collectible amounts. An allowance for doubtful accounts is based on specific analysis of the receivables. At June 30, 2022, and December 31, 2021, the Company had no allowance for doubtful accounts. Unbilled accounts receivable relate to various contracts and grants for which work has been performed, though invoicing has not yet occurred.

Credit Risk

The Company maintains cash balance deposit accounts that frequently exceed limits insured by the Federal Deposit Insurance Corporation. The Company has not experienced any losses in such accounts. The Company does not believe it is exposed to any significant credit risk in cash and cash equivalents.

Funding Receivable

Funding receivable represents eligible expenses to be reimbursed by NovaQuest Co-Investment Fund XV, L.P. pursuant to the Stock and Warrant Purchase Agreement (SWPA) executed in March 2021 and amended in October 2021. The eligible expenses have been incurred and are associated with the development of a treatment for Farber disease. As of June 30, 2022, the Company has submitted reimbursements for eligible expenditures to the contractual limitation of the SWPA.

Fair Value of Financial Instruments

The carrying amount of the Company's short-term financial instruments, which include cash and cash equivalents and restricted cash, accounts receivable and accounts payable, approximate their fair value due to their short maturities. The fair value of the Company's acquisition obligation approximates carrying value given the nature of the agreement.

Acquisitions

The Company accounts for business combinations using the acquisition method of accounting, which required the assets acquired, including in-process research and development (IPR&D), and liabilities assumed

be recorded at fair value as of the acquisition date. Any excess of the purchase price over the fair value of net assets acquired is recorded as goodwill. The determination of the estimated fair value of these items requires significant estimates and assumptions. Transaction costs associated with business combination are recorded in general and administrative and expensed as incurred.

If the Company determines the acquisition does not meet the definition of a business combination under the acquisition method of accounting, the transaction is accounted for as an asset acquisition. In an asset acquisition, up-front payments allocated to IPR&D are recorded in research and development expense if it is determined that there is no alternative future use, and subsequent milestone payments are recorded in research and development expense when achieved.

Intangible Asset

In conjunction with the asset acquisition of Arrevus, Inc. ("Arrevus"), the Company recognized an indefinite-lived intangible asset relating to an assembled workforce in the amount of $165,600. Indefinite-lived intangible assets are reviewed at least annually as of the fourth quarter each calendar year and earlier if an event occurs or other circumstances occur indicating that the Company may not recover the carrying value of the asset. If a qualitative assessment indicates that it is not more likely than not that the fair value of the indefinite-lived intangible asset exceeds its carrying amount, the Company compares the estimated fair value of the intangible asset with its carrying value. If the carrying value of the intangible asset exceeds its fair value, an impairment loss is recognized in an amount equal to that excess. No impairment charges have been recognized on intangible assets.

Preferred Stock

The Company applies ASC 480 when determining the classification and measurement of its preferred stock. Preferred shares subject to mandatory redemption are classified as liability instruments and are measured at fair value. Conditionally redeemable preferred shares (including preferred shares that feature redemption rights that are either within the control of the holder or subject to redemption upon the occurrence of uncertain events not solely within the Company's control) are classified as temporary equity. At all other times, preferred shares are classified as stockholders' equity.

The Series X Preferred Stock is classified as temporary equity under ASC 480-10-S99 due to certain contingent redemption rights that are not solely within the Company's control. The carrying value of the Series X Preferred Stock is not being accreted to redemption value as redemption is not deemed probable at this time.

Foreign Currencies

Assets and liabilities of foreign subsidiaries that operate in a local currency environment, where the local currency is the functional currency, are translated to U.S. dollars at exchange rates in effect at the balance sheet date, with the resulting translation adjustments directly recorded to a separate component of accumulated other comprehensive income. Income and expense accounts are translated at average exchanged rates for the period. Transactions which are not in the functional currency of the entity are remeasured into the functional currency and gains and losses resulting from the remeasurement are recorded in other income (expense).

Income Taxes

Deferred income tax assets and liabilities are recognized for temporary differences between the financial statement amounts and tax basis of existing assets and liabilities. Deferred tax assets and liabilities are measured using enacted rates expected to apply to taxable income in the years in which those temporary differences are expected to be recovered or settled. The Company is required to assess its needs for a valuation allowance at each balance sheet date and this assessment is based on the relative impact of all available

evidence, both positive and negative, and requires management to exercise judgment and make assumptions regarding the weight given to potential effect of such negative and positive evidence.

The Company recognizes the benefit of uncertain tax positions taken on its return at the largest amount that is more likely than not to be sustained upon examination based on the technical merit of each position.

Revenue Recognition and Direct Costs of Revenue

The Company derives its revenue from services provided to commercial and government clients under two types of contracts: cost-plus-fixed-fee and time and material consulting agreements. The Company assesses each contract at its inception to determine whether it should be combined with other contracts when the contracts are executed with the same customer. When making this determination, the Company considers factors such as whether two or more contracts were negotiated and executed at or near the same time or were negotiated with an overall profit objective. The Company recognizes revenue when the Company's customers obtain control of promised goods or services, in an amount that reflects the consideration which the Company expects to receive in exchange for those goods or services by analyzing the following five steps: (1) identify the contract with a customer(s); (2) identify the performance obligations in the contract; (3) determine the transaction price; (4) allocate the transaction price to the performance obligations in the contract; and (5) recognize revenue when (or as) the entity satisfies a performance obligation. To indicate the transfer of control for the Company's cost-plus-fixed-fee arrangements and time and material consulting contracts, it must have a present right to payment, legal title must have passed to the customer, and the customer must have the significant risks and rewards of ownership. Revenue for cost-plus-fixed-fee development contracts is generally recognized based upon the cost-to-cost measure of progress relative to total estimated contract costs, provided that the Company meets the criteria associated with transferring control of the goods or services over time. On a cost-plus-fixed-fee contract, the Company is paid direct costs incurred to satisfy contractual scope, allowable incurred indirect costs, plus a profit, which is fixed, up to funding levels predetermined by our customers. On cost-plus-fixed-fee type contracts, we do not bear the risks of unexpected cost overruns, provided incurred costs do not exceed predetermined contractual price ceilings. Revenue for time and materials consulting contracts is generally recognized utilizing the input method of measuring progress (cost to cost) towards complete satisfaction of the identified performance obligation, provided that the Company meets the criteria associated with transferring control of the goods or services over time.

Transaction price and variable consideration:

Once the performance obligations in the contract have been identified, the Company estimates the transaction price of the contract. The estimate includes amounts that are fixed as well as those that can vary based on expected outcomes of the activities or contractual terms.

When a contract's transaction price includes variable consideration, the Company evaluates the estimate of the variable consideration to determine whether the estimate needs to be constrained; therefore, the Company includes the variable consideration in the transaction price only to the extent that it is probable that a significant reversal of the amount of cumulative revenue recognized will not occur when the uncertainty associated with the variable consideration is subsequently resolved. At the inception of a contract, the Company estimates the transaction price based on its current rights and does not contemplate future modifications (including unexercised options) or follow-on contracts until they become legally enforceable. Contracts are often subsequently modified to include changes in specifications, requirements or price, which may create new or change existing enforceable rights and obligations. Depending on the nature of the modification, the Company considers whether to account for the modification as an adjustment to the existing contract or as a separate contract. Generally, modifications to the Company's contracts are not distinct from the existing contract due to the significant integration and interrelated tasks provided in the

context of the contract. Therefore, such modifications are accounted for as if they were part of the existing contract and recognized as a cumulative adjustment to revenue.

Cost-Plus-Fixed-Fee Development Contracts:

The Company generates contract revenue primarily from cost-plus-fixed-fee contracts associated with development of certain product candidates. Revenues from cost-plus-fixed-fee contracts are recognized as costs are incurred, generally based on allowable costs incurred during the period, plus any recognizable earned fee. Billings by the Company to customers under cost-plus-fixed-fee contracts generally occur every month and include payment terms of 30 days. The Company uses this input method to measure progress as the customer has the benefit of access to the development research under these projects and therefore benefits from the Company's performance incrementally as research and development activities occur under each project. The Company considers fixed fees under cost-plus-fixed-fee contracts to be earned in proportion to the allowable costs incurred in performance of the contract. Revenue for long-term development contracts is considered variable consideration because the deliverable is dependent on the successful completion of development and is generally recognized based upon the cost-to-cost measure of progress, provided that the Company meets the criteria associated with satisfying the performance obligation over time. The U.S. Government contracts for the development of the government sponsored product development candidates in agreements that span multiple years because they contain options for the U.S. Government to continue development of the project over the course of more than one year.

Revenue associated with costs incurred yet not billed to the customer are presented as unbilled accounts receivable on the consolidated balance sheet as of June 30, 2022 and December 31, 2021.

Customer Concentration Risk

The U.S. Government accounted for approximately 89% of the Company's revenues for the six months ended June 30, 2022. Approximately 100% and 98% of contract receivables invoiced as of June 30, 2022, and December 31, 2021, respectively, were due from the U.S. Government.

Research and Development Expenses

The Company expenses the cost of research and development as incurred. Research and development expenses are comprised of costs incurred in performing research and development activities, including clinical trial costs, manufacturing costs for both clinical and preclinical materials as well as other contracted services and other external costs. Nonrefundable advance payments for goods and services that will be used in future research and development activities are expensed when the activity is performed or when the goods have been received, rather when payment is made, in accordance with FASB ASC Topic 730, Research and Development.

In-Process Research and Development Expense

The Company has acquired, and may continue to acquire, the rights to develop and commercialize new drug candidates. The upfront payments to acquire new drug compounds are immediately expensed as IPR&D, provided that the drug candidates have not achieved regulatory approval for marketing, and absent obtaining such approval, have no alternative use.

Upon marketing clearance of the relevant research and development project, the Company will amortize capitalized IPR&D's milestones over its estimated useful life.

General and Administrative Expenses

General and administrative expenses consist of personnel costs, including salaries, benefits, and non-cash stock-based compensation, for our employees in finance, human resources, executive, and other

administrative functions, legal and consulting fees and recruiting costs not otherwise included in research and development expenses. Legal fees include those related to corporate and patent matters.

Stock-Based Compensation

The Company accounts for stock-based awards to employees and directors in accordance with the provisions of ASC 718, "Compensation — Stock Compensation". Under ASC 718, stock-based awards are valued at fair value on the date of grant and that fair value is recognized over the requisite service period on a straight-line basis, net of estimated forfeitures. The Company values its stock options using the Black-Scholes option pricing model. This valuation model requires the Company to make assumptions and judgments about variables used in the calculation. These variables and assumptions include the fair value of the Company's common stock, weighted average period of time that options are expected to be outstanding, the estimated volatility of comparable companies, the risk-free interest rate and the estimated forfeitures of unvested stock options. Forfeitures are estimated at the time of grant and adjusted, if necessary, in subsequent periods if actual forfeitures differ from those estimates. The Company generally utilizes the simplified method calculation of expected life and estimates the Company's stock volatility based on an average of historic volatilities of several entities with similar characteristics.

Determination of Fair Value of Common Stock

As there has been no public market for the Company's common stock to date, the estimated fair value of the Company's common stock has been determined by the Company's board of directors as of the date of grant of each option or restricted stock award, with input from management, considering the Company's most recently available third-party valuations of common stock and our board of directors' assessment of additional objective and subjective factors that it believed were relevant and which may have changed from the date of the most recent valuation through the date of the grant. These third-party valuations were performed in accordance with the guidance outlined in the American Institute of Certified Public Accountants' Accounting and Valuation Guide, *Valuation of Privately-Held-Company Equity Securities Issued as Compensation.* To arrive at a fair value for the total stockholders' equity of the Company, the third-party valuation firm considered the value indication provided by a discounted cash flow analysis.

Leases

In February 2016, the Financial Accounting Standards Board (FASB) issued Accounting Standards Update (ASU) 2016-02, Leases (ASC 842). The new guidance requires lessees to recognize assets and liabilities arising from leases with a term of greater than 12 months on the balance sheet and certain qualitative and quantitative disclosures are required. The Company adopted this standard on the date of incorporation in January 2021.

At the inception of the arrangement, the Company determines whether the arrangement is or contains a lease based on the unique facts and circumstances present in the arrangement. Lease liabilities represent an obligation to make payments arising from a lease and are measured at the present value of the remaining future lease payments over the term of the lease. The present value of the lease payments is determined using an incremental borrowing rate (IBR) which reflects the fixed rate at which the Company could borrow the amount of the lease payments, on a collateralized basis, for a similar term and economic environment. The lease terms may include the impact of options to extend or terminate the lease when it is reasonably certain that the Company will exercise the option. Assumptions made by the Company at the commencement date are re-evaluated upon the occurrence of certain events, including a lease modification. When a lease modification results in a separate contract, it is accounted for in the same manner as a new lease. Right of use (ROU) assets represent the right to use the underlying asset identified in the lease for the term of the agreement. The calculation of the ROU asset incorporates the value of the lease liability and excludes any lease incentives received and initial direct costs incurred.

Aceragen, Inc.

Notes to the Unaudited Condensed Consolidated Financial Statements
Period Ended June 30, 2022

The Company's lease portfolio consists of operating leases related to its facilities for its offices in Raleigh, North Carolina and Basel, Switzerland. The Company does not have any financing leases. Leases with a term of 12 months or less are considered short-term, and do not require recognition under ASC 842 on the condensed consolidated balance sheet, and payments associated with short-term leases are expensed as incurred. Rent expense for operating leases is recognized on a straight-line basis over the lease term.

New Accounting Pronouncements

From time to time, new accounting pronouncements are issued by the FASB that the Company has or will adopt as of a specified date. Unless otherwise noted, the Company does not believe that any other recently issued accounting pronouncements issued by the FASB had, or is expected to have, a material impact on the Company's present or future financial statements.

3. Stock-Based Compensation

During the six months ended June 30, 2022, the Company granted 534,500 stock options under the Company's 2021 Stock Incentive Plan (the "2021 Plan"). Typically, employee option grants generally vest 25% on the first anniversary of grant date, with the balance vesting proportionally for a duration of 36 months thereafter. During the six months ended June 30, 2022, and the period of March 2, 2021, to June 30, 2021, the Company recognized $494,759 and $1,000 in stock option compensation expenses, respectively. All stock-based compensation expenses are included in general and administrative expenses.

The following weighted average assumptions apply to the options to purchase 534,500 shares of common stock granted to employees during the six months ended June 30, 2022.

	2022
Expected stock price volatility	82.98%
Risk-free interest rate	2.00% – 2.84%
Expected term	6 years – 7 years
Estimated value of stock per share	$12.28

The following is a summary of activity in options for the six months ended June 30, 2022:

	Incentive Stock Options		Nonqualified Stock Options	
	Number of Shares	Weighted Average Exercise Prices	Number of Shares	Weighted Average Exercise Prices
Outstanding at December 31, 2021 (audited)	244,240	$ 3.07	70,760	$ 3.07
Granted	225,741	$12.28	308,759	$12.28
Exercised	—	—	—	—
Forfeited	—	—	—	—
Outstanding at June 30, 2022	469,981	$ 7.49	379,519	$10.56
Exercisable at June 30, 2022	20,936	$ 3.07	16,458	$ 3.07

As of June 30, 2022, there was approximately $3.9 million in unrecognized stock-based compensation expenses associated with outstanding awards which is expected to vest over the next 3.9 years.

4. Income taxes

Income taxes have been accounted for using the asset and liability method in accordance with ASC 740 "Income Taxes". The Company computes its interim provision for income taxes by applying the estimated

annual effective tax rate method. The Company estimates an annual effective tax rate of (0.49)% for the year ending December 31, 2022. This rate does not include the impact of any discrete items. The Company's effective tax rate for the six months ended June 30, 2022 and 2021 was (0.47)% and 0.0%, respectively.

The Company incurred losses for the six-month ended June 30, 2022, and is forecasting additional losses through the year, resulting in an estimated net loss for financial statement purposes for the year ending December 31, 2022. Due to the Company's history of losses, there is not sufficient evidence to record a net deferred tax asset associated with the U.S. or Swiss operations. Accordingly, a full valuation allowance has been recorded related to the net deferred tax assets in those jurisdictions.

The total tax expense during the six months ended June 30, 2022, and the period from March 2, 2021, to June 30, 2021, was approximately $37,000 and $0, respectively.

At June 30, 2022, the Company had no unrecognized tax benefits that would affect the Company's effective tax rate.

The FASB Staff Q&A, Topic 740, No. 5, Accounting for Global Intangible Low-Taxed Income ("GILTI"), states that an entity can make an accounting policy election to either recognize deferred taxes for temporary basis differences expected to reverse as GILTI in future years or to provide for the tax expense related to GILTI in the year the tax is incurred as a period expense only. The Company has elected to account for GILTI as a period expense in the year the tax is incurred. The Company does not expect a GILTI inclusion for 2022; no GILTI tax has been recorded for the eight months ended August 31, 2022, and the period from March 2, 2021 to June 30, 2021.

5. Acquisition Obligation

In October 2021, the Company entered into a Merger Agreement with Arrevus, Inc. (the "Merger"), whereby Arrevus became a wholly-owned subsidiary of the Company. As a result of the Merger, the Company has an obligation to pay former Arrevus shareholders deferred purchase consideration totaling $7,500,000, $6,000,000 of which is payable in October 2022 less any adjustments, as defined within the Merger Agreement, and $1,500,000 to be paid in January 2023. In addition to the deferred purchase consideration, the Company has an obligation to pay a working capital adjustment totaling $366,684 in October 2022. The Company imputed interest on the deferred purchase consideration at the date of the Merger Agreement in the amounts of $687,812. The Company will amortize the discount on a straight-line basis until the obligation becomes due. As of June 30, 2022, the Company had recognized a total of $327,670 in amortization expense. As of June 30, 2022, all amounts owed pursuant to the Arrevus transaction were classified as short term.

	Amounts
Years Ending December 31	
2022	$6,366,684
2023	1,500,000
Total	7,866,684
Less: Unamortized acquisition discount	(250,919)
Total acquisition obligation	$7,615,765

6. Contingencies

The Company is not a party to any outstanding material litigation and management is currently not aware of any legal proceedings that, individually or in the aggregate, are deemed to be material to the Company's financial condition or results of operations. The Company does not have contingency reserves established for any liabilities as of June 30, 2022.

Aceragen, Inc.

Notes to the Unaudited Condensed Consolidated Financial Statements
Period Ended June 30, 2022

7. Subsequent Events

The Company has evaluated all subsequent events through November 18, 2022, the date the unaudited condensed consolidated financial statements were available to be issued and determined that there were no subsequent events or transactions that required recognition or disclosure in the unaudited condensed consolidated financial statements.

On September 28, 2022, the Company merged with Idera Pharmaceuticals, Inc. (Idera). The merger was structured as a stock-for-stock transaction whereby all the Company's outstanding equity interests were exchanged for a combination of shares of Idera common stock, shares of newly designated convertible Series Z preferred stock, and shares of the newly designated Series X preferred stock.

ANNEX E

UNAUDITED PRO FORMA FINANCIAL STATEMENTS AND ACCOMPANYING NOTES FOR THE NINE MONTHS ENDED SEPTEMBER 30, 2022

UNAUDITED PRO FORMA CONDENSED COMBINED FINANCIAL INFORMATION

The following unaudited pro forma condensed combined financial information has been prepared in accordance with Article 11 of Regulation S-X under the Securities Act of 1933, as amended (the "Securities Act") and presents the combined historical consolidated financial position and consolidated results of operations of Idera Pharmaceuticals, Inc ("Idera" or the "Company") and the historical combined financial position and results of operations of Aceragen, Inc ("Aceragen"), adjusted to give effect to (i) the September 28, 2022 ("Closing Date") acquisition of Aceragen as further described in Note 1 — *Description of the Transaction* (the "Transaction"); (ii) the merger of Arrevus, Inc. ("Arrevus") with Aceragen on October 24, 2021 which is accounted for as asset acquisition under the US Generally Accepted Accounting Principles ("US GAAP") (the "Arrevus merger"); (iii) Aceragen's acquisition of ACG-801 (formerly known as RVT-801) from Enzyvant Therapeutics GmbH ("Enzyant") in March 2021, which is accounted for as an asset acquisition under the US GAAP (the "ACG-801 acquisition") and (iv) the pro forma effects of certain assumptions and adjustments described in "Notes to the Unaudited Pro Forma Condensed Combined Financial Information" below.

The following unaudited pro forma combined financial information is presented to illustrate the estimated effects of the Transaction, the mandatory conversion of outstanding Series Z convertible preferred stock into common stock and related warrants and stock options for Series Z convertible preferred stock into warrants and options for common stock, the Arrevus Merger and the ACG-801 acquisition, based on the historical financial statements and accounting records of Idera and Aceragen after giving effect to these transactions and the related pro forma adjustments as described in the notes included below.

The unaudited pro forma combined statement of operations for the nine months ended September 30, 2022 and for the year ended December 31, 2021, combine the historical statements of operations of Idera and Aceragen, giving effect to the Transaction as if it had occurred on January 1, 2021. For the year ended December 31, 2021, the unaudited pro forma combined statement of operations data also assumed the Arrevus merger took place as of January 1, 2021. The operations data of ACG-801 for the one month ended January 1, 2021 were considered immaterial, and accordingly, were not included in the unaudited pro forma combined statement of operations for the year ended December 31, 2021.

The historical financial statements of Idera and Aceragen have been adjusted to give pro forma effect to events that are (1) directly attributable to the Transaction, (2) factually supportable, and (3) with respect to the unaudited pro forma combined statements of operations, expected to have a continuing impact on the combined results of operations of the combined company. The unaudited pro forma combined financial statements should be read in conjunction with the accompanying notes to the unaudited pro forma combined financial statements.

The following unaudited pro forma condensed combined financial information and related notes are based on and should be read in conjunction with:

(i) the historical unaudited condensed consolidated financial statements of the Company and the related notes included in the Company's Quarterly Report on Form 10-Q as of and for the nine months ended September 30, 2022;

(ii) the historical audited consolidated financial statements of the Company and the related notes included in the Company's Annual Report on Form 10-K as of and for the year ended December 31, 2021;

(iii) the historical unaudited condensed consolidated financial statements of Aceragen and the related notes as of and for the six months ended June 30, 2022; and

(iv) the historical audited consolidated financial statements of Aceragen and the related notes as of and the period from March 2, 2021 (inception) to December 31, 2021.

(v) the historical audited financial statements of Arrevus and the related notes as of October 24, 2021 and the related statements of operations for the period from January 1, 2021 to October 24, 2021.

With respect to the Transaction, the unaudited pro forma combined financial information has been prepared by Idera using the acquisition method of accounting in accordance with U.S. generally accepted accounting principles. Idera has been treated as the acquirer in the Transaction for accounting purposes as Aceragen is deemed to be a variable interest entity to which Idera is the primary beneficiary. The assets acquired and liabilities assumed by Idera in the Transaction have been preliminarily measured at their respective estimated fair values as of September 28, 2022. Differences between these preliminary estimates of fair value and the final acquisition accounting will occur, and those differences could have a material impact on the accompanying unaudited pro forma combined financial statements and the combined company's future results of operations and financial position. Idera will finalize the acquisition accounting (including the necessary valuation and other studies) as soon as practicable within the required measurement period, but in no event later than one year following completion of the Transaction.

The pro forma adjustments are preliminary and have been made solely for the purpose of providing unaudited pro forma combined financial information prepared in accordance with the rules and regulations of the Securities and Exchange Commission (the "SEC").

The unaudited pro forma combined financial information has been presented for informational purposes only. The unaudited pro forma combined financial information does not purport to represent the actual results of operations that Idera and Aceragen would have achieved had the companies been combined during the periods presented in the unaudited pro forma combined financial statements and is not intended to project the future results of operations that the combined company may achieve after the Transaction. The unaudited pro forma combined financial information does not reflect any potential cost savings that may be realized as a result of the Transaction and also does not reflect any restructuring or integration-related costs to achieve those potential cost savings.

Unaudited Pro Forma Combined Statement of Operations
Nine Months Ended September 30, 2022
(in thousands, except per share data)

	Idera Pharmaceuticals, Inc. (Historical)	Aceragen, Inc. Historical for the Period from January 1, 2022 through September 28, 2022	Transaction Accounting Adjustments	Notes	Pro Forma Combined
Government contracts revenue	$ 49	$ 13,209	—		$ 13,258
Operating expenses:					
Research and development	5,960	21,556	—		27,516
General and administrative	7,325	7,978	(2,966)	A	12,337
Acquisition-related costs	2,836	—	(2,836)	A	—
Restructuring and other costs	2,802	—	(2,802)	A	—
Total operating expenses	18,923	29,534	(8,604)		39,853
Loss from operations	(18,874)	(16,325)	8,604		(26,595)
Non-operating income (expense):					
Interest income (expense), net	156	(482)	(67)	B	(393)
Warrant revaluation gain	116	—	(116)	C	—
Foreign currency exchange and other gains (losses)	(21)	(2)	—		(23)
Change in fair value of Series X preferred stock liability	—	—	(1,536)	D	(1,536)
Loss before income tax benefit	(18,623)	(16,809)	6,885		(28,547)
Income tax benefit	6,039	(37)	(6,039)	E	(37)
Net loss	$(12,584)	$(16,846)	$ 846		$(28,584)
Net loss per share, basic and diluted	$ (0.24)	$ (4.99)			$ (0.26)
Weighted average common shares outstanding, basic and diluted	53,052	3,373	55,257	F	111,682

See accompnaying Notes to Unaudited Pro Forma Condensed Combined Financial Information

Unaudited Pro Forma Combined Statement of Operations
Year Ended December 31, 2021
(in thousands, except per share data)

	Idera Pharmaceuticals, Inc. (Historical)	Aceragen, Inc. (Historical)	Arrevus, Inc. Historical for the Period from January 1, 2021 through October 24, 2021	Other Transaction Accounting Adjustments	Notes	Pro Forma Aceragen, Inc.	Transaction Accounting Adjustments	Notes	Pro Forma Combined
Government contracts revenue	$ —	$ 1,005	$2,867	$ —		$ 3,872	$ —		$ 3,872
Operating expenses:									
Research and development	16,375	21,007	2,010	—		23,017	—		39,392
General and administrative	9,976	3,794	589	(104)	A	4,279	—		14,255
Restructuring charge	1,322	—	—	—		—	—		1,322
Total operating expenses	27,673	24,801	2,599	(104)		27,296	—		54,969
Loss from operations	(27,673)	(23,796)	268	104		(23,424)	—		(51,097)
Non-operating income (expense):									
Interest income (expense)	2	(109)	(36)	36	G	(109)	(89)	B	(196)
Warrant revaluation gain	6,983	—	—	—		—	—		6,983
Future tranche right revaluation gain	118,803	—	—	—		—	—		118,803
Foreign currency exchange loss	(24)	(2)	—	—		(2)	—		(26)
Change in fair value of Series X preferred stock liability	—	—	—	—		—	(2,734)	D	(2,734)
Other income	—	—	54	—		54	—		54
Net income (loss) before income tax benefit	98,091	(23,907)	286	140		(23,481)	(2,823)		71,787
Income tax benefit	—	—	—	—		—	6,039	E	6,039
Net income (loss)	$ 98,091	$(23,907)	$ 286	$ 140		$(23,481)	$ 3,216		$ 77,826
Undistributed earnings to preferred stockholders	(1,150)	—	—	—		—	—		(1,150)
Net income (loss) attributable to common stockholders	$ 96,941	$(23,907)	$ 286	$ 140		$(23,481)	$ 3,216		$ 76,676
Net income (loss) per share applicable to common stockholders									
Basic	$ 1.97	$ (8.15)							$ 0.71
Diluted	$ (0.58)	$ (8.15)							$ (0.67)
Weighted-average number of common shares used in computing net income (loss) per share applicable to common stockholders									
Basic	49,203	2,933					55,424	F	107,560
Diluted	50,127	2,933					55,424	F	108,484
Net loss – diluted	(28,845)	(23,907)	286	140		(23,481)	3,216		(72,591)

See accompnaying Notes to Unaudited Pro Forma Condensed Combined Financial Information

Notes to Unaudited Pro Forma Condensed Combined Financial Information

1. Description of the Transactions and Basis of Presentation

Description of the Transaction

On September 28, 2022, Idera Pharmaceuticals, Inc. ("Idera") acquired Aceragen, Inc. ("Aceragen"), a Delaware corporation and its wholly owned subsidiaries. Aceragen is a privately-held biotechnology company addressing severe, rare, and orphan pulmonary and rheumatic diseases for which there are limited or no available treatments. The Company acquired Aceragen as a strategic extension of its rare disease business and focus with the primary objective of further developing Aceragen's portfolio of rare disease product candidates. Specifically, as a result of the Acquisition (as defined below). the Company will focus on developing ACG-701 to treat pulmonary exacerbations associated with cystic fibrosis and melioidosis, a severe, life-threatening infection, and ACG-801 to treat a rare lysosomal storage disorder known as Farber disease.

In accordance with the terms of an Agreement and Plan of Merger (the "Merger Agreement"), Idera acquired 100% of the outstanding security interests of Aceragen in a "stock-for-stock" transaction whereby all Aceragen outstanding equity interests were exchanged for a combination of shares of Idera common stock, shares of Idera Series Z convertible preferred stock ("Series Z"), and shares of the newly designated Idera Series X non-voting preferred stock ("Series X"). Under the terms of the Merger Agreement, Aceragen stockholders received (i) 4,398,762 shares of the Company's common stock, (ii) 80,656 shares of Series Z and (iii) five shares of Series X. In addition, all outstanding restricted shares subject to repurchase, options and warrants to purchase Aceragen common stock were converted into restricted shares, stock options and warrants to purchase shares of Idera's common stock and Series Z on terms substantially identical to those in effect prior to the acquisition except for adjustments to the underlying number of shares and the exercise price based on the Merger Agreement exchange ratio.

Subject to stockholder approval of the conversion and an increase in authorized shares and certain beneficial ownership limitations set by each holder, each share of Series Z will automatically convert into 1,000 shares of common stock. Holders of shares of Series X are entitled to receive distributions on shares of Series X.

Pursuant to the Merger Agreement, Idera has agreed to hold a stockholders' meeting (the "Special Meeting") to submit certain matters to its stockholders for their consideration, including: (i) the approval of the conversion of the Series Z preferred stock into shares of common stock in accordance with Nasdaq Listing Rule 5635(a) (the "Conversion Proposal") and (ii) the approval to effect a reverse stock split of all of Idera's issued and outstanding shares of common stock (the "Reverse Stock Split Proposal" and, together with the Conversion Proposal, the "Merger Agreement Meeting Proposals").

Pursuant to the Merger, Aceragen entered into a binding term sheet with the representative of certain former stockholders of Arrevus, Inc. pursuant to which Aceragen and the Arrevus former stockholders agreed to defer certain payments owed by Aceragen to the Arrevus former stockholders in an aggregate amount of $6.3 million until October 24, 2023. The deferred payments will bear annual interest at 12%, paid quarterly, beginning on April 1, 2023. Prepayments in full amount of the Deferred Payment plus accrued interest is allowed provided the holders of each Convertible Notes are given written notice and the option to convert the principal balance into shares of Common Stock pursuant to the terms of the Convertible Note. The Deferred Payments will be memorialized in an unsecured promissory note to be issued by Idera.

The foregoing summary of the transactions contemplated by the Merger Agreement is subject to, and qualified in its entirety by, the full text of the Merger Agreement, a copy of which was attached as Exhibit 2.1 to the Current Report on Form 8-K filed by Idera with the SEC on September 30, 2022.

Basis of Presentation

The unaudited pro forma combined financial information was prepared using the acquisition method of accounting and is based on the historical financial statements of Idera, Aceragen and Arrevus.

The acquisition method of accounting is based on Accounting Standards Codification ("ASC") 805, *Business Combinations*, with the Company as the accounting acquirer, and uses the fair value concepts defined in ASC 820, *Fair Value Measurement*.

ASC 805 requires, among other things, that most assets acquired and liabilities assumed be recognized at their fair values as of the acquisition date. In addition, ASC 805 requires that the consideration transferred be measured at the date the acquisition is completed at the then-current market price.

ASC 820 defines the term "fair value," sets forth the valuation requirements for any asset or liability measured at fair value, expands related disclosure requirements and specifies a hierarchy of valuation techniques based on the nature of the inputs used to develop the fair value measures. Fair value is defined in ASC 820 as "the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date." This is an exit price concept for the valuation of the asset or liability. In addition, market participants are assumed to be buyers and sellers in the principal (or the most advantageous) market for the asset or liability. Fair value measurements for an asset assume the highest and best use by these market participants. As a result of these standards, Idera may be required to record the fair value of assets which are not intended to be used or sold and/or to value assets at fair value measures that do not reflect Idera's intended use of those assets. Many of these fair value measurements can be highly subjective, and it is possible that other professionals, applying reasonable judgment to the same facts and circumstances, could develop and support a range of alternative estimated amounts.

Under the acquisition method of accounting, the assets acquired and liabilities assumed are recorded, as of the completion of the Acquisition, primarily at their respective fair values, with the excess of the purchase consideration over the fair value of Aceragen's net assets, allocated to goodwill, if any, and added to those of Idera. Financial statements and reported results of operations of Idera issued after completion of the Acquisition will reflect these values but will not be retroactively restated to reflect the historical financial position or results of operations of Aceragen. The pro forma allocation of the purchase price reflected in the unaudited pro forma condensed combined financial information is preliminary and thus subject to adjustment and may vary materially from the final purchase price allocation that will be completed within the measurement period, but in no event later than one year following the Closing Date since, among other reasons, prior to the closing of the Transaction, both companies were limited in their ability to share information.

Under ASC 805, acquisition-related transaction costs (e.g., advisory, legal and other professional fees) are not included as a component of consideration transferred but are accounted for as expenses in the periods in which such costs are incurred. Total acquisition-related transaction costs expected to be incurred by Idera and Aceragen are estimated to be $5.0 million and incurred during the nine months ended September 30, 2022. These acquisition related transaction costs are reflected as a pro forma adjustment to the unaudited pro forma combined statements of income for those same periods as a reduction in acquisition-related costs because those net costs are not expected to have a continuing impact on the combined company's results. In addition, Idera incurred $2.8 million in severance related costs in connection with the acquisition and have been reflected as a pro forma adjustment.

The unaudited pro forma combined financial statements do not include any adjustments to the realization of any costs (or cost savings) from operating efficiencies, synergies, or other restructuring activities that might result from the Transaction. Further, there may be additional charges (or costs savings) related to restructuring or other integration activities resulting from the Transaction, the timing, nature, and amount of which the Company's management cannot currently identify, and thus, such charges (or cost savings) are not reflected in the unaudited pro forma condensed combined financial statements. The restructuring and integration-related costs will be expensed in the appropriate accounting periods after completion of the acquisition as incurred. The pro forma adjustments represent management's best estimates and are based upon currently available information and certain assumptions that the Company believes are reasonable under the circumstances.

The unaudited pro forma combined financial information is presented for informational purposes only and does not necessarily indicate the financial results of the combined company had the companies been combined at the beginning of the period presented, nor does it necessarily indicate the results of operations in future periods or the future financial position of the combined company.

2. Accounting Policies

As part of preparing the pro forma condensed combined financial information, the Company conducted a preliminary review of the accounting policies of Aceragen in order to determine if any differences require

adjustment or reclassification of Aceragen's financial position and results of operations to conform to Idera's accounting policies and classifications. See Note 5 for additional information.

3. Consideration Transferred

The components of consideration transferred to effect the acquisition of Aceragen are as follows (*in thousands*):

Fair value of Idera common stock issued to Aceragen stockholders	$ 1,672
Fair value of Idera Series Z convertible preferred stock issued to Aceragen stockholders	26,971
Fair value of Idera Series X preferred stock issued to Aceragen stockholders	20,400
Fair value of Aceragen stock options and warrants assumed and allocated to consideration paid	6,670
Total consideration paid	$55,713

4. Preliminary estimate of Assets Acquired and Liabilities Assumed

The following summarizes a preliminary estimate of the assets acquired and the liabilities assumed by Idera as of the acquisition date, and includes a reconciliation to the total consideration transferred:

Assets acquired:	
Cash, cash equivalents and restricted cash	$ 5,482
Receivables	1,914
Prepaid expenses and other assets	575
In-process research and development assets	63,067
Goodwill	9,934
	80,972
Liabilities assumed:	
Accounts payable and accrued expenses	7,827
Assumed debt obligations	7,476
Operating lease liabilities	22
Deferred tax liability	9,934
	25,259
Net assets acquired	$55,713

As of the completion of the acquisition, identifiable intangible assets are required to be measured at fair value, and these acquired assets could include assets that are not intended to be used or sold or that are intended to be used in a manner other than their highest and best use. For purposes of these unaudited pro forma combined financial statements and consistent with the ASC 820 requirements for fair value measurements, it is assumed that all acquired assets will be used, and that all acquired assets will be used in a manner that represents the highest and best use of those acquired assets.

The fair value of IPR&D was capitalized as of the Acquisition date and accounted for as indefinite-lived intangible assets until completion or disposition of the assets or abandonment of the associated research and development efforts. Upon successful completion of the development efforts, the useful lives of the IPR&D assets will be determined based on the anticipated period of regulatory exclusivity and will be amortized within operating expenses. Until that time, the IPR&D assets will be subject to impairment testing and will not be amortized. The goodwill recorded related to the acquisition is the excess of the fair value of the consideration transferred by the acquirer over the fair value of the net identifiable assets acquired and liabilities assumed at the date of acquisition. The goodwill recorded is not deductible for tax purposes.

5. Pro Forma Adjustments

The unaudited pro forma combined financial information includes pro forma adjustments that are (1) directly attributable to the Transaction (2) factually supportable, and (3) with respect to the unaudited

pro forma combined statements of operations, expected to have a continuing impact on the results of operations of the combined company.

The pro forma adjustments reflecting the completion of the transaction are based upon the accounting analysis conclusion that the Transaction should be accounted for under the acquisition method of accounting and upon the assumptions set forth below.

The pro forma adjustments, based on preliminary estimates that may change significantly as additional information is obtained, are as follows:

A. Elimination of severance costs within general and administrative expenses, transaction costs and restructuring costs incurred in connection with the Aceragen acquisition and the acquisition of Arrevus that are not expected to have a continuing impact on the results of the combined entity.

B. To record the amortization of the debt discount related to the deferred payment by Aceragen to Arrevus in connection with the acquisition of Arrevus.

C. To record the elimination of the warrant revaluation gain upon shareholder approval to convert Series Z into common stock and related warrants are equity classified and not subject to remeasurement.

D. To record the change in fair value of the Series X preferred stock liability that is accounted for under the fair value option and remeasured at each reporting period.

E. To record the elimination of the income tax benefit resulting from the Aceragen acquisition during the nine months ended September 30, 2022 and record the benefit on January 1, 2021 as if the acquisition of Aceragen was completed on January 1, 2021.

F. The pro forma combined basic income (loss) per share have been adjusted to reflect the pro forma net income for the nine months ended September 30, 2022 and for the year ended December 31, 2021. In addition, the number of shares used in calculating the pro forma combined basic and diluted net income per share has been adjusted to reflect the estimated total number of shares of common stock of the combined company that would be outstanding as of the acquisition of Arrevus:

	Nine Months Ended September 30, 2022	Year Ended December 31, 2021
Issuance of Idera common stock to Aceragen stockholders	57,716	58,357
Vesting of equity awards issued to Aceragen stockholders	914	—
Elimination of historical Aceragen basic weighted average shares outstanding	(3,373)	(2,933)
Pro forma adjustment	55,257	55,424

G. Elimination of interest expense incurred in connection with the acquisition of Arrevus and not expected to have a continuing impact on the results of the combined entity.

ANNEX F

MANAGEMENT'S DISCUSSION AND ANALYSIS OF FINANCIAL CONDITION AND RESULTS OF OPERATIONS

Overview

Prior to its acquisition by the Company, Aceragen, Inc., together with its wholly-owned subsidiaries, Aceragen GmbH and Arrevus, Inc. (collectively, "Aceragen"), was a privately-held biotechnology company focused on addressing rare, orphan pulmonary, and rheumatic diseases for which there are limited or no available treatments. Aceragen owned or controlled the intellectual property and has varying period of exclusivity related to both ACG-701 (patented formulation of sodium fusidate) and ACG-801 (recombinant human acid ceramidase (rhAC)). Aceragen's strategy of developing and optimizing commercial value of ACG-701 and ACG-801 for appropriate patients underpinned its work developing:

- ACG-701 to treat cystic fibrosis pulmonary exacerbations ("CF") and melioidosis, a severe, life-threatening infection; and
- ACG-801 to treat patients suffering from a genetic mutation in the ASAH 1 gene, also known as Farber disease.

Aceragen was incorporated in Delaware in January 2021 and began operations in March 2021.

Aceragen Acquisition Activity

In March 2021, Aceragen entered into an asset purchase agreement with Enzyvant Therapeutics GmbH ("Enzyvant") to acquire ACG-801, formerly known as RVT-801, a lipid hydrolase acid ceramidase. The primary asset acquired in the acquisition was in-process research and development related to Enzyvant's compound, ACG-801, which is an investigational enzyme replacement therapy (ERT) for acid ceramidase deficiency presenting as Farber disease, a lysosomal storage disease with a unique, severe inflammatory phenotype for which no disease-specific therapy exists.

In October 2021, Aceragen entered into an Agreement and Plan of Merger (the "Arrevus Merger Agreement") with Arrevus, Inc. ("Arrevus"), pursuant to which Aceragen Merger Sub, Inc., a wholly-owned subsidiary of Aceragen, merged with and into Arrevus, with Arrevus being the surviving entity operating as a wholly-owned subsidiary of Aceragen. The primary asset acquired in the acquisition was in-process research and development related to Arrevus's sodium fusidate program, which could potentially be used for treatments of melioidosis, cystic fibrosis pulmonary exacerbations and other potential indications.

Aceragen Governmental Contracts and Awards

Aceragen has received two significant contracts for funding up to $49.7 million from the United States government, funded by the Defense Threat Reduction Agency ("DTRA"). Additionally, Aceragen has received a $3.5 million award from the Cystic Fibrosis Foundation of which $2.5 million remains available to be earned as certain developmental milestones are achieved.

Results of Operations for the Period from March 2, 2021 (inception) through December 31, 2021

Revenues

(in thousands)	For the period from March 2, 2021 (inception) through December 31, 2021
Revenues:	
Government sponsored product development	$ 897
Consulting services	108
Total revenues	1,005

Revenue was $1.0 million for the period from March 2, 2021 (inception) through December 31, 2021, consisting of $0.9 million in government sponsored product development, primarily associated with the programs funded by DTRA, and $0.1 million in consulting services associated with regulatory consulting for product development provided by Aceragen. Prior to Aceragen's acquisition of Arrevus, Aceragen provided development consulting services in support of the DTRA funded programs.

Research and Development Expenses

(in thousands)	For the period from March 2, 2021 (inception) through December 31, 2021
Direct costs by program:	
Government sponsored product development:	$ 624
Non-sponsored research and development:	8,542
Consulting Services	31
In-process research and development	11,810
Total Research and Development Costs	$21,007

Research and development expenses for government sponsored and non-government sponsored activities were $9.2 million for the period from March 2, 2021 (inception) through December 31, 2021. These expenses include $6.6 million in outsourced services inclusive of, but not limited to, drug product and substance manufacturing with a contract manufacturing organization, analytical services, and clinical studies related activities. Of the outsourced services, $6.2 million relates to ACG-801 activities and $0.4 million relates to ACG-701 activities. Furthermore, total research and development expense included $1.9 million in personnel-related costs. Of the personnel-related costs, $1.7 million related to ACG 801 activities and $0.2 million relates to ACG-701 activities. Research and development costs associated consulting services consisted of labor and other direct charges in connection with product development consulting services provided by Aceragen. In-process research and development expenses consisted of $10.2 million in acquisition-related charges of AGC-701 from Arrevus and $1.6 million in acquisition-related charges of ACG-801 from Enzyvant in accordance with ASC 730.

General and Administrative Expenses

(in thousands)	For the period from March 2, 2021 (inception) through December 31, 2021
General and administrative expenses	$3,794

General and administrative expenses were $3.8 million for the period from March 2, 2021 (inception) through December 31, 2021. These expenses include $2.2 million of personnel-related costs, $0.7 million of professional services and legal related fees, and $0.4 million in consultant costs.

Results of Operations for the Three Months Ended June 30, 2022 and 2021

Revenues

(in thousands)	Three Months Ended June 30, 2022	Three Months Ended June 30, 2021	$ Variance	% Variance
Government sponsored product development	$3,705	$ —	$3,705	—
Non-government sponsored product development	—	—	—	—
Total Revenues	$3,705	$ —	$3,705	—

Aceragen generates revenues through its government sponsored and non-government sponsored product development programs. Government sponsored product development revenues principally relates to

the DTRA funded programs, which were acquired through the Arrevus acquisition in October 2021. The increase of $3.7 million for the three months ended June 30, 2022 compared to the three months ended June 30, 2021 is attributed primarily to the revenues generated pursuant to the programs funded by DTRA, approximately $3.7 million, for the development of ACG-701 for the treatment of Melioidosis. In the prior period, Aceragen was focused on business start-up activities and did not have any revenue generating activities.

Research and Development Expenses

(in thousands)	Three Months Ended June 30, 2022	Three Months Ended June 30, 2021	$ Variance	% Variance
Government and non-government sponsored product development	$2,745	$ —	$2,745	—
Non-sponsored research and development	$3,768	$662	$3,102	469%
Total research and development expenses	$6,513	$662	$5,851	884%

Aceragen incurs both government and non-government sponsored product development expenses as well as non-sponsored research and development expenses. The increase in government and non-government sponsored product development of $2.7 million for the three months ended June 30, 2022 compared to the three months ended June 30, 2021 is primarily attributable to the initiation of the clinical trial for ACG-701 to treat Melioidosis pursuant to the DTRA funded programs acquired from Arrevus. Additionally, Aceragen initiated product development activities for its ACG-701 compound to treat CF during the fourth quarter of 2021. The increase in non-sponsored research and development expenses of $3.1 million for the three months ended June 30, 2022 compared to the three months ended June 30, 2021 is attributed to (i) $1.3 million increase for the manufacturing of ACG-801 drug substance for use in clinical trials to treat Farber disease; (ii) $0.7 million clinical related costs for ACG-801 to treat Farber disease; and (iii) $0.9 million of personnel related costs.

General and Administrative Expenses

(in thousands)	Three Months Ended June 30, 2022	Three Months Ended June 30, 2021	$ Variance	% Variance
General and administrative expenses	$1,735	$851	$884	104%

The increase in general and administrative expenses of $0.9 million for the three months ended June 30, 2022 compared to the three months ended June 30, 2021 is primarily attributed to the following: (i) $0.3 million of non-cash stock-based compensation expense; (ii) $0.3 million of personnel-related costs; and (iii) $0.2 million of professional accounting and legal services.

Interest Expense, Net

(in thousands)	Three Months Ended June 30, 2022	Three Months Ended June 30, 2021	$ Variance	% Variance
Interest expense (income), net	$167	$ —	$167	—

The increase in interest expense, net of $0.2 million for the three months ended June 30, 2022 compared to the three months ended June 30, 2021, was due to the imputed interest on the acquisition obligation to the Arrevus shareholders as a result of the Arrevus acquisition.

Six months ended June 30, 2022 compared to the period from March 2, 2021 (Inception) to June 30, 2021

Revenues

(in thousands)	Six Months Ended June 30, 2022	Period from March 2, 2021 (inception) to June 30, 2021	$ Variance	% Variance
Government sponsored product development	$8,393	$ —	$8,393	—
Non-government sponsored product development	1,000	—	1,000	—
Total Revenues	$9,393	$ —	$9,393	—

The increase of $8.4 million for the six months ended June 30, 2022 compared to the period from March 2, 2021 (inception) to June 30, 2021 is attributed to activities on the DTRA funded programs of $8.2 million, which were acquired from Arrevus in October 2021. The non-government sponsored product development revenues relate to the grant received from the Cystic Fibrosis Foundation described above, of which $1 million was earned during the three months ended March 31, 2022.

Research and Development Expenses

(in thousands)	Six Months Ended June 30, 2022	Period from March 2, 2021 (inception) to June 30, 2021	$ Variance	% Variance
Government and non-government sponsored product development	$ 6,363	$ —	$ 6,363	—
Non-sponsored research and development	7,378	1,702	5,676	333%
In-Process Research and Development	—	1,576	(1,576)	—
Total research and development expenses	$13,741	$3,278	$10,463	319%

Aceragen incurs both government and non-government sponsored product development expenses as well as non-sponsored research and development expenses. The increase in government and non-government sponsored product development of $6.4 million for the six months ended June 30, 2022 compared to the period from March 2, 2021 (inception) to June 30, 2021 is attributed primarily to the DTRA funded programs acquired from Arrevus in October 2021. The increase in non-sponsored research and development expenses of $4.1 million for the six months ended June 30, 2022 compared to the period from March 2, 2021 (inception) to June 30, 2021 is attributable to a $2.0 million increase in development and manufacturing costs of ACG-801 drug product, a $0.8 million increase in analytical services in support of the development and manufacturing activities, a $1.0 million increase in clinical trial related costs, a $1.3 million increase in personnel- related expenses, and $0.6 million other development costs because of longer operations in the period. In-Process Research and Development expense decrease of $1.6 million is due to a one-time charge in relation to the asset acquisition of Enzyvant in March 2021.

General and Administrative Expenses

(in thousands)	Six Months Ended June 30, 2022	Period from March 2, 2021 (inception) to June 30, 2021	$ Variance	% Variance
General and administrative expenses	$3,233	$1,190	$2,044	172%

The increase in general and administrative expenses of $2.0 million for the six months ended June 30, 2022 compared to the period from March 2, 2021 (inception) to June 30, 2021 is primarily attributable a $0.5 million increase of non-cash stock-based compensation expense, a $0.4 million increase in consulting, accountant, and audit related fees, $0.2 million of insurance costs, and a $0.9 million increase in personnel-related costs because of longer operations in the period.

Interest Expense, Net

(in thousands)	Six Months Ended June 30, 2022	Period from March 2, 2021 (inception) to June 30, 2021	$ Variance	% Variance
Interest expense, net	$331	$ —	$331	—

The increase in interest expense, net of $0.3 million for the six months ended June 30, 2022 compared to the period from March 2, 2021 to June 30, 2021 was due to the imputed interest on the acquisition obligation to the Arrevus' shareholders as a result of the Arrevus asset acquisition.

Liquidity and Capital Resources

Management's Plans

Similar to other development stage biotechnology companies, Aceragen's products that are being developed have not generated adequate revenue to achieve profitability. As a result, we have historically suffered recurring losses and we have required significant cash resources to execute Aceragen's business plans. These losses are expected to continue for the foreseeable future.

To date, Aceragen's operations have been financed primarily by its DTRA funded government contracts, product financing, net proceeds from the sale of preferred and common stock, and cash received from grants. As of June 30, 2022, Aceragen had cash of $7.9 million, consisting of readily available cash in bank accounts. While Aceragen's management believes its cash is not subject to excessive risk, Aceragen maintains significant amounts of cash at one or more financial institutions that are in excess of federally insured limits.

In addition, in the course of normal business operations, Aceragen has agreements with contract service providers to assist in the performance of its research and development and manufacturing activities. Aceragen can generally elect to discontinue the work under these agreements, sometimes subject to a cancelation charge. Aceragen could also enter into additional collaborative research, contract research, manufacturing and supplier agreements in the future, which may require upfront payments and even long-term commitments of cash.

Aceragen recognizes that it will need to raise additional capital in order to continue to execute its business plan in the future. There is no assurance that additional financing will be available when needed or that Aceragen will be able to obtain financing on terms acceptable to it or whether Aceragen will become profitable and generate positive operating cash flow. If Aceragen is unable to raise sufficient additional funds, it will have to further scale back its operations. Aceragen believes it has sufficient capital to fund its obligations, as they become due, in the ordinary course of business into the third fiscal quarter of 2023. Aceragen based this estimate on assumptions that may prove to be incorrect, and it could use currently available capital resources sooner than currently expected.

Cash Flows

Operating Activities.

Net cash used in operating activities was $22.5 million from March 2, 2021 (inception) through December 31, 2021 and was primarily due to our net loss of $23.9 million, adjusted for non-cash expenses in connection with the Arrevus acquisition of $6.9 million amortization of discount on Arrevus acquisition obligation of $0.1 million, partially offset by a $5.6 million decrease in our operating assets and liabilities.

Net cash used in operating activities of $6.8 million for the six months ended June 30, 2022 was primarily due to our net loss of $7.9 million, partially offset by non-cash items consisting of stock-based compensation and amortization of the acquisition discount totaling $0.8 million, and net increase in cash from changes in operating assets and liabilities of $0.3 million. Additionally, cash used in operating activities of $4.4 million for the period from March 2, 2021 (inception) to June 30, 2021 consisted primarily of our net loss of $4.5 million, partially offset by a net increase in cash from changes in operating assets and liabilities

of $0.1 million. The variance in cash used in operating activities for the six months ended June 30, 2022 versus the period from March 2, 2021 (inception) to June 30, 2021 is attributable to increased development and manufacturing costs associated with the advancements of ACG-701 and AGC-801 programs during the six months ended June 30, 2022 whereas operations from March 2, 2021 (inception) to June 30, 2021 primarily focused on start-up related activities and had a shortened period of operations.

Investing activities.

Net cash used by investing activities was $165,600 the period from March 2, 2021 (inception) through December 31, 2021, respectively, is related to assembled workforce acquired pursuant to the Arrevus Acquisition.

There was no cash provided by or used in Aceragen's investing activities for the six months ended June 30, 2022 and the period from March 2, 2021 to June 30, 2021.

Financing Activities.

Net cash provided by financing activities was $27.9 million for the period of March 2, 2021 (inception) to December 31, 2022 consisted primarily of cash received under a Stock and Warrant Purchase Agreement ("SWPA") for the development of ACG-801 to treat Farber disease.

Net cash provided by financing activities of $9.8 million for the six months ended June 30, 2022 was primarily due to cash received under a SWPA. Net cash provided by financing activities of $16.3 million for the period from March 2, 2021 (inception) to June 30, 2021 primarily due to cash received under a SWPA. The variance in cash provided by financing activities for the six months ended June 30, 2022 versus the period from March 2, 2021 (inception) to June 30, 2021 is due to the receipt of $15 million pursuant to issuance of Series X preferred shares under the SWPA during the period of March 2, 2021 (inception) to June 30, 2021 whereas the proceeds pursuant to the SWPA during the six months ended June 30, 2022 were limited to the reimbursement of eligible expenditures as defined in the SWPA.

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VOTE

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Your vote matters – here's how to vote!

You may vote online or by phone instead of mailing this card.

Votes submitted electronically must be received by January 12, 2023 at 9:00 a.m., Eastern Time.

Online
Go to **http://www.investorvote.com/IDRA** or scan the QR code – login details are located in the shaded bar below.

Phone
Call toll free 1-800-652-VOTE (8683) within the USA, US territories, and Canada.

Save paper, time, and money!
Sign up for electronic delivery at http://www.investorvote.com/IDRA

Using a **black ink** pen, mark your votes with an **X** as shown in this example.
Please do not write outside the designated areas. X

Special Shareholder Meeting Proxy Card

1234 5678 9012 345

▼ IF VOTING BY MAIL, SIGN, DETACH AND RETURN THE BOTTOM PORTION IN THE ENCLOSED ENVELOPE. ▼

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A Proposals – The Board of Directors recommends a vote FOR Proposals 1, 2, 3 and 4.

	For	Against	Abstain
1. Proposal to approve the issuance of shares of the Company's common stock upon conversion of the Company's Series Z Non-Voting Convertible Preferred Stock issued in September 2022.	☐	☐	☐
2. Proposal to approve an amendment to the Restated Certificate of Incorporation to effect a reverse stock split of the Common Stock at a ratio to be determined by the Company's Board of Directors within a range of one-for-seventeen (1:17) and one-for-twenty-three (1:23) (or any number in between), to be effected in the sole discretion of the Board of Directors at any time within one year of the date of the Special Meeting without further approval or authorization from the Company's stockholders.	☐	☐	☐
3. Proposal to approve the Idera Pharmaceuticals, Inc. 2022 Stock Incentive Plan.	☐	☐	☐
4. Proposal to approve the adjournment or postponement of the Special Meeting, if necessary, to continue to solicit votes for Proposal Nos. 1, 2, and/or 3.	☐	☐	☐

B Authorized Signatures – This section must be completed for your vote to count. Please date and sign below.

Please sign this proxy exactly as your name appears hereon. Joint owners should each sign personally. Trustees and other fiduciaries should indicate the capacity in which they sign. If a corporation or partnership, this signature should be that of an authorized officer who should state his or her title.

Date (mm/dd/yyyy) – Please print date below. / /

Signature 1 – Please keep signature within the box.

Signature 2 – Please keep signature within the box.

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Special Shareholder Meeting of Stockholders of Idera Pharmaceuticals, Inc. will be held virtually, via live webcast at https://www.virtualmeetingportal.com/iderapharma/2023 on January 12, 2023 at 9:00 a.m. Eastern Time.

Small steps make an impact.

Help the environment by consenting to receive electronic delivery, sign up at http://www.investorvote.com/IDRA

▼ IF VOTING BY MAIL, SIGN, DETACH AND RETURN THE BOTTOM PORTION IN THE ENCLOSED ENVELOPE. ▼

Proxy – Idera Pharmaceuticals, Inc.

Special Shareholder Meeting of Stockholders of Idera Pharmaceuticals, Inc.
January 12, 2023 at 9:00 a.m. Eastern Time

This proxy is solicited by the Board of Directors for use at the Special Shareholder Meeting of Stockholders.

The undersigned hereby appoints John Kirby and John Taylor, and each of them, with full power of substitution, to vote, as designated below, all the shares of Idera Pharmaceuticals, Inc. (the "Company") common stock held of record by the undersigned at the close of business on December 5, 2022, at the Special Shareholder Meeting of Stockholders (the "Special Shareholder Meeting"), to be held on January 12, 2023 at 9:00 a.m. Eastern Time, and at any and all adjournments, continuations, or postponements thereof. The undersigned hereby revokes any and all earlier dated proxies with respect to the Special Shareholder Meeting. This proxy, when properly executed, will be voted in the manner directed herein by the undersigned. If no direction is made, this proxy will be voted **FOR Proposal to approve the issuance of shares of the Company's common stock upon conversion of the Company's Series Z Non-Voting Convertible Preferred Stock issued in September 2022, FOR Proposal to approve an amendment to the Restated Certificate of Incorporation to effect a reverse stock split of the Common Stock at a ratio to be determined by the Company's Board of Directors within a range of one-for-seventeen (1:17) and one- for-twenty-three (1:23) (or any number in between), to be effected in the sole discretion of the Board of Directors at any time within one year of the date of the Special Meeting without further approval or authorization from the Company's stockholders, FOR Proposal to approve the Idera Pharmaceuticals, Inc. 2022 Stock Incentive Plan, and FOR Proposal to approve the adjournment or postponement of the Special Meeting, if necessary, to continue to solicit votes for Proposal Nos. 1, 2, and/or 3.**

If any other business is presented at the Special Shareholder Meeting, including matters incidental to the conduct of the meeting or otherwise, this proxy will be voted by those named in this proxy in their best judgment. At the present time, the Board of Directors knows of no other business to be presented at the Special Shareholder Meeting.

THIS PROXY WHEN PROPERLY EXECUTED WILL BE VOTED AS DIRECTED OR, IF NO DIRECTION IS GIVEN, WILL BE VOTED AS THE BOARD OF DIRECTORS RECOMMENDS.

See reverse for voting instructions.

C Non-Voting Items

Change of Address – Please print new address below.

Meeting Attendance
Mark box to the right if you plan to attend the Special Shareholder Meeting. ☐

idera

VOTE

Using a **black ink** pen, mark your votes with an **X** as shown in this example.
Please do not write outside the designated areas. X

Special Shareholder Meeting Proxy Card

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A Proposals – The Board of Directors recommends a vote FOR Proposals 1, 2, 3 and 4.

	For	Against	Abstain
1. Proposal to approve the issuance of shares of the Company's common stock upon conversion of the Company's Series Z Non-Voting Convertible Preferred Stock issued in September 2022.	☐	☐	☐
2. Proposal to approve an amendment to the Restated Certificate of Incorporation to effect a reverse stock split of the Common Stock at a ratio to be determined by the Company's Board of Directors within a range of one-for-seventeen (1:17) and one-for-twenty-three (1:23) (or any number in between), to be effected in the sole discretion of the Board of Directors at any time within one year of the date of the Special Meeting without further approval or authorization from the Company's stockholders.	☐	☐	☐
3. Proposal to approve the Idera Pharmaceuticals, Inc. 2022 Stock Incentive Plan.	☐	☐	☐
4. Proposal to approve the adjournment or postponement of the Special Meeting, if necessary, to continue to solicit votes for Proposal Nos. 1, 2, and/or 3.	☐	☐	☐

B Authorized Signatures – This section must be completed for your vote to count. Please date and sign below.

Please sign this proxy exactly as your name appears hereon. Joint owners should each sign personally. Trustees and other fiduciaries should indicate the capacity in which they sign. If a corporation or partnership, this signature should be that of an authorized officer who should state his or her title.

Date (mm/dd/yyyy) – Please print date below.	Signature 1 – Please keep signature within the box.	Signature 2 – Please keep signature within the box.
/ /		

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