geron

2019 ANNUAL REPORT

Letter to Stockholders

Proxy

10-K

Dear Geron Stockholder,

We are living through extraordinary times. In my 35 years in the business of developing new drugs and bringing them to patients who need them, I've never encountered such a dramatic challenge to the underpinnings of that mission.

Investigator sites around the world dedicated to oncology treatment and clinical trials have been subject to unprecedented disruption of normal routines when caring for their patients during the COVID-19 pandemic. Patients with other serious, even life-threatening conditions, are forced to consider whether they are better off fending for themselves in isolation at home rather than braving the dangers of entering a clinic or hospital to get treatments they already need, or to participate in clinical trials of promising new agents. Family life has been profoundly affected, with children or other family members suddenly at home 24/7. Office work has been transferred without warning to a work-from-home model, millions of workers have become unemployed and scores of businesses have been shuttered. Overall, I believe it would be hard to find anyone who does not have underlying anxiety about how long this crisis is going to last, when our lives and worlds will return to normal, and, indeed, what the new normal will look like.

In the business context, times like these call for straight talk from company leaders, including a thoughtful articulation of how individual businesses are being challenged, along with clear, incisive communication of the plans that companies have for weathering this storm and emerging with intact business operations and value creation opportunities.

Before the COVID-19 crisis broke, we at Geron had great confidence in our strategy to drive value creation through our imetelstat development plan. At the start of 2020, the Phase 2 efficacy data from our lower risk myelodysplastic syndromes (LR MDS) trial, IMerge, looked extremely promising, and both site activations and patient enrollment in our Phase 3 IMerge trial in LR MDS were gaining momentum. We had scheduled an FDA meeting in the second quarter to discuss our proposed regulatory strategy in myelofibrosis (MF) that we hope will play out positively. We also had confidence in our experienced team who have an extraordinary depth of expertise in hematologic myeloid malignancies to drive the business forward strategically and operationally.

We continue to believe in our strategy and imetelstat development plan. However, site initiations and enrollment rates in IMerge, like many other biotech companies' trials, have substantially fallen off in geographies where healthcare systems are prioritizing the care of very ill COVID-infected patients over clinical trial activities. As such, we recently concluded that we do not expect to complete enrollment in the Phase 3 IMerge trial by the end of 2020. For the same reasons, starting new studies of even a modest size would also be difficult to achieve in 2020, such as the proof of concept study in high risk MDS/acute myeloid leukemia (AML) that we had previously planned to start this year. As a result, we are postponing the startup of this study for now.

Because of the uncertainty of when the COVID-19 crisis will abate, we can't predict today when our IMerge Phase 3 trial will regain the promising momentum it had before COVID-19, which surely depends on the effectiveness of the measures taken in deeply COVID-affected areas around the world. Once there is a meaningful reduction in the rate of infections, we believe there will be lower demands on health care systems to care for very ill COVID-19 patients, and as social distancing at medical facilities becomes sufficiently relaxed, doctors will encourage patients to once again feel safe entering clinical sites. An early ray of hope comes from our IMerge experience in South Korea, where there was a rapid and well-coordinated government response to the COVID-19 pandemic, and the number of new cases is now in decline. This resulted in their health care system's return to a semblance of normality with IMerge clinical trial activities, and new MDS patients being screened.

We look forward to similar outcomes in other countries. Until then, we will continue to be in constant communication with our sites and investigators to assist as needed to ensure that once the COVID-19 crisis diminishes, we'll hopefully be able to very quickly ramp up site initiations and patient enrollment to the rate we had achieved just prior to COVID-19.

Our clinical and regulatory team is preparing intensely for the upcoming FDA meeting in the second quarter that will focus on a potential regulatory approval path for imetelstat in MF. We still expect to announce a decision regarding any potential late-stage development plans for MF by mid-year 2020.

We continue to expect more mature data on continued patient treatment and follow-up, including durability of transfusion independence, from the Phase 2 IMerge clinical trial in LR MDS to be presented at a major medical conference later this year. In addition, we expect new analyses from the IMbark trial to be presented showing the correlation of the median overall survival with other clinical endpoints from the trial. These analyses are also expected to provide further support that the potential improvement in overall survival observed in IMbark is an indication of the disease-modifying activity of imetelstat in MF.

To protect the safety of our employees, we instituted a work-from-home policy and restricted any domestic or international travel, in alignment with public health strategies designed to slow the spread of COVID-19. We have effectively implemented remote working tools and various staff support programs to foster collaboration and minimize disruption while working apart. Our employees based in our California and New Jersey offices, as well as other locations, are working from home very effectively, and their determination and dedication is evident daily.

In sum, I see nothing to suggest that the underlying value proposition for imetelstat in hematologic myeloid malignancies has been changed by COVID-19. The patients with LR MDS and MF will continue to need new treatments after this pandemic diminishes, and imetelstat will remain a novel agent with a unique mechanism of action that we believe offers modification of these patients' underlying disease, and as a result, meaningful clinical benefit for patients.

I wish all of you a safe remainder of the year and thank you for your continued support.

Sincerely,

John A. Scarlett, M.D.
Chairman and Chief Executive Officer

April 7, 2020

For important information regarding the use of forward-looking statements in this letter to stockholders, please refer to the inside back cover of this annual report.

GERON CORPORATION

919 E. Hillsdale Blvd., Suite 250
Foster City, CA 94404

April 14, 2020

Dear Fellow Geron Stockholder:

You are cordially invited to attend the 2020 Annual Meeting of Stockholders (the "Annual Meeting") of Geron Corporation to be held on Friday, June 5, 2020, at 8:00 a.m., Pacific Daylight Time. In light of the COVID-19 pandemic, for the safety of all our stockholders and personnel, and taking into account recent federal, state and local guidance that has been issued, we have determined that the Annual Meeting will be held in a virtual meeting format only, via the Internet, with no physical in-person meeting. You will be able to attend and participate in the virtual Annual Meeting online by visiting www.virtualshareholdermeeting.com/GERN2020, where you will be able to listen to the meeting live, submit questions, and vote. Instructions on how to participate in the virtual Annual Meeting and demonstrate proof of stock ownership are posted at www.virtualshareholdermeeting.com/GERN2020. The webcast of the virtual Annual Meeting will be archived for one year after the date of the virtual Annual Meeting at www.virtualshareholdermeeting.com/GERN2020.

As permitted by the rules of the Securities and Exchange Commission, we are pleased to furnish our proxy materials to stockholders primarily over the Internet. Consequently, most stockholders will receive a notice with instructions for accessing proxy materials and voting via the Internet, instead of paper copies of proxy materials. However, this notice will provide information on how stockholders may obtain paper copies of proxy materials if they choose. Stockholders who continue to receive hard copies of proxy materials may help us reduce costs by opting to receive future proxy materials by e-mail.

At this year's Annual Meeting, the agenda includes the following items:

- election of the three nominees for director named in the accompanying proxy statement to hold office as Class III members of the Board of Directors until the 2023 annual meeting of stockholders;
- amendment of our 2018 Equity Incentive Plan to increase the total number of shares of the Company's common stock issuable thereunder by 5,700,000 shares;
- advisory vote to approve named executive officer compensation; and
- ratification of Ernst & Young LLP as our independent registered public accounting firm.

Your vote is important to us. Whether or not you plan to attend the virtual Annual Meeting, please vote electronically via the Internet or by telephone, or, if you requested paper copies of the proxy materials, please complete, sign, date and return the accompanying proxy card in the enclosed postage-paid envelope, as promptly as possible. Thank you for your ongoing support of, and continued interest in, Geron Corporation.

Sincerely,

John A. Scarlett, M.D.
Chairman of the Board, President and
Chief Executive Officer

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GERON CORPORATION
919 E. Hillsdale Blvd., Suite 250
Foster City, CA 94404

NOTICE OF ANNUAL MEETING OF STOCKHOLDERS
To Be Held on June 5, 2020

To the Stockholders of Geron Corporation:

NOTICE IS HEREBY GIVEN that the Annual Meeting of Stockholders of GERON CORPORATION, a Delaware corporation (the "Company"), will be held on Friday, June 5, 2020, at 8:00 a.m., Pacific Daylight Time. In light of the COVID-19 pandemic, for the safety of all our stockholders and personnel, and taking into account recent federal, state and local guidance that has been issued, we have determined that the Annual Meeting will be held in a virtual meeting format only, via the Internet, with no physical in-person meeting. You can attend virtual the Annual Meeting online, vote your shares electronically and submit your questions during the virtual Annual Meeting, by visiting www.virtualshareholdermeeting.com/GERN2020. You will need to have your 16-Digit Control Number included in the Notice of Internet Availability of Proxy Materials, on your proxy card or on the instructions that accompanied your proxy materials to join the virtual Annual Meeting.

The Annual Meeting will be held for the following purposes:

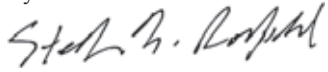
1. To elect the three nominees for director named in the accompanying proxy statement (the "Proxy Statement") to hold office as Class III members of the Board of Directors until the 2023 annual meeting of stockholders;
2. To approve an amendment to the Company's 2018 Equity Incentive Plan to increase the number of shares of the Company's Common Stock issuable thereunder by 5,700,000 shares;
3. To approve, on an advisory basis, the compensation of the Company's named executive officers, as disclosed in the Proxy Statement;
4. To ratify the selection by the Audit Committee of the Board of Directors of Ernst & Young LLP as the Company's independent registered public accounting firm for the fiscal year ending December 31, 2020; and
5. To transact such other business as may properly come before the Annual Meeting or any postponement or adjournment thereof.

The foregoing items of business are more fully described in the Proxy Statement accompanying this Notice.

The Board of Directors has fixed the close of business on April 9, 2020, as the record date for the determination of stockholders entitled to notice of and to vote at the virtual Annual Meeting and at any adjournment or postponement thereof. Each stockholder is entitled to one vote for each share of Common Stock held at that time.

Your Vote Is Important To Us. Whether or not you plan to attend the virtual Annual Meeting, please vote electronically via the Internet or by telephone, or, if you requested paper copies of the proxy materials, please complete, sign, date and return the accompanying proxy card in the enclosed postage-paid envelope, as promptly as possible. Stockholders who attend the virtual Annual Meeting should follow the instructions at www.virtualshareholdermeeting.com/GERN2020 to vote during the virtual Annual Meeting.

By Order of the Board of Directors,



Stephen N. Rosenfield
Executive Vice President,
Chief Legal Officer and Corporate Secretary

Foster City, California
April 14, 2020

Important Notice Regarding the Availability of Proxy Materials for the Annual Meeting to Be Held on June 5, 2020:
Letter to Stockholders, Notice and 2020 Proxy Statement, and 2019 Annual Report on Form 10-K
are available at www.proxyvote.com.

YOUR VOTE IS VERY IMPORTANT, REGARDLESS OF THE NUMBER OF SHARES YOU OWN. WHETHER OR NOT YOU EXPECT TO ATTEND THE VIRTUAL ANNUAL MEETING, WE URGE YOU TO SUBMIT YOUR PROXY PROMPTLY IN ORDER TO ASSURE THAT A QUORUM IS PRESENT.

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GERON CORPORATION

919 E. Hillsdale Blvd., Suite 250
Foster City, CA 94404

PROXY STATEMENT
FOR THE ANNUAL MEETING OF STOCKHOLDERS
TO BE HELD ON JUNE 5, 2020

QUESTIONS AND ANSWERS ABOUT THESE PROXY MATERIALS AND VOTING

Why am I receiving these materials?

You are receiving this annual meeting information and Proxy Statement from us because you owned shares of common stock of Geron Corporation, a Delaware corporation ("Geron," the "Company," "we" or "us"), as of April 9, 2020, the record date for our 2020 Annual Meeting of Stockholders (the "Annual Meeting"). The Geron Board of Directors (the "Board of Directors" or the "Board") has made these materials available to you in connection with the Board's solicitation of proxies for use at the Annual Meeting. You may vote by proxy over the Internet or by phone, or by mail if you requested printed copies of the proxy materials.

As permitted by the rules of the Securities and Exchange Commission (the "SEC"), we are providing our stockholders access to proxy materials via the Internet. Accordingly, we are sending by mail only a Notice of Availability of Proxy Materials (the "Notice") to certain of our stockholders of record and posting our proxy materials online at www.proxyvote.com. Stockholders who previously requested to receive hard copies of proxy materials will receive a full set of proxy materials, instead of the Notice. We intend to distribute the Notice and the proxy materials on or about April 17, 2020 to all stockholders of record entitled to vote at the Annual Meeting.

What does it mean if I receive more than one set of proxy materials or more than one Notice, or combination thereof?

If you receive more than one set of proxy materials, or more than one Notice or a combination thereof, your shares may be registered in more than one name or may be registered in different accounts. Please follow the voting instructions on each set of proxy materials or Notices to ensure that all of your shares are voted.

Will I receive any proxy materials by mail other than the Notice?

No, you will not receive any other proxy materials by mail other than the Notice unless you request paper copies. This Proxy Statement and Geron's 2019 Annual Report on Form 10-K are available at www.proxyvote.com. You may request a full set of proxy materials be sent to your specified postal or email address as follows:

- by telephone: call 1-800-579-1639 free of charge and follow the instructions;
- by Internet: go to www.proxyvote.com and follow the instructions; or
- by e-mail: send an e-mail message to sendmaterial@proxyvote.com. Please send a blank e-mail and insert the 16-Digit Control Number located in your Notice in the subject line. Please make any such request on or before May 22, 2020 to facilitate timely delivery.

To sign up for electronic delivery of proxy materials, please follow the instructions provided with your proxy materials and on your proxy card or voting instruction card, to vote using the Internet and, when prompted, indicate that you agree to receive or access future stockholder communications electronically. Alternatively, you can go to www.proxyvote.com and enroll for online delivery of proxy materials. A stockholder's election to receive proxy materials by mail or electronically by email will remain in effect until the stockholder terminates such election.

What is the purpose of the Annual Meeting?

At our Annual Meeting, stockholders will act upon the matters described in this Proxy Statement. In addition, management will report on current events at Geron and respond to questions from stockholders.

How can I participate in the Annual Meeting?

In light of the COVID-19 pandemic, for the safety of all our stockholders and personnel, and taking into account recent federal, state and local guidance that has been issued, we will be holding our Annual Meeting virtually, on Friday, June 5, 2020, at 8:00 a.m., Pacific Daylight Time, via the Internet at www.virtualshareholdermeeting.com/GERN2020. Online check-in will begin at 7:30 a.m. Pacific Time and you should allow ample time for the check-in procedures. At our virtual Annual Meeting, shareholders will be able to attend, vote and submit questions via the Internet. Whether or not you plan to attend the virtual Annual Meeting, we urge you to vote and submit your proxy in advance of the meeting by one of the methods described in these proxy materials.

You will not be able to attend the virtual Annual Meeting in person.

How do I ask questions at the virtual Annual Meeting?

Our virtual Annual Meeting allows stockholders to submit questions and comments before and during the virtual Annual Meeting. You may submit questions before the virtual Annual Meeting at www.virtualshareholdermeeting.com/GERN2020. During the virtual Annual Meeting, you may only submit questions in the question box provided at www.virtualshareholdermeeting.com/GERN2020. In both cases, stockholders must have available their 16-Digit Control Number provided in the Notice or your proxy card (if you received a printed copy of the proxy materials). We will respond to as many inquiries at the virtual Annual Meeting as time allows.

What if during the check-in time or during the virtual Annual Meeting I have technical difficulties or trouble accessing the virtual meeting website?

We will have technicians ready to assist you with any technical difficulties you may have accessing the virtual meeting website. If you encounter any difficulties accessing the virtual Annual Meeting during the check-in or meeting time, please call the technical support number that will be posted on the virtual Annual Meeting website log-in page.

What if I cannot virtually attend the Annual Meeting?

You may vote your shares electronically before the virtual Annual Meeting by Internet, or by telephone or by mail as described below. You do not need to access the virtual Annual Meeting to vote if you submitted your vote by Internet, by telephone or by mail in advance of the virtual Annual Meeting.

The virtual Annual Meeting will be archived for one year after the date of the virtual Annual Meeting at www.virtualshareholdermeeting.com/GERN2020.

Who can vote at the virtual Annual Meeting?

Only holders of record at the close of business on April 9, 2020 (the "Record Date") will be entitled to notice of and to vote at the virtual Annual Meeting or any adjournment or postponement thereof. At the close of business on the Record Date, we had 200,361,848 shares of common stock, par value $0.001 per share ("Common Stock"), outstanding.

Stockholder of Record: Shares Registered in Your Name

Each holder of record of Common Stock on the Record Date will be entitled to one vote for each share held on all matters to be voted upon at the virtual Annual Meeting. As a stockholder of record, you may vote at the virtual Annual Meeting, or prior to the virtual Annual Meeting, vote through the Internet or by telephone, or by mail using a

proxy card that you received or that you may request. Whether or not you plan to attend the virtual Annual Meeting, we urge you vote by proxy through the Internet or by telephone as instructed below, or by completing a proxy card that you may request or that we may elect to deliver at a later time. Stockholders who attend the virtual Annual Meeting should follow the instructions at www.virtualshareholdermeeting.com/GERN2020 to vote during the virtual Annual Meeting. The stock transfer books will not be closed between the Record Date and the virtual Annual Meeting date. A complete list of stockholders entitled to vote at the virtual Annual Meeting will be available for examination at our principal executive offices at the address listed above for a period of ten days prior to the virtual Annual Meeting and will be available on the virtual meeting site at www.virtualshareholdermeeting.com/GERN2020.

Beneficial Owner: Shares Registered in the Name of a Broker or Bank

If on the Record Date your shares were held, not in your name, but rather in an account at a brokerage firm, bank, dealer or other similar organization, then you are the beneficial owner of shares held in "street name" and the Notice is being forwarded to you by that organization. The organization holding your account is considered to be the stockholder of record for purposes of voting during the virtual Annual Meeting. As a beneficial owner, you have the right to direct your broker or other agent regarding how to vote the shares in your account. You are also invited to attend the virtual Annual Meeting. However, since you are not the stockholder of record, you may only vote your shares during the virtual Annual Meeting if you request and obtain a valid 16-Digit Control Number from your broker or agent. Beneficial owners who attend the virtual Annual Meeting should follow the instructions at www.virtualshareholdermeeting.com/GERN2020 to vote during the virtual Annual Meeting.

What is the quorum requirement?

A quorum of stockholders is necessary to hold a valid meeting. In order to constitute a quorum and to transact business at the virtual Annual Meeting, the holders of a majority of the Common Stock issued and outstanding and entitled to vote must be present in person or represented by proxy. Virtual attendance at our Annual Meeting constitutes presence in person for purposes of a quorum at the meeting. Shares represented by proxies that reflect abstentions or "broker non-votes" will be counted as shares that are present and entitled to vote for purposes of determining the presence of a quorum.

What am I voting on at the virtual Annual Meeting? What is the Board's recommendation on each of the proposals?

You are being asked to vote on four proposals, as follows:

Proposal Number	Proposal	Board Recommends
1	To elect the three nominees for director named in this Proxy Statement to hold office as Class III members of our Board of Directors until the 2023 annual meeting of stockholders.	**FOR ALL director nominees**
2	To approve an amendment to our 2018 Equity Incentive Plan to increase the total number of shares of Common Stock issuable thereunder by 5,700,000 shares.	**FOR**
3	To approve, on an advisory basis, the compensation of our named executive officers, as disclosed in this Proxy Statement.	**FOR**
4	To ratify the selection by the Audit Committee of the Board of Directors of Ernst & Young LLP as our independent registered public accounting firm for the fiscal year ending December 31, 2020.	**FOR**

How many votes are needed to approve each proposal? What is the effect of abstentions and broker non-votes on each of the proposals?

The following table summarizes the minimum vote needed to approve each proposal and the effect of abstentions and broker non-votes on each of the proposals:

Proposal Number	Proposal	Votes Required to Approve Proposal[1]	Effect of Abstentions	Effect of Broker Non-Votes
1	To elect the three nominees for director named in this Proxy Statement to hold office as Class III members of our Board of Directors until the 2023 annual meeting of stockholders.	The nominees receiving the most "FOR" votes properly cast in person or by proxy will be elected. Only votes "FOR" will affect the outcome of the vote; "WITHHOLD" votes will have no effect on the outcome of the vote. However, under our Corporate Governance Guidelines, any nominee for director who receives a greater number of "WITHHOLD" votes from his or her election than votes "FOR" such election is required to submit an offer of resignation for consideration by the Nominating and Corporate Governance Committee. In such case, the Nominating and Corporate Governance Committee will then consider all of the relevant facts and circumstances and recommend to the Board the action to be taken with respect to such offer of resignation.	Not applicable	No effect
2	To approve an amendment to the Company's 2018 Equity Incentive Plan to increase the total number of shares of the Company's Common Stock issuable thereunder by 5,700,000 shares.	The affirmative vote of the holders of a majority of the shares having voting power present in person or represented by proxy at the Annual Meeting.	Against	No effect
3	To approve, on an advisory basis, the compensation of our named executive officers, as disclosed in this Proxy Statement.	The affirmative vote of the holders of a majority of the shares having voting power present in person or represented by proxy at the Annual Meeting.	Against	No effect
4	To ratify the selection by the Audit Committee of the Board of Directors of Ernst & Young LLP as our independent registered public accounting firm for the fiscal year ending December 31, 2020.	The affirmative vote of the holders of a majority of the shares having voting power present in person or represented by proxy at the Annual Meeting.	Against	Not applicable[2]

(1) Virtual attendance at our Annual Meeting constitutes presence in person for purposes of the votes.

(2) This proposal is considered to be a "routine" matter under NYSE rules. Accordingly, if you hold your shares in street name and do not provide voting instructions to your broker, bank or other agent that holds your shares, your broker, bank or other agent has discretionary authority under NYSE rules to vote your shares on this proposal. For more information, see "If I am a beneficial owner of shares held in street name and I do not provide my broker or bank with my voting instructions, what happens?" and "What are broker non-votes?" below.

What are the choices in voting?

For Proposal 1, you may either vote "FOR" all nominees to the Board of Directors or you may "WITHHOLD" your vote for one or more nominees that you specify. For proposals 2, 3 and 4, you may vote "FOR" the proposal or "AGAINST" the proposal or "ABSTAIN" from voting on the proposal.

Could other matters be decided at the virtual Annual Meeting?

Our Bylaws require that we receive advance notice of any proposal to be brought before the Annual Meeting by our stockholders, and we have not received notice of any such proposals. If any other matters were to be properly submitted for a vote at the virtual Annual Meeting, the proxy holders appointed by the Board will have the discretion to vote on those matters for you as they see fit. This includes, among other things, considering any motion to adjourn the virtual Annual Meeting to another time and/or place, including for the purpose of soliciting additional proxies for or against a given proposal.

How do I vote my shares and what are the voting deadlines?

Please refer to the proxy card for instructions on, and access information for, voting by telephone, over the Internet or by mail.

Stockholder of Record: Shares Registered In Your Name

You are a stockholder of record if, on the Record Date, your shares were registered directly in your name with our transfer agent, Computershare Trust Company, N.A. As a stockholder of record, there are several ways for you to vote your shares.

- **Via the Internet Before the Virtual Annual Meeting.** You may vote by Internet at www.proxyvote.com, 24 hours a day, seven days a week. You will need the 16-Digit Control Number included on your Notice, your proxy card (if you received a printed copy of the proxy materials) or the instructions that accompanied your proxy materials to join the virtual Annual Meeting. Votes submitted through the Internet must be received by 11:59 p.m., Eastern Daylight Time, on June 4, 2020.
- **By Telephone.** You may vote using a touch-tone telephone by calling 1-800-690-6903, 24 hours a day, seven days a week. You will need the 16-Digit Control Number included on your Notice, your proxy card (if you received a printed copy of the proxy materials) or the instructions that accompanied your proxy materials to join the virtual Annual Meeting. Votes submitted by telephone must be received by 11:59 p.m., Eastern Daylight Time, on June 4, 2020.
- **By Mail.** If you received printed proxy materials, you may submit your vote by completing, signing, and dating each proxy card received and returning it in the postage-paid envelope. Sign your name exactly as it appears on the proxy card. Proxy cards submitted by mail must be received no later than close of business June 4, 2020 to be voted at the virtual Annual Meeting.
- **Via the Internet During the Virtual Annual Meeting.** Stockholders who attend the virtual Annual Meeting should follow the instructions at www.virtualshareholdermeeting.com/GERN2020 to vote during the virtual Annual Meeting. You will need the 16-Digit Control Number included on your Notice, your proxy card (if you received a printed copy of the proxy materials) or the instructions that accompanied your proxy materials to join the virtual Annual Meeting.

The Internet and telephone voting procedures described above, which comply with Delaware law, are designed to authenticate stockholders' identities, to allow stockholders to vote their shares, and to confirm that their instructions have been properly recorded. However, please be aware that you must bear any costs associated with your Internet access, such as usage charges from Internet access providers and telephone companies.

Beneficial Owner: Shares Registered in the Name of a Broker or Bank

You are a beneficial owner, if on the Record Date, your shares were held in an account at a brokerage firm, bank, dealer, or other similar organization and not in your name. The organization holding your account is

considered to be the stockholder of record for purposes of voting at the virtual Annual Meeting. Being a beneficial owner means that, like most stockholders, your shares are held in "street name" and these proxy materials are being forwarded to you by that organization.

As a beneficial owner, you should have received a Notice or voting instructions from the broker or other nominee holding your shares. You should follow the instructions in the Notice or voting instructions provided by your broker or nominee in order to instruct your broker or other nominee on how to vote your shares. The availability of telephone and Internet voting will depend on the voting process of the broker or nominee. Please contact your bank, broker or other agent if you have questions about their instructions on how to vote your shares. Please also note that since you are not the stockholder of record, you may only vote your shares during the virtual Annual Meeting if you request and obtain a valid 16-Digit Control Number from your broker or agent. Beneficial owners who attend the virtual Annual Meeting should follow the instructions at www.virtualshareholdermeeting.com/GERN2020 to vote during the virtual Annual Meeting. You will need the 16-Digit Control Number included on your Notice, your proxy card (if you received a printed copy of the proxy materials) or the instructions that accompanied your proxy materials to join the virtual Annual Meeting.

If you do not provide your broker or bank with instructions on how to vote your shares, your broker or bank will be able to vote your shares with respect to ratification of the selection of Ernst & Young LLP as our independent registered public accounting firm for the fiscal year ending December 31, 2020 (Proposal 4). For more information, see "If I am a beneficial owner of shares held in street name and I do not provide my broker or bank with my voting instructions, what happens?" and "What are broker non-votes?" below.

Geron Plan Participants

As trustee of the Geron 401(k) Plan, Prudential Bank and Trust FSB will receive a proxy that incorporates all the shares owned by the Geron 401(k) Plan and will vote such proxy as directed by the Geron 401(k) sponsor.

If you purchased through the 1996 Employee Stock Purchase Plan or the 2014 Employee Stock Purchase Plan and your shares are held in the name of a broker, please refer to the discussion above under "Beneficial Owner: Shares Registered in the Name of a Broker or Bank."

If I am a stockholder of record and I do not vote, or if I return a proxy card or otherwise vote without giving specific voting instructions, what happens?

If you are a stockholder of record and you do not specify your vote on each proposal individually when voting via the Internet, over the telephone or if you sign and return a proxy card without giving specific voting instructions, then your shares will be voted in line with the Board's recommendations above as described under "What am I voting on at the virtual Annual Meeting? What is the Board's recommendation on each of the proposals?" If any other matter is properly presented at the virtual Annual Meeting, your proxyholder (one of the individuals named on your proxy card) will vote your shares using his or her best judgment.

If I am a beneficial owner of shares held in street name and I do not provide my broker or bank with my voting instructions, what happens?

If you are a beneficial owner of shares registered in the name of your broker, bank or other agent, and you do not instruct your broker, bank or other agent how to vote your shares, your broker, bank or other agent may still be able to vote your shares in its discretion. In this regard, under the rules of the New York Stock Exchange (NYSE), brokers, banks and other securities intermediaries that are subject to NYSE rules may use their discretion to vote your "uninstructed" shares with respect to matters considered to be "routine" under NYSE rules, but not with respect to "non-routine" matters. In this regard, Proposals 1, 2 and 3 are considered to be "non-routine" under NYSE rules meaning that your broker may not vote your shares on those proposals in the absence of your voting instructions. However, Proposal 4 is considered to be a "routine" matter under NYSE rules meaning that if you do not return voting instructions to your broker by its deadline, your shares may be voted by your broker in its discretion on Proposal 4.

If you are a beneficial owner of shares held in street name, in order to ensure your shares are voted in the way you would prefer, you must provide voting instructions to your broker, bank or other agent by the deadline provided in the proxy materials you receive from your broker, bank or other agent.

What are broker non-votes?

As discussed above, when a beneficial owner of shares held in street name does not give voting instructions to his or her broker, bank or other securities intermediary holding his or her shares as to how to vote on matters deemed to be "non-routine" under NYSE rules, the broker, bank or other such agent cannot vote the shares. These un-voted shares are counted as "broker non-votes." Proposals 1, 2 and 3 are considered to be "non-routine" under NYSE rules and we therefore expect broker non-votes to exist in connection with those proposals.

As a reminder, if you are a beneficial owner of shares held in street name, in order to ensure your shares are voted in the way you would prefer, you must provide voting instructions to your broker, bank or other agent by the deadline provided in the materials you receive from your broker, bank or other agent.

Can I revoke or change my vote after I submit my proxy?

Stockholder of Record: Shares Registered in Your Name

If you are a stockholder of record, you may revoke or change your vote at any time before the final vote at the virtual Annual Meeting by:

- signing and returning a new proxy card with a later date;
- submitting a later-dated vote by telephone or via the Internet — only your latest Internet or telephone vote received by 11:59 p.m., Eastern Time, on June 4, 2020, will be counted. You will need the 16-Digit Control Number included on your Notice, your proxy card (if you received a printed copy of the proxy materials) or the instructions that accompanied your proxy materials;
- attending the virtual Annual Meeting and voting again by following the instructions at www.virtualshareholdermeeting.com/GERN2020 to vote during the virtual Annual Meeting. To virtually attend the Annual Meeting, you will need the 16-Digit Control Number included on your Notice, your proxy card (if you received a printed copy of the proxy materials) or the instructions that accompanied your proxy materials; or
- delivering a written revocation to our Corporate Secretary at Geron's offices, 919 E. Hillsdale Blvd., Suite 250, Foster City, California 94404, before the virtual Annual Meeting.

Beneficial Owner: Shares Registered in the Name of a Broker or Bank

If you are a beneficial owner of your shares, you must contact the broker or other nominee holding your shares and follow their instructions for revoking or changing your vote.

How will your proxy be counted?

Votes will be counted by the Inspector of Election appointed for the virtual Annual Meeting, who will separately count "FOR," "WITHHOLD" and broker non-votes with respect to Proposal 1 regarding the election of directors, and, with respect to Proposals 2, 3 and 4, "FOR" and "AGAINST" votes, abstentions and, as applicable, broker non-votes.

Is my vote confidential?

Yes. Proxy cards and voting tabulations that identify stockholders by name are kept confidential. There are exceptions for contested proxy solicitations or when necessary to meet legal requirements. In addition, all comments written on a proxy card or elsewhere will be forwarded to management, but your identity will be kept confidential unless you ask that your name be disclosed.

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

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

Who is paying for this proxy solicitation?

We will pay the entire cost of solicitation of proxies, including preparation, assembly, printing and mailing of this Proxy Statement, the proxy card and any additional information furnished to stockholders. Copies of solicitation materials will be furnished to banks, brokerage houses, fiduciaries and custodians holding in their names shares of Common Stock beneficially owned by others to forward to such beneficial owners. In addition, we may reimburse persons representing beneficial owners of Common Stock for their costs of forwarding solicitation materials to such beneficial owners. The original solicitation of proxies by mail may be supplemented by solicitation by mail, telephone or other electronic means, or in person, by our directors, officers, or other regular employees, or at our request, by Alliance Advisors, LLC. No additional compensation will be paid to directors, officers or other regular employees for such services, but Alliance Advisors will be paid its customary fee, estimated to be $6,500, to render solicitation services.

When are stockholder proposals due for next year's Annual Meeting?

See the sub-section entitled "Stockholder Nominations and Proposals for 2021 Annual Meeting" under the section entitled "Other Matters."

How can I obtain a copy of Geron's Annual Report on Form 10-K?

We will mail to you without charge, upon written request, a copy of our Annual Report on Form 10-K for the year ended December 31, 2019 filed with the SEC, as well as a copy of any exhibit specifically requested. Requests should be sent to: Corporate Secretary, Geron Corporation, 919 E. Hillsdale Blvd., Suite 250, Foster City, California 94404. A copy of our Annual Report on Form 10-K has also been filed with the SEC and may be accessed from the SEC's homepage (www.sec.gov). You may also view and download our 2019 Annual Report on Form 10-K on our website at www.geron.com as well as www.proxyvote.com.

What is householding and how does it affect me?

Some brokers and other nominee record holders may be participating in the practice of "householding" proxy statements. This means that only one copy of this Proxy Statement and 2019 Annual Report on Form 10-K or the Notice may have been sent to multiple stockholders in a stockholder's household. Once you have received notice from your broker that they will be "householding" communications to your address, "householding" will continue until you are notified otherwise or until you revoke your consent. If, at any time, you no longer wish to participate in "householding" and would prefer to receive separate copies of the proxy statement, annual report or the notice of internet availability of proxy materials, please notify your broker or our Investor Relations department. We will promptly deliver copies of the Proxy Statement and our 2019 Annual Report on Form 10-K or the Notice to any stockholder who contacts CG Capital at (877) 889-1972 or by mail addressed to Investor Relations, Geron Corporation, 919 E. Hillsdale Blvd., Suite 250, Foster City, California 94404, requesting such copies. If you receive multiple copies of the proxy statement and annual report at your household and would like to receive a single copy of the proxy statement and annual report for your household in the future, you should contact your broker, other nominee record holder, or our Investor Relations department to request a single copy of the proxy statement and annual report.

MATTERS TO BE CONSIDERED AT THE 2020 ANNUAL MEETING

PROPOSAL 1

ELECTION OF DIRECTORS

Board Structure

Our Board currently consists of seven directors, six of whom are "independent," as that term is defined by Nasdaq Rule 5602(a)(2), and one of whom is an executive officer of the Company. Our Bylaws provide for the classification of the Board into three classes with staggered terms of office so that one class of the Board is elected annually, and each class of directors stands for election every three years.

The term of office of the Class III directors, Karin Eastham; V. Bryan Lawlis, Ph.D.; and Susan Molineaux, Ph.D. will expire at the Annual Meeting. Proxies may only be voted for the three Class III directors nominated for election at the Annual Meeting. The Class I directors, John A. Scarlett, M.D.; and Robert J. Spiegel, M.D., FACP, have one year remaining on their terms of office. The Class II directors, Dawn C. Bir and Elizabeth G. O'Farrell, have two years remaining on their terms of office.

The following table provides summary information about each director nominee and currently serving director as of March 31, 2020:

			Committee Memberships			
Name and Principal Position	**Age**	**Independent**	**AC**	**CC**	**NG**	**Other Public Boards**
2020 Director Nominees						
Karin Eastham Retired C.P.A. Lead Independent Director	70	Yes	C, FE	M		3
V. Bryan Lawlis, Ph.D. Independent Director	68	Yes	M	M		3
Susan M. Molineaux, Ph.D. President, Chief Executive Officer and Director, Calithera Biosciences, Inc. Independent Director	66	Yes			C	2
Currently Serving Directors						
John A. Scarlett, M.D. Chairman of the Board, President, and Chief Executive Officer	69	No				2
Robert J. Spiegel, M.D., FACP Independent Director	70	Yes		C		1
Dawn C. Bir Chief Commercial Officer, Reata Pharmaceuticals, Inc.	49	Yes			M	None
Elizabeth G. O'Farrell Independent Director	55	Yes	M, FE			1

AC: Audit Committee

CC: Compensation Committee

NG: Nominating and Corporate Governance Committee

C: Chair

M: Member

FE: Financial Expert

NOMINEES FOR ELECTION TO THE BOARD OF DIRECTORS
For a Three-Year Term Expiring at the 2023 Annual Meeting

The Board has selected three nominees for Class III directors: Ms. Karin Eastham, Dr. Bryan Lawlis and Dr. Susan M. Molineaux, all three of whom were previously elected by stockholders.

Set forth below is a brief biography of each nominee for Class III director, the periods during which they have served as a director of Geron, and information furnished by them as to principal occupations and public company directorships held by them. The biographies below also include a discussion of the specific experience, qualifications, attributes or skills of each nominee that led the Nominating and Corporate Governance Committee and the Board to conclude, as of the date of this Proxy Statement, that each nominee for Class III director should continue to serve as a director. Each person nominated for election has consented to being named as a nominee in this Proxy Statement and has agreed to serve if elected, and the Board has no reason to believe that any nominee will be unable to serve.

It is a key objective of the Company to have a diverse Board, representing a range of expertise, skills, perspectives and experiences in areas that are relevant to the Company's business and the needs of the Board. As stated in our Nominating and Corporate Governance Committee Charter and our Corporate Governance Guidelines, as part of the director search process, the Nominating and Corporate Governance Committee endeavors to consider qualified candidates, including women and minorities, who meet the relevant business and search criteria. In furtherance of the foregoing, where a third-party search firm is engaged and requested to furnish an initial list of possible candidates, such firm will be requested to include in such list women and minority candidates who meet such criteria.

Class III Director Nominees (Term Expiring at the 2023 Annual Meeting)

Karin Eastham

Experience

Ms. Eastham has served as a director of Geron since March 2009, and as Lead Independent Director of the Board since December 2018. Ms. Eastham also serves as a member of the boards of directors of Veracyte, Inc., a molecular diagnostics company, since December 2012; Nektar Therapeutics, a clinical-stage biopharmaceutical company, since September 2018, and Personalis, Inc., a diagnostic company developing genomic sequencing tools, since September 2019. Ms. Eastham previously served as a director of Illumina, Inc., a manufacturer of life science tools and reagents, from July 2004 to May 2019; MorphoSys AG, a Frankfurt Stock Exchange-listed biotechnology company, from May 2012 to May 2017; Trius Therapeutics, Inc., a biopharmaceutical company, from 2009 until its sale in 2013; Amylin Pharmaceuticals, Inc., a biopharmaceutical company focused on diabetes and metabolic disorders, from 2005 until its sale in 2012; and Genoptix, Inc., a provider of specialized laboratory services, from 2008 until its sale in 2011. From 1976 until her retirement in September 2008, Ms. Eastham has held several senior management positions in finance in the biopharmaceutical industry, including with the Burnham Institute for Medical Research, a non-profit corporation engaged in basic biomedical research; Diversa Corporation, a biotechnology company; CombiChem, Inc., a computational chemistry company; Cytel Corporation, a biopharmaceutical company; and Boehringer Mannheim Corporation, a biopharmaceutical company. Ms. Eastham holds a B.S. and an M.B.A. from Indiana University and is a retired Certified Public Accountant.

Qualifications and Director Commitments

Ms. Eastham has confirmed to our Board that she is fully committed to continuing to dedicate the required amount of time to fulfill her duties as the Lead Independent Director for Geron, as well as her roles as Chair of our Audit Committee and a member of our Compensation Committee. Serving on Geron's Board for over 10 years, Ms. Eastham is the longest serving female director on our Board. Throughout this period, she has consistently demonstrated her ability to dedicate sufficient time and focus on her duties as a director of Geron, Chair of our Audit Committee and a member of our Compensation Committee. Ms. Eastham has attended 100% of the meetings for Geron's Board, Audit Committee and Compensation Committee for each of the years ended

December 31, 2019 and 2018. In accordance with our Board's standard practice, Ms. Eastham reviews scheduled Geron Board and committee meeting dates a year in advance to confirm availability to participate and attend all Board and committee meetings. All the companies for which she serves as a director are located in the San Francisco Bay Area, enabling her to travel and regularly attend Geron's Board and committee meetings. In addition, Ms. Eastham does not serve on the board of any privately-held companies

The Board believes Ms. Eastham's understanding of biotechnology companies, combined with her business leadership and financial experience, her contributions to the Board's understanding of corporate governance and strategy for life science companies through her extensive experience as a director in the biopharmaceutical industry, and her strong senior management experience in the biopharmaceutical industry, particularly in key corporate finance and accounting positions, provides important perspectives to the Board. In addition, the Board believes Ms. Eastham's financial expertise and deep business experience, as well as her demonstrated commitment to our Board and her extensive knowledge of Geron's business and strategies, based on her service on Geron's Board since 2009, qualifies her to be elected as a director and serve as the Lead Independent Director.

Ms. Eastham joined the Board in March 2009 and turned 70 years of age in 2019. The Company's Corporate Governance Guidelines set forth: (a) a term limit for director Board service of ten (10) years that the other directors may, by at least a 2/3 vote, extend, and (b) that directors will not typically be nominated for election to the Board after they reach the age of 70, although the Board may decide to waive this policy in individual cases. Without Ms. Eastham present, the Directors discussed her important contributions to the Company and the Board as Lead Independent Director, Chair of the Audit Committee and member of the Compensation Committee, and subsequently unanimously voted to extend the term limit and waive the age limit to enable Ms. Eastham to be nominated by the Board for re-election by the stockholders.

V. Bryan Lawlis, Ph.D.

Experience

Dr. Lawlis has served as a director of Geron since March 2012. He also serves as a member of the boards of directors of BioMarin Pharmaceutical, Inc., a biopharmaceutical company specializing in rare genetic diseases, since June 2007; Coherus BioSciences, Inc., a biologics platform company specializing in biosimilars, since May 2014; Aeglea BioTherapeutics, Inc., a biotechnology company specializing in human enzyme therapeutics for rare genetic diseases and cancer, since July 2018; and several privately-held biotechnology companies. In addition, he serves as an advisor to Phoenix Venture Partners, a venture capital firm specializing in manufacturing technologies, since October 2015. Dr. Lawlis previously served as a director of KaloBios Pharmaceuticals, Inc., a biopharmaceutical company, from August 2013 to September 2014; and Sutro Biopharma, Inc., a biologics platform company specializing in therapeutics for cancer and autoimmune disorders, from January 2004 to June 2019. Dr. Lawlis was the President and Chief Executive Officer of Itero Biopharmaceuticals LLC, a privately-held, early stage biopharmaceutical company that he co-founded, from 2006 to 2011. Dr. Lawlis also held several senior management positions in the biopharmaceutical industry, including President and Chief Executive Officer of Aradigm Corporation, a specialty drug company focused on drug delivery technologies, and President and Chief Executive Officer of Covance Biotechnology Services, a contract biopharmaceutical manufacturing operation, which he co-founded. Dr. Lawlis holds a B.A. in microbiology from the University of Texas at Austin and a Ph.D. in biochemistry from Washington State University.

Qualifications

The Board believes Dr. Lawlis' extensive experience in manufacturing biotechnology and other pharmaceutical products, as well as his expertise in the research and development of drug products and in the management and conduct of clinical trials and drug regulatory processes, qualifies Dr. Lawlis to be elected as a director.

Susan M. Molineaux, Ph.D.

Experience

Dr. Molineaux has served as a director of Geron since September 2012. Dr. Molineaux has been Chief Executive Officer, President and a member of the board of directors of Calithera Biosciences, Inc., a biotechnology company developing oncology therapeutics, since co-founding the company in June 2010. She also serves as a member of the board of directors of Theravance Biopharma, Inc., a biopharmaceutical company located in South San Francisco, since April 2015, where she is a member of the Sciences and Technology Committee, and as a Scientific Advisor to Lightstone Ventures, a private life sciences investment company, since September 2016. Prior to Calithera, Dr. Molineaux co-founded Proteolix, Inc., a privately-held oncology-oriented biopharmaceutical company, where she served as Chief Scientific Officer from December 2003 until December 2005 and from February 2009 until November 2009, and as President and Chief Executive Officer from January 2006 until February 2009, until the company's acquisition by Onyx Pharmaceuticals, Inc., a global oncology-oriented biopharmaceutical company, in November 2009. Previously, Dr. Molineaux held several senior management positions in the biopharmaceutical industry, including Vice President of Biology at Rigel Pharmaceuticals, Inc., a biopharmaceutical company focused on inflammatory and autoimmune diseases; Vice President of Biology at Praelux, Inc., a biopharmaceutical company; and Vice President of Drug Development at Praecis Pharmaceuticals, Inc., an oncology-focused biopharmaceutical company. Dr. Molineaux holds a B.S. in biology from Smith College, a Ph.D. in molecular biology from Johns Hopkins University, and completed a postdoctoral fellowship at Columbia University.

Qualifications and Director Commitments

Dr. Molineaux has confirmed to our Board that she is fully committed to continuing to dedicate the required amount of time to fulfill her duties as a director of Geron, including her role as Chair of our Nominating and Corporate Governance Committee. Dr. Molineaux has served on our Board for almost eight years, and during this time, she has thoroughly demonstrated her ability to dedicate sufficient time and focus on her duties as a director of Geron and Chair of our Nominating and Corporate Governance Committee. In each of the years ended December 31, 2019 and 2018, Dr. Molineaux attended 100% of the meetings for Geron's Board and Geron's Nominating and Corporate Governance Committee, 100% of the meetings for Calithera's board, and 100% of the meetings for Theravance's board and Theravance's Science and Technology Committee. As President, Chief Executive Officer and director of Calithera, Dr. Molineaux does not serve on any Calithera board committees, and accordingly serves only on board committees for Geron and Theravance. Dr. Molineaux's duties on Theravance's Science and Technology Committee are limited in scope and therefore our Board believes that her membership on that committee does not interfere with her ability to reliably devote time to Geron's Board, as well as Geron's Nominating and Corporate Governance Committee. In accordance with our Board's standard practice, Dr. Molineaux reviews scheduled Geron Board and committee meeting dates a year in advance to confirm availability to participate and attend all Board and committee meetings. All the companies for which she serves as a director are located in the San Francisco Bay Area, enabling her to travel and regularly attend Geron's Board and committee meetings. In addition, each of Geron and Calithera is a smaller reporting company within the meaning of SEC rules and had only 45 and 93 employees, respectively, as of December 31, 2019. Dr. Molineaux does not serve on the board of any privately-held companies.

The Board believes Dr. Molineaux's extensive experience in pharmaceutical and oncology drug development, and her expertise in managing and conducting clinical trials, qualifies Dr. Molineaux to be elected as a director of the Company. The Board and the Nominating and Corporate Governance Committee also believe that Dr. Molineaux provides great value to the Board and contributes significantly to discussions and decision-making. Dr. Molineaux has extensive experience in the biotechnology industry, with current executive experience at Calithera. Accordingly, the Board believes that Dr. Molineaux's contributions as a director are substantial, based upon her business and scientific expertise acquired in successfully holding executive and leadership positions in biotechnology companies, and her demonstrated reliability and commitment to service on our Board and Nominating and Corporate Governance Committee. Dr. Molineaux's knowledge of the biotechnology industry and business, and healthcare related issues, combined with her experience as the chief executive officer of a public company, qualify her to be elected as a director.

Vote Required

Directors are elected by a plurality of the votes of the holders of shares present in person or represented by proxy at the meeting. Each of the three nominees receiving the highest number of "FOR" votes properly cast in person or by proxy at the meeting will be elected as a Class III director of Geron. In tabulating the voting results for the election of directors, only "FOR" and "WITHHOLD" votes and broker non-votes are counted. "WITHHOLD" votes and broker non-votes will not have any effect on the outcome of the election. In the event that any nominee should be unavailable for election as a result of an unexpected occurrence, shares that would have been voted for that nominee will instead be voted for the election of a substitute nominee, if any, proposed by the Nominating and Corporate Governance Committee and the Board.

Although the election of directors at the Annual Meeting is uncontested and directors are elected by a plurality of votes cast, and we therefore expect that each of the named nominees for director will be elected at the Annual Meeting, under our Corporate Governance Guidelines, any nominee for director is required to submit an offer of resignation for consideration by the Nominating and Corporate Governance Committee if such nominee for director (in an uncontested election) receives a greater number of "WITHHOLD" votes from his or her election than votes "FOR" such election. In such case, the Nominating and Corporate Governance Committee will then consider all of the relevant facts and circumstances and recommend to the Board the action to be taken with respect to such offer of resignation. Promptly following the Board's decision, we would disclose that decision and an explanation of such decision in a filing with the SEC or a press release.

The Board of Directors Unanimously Recommends That Stockholders Vote FOR the Election of all Nominees to the Board of Directors

MEMBERS OF THE BOARD OF DIRECTORS CONTINUING IN OFFICE AFTER THE ANNUAL MEETING

Set forth below is a brief biography of each continuing director composing the remainder of the Board with terms expiring as shown, including the periods during which they have served as a director of Geron, and information furnished by them as to principal occupations and public company directorships held by them. The biographies below also include a discussion of the specific experience, qualifications, attributes or skills of each continuing director that led the Nominating and Corporate Governance Committee and the Board to conclude, as of the date of this Proxy Statement, that the applicable director should continue to serve as a director.

Class I Directors (Term Expiring at the 2021 Annual Meeting)

John A. Scarlett, M.D.

Experience

Dr. Scarlett has served as our Chairman of the Board since December 2018, our Chief Executive Officer and a director since joining Geron in September 2011, and President since January 2012. Dr. Scarlett also serves as a member of the boards of directors for Chiasma, Inc., a biopharmaceutical company focused on transforming injectable drugs into oral medications, since February 2015, and CytomX Therapeutics, Inc., an oncology-oriented company, since June 2016. Prior to joining Geron, Dr. Scarlett served as President, Chief Executive Officer and a member of the board of directors of Proteolix, Inc., a privately-held, oncology-oriented biopharmaceutical company, from February 2009 until its acquisition by Onyx Pharmaceuticals, Inc., an oncology-oriented biopharmaceutical company, in November 2009. From February 2002 until its acquisition by Ipsen, S.A. in October 2008, Dr. Scarlett served as the Chief Executive Officer and a member of the board of directors of Tercica, Inc., an endocrinology-oriented biopharmaceutical company, and also as its President from February 2002 through February 2007. From March 1993 to May 2001, Dr. Scarlett served as President and Chief Executive Officer of Sensus Drug Development Corporation, a privately-held company focused on endocrine disorders. In 1995, he co-founded Covance Biotechnology Services, Inc., a contract biopharmaceutical manufacturing operation, and served as a member of its board of directors from inception to 2000. From 1991 to 1993, Dr. Scarlett headed the North American Clinical Development Center and served as Senior Vice President of Medical and Scientific Affairs at Novo Nordisk Pharmaceuticals, Inc., a wholly-owned

subsidiary of Novo Nordisk A/S, a global pharmaceutical company. Dr. Scarlett received his B.A. degree in chemistry from Earlham College and his M.D. from the University of Chicago, Pritzker School of Medicine.

Qualifications and Director Commitments

As the only management representative on the Board, Dr. Scarlett brings management's perspective to the Board's discussions about Geron's business and strategic direction. In addition, the Board believes Dr. Scarlett's deep understanding of what makes businesses work effectively and efficiently, as well as his medical background and extensive drug development experience, provide valuable insights to the Board. See discussion below regarding Board Leadership and Governance in connection with the appointment of a Lead Independent Director who provides leadership for the independent members of the Board.

Serving as a director for other publicly-held biopharmaceutical companies provides Dr. Scarlett with alternate viewpoints on business strategy and board decision-making, which we believe enhances his contributions to our Board. Dr. Scarlett has demonstrated his ability to dedicate sufficient time and focus on his duties as a member of our Board and attended 100% of our Board meetings in 2019. In accordance with our Board's standard practice, Dr. Scarlett reviews scheduled Board meeting dates a year in advance to confirm availability to participate and attend all our Board meetings, and prioritizes Geron's meetings over Chiasma and CytomX board meetings. Accordingly, the Board believes Dr. Scarlet's business and medical expertise acquired in successfully holding executive and leadership positions in biotechnology companies, and his demonstrated reliability and commitment to service on our Board, qualifies him to serve as a director and Chairman of the Board.

Robert J. Spiegel, M.D., FACP

Experience

Dr. Spiegel has served as a director of Geron since May 2010. Dr. Spiegel currently serves as an Associate Professor at the Weill Cornell Medical School, a Senior Advisor to Warburg Pincus, a private equity firm, and an Advisor to the Israel Biotech Fund, a venture investment fund. He is also a member of the board of directors of Cyclacel Pharmaceuticals, Inc., a biopharmaceutical company developing targeted medicines for cancer and other proliferative diseases, since September 2018; and several privately-held biotechnology companies. He previously served as a director for Avior Computing Corporation, a privately-held governance risk and compliance process technology company, from October 2011 to November 2017; Talon Therapeutics, Inc., a biopharmaceutical company, from July 2010 to July 2013; Capstone Therapeutics Corp., a biotechnology company, from May 2010 to January 2012; Sucampo Pharmaceuticals, Inc., a biopharmaceutical company, from January 2015 to January 2018; and PDS Biotechnology Corporation (formerly Edge Therapeutics, Inc.), a biotechnology company, from August 2013 to March 2019; the Cancer Institute of New Jersey from 1999 to 2009; and Cancer Care New Jersey from 1995 to 2011. From March 2011 to April 2016, Dr. Spiegel served as Chief Medical Officer of PTC Therapeutics, Inc., a biopharmaceutical company focused on discovering and developing treatments for rare disorders. In 2009, after 26 years with the Schering-Plough Corporation (now Merck & Co.), a global healthcare company, Dr. Spiegel retired as Chief Medical Officer and Senior Vice President of the Schering-Plough Research Institute, the pharmaceutical research arm of the Schering-Plough Corporation. His career at Schering-Plough involved various positions, including Director of clinical research for oncology, Vice President of clinical research, and Senior Vice President of worldwide clinical research. Following a residency in internal medicine, Dr. Spiegel completed a fellowship in medical oncology at the National Cancer Institute, and from 1981 to 1999 he held academic positions at the National Cancer Institute and New York University Cancer Center. Dr. Spiegel holds a B.A. from Yale University and an M.D. from the University of Pennsylvania.

Qualifications

The Board believes Dr. Spiegel's extensive medical experience developing oncology products, his deep understanding of pharmaceutical research and development, and broad expertise in gaining regulatory approval for drug candidates, enhances the Board's ability to critically assess the progress and potential of imetelstat, and qualifies Dr. Spiegel to serve as a director.

Class II Directors (Term Expiring at the 2022 Annual Meeting)

Dawn C. Bir

Experience

Ms. Bir has served as a director of Geron since March 2019. Since September 2016, Ms. Bir has served as the Chief Commercial Officer of Reata Pharmaceuticals, Inc., a biopharmaceutical company, where she leads marketing, market access, sales, and commercial operations. From February 2013 to September 2016, Ms. Bir served as Vice President of Sales with Pharmacyclics LLC, an AbbVie company, where she built and led their first hematology national sales organization, and was responsible for the launch of IMBRUVICA in the United States and Puerto Rico. From October 2011 to February 2013, Ms. Bir served as Vice President of Sales & Marketing of SKY Pharmaceuticals Packaging, Inc. & Rx Pak, a unit within the U.S. pharmaceutical and specialty solutions division of McKesson Corporation, a global healthcare company, where she was responsible for two companies and revenue centers, and led multiple functions, including sales, marketing, contract management, project management and customer service. From 1996 to October 2011, Ms. Bir held several commercial and sales positions of increasing responsibility within Genentech, Inc., a member of the Roche Group, a global pharmaceutical company, and Bristol-Myers Squibb Company, a global pharmaceutical company. Ms. Bir holds a B.S. in Biology from Binghamton University.

Qualifications

The Board believes Ms. Bir's extensive commercial, sales and marketing expertise, including with hematology-oncology products, broadens the Board's ability to advise, evaluate and analyze future potential commercialization activities for imetelstat, especially in the United States, as well as to provide insights into the competitive landscape of other hematology-oncology products. This knowledge and experience, together with her strong leadership ability as a female executive in the healthcare industry, qualify Ms. Bir to serve as a director.

Elizabeth G. O'Farrell

Experience

Ms. O'Farrell has served as a director of Geron since March 2019. Ms. O'Farrell also serves as a member of the boards directors of PDL BioPharma, Inc., since June 2018, a company focused on acquiring and managing a portfolio of companies, products, royalty agreements and debt facilities in the healthcare industry, and a privately-held biotechnology company. Since January 2018, Ms. O'Farrell has served on the finance committee of the United Way of Brevard (Brevard County, Florida), a non-profit organization. In December 2017, Ms. O'Farrell retired from a 24-year career with Eli Lilly and Company, a global pharmaceutical company, where she held several senior management positions in finance and corporate governance, most recently serving as Chief Procurement Officer and Head of Global Shared Services from January 2012 to December 2017. Prior to that position, she also served as Senior Vice President, Policy and Finance; Senior Vice President, Finance; Chief Financial Officer, Lilly USA; Chief Financial Officer, Lilly Canada; and General Auditor. Before joining Eli Lilly, Ms. O'Farrell was an accountant with Boise Cascade Office Products, and served as an auditor at Whipple & Company, a professional accountancy firm, and Price Waterhouse, an international public accounting firm. Ms. O'Farrell holds a B.S. in accounting with honors and an M.B.A. in management information systems, both from Indiana University.

Qualifications

Ms. O'Farrell's significant financial, operational and corporate governance expertise strengthens the Board's collective knowledge related to compliance, financial reporting and internal controls. In addition, Ms. O'Farrell's management and leadership experience, gained through the various management roles she has held, also provides unique and valuable insights to the Board regarding organizational development for a growing company, as Geron pursues late-stage development and potential commercialization of imetelstat. The Board believes Ms. O'Farrell's knowledge and experience as a senior female executive with a long tenure at a large global pharmaceutical company qualify Ms. O'Farrell to serve as a director.

BOARD LEADERSHIP AND GOVERNANCE

We have an ongoing commitment to excellence in corporate governance and business practices. In furtherance of this commitment, we regularly monitor developments in the area of corporate governance and review our processes, policies and procedures in light of such developments. Key information regarding our corporate governance initiatives can be found on the Corporate Governance page under the Investor Relations section of our website at https://ir.geron.com/investors/corporate-governance/, including our Corporate Governance Guidelines, Code of Conduct, Insider Trading Policy, Privacy Policy and the charters for our Audit, Compensation and Nominating and Corporate Governance committees. We believe that our corporate governance policies and practices, including the substantial percentage of independent directors on our board of directors and the leadership provided by our Lead Independent Director, Ms. Eastham, empower our independent directors to effectively oversee our management – including the performance of our Chief Executive Officer – and provide an effective and appropriately balanced board governance structure.

Corporate Governance Guidelines

Our Board has adopted Corporate Governance Guidelines that set forth key principles to guide the operation of the Board and its committees in the exercise of their responsibilities to serve the interests of Geron and our stockholders. As stated in our Nominating and Corporate Governance Committee Charter and our Corporate Governance Guidelines, as part of the director search process, the Nominating and Corporate Governance Committee endeavors to consider qualified candidates, including women and minorities, who meet the relevant business and search criteria. In furtherance of the foregoing, where a third-party search firm is engaged and requested to furnish an initial list of possible candidates, such firm will be requested to include in such list women and minority candidates who meet such criteria.

The current form of the Corporate Governance Guidelines can be found on our website at https://ir.geron.com/investors/corporate-governance/. In addition, these guidelines are available in print to any stockholder who requests a copy. Please direct all requests to our Corporate Secretary, Geron Corporation, 919 E. Hillsdale Blvd., Suite 250, Foster City, California 94404.

Board Independence

In accordance with Nasdaq listing standards and Geron's Corporate Governance Guidelines, a majority of the members of our Board must qualify as "independent" as defined by Nasdaq Rule 5605(a)(2). In keeping with these guidelines, a member of our Board may serve as a director of another company only to the extent such position does not conflict or interfere with such person's service as a director of Geron. The Board consults with our counsel to ensure that the Board's determinations regarding Board independence are consistent with relevant securities and other laws and regulations regarding the definition of "independent," including those set forth in pertinent listing standards of Nasdaq, as in effect from time to time.

Consistent with these considerations, our Board has determined affirmatively that all nominees for election at the Annual Meeting, and all current and continuing directors, with the exception of Dr. Scarlett, are independent with the meaning of the Nasdaq listing standards. Dr. Scarlett, who is our Chairman of the Board, President and Chief Executive Officer, is the sole non-independent director, and the Board regularly meets in executive sessions outside the presence of Dr. Scarlett.

There are no family relationships between any director and any of our executive officers. There are no arrangements or agreements relating to compensation provided by a third party to any member of our Board, including current nominees for director, in connection with their candidacy or Board service to us.

Board Leadership Structure

In December 2018, Dr. Scarlett was appointed by the Board to serve as Chairman of the Board, in addition to his role as President and Chief Executive Officer of the Company. Particularly in light of the rapid growth the Company has experienced and expects to continue to experience as it advances development of imetelstat on its own, the Board continues to believe that Dr. Scarlett is best suited to serve as our Chairman

because he is the member of the Board who is most familiar with our business as a whole and the most capable of identifying and bringing to the attention of the full Board the strategic priorities and key issues facing the Company. The Board also believes that having Dr. Scarlett in a combined Chairman/Chief Executive Officer role helps provide strong, unified leadership for our management team. To counterbalance our Board's decision to have a combined Chairman and Chief Executive Officer, the Company's Corporate Governance Guidelines require that the Board appoint a Lead Independent Director when the role of Chairman is held by a director who does not qualify as an independent director. In December 2018, the Board appointed Ms. Eastham to serve as Lead Independent Director for the Board. In her role as Lead Independent Director, Ms. Eastham facilitates Board interactions and information flow. The structure also allows for a clear communication path for the non-employee directors, who may raise any issues or concerns that they have directly with the Lead Independent Director.

The Chairman of the Board has the authority, among other things, to call and preside over Board meetings, to set meeting agendas and to determine materials to be distributed to the Board. However, the Lead Independent Director provides active leadership on behalf of the independent directors on the Board. With the Chairman, President and Chief Executive Officer, Dr. Scarlett, the Lead Independent Director, Ms. Eastham, advises on Board meeting agendas and discussion priorities. In addition, the Lead Independent Director provides regular communications to directors between meetings, inviting comments, ideas and concerns from each non-employee director. The Lead Independent Director also has the following responsibilities:

- Presiding at executive sessions of non-employee directors;
- Serving as a liaison between the Board Chairman and non-employee directors;
- Advising the Board Chairman regarding the impression of the non-employee directors as to the quality, quantity and timeliness of the flow of information from the Company that is necessary for the Board to effectively perform its duties; and
- Accepting additional responsibilities as may be recommended from time-to-time by the Board or the non-employee directors of the Board.

Board Committees and Meetings

It is Geron's policy to encourage directors to attend annual meetings of stockholders. All of our current directors, except Ms. Bir, attended our 2019 Annual Meeting of Stockholders. During the year ended December 31, 2019, the Board held seven meetings and acted by unanimous written consent on four occasions. The Board has an Audit Committee, a Compensation Committee, and a Nominating and Corporate Governance Committee. During the year ended December 31, 2019, each of the current directors attended at least 75% of the aggregate number of meetings of the Board and the committees on which the director served during the portion of the last fiscal year for which he or she was a director or committee member.

Below is a description of each committee of the Board. Each of the committees has authority to engage and determine the compensation for legal counsel or other experts or consultants, as it deems appropriate, to assist with fulfilling its responsibilities. The Board has determined that each member of each committee meets the applicable Nasdaq and SEC rules and regulations regarding "independence" and that each member is free of any relationship that would impair his or her individual exercise of independent judgement with regard to Geron.

Audit Committee

The Audit Committee operates under a written charter that satisfies the applicable standards of the SEC and Nasdaq. A copy of the Audit Committee charter is available on our website at https://ir.geron.com/investors/corporate-governance/. The Audit Committee held seven meetings in 2019. The Audit Committee's responsibilities include:

- appointing or terminating, approving the compensation of, and assessing the qualifications, performance and independence of our independent registered public accounting firm;

- pre-approving audit and permissible non-audit services and the terms of such services to be provided by our independent registered public accounting firm;
- reviewing the plan and scope of the annual audit of financial statements with the independent registered public accounting firm and members of management;
- reviewing and discussing with management and/or the independent registered public accounting firm, prior to public disclosure, our annual and quarterly financial statements and related disclosures in our Forms 10-K, Forms 10-Q, and earnings press releases, including critical accounting policies and practices used by us and information contained in "Management's Discussion and Analysis of Financial Condition and Results of Operations";
- recommending to the Board, based upon the Audit Committee's review and discussions with management and the independent registered public accounting firm, whether our audited financial statements shall be included in our Annual Report on Form 10-K;
- monitoring our internal control over financial reporting and disclosure controls and procedures, including reviewing management's assessment and disclosures related to any significant changes, material weaknesses or significant deficiencies;
- overseeing compliance with legal and regulatory requirements as they relate to our financial statements and accounting matters, including our insider trading compliance program;
- establishing policies and procedures for the receipt and retention of whistleblower complaints and concerns and overall compliance with our Code of Conduct;
- preparing the audit committee report required by the SEC to be included in our annual proxy statement;
- reviewing and approving or ratifying any related party transactions; and
- overseeing financial and operation risk exposures (including cybersecurity risks) and the actions management has taken to limit, monitor and control such exposures.

From January 1, 2019 to June 6, 2019, the Audit Committee was comprised of Ms. Eastham, Dr. Lawlis, Mr. Bradbury and Ms. O'Farrell, who was appointed to the Board and the Audit Committee on March 26, 2019. Mr. Bradbury ceased being a director and a member of the Audit Committee effective June 6, 2019, the date of the Company's 2019 Annual Meeting of Stockholders, as a result of his decision not to stand for re-election due to his new responsibilities as the chief executive officer for another public company. Since June 6, 2019, the Audit Committee has been comprised of Ms. Eastham, Ms. O'Farrell and Dr. Lawlis. The Board has determined that all of the members of the Audit Committee are financially literate and that two members of the Audit Committee, Ms. Eastham and Ms. O'Farrell, have accounting and financial management expertise that qualifies each as an "Audit Committee Financial Expert," as such term is defined in Item 407(d)(5) of Regulation S-K promulgated by the SEC. Previously, Mr. Bradbury also met the qualifications to be deemed an Audit Committee Financial Expert. See more information about the Audit Committee in the section entitled "Audit Committee Report."

Compensation Committee

The Compensation Committee operates under a written charter that satisfies the applicable standards of the SEC and Nasdaq. A copy of the Compensation Committee charter is available on our website at https://ir.geron.com/investors/corporate-governance/. The charter of the Compensation Committee allows it to delegate responsibilities to a subcommittee of the Compensation Committee, but only to the extent consistent with our certificate of incorporation, Bylaws and Nasdaq rules. The Compensation Committee held seven meetings in 2019 and acted by unanimous written consent on 11 occasions. The Compensation Committee's responsibilities include:

- establishing and overseeing our executive compensation philosophy and strategy;

- reviewing and approving the terms of any employment agreements, severance arrangements, change in control protections and other compensatory arrangements for our executive officers, including our Chief Executive Officer;
- annually reviewing and recommending to the Board corporate goals and objectives relevant to the compensation of our executive officers, including our Chief Executive Officer;
- reviewing and approving, or making recommendations to the Board with respect to, the compensation of our executive officers, including our Chief Executive Officer, based upon an annual evaluation of each individual's performance;
- overseeing and administering our cash and equity incentive plans, including establishing policies and procedures for the grant of equity-based awards and approving, or making recommendation to the full Board with respect to, the grant of such equity-based awards;
- appointing, compensating and overseeing the work of any compensation and benefits consultants, legal counsel or other experts or advisors retained by the Compensation Committee, including an independence assessment as outlined by Nasdaq rules;
- reviewing and discussing with management our compensation discussion and analysis disclosure to be included in our annual proxy statement;
- reviewing and making recommendations to our Board regarding non-employee director compensation; and
- reviewing and assessing the potential impact of our compensation practices on enterprise risk.

For information on the Compensation Committee's processes and procedures on the consideration and determination of executive compensation, see the sub-section entitled "Compensation Discussion and Analysis – Role of the Compensation Committee." For information on the Compensation Committee's processes and procedures with respect to non-employee director compensation matters, see the section entitled "Compensation of Directors."

Compensation Committee Interlocks and Insider Participation

Drs. Lawlis and Spiegel and Ms. Eastham served on the Compensation Committee for the year ended December 31, 2019. Neither Drs. Lawlis or Spiegel, nor Ms. Eastham, is a former or current officer or employee of Geron. None of our executive officers serves as a member of a compensation committee of any entity that has one or more executive officers serving as a member of our Board or Compensation Committee.

Nominating and Corporate Governance Committee

The Nominating and Corporate Governance Committee operates under a written charter that satisfies the applicable standards of the SEC and Nasdaq. A copy of the Nominating and Corporate Governance Committee charter is available on our website at https://ir.geron.com/investors/corporate-governance/. The Nominating and Corporate Governance Committee held four meetings in 2019. The Nominating and Corporate Governance Committee's responsibilities include:

- developing, reviewing and recommending to the Board a set of corporate governance guidelines and principles;
- creating and recommending to the Board criteria for Board and committee membership;
- establishing procedures for identifying and evaluating individuals qualified to become members of the Board, including nominees recommended by stockholders;
- recommending to the Board the persons to be nominated for election or re-election as directors;
- reviewing and recommending to the Board the functions, duties and compositions of the Board committees;

- considering and reporting to the Board any questions of possible conflicts of interest of Board members; and
- assessing the performance of the Board, the Board committees and individual directors.

Specific qualifications and the process for recommending director candidates are provided in more detail under the sub-sections entitled "Other Matters – Director Nominees Recommended by Stockholders" and "Other Matters – Director Qualifications."

From January 1, 2019 to June 6, 2019, the Nominating and Corporate Governance Committee was comprised of Dr. Molineaux, Mr. Bradbury and Ms. Bir, who was appointed to the Board and the Nominating and Corporate Governance Committee on March 26, 2019. Mr. Bradbury ceased being a director and a member of the Nominating and Corporate Governance Committee effective June 6, 2019, the date of the Company's 2019 Annual Meeting, as a result of his decision not to stand for re-election due to his new responsibilities as the chief executive officer for another public company. Since June 6, 2019, the Nominating and Corporate Governance Committee has been comprised of Dr. Molineaux and Ms. Bir.

Board's Role in Risk Oversight

Geron is subject to a variety of risks, including those described under the section entitled "Risk Factors" in our Annual Report on Form 10-K for the year ended December 31, 2019. Some risks may be readily perceived and even quantified, while others are unexpected or unforeseeable. Risks can be external or can arise as a result of our internal business or financial activities.

The Board and our executive management team work together to manage our risks. It is management's responsibility to identify various risks facing the Company, bring the Board's attention to material risks, and implement appropriate risk management policies and procedures to manage risk exposure on a day-to-day basis. The Board has an active role in overseeing our risk management process directly or through its committees.

The Board has delegated responsibility for the oversight of specific risks to the Board committees as follows:

- The Audit Committee oversees management of financial risks. In addition to fulfilling its responsibilities for the oversight of our financial reporting processes and annual audit of Geron's financial statements, the Audit Committee also reviews with the Company's independent registered public accounting firm and the Company's management the adequacy and effectiveness of our policies and procedures to assess, monitor and manage fraud risk and our ethical compliance program. The Audit Committee takes appropriate actions to set the best practices and highest standards for quality financial reporting, sound business risk practices, including practices related to cybersecurity, and ethical behavior.
- The Compensation Committee is responsible for overseeing the management of risks relating to our employment policies and executive compensation plans and arrangements. In connection with structuring the executive compensation program, the Compensation Committee, together with the Board, considers whether the elements of such program, individually or in the aggregate, encourage our executive officers to take unnecessary risks. For further information, see the sub-section entitled "Risk Assessment of Compensation Policies and Practices."
- The Nominating and Corporate Governance Committee manages Geron's corporate governance practices. The Nominating and Corporate Governance Committee also reviews risks associated with the independence of the Board, potential conflicts of interest and risks relating to management and Board succession planning. In addition, the Board recently delegated to the Nominating and Corporate Governance Committee the responsibility for overseeing the management of risks associated with the COVID-19 pandemic.

While each committee is responsible for evaluating certain risks and overseeing the management of such risks within its respective oversight area, the entire Board is regularly informed through committee reports about such risks.

Risk Assessment of Compensation Policies and Practices

The Compensation Committee maintains a pay for performance compensation philosophy, but also recognizes that providing certain types of compensation incentives may inadvertently motivate individuals to act in ways that could be detrimental to the Company in order to maximize individual compensation. To minimize such risk, the Compensation Committee annually evaluates our compensation philosophy generally as it relates to all employees, as well as individual compensation elements of base salary, annual performance-based bonuses, equity awards, severance and change in control benefits and other benefits to ensure each is evaluated against appropriate standards and that such incentives provide for the achievement of target goals that are balanced between short-term rewards and long-term enhancement of stockholder value.

The Compensation Committee believes the following elements of our compensation program mitigate the risks associated with our compensation practices:

- setting annual base salaries consistent with the responsibilities of our Principal Executive Officer, Principal Financial Officer and our three other most highly compensated executive officers at December 31, 2019 (our "Named Executive Officers"), and market comparables to ensure that our Named Executive Officers are not motivated to take excessive risks to achieve a reasonable level of financial security;
- establishing corporate goals for our annual performance-based bonus program that are consistent with our annual operating and strategic plans and are designed to achieve a proper risk/reward balance without excessive risk taking;
- requiring an executive officer to forfeit his or her entire annual performance-based bonus if we determine that such executive officer has engaged in any misconduct intended to affect the payment of his or her annual performance-based bonus, or has otherwise engaged in any act or omission that would constitute cause for termination of his or her employment, as defined by his or her employment agreement;
- having a mix of fixed and variable, annual and long-term and cash and equity compensation elements to encourage strategies and actions that balance short-term and long-term best interests;
- granting stock option awards which provide value only if the market price of our Common Stock increases to encourage our executive officers to take a long-term view of our business and performance-based stock option awards that only vest upon the attainment of specific strategic milestones;
- absence of employment agreements or contracts that contain multi-year guarantees of salary increases, or non-performance-based bonuses or equity compensation;
- emphasizing pay equity amongst our employees and with reference to external comparators; and
- having available, to the Compensation Committee and the Board, the discretion to measure and calculate achievement of corporate goals and other corporate performance measures, which prevents the compensation program from being susceptible to manipulation by a single employee.

The Compensation Committee has reviewed our compensation policies and practices as they relate to all employees and has determined that such policies and practices do not present any risks that are reasonably likely to have a material adverse effect on Geron, and instead, encourage behaviors that support sustainable value generation. In addition, the Compensation Committee has reviewed and evaluated our executive compensation program and believes that our executive compensation policies and practices do not encourage inappropriate actions or risk taking by our executive officers.

OTHER CORPORATE GOVERNANCE MATTERS

Code of Conduct

In 2003, we adopted a Code of Conduct, which is available in its entirety on the Corporate Governance page in the Investor Relations section of our website at www.geron.com and to any stockholder otherwise

requesting a copy. All our directors, employees, executive officers, including our Chief Executive Officer and Chief Financial Officer, are required to adhere to the Code of Conduct in discharging their work-related responsibilities. Employees are required to report any conduct they believe in good faith to be an actual or apparent violation of the Code of Conduct. Amendments to the Code of Conduct, and any waivers from the Code of Conduct granted to our directors or executive officers, will be made available through our website as they are adopted. Accordingly, we intend to satisfy the disclosure requirement under Item 5.05 of Form 8-K regarding an amendment to, or waiver from, a provision of the Code of Conduct by posting such information on our website at www.geron.com.

Whistleblower Policy

In keeping with the Sarbanes-Oxley Act of 2002, the Audit Committee has established procedures for the receipt and handling of complaints received by us regarding accounting, internal accounting controls, auditing matters, questionable financial practices or violations of our Code of Conduct ("complaints"). Contact information for an external hotline that is maintained by an independent third party has been distributed to all employees and consultants to allow for the confidential, anonymous submission of complaints by our employees and consultants. Any complaints received by this hotline are reviewed by the Audit Committee and our Chief Legal Officer.

Prohibitions on Derivative, Hedging, Monetization and Other Transactions

We maintain an insider trading compliance policy that applies to all directors and employees, including our executive officers, which prohibits certain transactions in our Common Stock, including short sales, puts, calls or other transactions involving derivative securities, hedging or monetization transactions, purchases of our Common Stock on margin or borrowing against an account in which our Common Stock is held, or pledging our Common Stock as collateral for a loan. Our Audit Committee oversees compliance with our insider trading compliance program, including approval of any material updates to the insider trading compliance program. Our Chief Legal Officer serves as our insider trading compliance officer and reports, at least once annually, to the Audit Committee on his monitoring of the insider trading compliance program. In addition, the Audit Committee meets with the Compliance Officer outside of the presence of any other executive officers. A copy of our insider trading compliance policy is available on our website at https://ir.geron.com/investors/corporate-governance/.

Communications with the Board

Stockholders wishing to communicate with the Board, or with a specific Board member, may do so by writing to the Board, or to the individual Board member, and delivering the communication in person or mailing it to: Board of Directors, c/o Stephen N. Rosenfield, Corporate Secretary, Geron Corporation, 919 E. Hillsdale Blvd., Suite 250, Foster City, California 94404. All mail addressed in this manner will be delivered to the Chair of the Board or Chairs of the Board committees with responsibilities touching most closely on the matters addressed in the communication. From time to time, the Board may change the process by which stockholders may communicate with the Board or its members. Please refer to our website for any changes to this process.

COMPENSATION OF DIRECTORS

The Compensation Committee determines non-employee director compensation, which the full Board reviews and approves upon recommendation from the Compensation Committee. When considering non-employee director compensation decisions, the Compensation Committee believes it is important to be informed as to current compensation practices of comparable publicly-held companies in the life sciences industry, especially to understand the demand and competitiveness for attracting and retaining an individual with each of the non-employee director's specific expertise and experience. Our compensation arrangements for non-employee directors are set forth in our Non-Employee Director Compensation Policy (the "Director Compensation Policy"). The Director Compensation Policy outlines cash and equity compensation automatically payable to non-employee directors of the Board, unless such non-employee director declines receipt of such cash or equity compensation by written notice to us. Traditionally, the Compensation Committee has reviewed our non-employee director compensation relative to industry practices every other year.

In January 2019, the Board requested AON Radford ("Radford"), an independent compensation consultant, to review non-employee director compensation for a Lead Independent Director given our change in Board leadership structure at the end of 2018, as described under the sub-section entitled "Board Leadership and Governance – Board Leadership Structure." Based on this review, and guidance from Radford, effective January 30, 2019, the Board approved an amendment to the Director Compensation Policy to add annual cash compensation of $25,000 for the Lead Independent Director role.

In January 2020, Radford conducted a review of non-employee director compensation in comparison to our 2019 peer group. Based on this review, and guidance from Radford, effective February 12, 2020, the Board approved an amendment to the Director Compensation Policy to increase the size of the Annual Grant (described below) from 70,000 to 83,000 shares of the Company's Common Stock. For further discussion of the defined peer group recommended by Radford, see the sub-section entitled "Compensation Discussion and Analysis – Process for Setting Executive Compensation – Use of Market Data and Peer Group Analysis."

Cash Compensation

The following table describes the annual cash compensation applicable to each role performed by non-employee directors as outlined in the Director Compensation Policy in effect for the year ended December 31, 2019 ("2019 fiscal year"):

Non-Employee Director Role	Base Retainer ($)	Additional Retainer ($)
Board member	42,500	N/A
Chairman of the Board	N/A	35,000
Lead Independent Director[1]	N/A	25,000
Audit Committee Chair[2]	N/A	25,000
Compensation Committee Chair[2]	N/A	15,000
Nominating and Corporate Governance Committee Chair[2]	N/A	10,000
Audit Committee member	N/A	12,500
Compensation Committee member	N/A	7,500
Nominating and Corporate Governance Committee member	N/A	5,000

(1) Effective January 30, 2019, an additional annual cash retainer of $25,000 was adopted for the Lead Independent Director role on the Board, which the Board retroactively applied beginning January 1, 2019 for Ms. Eastham.

(2) Committee Chair does not also receive additional Committee member compensation.

Under the Director Compensation Policy, annual non-employee director cash compensation is paid quarterly in arrears in cash, or, at each director's election, in fully vested shares of our Common Stock. In 2019, such Common Stock was issued under the Directors' Market Value Stock Purchase Plan (the "Directors Market Value Plan"), which the Board adopted in October 2018, based on the "market value" on the purchase date (which generally means the consolidated closing bid price per share of our Common Stock as reported by Nasdaq on the purchase date).

Additionally, under the Director Compensation Policy, non-employee directors are eligible to receive equity grants, as more fully described below under the sub-section entitled "Equity Compensation." Non-employee directors also receive reimbursement for out-of-pocket expenses incurred in connection with attendance at meetings of the Board.

Director Compensation Table

The following table provides compensation information for the 2019 fiscal year, for each non-employee director of the Board who served in such capacity during the 2019 fiscal year. Dr. Scarlett does not receive any compensation for his Board service.

Non-Employee Director	Fees Earned or Paid in Cash ($) [1]	Option Awards ($) [2]	Total ($)
Bir, Dawn	36,417	216,040	252,457
Bradbury, Daniel [3]	26,044 [4]	—	26,044
Eastham, Karin	100,000	69,412	169,412
Lawlis, V. Bryan	62,500	69,412	131,912
Molineaux, Susan	52,500	69,412	121,912
O'Farrell, Elizabeth	42,167	216,040	258,207
Spiegel, Robert	57,500 [5]	69,412	126,912

(1) Consists of the annual retainer fee for service as a member of the Board of Directors or any Board committee. For further information concerning such fees, see the section above entitled "Cash Compensation."

(2) Amounts do not reflect dollar amounts actually received by our non-employee directors and instead, in accordance with SEC rules, represent the aggregate grant date fair value of stock option awards granted to our non-employee directors during 2019, as calculated in accordance with Financial Accounting Standards Board Accounting Standards Codification Topic 718 ("FASB ASC Topic 718"). Refer to Note 8 of the financial statements in our Annual Report on Form 10-K for the year ended December 31, 2019 regarding assumptions underlying the valuation of stock option awards and the calculation method. For information regarding the aggregate number of stock option awards held by the non-employee directors of the Board at December 31, 2019, see the sub-section entitled "Outstanding Equity Awards at Fiscal Year-End for Non-Employee Directors."

(3) Mr. Bradbury determined not to stand for re-election in 2019 due to his new responsibilities as the chief executive officer for another public company, and, as such, his term expired as of the 2019 Annual Meeting of Stockholders.

(4) Includes fees paid in stock in lieu of cash through the issuance of an aggregate 9,036 shares of Common Stock under the Directors Market Value Plan.

(5) Includes fees paid in stock in lieu of cash through the issuance of an aggregate 20,114 shares of Common Stock under the Directors Market Value Plan.

Equity Compensation

Terms of Awards

Pursuant to the Director Compensation Policy, each individual who first becomes a non-employee director receives an initial stock option grant and thereafter each non-employee director is eligible to receive stock option grants on an annual basis. Non-employee director stock options are currently granted pursuant to the 2018 Equity Incentive Plan, in accordance with the Director Compensation Policy. The following describes the equity compensation arrangements as outlined in the Director Compensation Policy in effect for the 2019 fiscal year (with updates included where the Director Compensation Policy was amended in 2020):

- *Initial Grant.* Each individual who first becomes a non-employee director, whether by election by Geron's stockholders or by appointment by the Board to fill a vacancy, automatically will be granted an option to purchase 120,000 shares of Common Stock on the date such individual first becomes a non-employee director (the "Initial Grant"). The Initial Grant vests annually over three years upon each anniversary of the date of appointment to the Board, subject to the non-employee director's continuous service through each applicable vesting date.

- *Annual Grant.* On the date of each annual meeting of our stockholders, each non-employee director (other than any director receiving an Initial Grant on the date of such annual meeting) who is then serving as a non-employee director and who will continue as a non-employee director following the date of such annual meeting automatically will be granted an option to purchase 70,000 shares of our Common Stock (the "Annual Grant"). In February 2020, the Board approved an amendment to the Director Compensation Policy to increase the Annual Grant from an option to purchase 70,000 shares of our Common Stock to an option to purchase 83,000 shares of our Common Stock. The Annual Grant vests in full on the earlier of: (i) the date of the next annual meeting of our stockholders or (ii) the first anniversary of the date of grant, subject to the non-employee director's continuous service through such applicable vesting date.
- *Exercise Price and Term of Options.* The exercise price of all options granted under the 2018 Equity Incentive Plan is equal to the fair market value of a share of our Common Stock as determined under the 2018 Equity Incentive Plan. Options granted under the 2018 Equity Incentive Plan have a term of ten years from the date of grant, unless terminated earlier.
- *Exercise Period Post-Termination.* The options granted pursuant to the 2018 Equity Incentive Plan remain exercisable until the earlier of the original expiration date of the option or 36 months following the optionee's termination of service as our non-employee director.

As noted above, under the Directors Market Value Plan, to the extent permitted by the Director Compensation Policy, the cash compensation payable to a non-employee director who has properly formally elected to receive such cash compensation instead in the form of shares of our Common Stock will be used to purchase shares of Common Stock from Geron under the Directors Market Value Plan on the date that such cash compensation is payable to the non-employee director under the Director Compensation Policy.

Effect of Certain Corporate and Termination Events

As set forth in each option agreement under the 2018 Equity Incentive Plan, the vesting for each Initial Grant and Annual Grant will accelerate in full in the event of a Change in Control of Geron (as defined in the 2018 Equity Incentive Plan and described below under the sub-section entitled "Potential Payments Upon Termination or Change in Control"). In addition, in the event a non-employee director experiences a termination of service as a result of such director's total and permanent disability (as defined in Section 22(e)(3) of the Internal Revenue Code of 1986, as amended (the "Code")) or death, the portion of each outstanding option held by such director that would have vested during the 36 months after the date of such director's termination of service, will automatically vest.

Option Grants to Non-Employee Directors in 2019

The following table sets forth the following information with respect to non-employee directors (seven persons) for the 2019 fiscal year: (i) stock options granted under the 2018 Equity Incentive Plan; and (ii) the grant date fair value of stock options granted.

Non-Employee Director	Grant Date	Option Awards Granted During 2019 (#)	Grant Date Fair Value of Option Awards Granted During 2019 ($)[1]
Bir, Dawn	3/26/19 [2]	120,000	146,628
Bir, Dawn	6/6/19 [3]	70,000	69,412
Bradbury, Daniel [4]	—	—	—
Eastham, Karin	6/6/19 [3]	70,000	69,412
Lawlis, V. Bryan	6/6/19 [3]	70,000	69,412
Molineaux, Susan	6/6/19 [3]	70,000	69,412
O'Farrell, Elizabeth	3/26/19 [2]	120,000	146,628
O'Farrell, Elizabeth	6/6/19 [3]	70,000	69,412
Spiegel, Robert	6/6/19 [3]	70,000	69,412

(1) Amounts do not reflect dollar amounts actually received by our non-employee directors and instead, in accordance with SEC rules, represent the grant date fair value of each stock option granted in 2018 calculated in accordance

with FASB ASC Topic 718. Refer to Note 8 of the financial statements in our Annual Report on Form 10-K for the year ended December 31, 2019 regarding assumptions underlying the valuation of stock option awards and the calculation method.

(2) In connection with their appointment to the Board on March 26, 2019, each of Ms. Bir and Ms. O'Farrell was granted an Initial Grant of 120,000 shares of Common Stock in accordance with our Director Compensation Policy. Such option grants each vest annually over three years upon from the date of appointment to the Board, subject to continued service by each of Ms. Bir and Ms. O'Farrell.

(3) Stock option vests on the earlier of: (i) the date of the next annual meeting or (ii) the first anniversary of the date of grant of such option, subject to the non-employee director's continuous service to the Company through such applicable vesting date.

(4) Mr. Bradbury's term expired as of the 2019 Annual Meeting of Stockholders and as such, he was not eligible for a stock option grant in 2019.

Option Exercises in 2019

For the 2019 fiscal year, no options were exercised by any non-employee directors.

Outstanding Equity Awards at Fiscal Year-End for Non-Employee Directors

The following table sets forth stock options outstanding for each non-employee director included in the Director Compensation Table above as of December 31, 2019.

	Option Awards Outstanding as of December 31, 2019	
Non-Employee Director	**Exercisable (#)**	**Unexercisable (#)**
Bir, Dawn	—	190,000
Bradbury, Daniel (1)	345,000	—
Eastham, Karin	358,000	70,000
Lawlis, V. Bryan	380,000	70,000
Molineaux, Susan	345,000	70,000
O'Farrell, Elizabeth	—	190,000
Spiegel, Robert	205,000	70,000

(1) Mr. Bradbury's term expired as of the 2019 Annual Meeting of Stockholders.

PROPOSAL 2

APPROVAL OF AN AMENDMENT TO OUR 2018 EQUITY INCENTIVE PLAN TO INCREASE THE NUMBER OF SHARES ISSUABLE THEREUNDER

The Company's stockholders are being asked to approve an amendment to the Company's 2018 Equity Incentive Plan (the "2018 Plan") at the Annual Meeting to increase the number of shares issuable thereunder by 5,700,000 shares of our Common Stock. The Board approved the foregoing amendment to the 2018 Plan to ensure that the Company can continue to grant stock options in order to provide long-term incentives to our employees, non-employee directors and consultants. Our continued ability to offer equity awards under the 2018 Plan is critical to our ability to attract, motivate and retain qualified employees, non-employee directors and consultants, particularly as we grow and in light of the highly competitive market for talent in which we operate.

Shares Available for Future Awards

The Board believes that additional shares are necessary to meet the Company's anticipated equity compensation needs. The proposed increase is expected to last approximately one year. This estimate is based on a forecast that takes into account our anticipated rate of growth in hiring, required stock option grants under the Non-Employee Director Compensation Policy, and our historical forfeiture rates. We have also considered stockholder feedback in determining an appropriate number of shares to seek to add to the 2018 Plan.

The 2018 Plan was initially adopted by the Board in March 2018 and approved by the stockholders in May 2018.

Upon adoption, the 2018 Plan had an initial new share reserve of 10,000,000 shares of Common Stock. The aggregate number of shares of our Common Stock that may be issued under the 2018 Plan also included, as of the effective date of the 2018 Plan: (i) 2,895,419 unallocated shares that were remaining available for the grant of awards under our 2011 Equity Incentive Plan (the "2011 Plan") as of the effective date of the 2018 Plan in May 2018; and (ii) certain shares subject to outstanding awards granted under the 2011 Plan and our 1992 Stock Option Plan, our 1996 Directors' Stock Option Plan and our Amended and Restated 2002 Equity Incentive Plan (together, the "Prior Plans") that may become available for grant under the 2018 Plan as such shares become available from time to time (as further described below under "Summary of the 2018 Equity Incentive Plan – Stock Subject to the 2018 Plan"). As of March 2, 2020, only 503,974 shares remained available for grant under the 2018 Plan (plus the Prior Plans' Returning Shares (as defined and further described below under "Summary of the 2018 Equity Incentive Plan – Stock Subject to the 2018 Plan") as such shares become available from time to time).

Why You Should Vote to Approve the Amendment to the 2018 Plan

Equity Awards Are a Key Component of Our Compensation Philosophy

Our Board believes that the issuance of equity awards is a key element underlying our ability to attract, retain and motivate key personnel, non-employee directors and consultants because of the strong competition for highly trained and experienced individuals among biotechnology companies, especially in the San Francisco Bay Area and northern New Jersey. In addition, because of the highly regulated and complex industry that we operate in, our success depends on our ability to attract and retain individuals with deep experience in our industry. Without such key personnel, non-employee directors and consultants, we might not achieve our development and commercialization plans. Therefore, the Board believes that the proposed amendment to the 2018 Plan to increase the number of shares issuable under the 2018 Plan is in the best interests of the Company and its stockholders and recommends a vote in favor of this Proposal 2.

Approval of the amendment to the 2018 Plan by our stockholders will allow us to continue to attract and retain highly trained and experienced individuals who are critical to our success, through the grant of equity awards at levels determined appropriate by our Board or Compensation Committee. The amended 2018 Plan will also allow us to utilize equity awards as long-term incentives to secure and retain the services of our employees, non-employee directors and consultants, consistent with our compensation philosophy and common compensation practice for companies headquartered in the San Francisco Bay Area. To date, we have relied

significantly on equity awards in the form of stock option grants to attract and retain key employees, non-employee directors and consultants, all of whom are critical to our success. We believe the use of stock option grants strongly aligns the interests of our employees with those of our stockholders by placing a considerable proportion of our employees' total compensation "at risk" because their compensation, in the form of stock options, is contingent on the appreciation in value of our Common Stock. In addition, we believe stock option grants encourage employee ownership in Geron and promote retention through the reward of long-term Company performance.

The 2018 Plan Requires Additional Shares to Meet our Forecasted Equity Needs

As described above, the 2018 Plan had 503,974 shares remaining available for grant as of March 2, 2020 (plus the Prior Plans' Returning Shares (as defined and further described below under "Summary of the 2018 Equity Incentive Plan – Stock Subject to the 2018 Plan") as such shares become available from time to time). Subject to adjustment for certain changes in our capitalization, if this Proposal 2 is approved by our stockholders, then under the 2018 Plan, we will have 5,700,000 new shares available for grant after our Annual Meeting for a total of approximately 6,203,974 shares available for grant after our Annual Meeting (based on shares available under the 2018 Plan as of March 2, 2020) (plus the Prior Plans' Returning Shares (as defined and further described below under "Summary of the 2018 Equity Incentive Plan – Stock Subject to the 2018 Plan") as such shares become available from time to time).

Our 2018 Inducement Award Plan (the "Inducement Plan") allows us to grant nonstatutory stock options to new employees as a material inducement to their joining the Company. Such grants to new employees assist us in meeting a portion of our equity compensation needs, but only with respect to a limited group. To meet the growing hiring needs of the Company, the Compensation Committee approved an increase of 1,300,000 shares for the Inducement Plan in February 2020. As of March 2, 2020, 1,378,600 shares remained available for grant in the Inducement Plan.

We currently forecast granting stock options representing approximately 10,500,000 shares over the next one-year period, or approximately 5.2% of our Common Stock outstanding as of March 2, 2020. Given the expansion of our Company to advance the development of imetelstat on our own, we have more employees than in prior years which creates greater equity compensation requirements. In addition, because imetelstat is currently being evaluated in IMerge, a Phase 3 clinical trial, our current hiring needs require highly trained regulatory, and clinical personnel with expertise in late-stage drug development, as well as individuals with experience in pre-commercial activities in preparation for potential commercialization of imetelstat.

We also anticipate option cancellations of approximately 348,000 shares in 2020 based on current projections. If our expectation for forfeitures is accurate, our net grants (grants less forfeitures and cancellations) over the next one-year period will be approximately 10,152,000 Shares, or approximately 5.1% of our Common Stock outstanding as of March 2, 2020.

We currently intend to reserve the additional shares being requested under this Proposal 2 for issuance under our 2018 Plan to meet our estimated near-term equity compensation needs for our current employees, non-employee directors and consultants.

We operate in a highly competitive industry and geography for employee talent and do not expect required rates of compensation to decline. One alternative to using equity awards would be to significantly increase cash compensation. We do not believe this would be in the best interests of the Company or its stockholders, because it would significantly impact our financial resources to further advance the imetelstat program. As a biotechnology company headquartered in the San Francisco Bay Area, we believe that a combination of equity and cash compensation is more appropriate and preferable to enable us to attract, retain and motivate employees. Any significant increase in cash compensation in lieu of equity awards would reduce the cash otherwise available for advancing the development of imetelstat. Furthermore, we do not believe a cash-oriented compensation program would provide the same value to the Company or its stockholders with respect to long-term employee retention or serve to align employees' interests with those of our stockholders, in comparison to a program that includes equity awards.

We Carefully Manage the Use of Equity Awards, and the Size of our Share Reserve is Reasonable

Our compensation philosophy reflects broad-based eligibility for equity awards, and we grant stock options to all of our employees and non-employee directors. However, we recognize that stock options dilute existing stockholders, and, therefore, we responsibly manage the growth of our equity compensation program. We are committed to effectively monitoring the share reserves for our equity plans, including our "burn rate," to ensure that we maximize stockholders' value by granting the appropriate number of stock options necessary to attract, reward, and retain employees, non-employee directors and consultants. Our burn rate for 2019 and in the last three years was at or below the 50th percentile of the defined peer group market data provided by Radford. The burn rate for 2019 includes stock option grants from the 2018 Plan and the Inducement Plan. Our stock options outstanding were above the 75th percentile of the defined peer group market data provided by Radford due to the substantial number of stock options with exercise prices greater than the closing price of our stock as reported by the Nasdaq Global Select Market during 2019. Despite this fact, we have not repriced any stock options in 2019. In addition, the 2019 burn rate and stock options outstanding reflects the recent growth of the Company as we rebuild internal development capability through hiring to continue development of imetelstat on our own. In 2019, we recruited highly qualified and experienced professionals to drive each development function, including clinical operations, regulatory affairs, clinical science, biometrics and data management, manufacturing, quality, translational research and program management. In addition, many of our newly hired personnel had previous experience with imetelstat through the prior Janssen collaboration, which facilitates our ability to advance the imetelstat program.

The tables below show our historical overhang and burn rate percentages under the current 2018 Plan and reflect the responsible actions we have taken in the past regarding our stock option grants.

Equity Awards Outstanding and Overhang

	As of March 2, 2020
2018 Plan Information	
Total number of shares of Common Stock subject to outstanding stock options	14,238,131
Weighted-average exercise price of outstanding stock options	$1.47
Weighted-average remaining term of outstanding stock options	9.1 years
Total number of shares of Common Stock subject to outstanding full value awards	None
Total number of shares of Common Stock available for grant	503,974
Plan Information for Other Option Plans	
Total number of shares of Common Stock subject to outstanding stock options	28,229,813
Weighted average exercise price of outstanding stock options	$2.50
Weighted-average remaining term of outstanding stock options	6.0 years
Total number of shares of Common Stock subject to outstanding full value awards	None
Total number of shares of Common Stock available for grant	1,378,600
Total number of shares of Common Stock outstanding	200,344,809
Per-share closing price of Common Stock as reported on the Nasdaq Global Select Market	$1.16

Burn Rate

The following table provides detailed information regarding the activity related to our 2018 Plan for the 2019 fiscal year.

	Year Ended December 31, 2019
Total number of shares of Common Stock subject to stock options granted	3,982,200
Total number of shares of Common Stock subject to full value awards granted	None
Weighted-average number of shares of Common Stock outstanding	190,160,311
Burn Rate	2.1%

The 2018 Plan Incorporates Good Compensation and Governance Practices

The 2018 Plan includes many provisions designed to protect our stockholders' interests and to reflect corporate governance best practices.

- *Administration by the Board or an independent committee of the Board*. The 2018 Plan is administered by our Board, which may delegate authority to administer the 2018 Plan to an independent Board committee. The Board has delegated authority to administer the 2018 Plan to the Compensation Committee, which consists of three "non-employee directors" within the meaning of Rule 16b-3 under the Exchange Act. The Board retains the authority to concurrently administer the 2018 Plan and may, at any time, revest in the Board some or all of the powers previously delegated to the Compensation Committee or any other committee.
- *Repricing is not allowed*. The 2018 Plan prohibits the repricing of outstanding stock options and stock appreciation rights, and the cancellation of any outstanding stock options or stock appreciation rights that have an exercise or strike price greater than the then-current fair market value of our Common Stock in exchange for cash or other stock awards under the 2018 Plan, without prior stockholder approval.
- *Stockholder approval is required for additional shares or any material amendment*. The 2018 Plan does not contain an annual "evergreen" provision. The 2018 Plan authorizes a fixed number of shares, so that stockholder approval is required to issue any additional shares, allowing our stockholders to have direct input on our equity compensation program. Consistent with Nasdaq rules, the 2018 Plan requires stockholder approval of any material revisions to the 2018 Plan. In addition, certain other amendments to the 2018 Plan require stockholder approval.
- *Awards subject to forfeiture/clawback*. Awards granted under the 2018 Plan are subject to recoupment in accordance with any clawback provisions in a participant's employment agreement or other agreement with the Company, or any clawback policy that we are required to adopt pursuant to the listing standards of any national securities exchange or association on which our securities are listed or as is otherwise required by the Dodd-Frank Wall Street Reform and Consumer Protection Act or other applicable law. In addition, we may impose other clawback, recovery or recoupment provisions in a stock award agreement, including a reacquisition right in respect of previously acquired shares or other cash or property upon the occurrence of cause.
- *No single trigger accelerated vesting upon change in control*. The 2018 Plan does not provide for any automatic mandatory vesting of awards upon a change in control.
- *No liberal change in control definition*. The change in control definition in the 2018 Plan is not a "liberal" definition. A change in control transaction must actually occur in order for the change in control provisions in the 2018 Plan to be triggered.
- *No discounted stock options or stock appreciation rights*. All stock options and stock appreciation rights granted under the 2018 Plan must have an exercise or strike price equal to or greater than the fair market value of our Common Stock on the date the stock option or stock appreciation right is granted.
- *No liberal share counting or recycling of appreciation awards*. The following shares will not become available again for issuance under the 2018 Plan: (i) shares underlying stock options or stock appreciation rights that are reacquired or withheld (or not issued) by us to satisfy the exercise or purchase price of a stock award; (ii) shares underlying stock options or stock appreciation rights that are reacquired or withheld (or not issued) by us to satisfy a tax withholding obligation in connection with a stock award; and (iii) any shares repurchased by us on the open market with the proceeds of the exercise or purchase price of a stock option or a stock appreciation right.
- *Fungible share counting*. The 2018 Plan contains a "fungible share counting" structure, whereby the number of shares of our Common Stock available for issuance under the 2018 Plan will be reduced by (i) one share for each share issued pursuant to a stock option or stock appreciation right with an exercise price that is at least 100% of the fair market value of our Common Stock on the date of grant (an "Appreciation Award") granted under the 2018 Plan and (ii) 2.0 shares for each share issued pursuant to a stock award that is not an Appreciation Award (a "Full Value Award") granted under the 2018 Plan. As part of such fungible share counting structure, the number of

shares of our Common Stock available for issuance under the 2018 Plan will be increased by (i) one share for each share that becomes available again for issuance under the terms of the 2018 Plan subject to an Appreciation Award and (ii) 2.0 shares for each share that becomes available again for issuance under the terms of the 2018 Plan subject to a Full Value Award.

- *Termination of stock options and stock appreciation rights on a participant's termination for cause*. If a participant's service is terminated for cause, which is defined under the 2018 Plan as (i) the participant's conviction of any crime involving fraud, dishonesty or moral turpitude; (ii) the participant's attempted commission of or participation in a fraud or act of dishonesty against the Company resulting in material harm to the business of the Company; (iii) the participant's intentional, material violation of any contract or agreement with the Company, or any statutory duty the participant owes to the Company; or (iv) the participant's conduct that constitutes gross misconduct, insubordination, incompetence or habitual neglect of duties and that results in material harm to the business of the Company, the participant's stock options and stock appreciation rights terminate immediately, and the participant is prohibited from exercising his or her stock options and stock appreciation rights.
- *Restrictions on dividends*. The 2018 Plan provides that (i) no dividends or dividend equivalents may be paid with respect to any shares of our Common Stock subject to a stock award before the date such shares have vested, (ii) any dividends or dividend equivalents that are credited with respect to any such shares will be subject to all of the terms and conditions applicable to such shares under the terms of the applicable stock award agreement (including any vesting conditions), and (iii) any dividends or dividend equivalents that are credited with respect to any such shares will be forfeited to us on the date such shares are forfeited to or repurchased by us due to a failure to vest.

Summary of the 2018 Equity Incentive Plan

The following is a summary of the principal features of the 2018 Plan, as amended, together with the applicable tax implications with respect to the 2018 Plan. The summary is qualified by reference to the full text of the 2018 Plan, as amended, which is attached as Appendix A to this proxy statement.

General

The 2018 Plan provides for grants to employees of the Company and any parent or subsidiary of the Company (including officers and employee directors) of "incentive stock options" within the meaning of Section 422 of the Code, and for grants of non-qualified stock options and stock purchase rights to employees (including officers and employee directors) and consultants (including non-employee directors) of the Company or any parent or subsidiary of the Company. See "Federal Income Tax Aspects" below for information concerning the tax treatment of incentive stock options, non-qualified stock options and stock purchase rights.

The 2018 Plan is not a qualified retirement plan under Section 401(a) of the Code, and is not subject to the provisions of the Employee Retirement Income Security Act of 1974, as amended.

Purpose

The 2018 Plan is designed to secure and retain the services of our employees, non-employee directors and consultants, provide incentives for our employees, non-employee directors and consultants to exert maximum efforts for the success of our Company and our affiliates, and provide a means by which our employees, non-employee directors and consultants may be given an opportunity to benefit from increases in the value of our Common Stock. The 2018 Plan is also designed to align employees' interests with stockholder interests.

Administration

The 2018 Plan is administered by our Board, which may in turn delegate authority to administer the 2018 Plan to a committee of non-employee directors. The Board has delegated authority to administer the 2018 Plan to the Compensation Committee of the Board. Our Board may, at any time, revest in itself some or all of the power delegated to such a committee. The Board and any committee of non-employee directors to whom the

Board may delegate authority to administer the 2018 Plan are each considered to be a Plan Administrator for purposes of this Proposal 2. Subject to the terms of the 2018 Plan, the Plan Administrator may determine the recipients, the types of stock awards to be granted, the number of shares of our Common Stock subject to or the cash value of stock awards, and the terms and conditions of stock awards granted under the 2018 Plan, including the period of their exercisability and vesting. The Plan Administrator also has the authority to provide for accelerated exercisability and vesting of stock awards. Subject to the limitations set forth below, the Plan Administrator also determines the fair market value applicable to a stock award and the exercise or strike price of stock options and stock appreciation rights granted under the 2018 Plan.

The Plan Administrator may also delegate to one or more executive officers the authority to designate employees who are not executive officers to be recipients of certain stock awards and the number of shares of our Common Stock subject to such stock awards. Under any such delegation, the Plan Administrator will specify the total number of shares of our Common Stock that may be subject to the stock awards granted by such executive officer. The executive officer may not grant a stock award to himself or herself.

Eligibility

Employees, non-employee directors, and consultants are eligible to participate in the 2018 Plan. As of March 2, 2020, all of our 50 employees (including 7 executive officers), 6 non-employee directors (including currently serving and nominee non-employee directors) and approximately 50 consultants are currently eligible to participate in the 2018 Plan and may receive all types of stock awards other than incentive stock options, under the 2018 Plan. Incentive stock options may be granted under the 2018 Plan only to our employees, including our executive officers.

Stock Subject to the 2018 Plan

Subject to adjustment for certain changes in our capitalization, the aggregate number of shares of our Common Stock that may be issued under the 2018 Plan (the "Share Reserve") if this Proposal 2 is approved by our stockholders will not exceed the sum of: (i) 2,895,419 (which is the number of unallocated shares that remained available for the grant of new stock awards under the 2011 Plan as of the effective date of the 2018 Plan), (ii) 10,000,000 shares (which is the number of new shares that were reserved as of the effective date of the 2018 Plan), (iii) the 5,700,000 newly-requested shares that are the subject of this Proposal 2, and (iv) any Prior Plans' Returning Shares (as defined below), as such shares become available from time to time.

The "Prior Plans' Returning Shares" are shares subject to outstanding stock awards granted under the Prior Plans that, from and after the effective date of the 2018 Plan, (i) expire or terminate for any reason prior to exercise or settlement, (ii) are forfeited, cancelled or otherwise returned to us because of the failure to meet a contingency or condition required for the vesting of such shares, or (iii) other than with respect to outstanding stock options and stock appreciation rights granted under the Prior Plans with an exercise or strike price of at least 100% of the fair market value of the underlying Common Stock on the date of grant ("Prior Plans' Appreciation Awards"), are reacquired or withheld (or not issued) by us to satisfy a tax withholding obligation in connection with a stock award.

The number of shares of our Common Stock available for issuance under the 2018 Plan will be reduced by (i) one share for each share of Common Stock issued pursuant to a stock option or stock appreciation right with an exercise or strike price of at least 100% of the fair market value of the underlying Common Stock on the date of grant, and (ii) 2.0 shares for each share of Common Stock issued pursuant to a Full Value Award (i.e., any stock award that is not a stock option or stock appreciation right with an exercise or strike price of at least 100% of the fair market value of the underlying Common Stock on the date of grant).

If (i) any shares of Common Stock subject to a stock award are not issued because the stock award expires or otherwise terminates without all of the shares covered by the stock award having been issued or is settled in cash, (ii) any shares of Common Stock issued pursuant to a stock award are forfeited back to or repurchased by us because of the failure to meet a contingency or condition required for the vesting of such shares, or (iii) with respect to a Full Value Award, any shares of Common Stock are reacquired or withheld (or not issued) by us to satisfy a tax withholding obligation in connection with the award, then such shares will

again become available for issuance under the 2018 Plan (collectively, the "2018 Plan Returning Shares"). For each 2018 Plan Returning Share subject to a Full Value Award, or Prior Plans' Returning Share subject to a stock award other than a Prior Plans' Appreciation Award, the number of shares of Common Stock available for issuance under the 2018 Plan will increase by 2.0 shares.

Any shares of Common Stock reacquired or withheld (or not issued) by us to satisfy the exercise or purchase price of a stock award will no longer be available for issuance under the 2018 Plan, including any shares subject to a stock award that are not delivered to a participant because the stock award is exercised through a reduction of shares subject to the stock award. In addition, any shares reacquired or withheld (or not issued) by us to satisfy a tax withholding obligation in connection with a stock option or stock appreciation right granted under the 2018 Plan or a Prior Plans' Appreciation Award, or any shares repurchased by us on the open market with the proceeds of the exercise or strike price of a stock option or stock appreciation right granted under the 2018 Plan or a Prior Plans' Appreciation Award will no longer be available for issuance under the 2018 Plan.

Repricing; Cancellation and Re-Grant of Stock Options or Stock Appreciation Rights

Under the 2018 Plan, the Plan Administrator does not have the authority to reprice any outstanding stock option or stock appreciation right by reducing the exercise or strike price of the stock option or stock appreciation right or to cancel any outstanding stock option or stock appreciation right that has an exercise or strike price greater than the then-current fair market value of our Common Stock in exchange for cash or other stock awards without obtaining the approval of our stockholders. Such approval must be obtained within 12 months prior to such an event.

Stock Options

Stock options may be granted under the 2018 Plan pursuant to stock option agreements. The 2018 Plan permits the grant of stock options that are intended to qualify as incentive stock options ("ISOs") and nonstatutory stock options ("NSOs").

The exercise price of a stock option granted under the 2018 Plan may not be less than 100% of the fair market value of the Common Stock subject to the stock option on the date of grant and, in some cases (see "Limitations on Incentive Stock Options" below), may not be less than 110% of such fair market value.

The term of stock options granted under the 2018 Plan may not exceed ten years and, in some cases (see "Limitations on Incentive Stock Options" below), may not exceed five years. Except as otherwise provided in a participant's stock option agreement or other written agreement with us, if a participant's service relationship with us (referred to in this Proposal 2 as "continuous service") terminates (other than for cause or the participant's death or disability), the participant may exercise any vested stock options for up to three months following the participant's termination of continuous service. Except as otherwise provided in a participant's stock option agreement or other written agreement with us, if a participant's continuous service terminates due to the participant's disability or death (or the participant dies within a specified period, if any, following termination of continuous service), the participant, or his or her beneficiary, as applicable, may exercise any vested stock options for up to 24 months following the participant's termination due to the participant's disability or following the participant's death. Except as explicitly provided otherwise in a participant's stock option agreement or other written agreement with us, if a participant's continuous service is terminated for cause (as defined in the 2018 Plan), all stock options held by the participant will terminate upon the participant's termination of continuous service and the participant will be prohibited from exercising any stock option from and after such termination date. Except as otherwise provided in a participant's stock option agreement or other written agreement with us, the term of a stock option may be extended if the exercise of the stock option following the participant's termination of continuous service (other than for cause or the participant's death or disability) would be prohibited by applicable securities laws or if the sale of any Common Stock received upon exercise of the stock option following the participant's termination of continuous service (other than for cause) would violate our insider trading policy. In no event, however, may a stock option be exercised after its original expiration date.

Acceptable forms of consideration for the purchase of our Common Stock pursuant to the exercise of a stock option under the 2018 Plan will be determined by the Plan Administrator and may include payment: (i) by cash, check, bank draft or money order payable to us; (ii) pursuant to a program developed under Regulation T as promulgated by the Federal Reserve Board; (iii) by delivery to us of shares of our Common Stock (either by actual delivery or attestation); (iv) by a net exercise arrangement (for NSOs only); or (v) in other legal consideration approved by the Plan Administrator.

Stock options granted under the 2018 Plan may become exercisable in cumulative increments, or "vest," as determined by the Plan Administrator at the rate specified in the stock option agreement. Shares covered by different stock options granted under the 2018 Plan may be subject to different vesting schedules as the Plan Administrator may determine.

The Plan Administrator may impose limitations on the transferability of stock options granted under the 2018 Plan in its discretion. Generally, a participant may not transfer a stock option granted under the 2018 Plan other than by will or the laws of descent and distribution or, subject to approval by the Plan Administrator, pursuant to a domestic relations order or an official marital settlement agreement. However, the Plan Administrator may permit transfer of a stock option in a manner that is not prohibited by applicable tax and securities laws. In addition, subject to approval by the Plan Administrator, a participant may designate a beneficiary who may exercise the stock option following the participant's death.

Limitations on Incentive Stock Options

In accordance with current federal tax laws, the aggregate fair market value, determined at the time of grant, of shares of our Common Stock with respect to ISOs that are exercisable for the first time by a participant during any calendar year under all of our stock plans may not exceed $100,000. The stock options or portions of stock options that exceed this limit or otherwise fail to qualify as ISOs are treated as NSOs. No ISO may be granted to any person who, at the time of grant, owns or is deemed to own stock possessing more than 10% of our total combined voting power unless the following conditions are satisfied:

- the exercise price of the ISO must be at least 110% of the fair market value of the Common Stock subject to the ISO on the date of grant; and
- the term of the ISO must not exceed five years from the date of grant.

Subject to adjustment for certain changes in our capitalization, the aggregate maximum number of shares of our Common Stock that may be issued pursuant to the exercise of ISOs under the 2018 Plan is 25,807,454 shares.

Stock Appreciation Rights

Stock appreciation rights may be granted under the 2018 Plan pursuant to stock appreciation right agreements. Each stock appreciation right is denominated in common stock share equivalents. The strike price of each stock appreciation right will be determined by the Plan Administrator, but will in no event be less than 100% of the fair market value of the Common Stock subject to the stock appreciation right on the date of grant. The Plan Administrator may also impose restrictions or conditions upon the vesting of stock appreciation rights that it deems appropriate. The appreciation distribution payable upon exercise of a stock appreciation right may be paid in shares of our Common Stock, in cash, in a combination of cash and stock, or in any other form of consideration determined by the Plan Administrator and set forth in the stock appreciation right agreement. Stock appreciation rights will be subject to the same conditions upon termination of continuous service and restrictions on transfer as stock options under the 2018 Plan.

Restricted Stock Awards

Restricted stock awards may be granted under the 2018 Plan pursuant to restricted stock award agreements. A restricted stock award may be granted in consideration for cash, check, bank draft or money order payable to us, the participant's services performed for us, or any other form of legal consideration acceptable to the Plan Administrator. Shares of our Common Stock acquired under a restricted stock award may

be subject to forfeiture to or repurchase by us in accordance with a vesting schedule to be determined by the Plan Administrator. Rights to acquire shares of our Common Stock under a restricted stock award may be transferred only upon such terms and conditions as are set forth in the restricted stock award agreement. A restricted stock award agreement may provide that any dividends paid on restricted stock will be subject to the same vesting conditions as apply to the shares subject to the restricted stock award. Upon a participant's termination of continuous service for any reason, any shares subject to restricted stock awards held by the participant that have not vested as of such termination date may be forfeited to or repurchased by us.

Restricted Stock Unit Awards

Restricted stock unit awards may be granted under the 2018 Plan pursuant to restricted stock unit award agreements. Payment of any purchase price may be made in any form of legal consideration acceptable to the Plan Administrator. A restricted stock unit award may be settled by the delivery of shares of our Common Stock, in cash, in a combination of cash and stock, or in any other form of consideration determined by the Plan Administrator and set forth in the restricted stock unit award agreement. Restricted stock unit awards may be subject to vesting in accordance with a vesting schedule to be determined by the Plan Administrator. Dividend equivalents may be credited in respect of shares of our Common Stock covered by a restricted stock unit award, provided that any additional shares credited by reason of such dividend equivalents will be subject to all of the same terms and conditions of the underlying restricted stock unit award. Except as otherwise provided in a participant's restricted stock unit award agreement or other written agreement with us, restricted stock units that have not vested will be forfeited upon the participant's termination of continuous service for any reason.

Performance Awards

The 2018 Plan allows us to grant performance stock awards. A performance stock award is a stock award that is payable (including that may be granted, may vest, or may be exercised) contingent upon the attainment of pre-determined performance goals during a performance period. A performance stock award may require the completion of a specified period of continuous service. The length of any performance period, the performance goals to be achieved during the performance period, and the measure of whether and to what degree such performance goals have been attained will be determined by the Plan Administrator in its discretion. In addition, to the extent permitted by applicable law and the applicable stock award agreement, the Plan Administrator may determine that cash may be used in payment of performance stock awards.

Performance goals under the 2018 Plan will be based on any one or more of the following performance criteria: (i) net earnings (either before or after one or more of the following: (A) interest, (B) taxes, (C) depreciation and (D) amortization); (ii) gross or net sales or revenue; (iii) net income (either before or after taxes); (iv) adjusted net income; (v) operating earnings or profit; (vi) cash flow (including, but not limited to, operating cash flow and free cash flow); (vii) return on assets; (viii) return on capital; (ix) return on stockholders' equity; (x) total stockholder return; (xi) return on sales; (xii) gross or net profit or operating margin; (xiii) costs; (xiv) funds from operations; (xv) expenses; (xvi) working capital; (xvii) earnings per share; (xviii) adjusted earnings per share; (xix) price per share; (xx) regulatory body approval for commercialization of a product; (xxi) positive results from clinical trials; (xxii) initiation of clinical trials; (xxiii) implementation, completion or maintenance of critical projects or relationships; (xxiv) closing of significant financing; (xxv) execution or completion of strategic initiatives; (xxvi) market share; (xxvii) economic value; (xxviii) cash flow return on capital; (xxix) return on net assets; and (xxx) other measures of performance selected by the Plan Administrator.

Performance goals may be based on a company-wide basis, with respect to one or more business units, divisions, affiliates or business segments, and in either absolute terms or relative to the performance of one or more comparable companies or the performance of one or more relevant indices. The Plan Administrator may, in its sole discretion, provide that one or more objectively determinable adjustments shall be made to one or more of the performance goals. Such adjustments may include one or more of the following: (i) items related to a change in accounting principles; (ii) items relating to financing activities; (iii) expenses for restructuring or productivity initiatives; (iv) other non-operating items; (v) items related to acquisitions; (vi) items attributable to the business operations of any entity acquired by the Company during the performance period; (vii) items related to the disposal of a business or segment of a business; (viii) items related to discontinued operations that do not qualify as a segment of a business under applicable accounting standards; (ix) items attributable to any

stock dividend, stock split, combination or exchange of stock occurring during the performance period; (x) any other items of significant income or expense which are determined to be appropriate adjustments; (xi) items relating to unusual or extraordinary corporate transactions, events or developments, (xii) items related to amortization of acquired intangible assets; (xiii) items that are outside the scope of the Company's core, on-going business activities; (xiv) items related to acquired in-process research and development; (xv) items relating to changes in tax laws; (xvi) items relating to major licensing or partnership arrangements; (xvii) items relating to asset impairment charges; (xviii) items relating to gains or losses for litigation, arbitration and contractual settlements; (xix) items relating to any other unusual or nonrecurring events or changes in applicable laws, accounting principles or business conditions; or (xx) any other items selected by the Plan Administrator.

In addition, the Plan Administrator retains the discretion to reduce or eliminate the compensation or economic benefit due upon the attainment of any performance goals and to define the manner of calculating the performance criteria it selects to use for a performance period.

Other Stock Awards

Other forms of stock awards valued in whole or in part by reference to, or otherwise based on, our Common Stock may be granted either alone or in addition to other stock awards under the 2018 Plan. Subject to the terms of the 2018 Plan, the Plan Administrator will have sole and complete authority to determine the persons to whom and the time or times at which such other stock awards will be granted, the number of shares of our Common Stock to be granted and all other terms and conditions of such other stock awards.

Clawback Policy

Stock awards granted under the 2018 Plan will be subject to recoupment in accordance with any clawback provisions in a participant's employment agreement or other agreement with the Company or any clawback policy that we are required to adopt pursuant to the listing standards of any national securities exchange or association on which our securities are listed or as is otherwise required by the Dodd-Frank Wall Street Reform and Consumer Protection Act or other applicable law. In addition, the Plan Administrator may impose other clawback, recovery or recoupment provisions in a stock award agreement as the Plan Administrator determines necessary or appropriate, including a reacquisition right in respect of previously acquired shares of our Common Stock or other cash or property upon the occurrence of cause.

Changes to Capital Structure

In the event of certain capitalization adjustments, the Plan Administrator will appropriately adjust: (i) the class(es) and maximum number of securities subject to the 2018 Plan; (ii) the class(es) and maximum number of securities that may be issued pursuant to the exercise of ISOs; and (iii) the class(es) and number of securities and price per share of stock subject to outstanding stock awards.

Corporate Transaction

In the event of a corporate transaction (as defined in the 2018 Plan and described below), the Board will have the discretion to take one or more of the following actions with respect to outstanding stock awards (contingent upon the closing or completion of such corporate transaction), unless otherwise provided in the stock award agreement or other written agreement with the participant or unless otherwise provided by the Board at the time of grant:

- arrange for the surviving or acquiring corporation (or its parent company) to assume or continue the award or to substitute a similar stock award for the award (including an award to acquire the same consideration paid to our stockholders pursuant to the corporate transaction);
- arrange for the assignment of any reacquisition or repurchase rights held by us with respect to the stock award to the surviving or acquiring corporation (or its parent company);
- accelerate the vesting (and, if applicable, the exercisability) of the stock award and provide for its termination prior to the effective time of the corporate transaction;

- arrange for the lapse, in whole or in part, of any reacquisition or repurchase rights held by us with respect to the award;
- cancel or arrange for the cancellation of the stock award, to the extent not vested or exercised prior to the effective time of the corporate transaction, in exchange for such cash consideration, if any, as the Board may consider appropriate; and
- make a payment, in such form as may be determined by the Board, equal to the excess, if any, of (i) the value of the property the participant would have received upon the exercise of the stock award immediately prior to the effective time of the corporate transaction, over (ii) any exercise price payable in connection with such exercise.

The Board is not obligated to treat all stock awards or portions of stock awards in the same manner. The Board may take different actions with respect to the vested and unvested portions of a stock award.

For purposes of the 2018 Plan, a corporate transaction generally will be deemed to occur in the event of the consummation of: (i) a sale or other disposition of all or substantially all of our consolidated assets; (ii) a sale or other disposition of at least 90% of our outstanding securities; (iii) a merger, consolidation or similar transaction following which we are not the surviving corporation; or (iv) a merger, consolidation or similar transaction following which we are the surviving corporation but the shares of our Common Stock outstanding immediately prior to the transaction are converted or exchanged into other property by virtue of the transaction.

Change in Control

Under the 2018 Plan, a stock award may be subject to additional acceleration of vesting and exercisability upon or after a change in control (as defined in the 2018 Plan and described below) as may be provided in the participant's stock award agreement, in any other written agreement with us or in our Director Compensation Policy, but in the absence of such provision, no such acceleration will occur.

For purposes of the 2018 Plan, a change in control generally will be deemed to occur upon the first to occur of an event set forth in any one of the following: (i) as a result of any merger or consolidation, the voting securities of the Company outstanding immediately prior thereto represent less than 49% of the combined voting power of the voting securities of the Company or such surviving or acquiring entity outstanding immediately after such transaction; (ii) a majority of our Board becomes comprised of individuals whose nomination, appointment, or election was not approved by at least two-thirds of the Board members or their approved successors; (iii) any individual, entity or group becomes the beneficial owner of more than 20% of the then outstanding shares of Common Stock of the Company; (iv) any sale of all or substantially all of the assets of the Company; or (v) the complete liquidation or dissolution of the Company.

The acceleration of vesting of a stock award in the event of a corporate transaction or a change in control event under the 2018 Plan may be viewed as an anti-takeover provision, which may have the effect of discouraging a proposal to acquire or otherwise obtain control of us.

Plan Amendments and Termination

The Plan Administrator will have the authority to amend or terminate the 2018 Plan at any time. However, except as otherwise provided in the 2018 Plan or a stock award agreement, no amendment or termination of the 2018 Plan may materially impair a participant's rights under his or her outstanding stock awards without the participant's consent. We will obtain stockholder approval of any amendment to the 2018 Plan as required by applicable law and listing requirements. No incentive stock options may be granted under the 2018 Plan after the tenth anniversary of the date the 2018 Plan was adopted by our Board.

U.S. Federal Income Tax Consequences

The following is a summary of the principal United States federal income tax consequences to participants and us with respect to participation in the 2018 Plan. This summary is not intended to be exhaustive and does not discuss the income tax laws of any local, state or foreign jurisdiction in which a participant may

reside. The information is based upon current federal income tax rules and therefore is subject to change when those rules change. Because the tax consequences to any participant may depend on his or her personal circumstances, each participant should consult the participant's tax adviser regarding the federal, state, local and other tax consequences of the grant or exercise of a stock award or the disposition of stock acquired under the 2018 Plan. The 2018 Plan is not qualified under the provisions of Section 401(a) of the Code and is not subject to any of the provisions of the Employee Retirement Income Security Act of 1974. Our ability to realize the benefit of any tax deductions described below depends on our generation of taxable income as well as the requirement of reasonableness and the satisfaction of our tax reporting obligations.

Nonstatutory Stock Options

Generally, there is no taxation upon the grant of an NSO if the stock option is granted with an exercise price equal to the fair market value of the underlying stock on the grant date. Upon exercise, a participant will recognize ordinary income equal to the excess, if any, of the fair market value of the underlying stock on the date of exercise of the stock option over the exercise price. If the participant is employed by us or one of our affiliates, that income will be subject to withholding taxes. The participant's tax basis in those shares will be equal to his or her fair market value on the date of exercise of the stock option, and the participant's capital gain holding period for those shares will begin on that date.

Subject to the requirement of reasonableness, the provisions of Section 162(m) of the Code, and the satisfaction of a tax reporting obligation, we will generally be entitled to a tax deduction equal to the taxable ordinary income realized by the participant.

Incentive Stock Options

The 2018 Plan provides for the grant of stock options that are intended to qualify as "incentive stock options," as defined in Section 422 of the Code. Under the Code, a participant generally is not subject to ordinary income tax upon the grant or exercise of an ISO. If the participant holds a share received upon exercise of an ISO for more than two years from the date the stock option was granted and more than one year from the date the stock option was exercised, which is referred to as the required holding period, the difference, if any, between the amount realized on a sale or other taxable disposition of that share and the participant's tax basis in that share will be long-term capital gain or loss.

If, however, a participant disposes of a share acquired upon exercise of an ISO before the end of the required holding period, which is referred to as a disqualifying disposition, the participant generally will recognize ordinary income in the year of the disqualifying disposition equal to the excess, if any, of the fair market value of the share on the date of exercise of the stock option over the exercise price. However, if the sales proceeds are less than the fair market value of the share on the date of exercise of the stock option, the amount of ordinary income recognized by the participant will not exceed the gain, if any, realized on the sale. If the amount realized on a disqualifying disposition exceeds the fair market value of the share on the date of exercise of the stock option, that excess will be short-term or long-term capital gain, depending on whether the holding period for the share exceeds one year.

For purposes of the alternative minimum tax, the amount by which the fair market value of a share of stock acquired upon exercise of an ISO exceeds the exercise price of the stock option generally will be an adjustment included in the participant's alternative minimum taxable income for the year in which the stock option is exercised. If, however, there is a disqualifying disposition of the share in the year in which the stock option is exercised, there will be no adjustment for alternative minimum tax purposes with respect to that share. In computing alternative minimum taxable income, the tax basis of a share acquired upon exercise of an ISO is increased by the amount of the adjustment taken into account with respect to that share for alternative minimum tax purposes in the year the stock option is exercised.

We are not allowed a tax deduction with respect to the grant or exercise of an ISO or the disposition of a share acquired upon exercise of an ISO after the required holding period. If there is a disqualifying disposition of a share, however, we will generally be entitled to a tax deduction equal to the taxable ordinary income realized by the participant, subject to the requirement of reasonableness, the provisions of Section 162(m) of the

Code, and provided that either the employee includes that amount in income or we timely satisfy our reporting requirements with respect to that amount.

Restricted Stock Awards

Generally, the recipient of a restricted stock award will recognize ordinary income at the time the stock is received equal to the excess, if any, of the fair market value of the stock received over any amount paid by the recipient in exchange for the stock. If, however, the stock is not vested when it is received (for example, if the employee is required to work for a period of time in order to have the right to sell the stock), the recipient generally will not recognize income until the stock becomes vested, at which time the recipient will recognize ordinary income equal to the excess, if any, of the fair market value of the stock on the date it becomes vested over any amount paid by the recipient in exchange for the stock. A recipient may, however, file an election with the Internal Revenue Service, within 30 days following his or her receipt of the restricted stock award, to recognize ordinary income, as of the date the recipient receives the restricted stock award, equal to the excess, if any, of the fair market value of the stock on the date the restricted stock award is granted over any amount paid by the recipient for the stock.

The recipient's basis for the determination of gain or loss upon the subsequent disposition of shares acquired from a restricted stock award will be the amount paid for such shares plus any ordinary income recognized either when the stock is received or when the stock becomes vested.

Subject to the requirement of reasonableness, the provisions of Section 162(m) of the Code, and the satisfaction of a tax reporting obligation, we will generally be entitled to a tax deduction equal to the taxable ordinary income realized by the recipient of the restricted stock award.

Restricted Stock Unit Awards

Generally, the recipient of a restricted stock unit award structured to comply with the requirements of Section 409A of the Code or an exception to Section 409A of the Code will recognize ordinary income at the time the stock is delivered equal to the excess, if any, of the fair market value of the stock received over any amount paid by the recipient in exchange for the stock. To comply with the requirements of Section 409A of the Code, the stock subject to a restricted stock unit award may generally only be delivered upon one of the following events: a fixed calendar date (or dates), separation from service, death, disability or a change in control. If delivery occurs on another date, unless the restricted stock unit award otherwise complies with or qualifies for an exception to the requirements of Section 409A of the Code (including delivery upon achievement of a performance goal), in addition to the tax treatment described above, the recipient will owe an additional 20% federal tax and interest on any taxes owed.

The recipient's basis for the determination of gain or loss upon the subsequent disposition of shares acquired from a restricted stock unit award will be the amount paid for such shares plus any ordinary income recognized when the stock is delivered.

Subject to the requirement of reasonableness, the provisions of Section 162(m) of the Code, and the satisfaction of a tax reporting obligation, we will generally be entitled to a tax deduction equal to the taxable ordinary income realized by the recipient of the restricted stock unit award.

Stock Appreciation Rights

Generally, if a stock appreciation right is granted with an exercise price equal to the fair market value of the underlying stock on the grant date, the recipient will recognize ordinary income equal to the fair market value of the stock or cash received upon such exercise. Subject to the requirement of reasonableness, the provisions of Section 162(m) of the Code, and the satisfaction of a tax reporting obligation, we will generally be entitled to a tax deduction equal to the taxable ordinary income realized by the recipient of the stock appreciation right.

New Plan Benefits Under the 2018 Plan

The following table sets forth certain information regarding future benefits under the 2018 Plan, as amended:

Name and Position	Number of Shares
John A. Scarlett M.D.	
Chairman of the Board, President and Chief Executive Officer	(1)
Olivia K. Bloom	
Executive Vice President Finance, Chief Financial Officer and Treasurer	(1)
Andrew J. Grethlein, Ph.D	
Executive Vice President, Chief Operating Officer	(1)
Aleksandra Rizo, Ph.D., M.D.	
Executive Vice President, Chief Medical Officer	(1)
Melissa A. Kelly Behrs	
Executive Vice President, Chief Business Officer	(1)
All current executive officers as a group	(1)
All current directors who are not executive officers as a group	(2)
All current employees who are not executive officers as a group	(1)

(1) Awards granted under the 2018 Plan to our executive officers and other employees are discretionary and are not subject to set benefits or amounts under the terms of the 2018 Plan, and we have not granted any awards under the 2018 Plan subject to stockholder approval of this Proposal 2. Accordingly, the future benefits or amounts that will be received by or allocated to our executive officers and other employees under the 2018 Plan are not determinable.

(2) As described above in this proxy statement under "Compensation of Directors," pursuant to the Director Compensation Policy, on the date of each annual meeting of our stockholders, including this Annual Meeting, each current non-employee director (other than any director receiving an initial grant on the date of such annual meeting) who is then serving as a non-employee director and who will continue as a non-employee director following the date of such annual meeting automatically will be granted an option to purchase 83,000 shares of our Common Stock (the "Annual Grant"). Under the current terms of our Director Compensation Policy, the aggregate number of shares subject to such Annual Grants that will automatically be granted to all of our current directors who are not executive officers as a group will be 498,000 shares each year.

2018 Plan Benefits

The following table presents certain information with respect to cumulative stock options that have been granted under the 2018 Plan as of March 2, 2020:

Name and Position	Cumulative Number of Shares Subject to Stock Options Granted Under the 2018 Plan	Weighted Average Exercise Price
John A. Scarlett M.D. ..... Chairman of the Board, President and Chief Executive Officer	3,132,750	$ 1.41
Olivia K. Bloom ..... Executive Vice President, Finance, Chief Financial Officer and Treasurer	1,341,375	$ 1.47
Andrew J. Grethlein, Ph.D. ..... Executive Vice President, Chief Operating Officer	1,341,375	$ 1.47
Aleksandra Rizo, Ph.D., M.D. ..... Executive Vice President, Chief Medical Officer	291,375	$ 1.295
Melissa A. Kelly Behrs..... Executive Vice President, Chief Business Officer	1,341,375	$ 1.47
All current executive officers as a group.....	8,789,625	$ 1.45
All current directors who are not executive officers as a group.....	940,000	$ 2.07
Each nominee for election as a director:		
Karin Eastham	140,000	$ 2.41
V. Bryan Lawlis, Ph.D.	140,000	$ 2.41
Susan M. Molineaux, Ph.D.	140,000	$ 2.41
Each associate of any current executive officers, current directors or director nominees.....	—	$ —
Each other person who received or is to receive 5% of awards	—	$ —
All current employees who are not executive officers as a group	4,396,006	$ 1.37

Required Vote and Board of Directors Recommendation

Approval of this Proposal 2 requires the affirmative vote of the holders of a majority of the shares having voting power present in person or represented by proxy at the Annual Meeting. Abstentions will have the same effect as a vote against this proposal, and broker non-votes will have no effect on the outcome of this proposal.

The Board of Directors Unanimously Recommends That Stockholders Vote FOR Proposal 2

PROPOSAL 3

ADVISORY VOTE TO APPROVE NAMED EXECUTIVE OFFICER COMPENSATION

As required by Section 951 of the Dodd-Frank Wall Street Reform and Consumer Protection Act and Section 14A of the Securities Exchange Act of 1934, as amended (the "Exchange Act"), the Board is requesting stockholders to vote, on a non-binding advisory basis, to approve the compensation paid to Geron's Named Executive Officers, as disclosed in this Proxy Statement. This proposal, commonly known as a "say-on-pay" proposal, gives stockholders the opportunity to express their views on the compensation of Geron's Named Executive Officers.

This vote is not intended to address any specific item of compensation, but rather the overall compensation of our Named Executive Officers and our executive compensation philosophy, policies and practices described in this Proxy Statement. The overall compensation of our Named Executive Officers subject to the vote is disclosed in this Proxy Statement in the sections entitled "Compensation Discussion and Analysis" and "Executive Compensation Tables and Related Narrative Disclosure."

The Compensation Committee continually reviews our executive compensation program to determine whether such program achieves our desired goals of aligning our executive compensation strategy and structure with the Company's stockholders' interests and current market practices. As discussed in detail in the section entitled "Compensation Discussion and Analysis" of this Proxy Statement, Geron's executive compensation strategy and structure is designed to motivate our executive team to create long-term value for our stockholders through the achievement of strategic business objectives, while effectively managing the risks and challenges inherent in a clinical-stage biotechnology company. As the long-term success of Geron depends on the talents of our employees, our compensation structure plays a significant role in our ability to attract, retain and motivate the highest quality workforce in a competitive employment environment in both the San Francisco Bay Area and northern New Jersey, while also promoting a high-performance culture. The Compensation Committee believes the emphasis on pay for performance in Geron's executive compensation program strongly aligns with the long-term interests of our stockholders. Please read the "Compensation Discussion and Analysis" section of this Proxy Statement for additional details about our executive compensation program, including information about the 2019 compensation of our Named Executive Officers.

Advisory Vote

We recommend stockholder approval of the 2019 compensation of our Named Executive Officers as disclosed in this Proxy Statement pursuant to the SEC's compensation disclosure rules, which disclosure includes the section entitled "Compensation Discussion and Analysis," and the compensation tables and accompanying narrative disclosures within the section entitled "Executive Compensation Tables and Related Narrative Disclosure" of this Proxy Statement.

Accordingly, the Board recommends that stockholders vote in favor of the following resolution:

"RESOLVED, that the stockholders approve, on a non-binding advisory basis, the compensation paid to Geron's Named Executive Officers, as disclosed in the Compensation Discussion and Analysis section, the tabular disclosure regarding such compensation and the accompanying narrative disclosure set forth in the Proxy Statement relating to the Company's 2020 Annual Meeting of Stockholders."

Approval of the above resolution requires the affirmative vote of the holders of a majority of the shares having voting power present in person or represented by proxy at the Annual Meeting. Abstentions will have the same effect as a vote against this proposal, and broker non-votes will have no effect on the outcome of this proposal.

As this is an advisory vote, the outcome of the vote is non-binding on us with respect to future executive officer compensation decisions, including those related to our Named Executive Officers, or otherwise. However, the Board and the Compensation Committee will review the results of the vote and take them into account when considering future executive officer compensation policies and decisions.

Unless the Board modifies its policy on the frequency of future advisory votes on the compensation of our Named Executive Officers, the next advisory vote on the compensation of our Named Executive Officers will be held at next year's annual meeting of stockholders.

The Board of Directors Unanimously Recommends
That Stockholders Vote FOR Proposal 3

COMPENSATION DISCUSSION AND ANALYSIS

This Compensation Discussion and Analysis section presents and discusses executive compensation policies and practices and the compensation decisions relating to our "Named Executive Officers" (as defined below) for the 2019 fiscal year, and includes the following:

- an executive summary of the business activities which influenced 2019 compensation decisions and important features of our executive compensation program;
- philosophy, objectives and key elements of our executive compensation program;
- process for setting executive compensation, including the role of the Compensation Committee, management and independent compensation consultant;
- a detailed discussion and analysis of the Compensation Committee's specific decisions about 2019 compensation for each of our Named Executive Officers; and
- a description of other compensation considerations and practices.

The following executive officers are collectively referred to herein as our Named Executive Officers:

- Dr. John A. Scarlett, Chairman of the Board, Chief Executive Officer and President;
- Ms. Olivia K. Bloom, Executive Vice President, Finance, Chief Financial Officer and Treasurer;
- Dr. Andrew J. Grethlein, Executive Vice President, Chief Operating Officer;
- Dr. Aleksandra Rizo, Executive Vice President, Chief Medical Officer; and
- Ms. Melissa A. Kelly Behrs, Executive Vice President, Chief Business Officer.

Executive Summary

Business Highlights that Impacted 2019 Executive Compensation

Our executive compensation program in 2019 was highly influenced by our decision to continue development of the imetelstat program on our own after receiving notice from Janssen Biotech, Inc. ("Janssen") in September 2018 of its decision to discontinue development of imetelstat, terminate its license rights under the collaboration and license agreement (the "Collaboration Agreement"), and return the imetelstat program to us. Since regaining the rights to imetelstat we have accomplished the following key activities:

- Advanced clinical development of imetelstat with the commencement of a Phase 3 clinical trial in lower risk myelodysplastic syndromes ("MDS").
- Presented updated clinical data and analyses from the ongoing Phase 2 trials in myelofibrosis ("MF") and MDS at a medical conference.
- Obtained Fast Track designation from the United States Food and Drug Administration ("FDA") for imetelstat in adult patients with Intermediate-2 or High-risk MF whose disease has relapsed after or is refractory to janus kinase ("JAK") inhibitor treatment, or relapsed/refractory MF.

- Conducted an End of Phase 2 meeting with the FDA to discuss the results of the IMbark Phase 2 clinical trial in MF. Based on feedback from the meeting, in 2020 we plan to submit Phase 3 trial design proposals in MF to the FDA and to have further discussions with the FDA regarding a potential regulatory approval path for imetelstat in MF.
- Completed transition of the imetelstat program from Janssen to Geron, including transfer of all clinical, regulatory, manufacturing, nonclinical and translational activities.
- Established contract manufacturing supply chain for imetelstat designed to enable production of imetelstat for potential future clinical and commercial needs.
- Recruited highly qualified and experienced professionals to drive each development operation, including clinical operations, regulatory affairs, clinical science, biometrics and data management, manufacturing, quality, translational research and program management. Many of our newly hired personnel had previous experience with imetelstat through the Janssen collaboration, which facilitates our ability to advance the imetelstat program.

We structured 2019 executive compensation to maintain continuity within the Company, which was vital as we transitioned the program from Janssen to us and continued development of imetelstat on our own. Consistent with prior years, in 2019, we faced persistent retention and recruitment challenges as the marketplace for qualified executive officers with broad experience in a small company environment continued to be highly competitive in both the San Francisco Bay Area and northern New Jersey, fueled in part by robust growth in both the technology and biopharmaceutical industries and high demand for experienced personnel by newly public entities, especially in the healthcare sector. In addition, we designed 2019 executive compensation to incentivize and reward past and future achievements that position the Company to advance the development of imetelstat in MDS and MF and potentially expand development into other hematologic myeloid malignancies, as well as establish a foundation for future growth into potential commercialization.

Our corporate goals for 2019 primarily focused on transitioning the imetelstat program from Janssen to us, initiating the Phase 3 clinical trial in MDS, seeking potential collaboration partners for ex-U.S. commercialization of imetelstat and rebuilding internal development capability through hiring and re-establishing a manufacturing supply chain. The Compensation Committee and independent members of the Board (the "Independent Board"), evaluated our achievements in 2019 and determined that we achieved 90% of our 2019 corporate goals, which included additional achievements not originally identified at the beginning of the year. For details regarding our 2019 corporate goal achievements, see the sub-section entitled "Compensation Discussion and Analysis – 2019 Corporate Goal Achievement Factor."

Important Features of Our Executive Compensation Program

The Compensation Committee has structured our executive compensation program to ensure that our executive officers, including our Named Executive Officers, are compensated in a manner consistent with stockholder interests, competitive pay practices and applicable requirements of regulatory bodies. To help us accomplish these important objectives, we have adopted the following policies and practices over time:

What We Do:	**What We Don't Do:**
✓ Emphasize pay for performance using a mix of annual and long-term metrics	✓ Approve automatic or guaranteed annual salary increases
✓ Conduct competitive benchmarking to ensure executive officer compensation is aligned to market	✓ Permit automatic or guaranteed bonuses or long-term incentive awards
✓ Require a compensation recoupment (i.e., clawback) with respect to all our executive officers	✓ Provide for tax gross-ups
✓ Appoint only independent directors to the Compensation Committee	✓ Reprice options without stockholder approval
✓ Engage an independent compensation consultant reporting directly to the Compensation Committee	✓ Allow hedging or pledging of Company stock
✓ Annually assess risk in our compensation programs and identify mitigation strategies	✓ Grant stock options with an exercise price less than fair market value
✓ Conduct annual say-on-pay vote	

Stockholder Engagement

At our 2019 Annual Meeting of Stockholders, we sought an advisory vote from our stockholders regarding the compensation of our named executive officers. At the time of the 2019 Annual Meeting of Stockholders, approximately 70% of our outstanding shares were represented by individual (non-institutional) investor stockholders. The 2019 "say-on-pay" proposal was approved, with approximately 60.1% of the votes cast supporting the proposal. Due to the lower than 70% vote outcome, at the direction of the Compensation Committee and the Board, we commenced a comprehensive stockholder outreach program following our 2019 Annual Meeting of Stockholders with assistance from Alliance Advisors, a proxy solicitor, aimed at soliciting feedback from stockholders related to our governance and executive compensation practices so that we could better understand our stockholders' views on executive compensation, be responsive to the outcome of the 2019 "say-on-pay" proposal and consider potential changes to our compensation programs that would address our stockholders' concerns.

As part of this outreach program, Alliance Advisors contacted the top 20 institutional investment firms representing votes both "For" and "Against" our 2019 "say-on-pay" proposal. These firms represented approximately 29% of our outstanding shares, or 90% of our institutional investor stockholders. We held telephonic meetings with two of our institutional investors, representing 9% of our outstanding shares. Each meeting was attended by governance representatives from the institutional investment firm, Alliance Advisors, members of our executive management team and the Chairman of our Compensation Committee. Additionally, we examined reports and analyses issued by proxy advisory services, Institutional Shareholder Services (ISS) and Glass Lewis, and noted that both firms recommended "For" the 2019 "say-on-pay" proposal. Feedback from this outreach and analysis affirmed that the Company's executive compensation practices were consistent with industry standards, including the primary use of stock options as long-term equity incentives that help align the interests of employees and stockholders. Comments from institutional investors focused on the presentation of information, including the use of tables to distinguish elements of annual compensation from long-term compensation. Also, institutional investors noted future interest in information related to sustainability, social risk issues and corporate responsibility as the Company matures and grows.

Based on comments from the stockholder outreach program, we have enhanced our disclosures around annual and long-term compensation, including description of how long-term compensation is measured. The Compensation Committee did not make any changes to Geron's executive compensation program for 2019 as a result of the 2019 "say-on-pay" vote or the feedback from the stockholder outreach program. However, the Compensation Committee will continue to monitor and evaluate our executive compensation program going forward in light of our stockholders' views and our evolving needs and business strategy to ensure the program aligns with the interests of our stockholders.

Our Executive Compensation Program

Philosophy and Objectives

We believe that the leadership of our current executive team will be vital as we advance imetelstat independently and, if imetelstat is approved in the future by regulatory authorities, commercialize in the United States and seek potential commercialization partners for territories outside of the United States. Our industry is highly scientific, clinical, regulated and dynamic, which requires an executive team that is exceptionally educated, dedicated and experienced. We also believe that the work of our executive officers, including our Named Executive Officers, toward accomplishing our corporate goals is highly collaborative and team-oriented, requiring our executive officers to perform duties and responsibilities outside those of his or her job title, as such job titles are commonly understood in the industry. Given the highly collaborative teamwork of our executive officers, including our Named Executive Officers, and the benefit we believe is conveyed to the Company by retaining the team intact, the Compensation Committee has concluded that retention and internal pay equity among the executive team are key factors in compensation decisions. In light of these circumstances, we believe our executive compensation program serves to help attract, motivate and retain executive officers, including, our Named Executive Officers, who can drive strategic clinical and business objectives and build long-term stockholder value.

Our executive compensation program has the following general objectives:

Objective	Description
Pay for Performance	We tie annual performance-based bonuses to the successful achievement of individual and corporate goals
Alignment to Stockholders' Interests	We structure long-term incentives (i.e., stock options) such that benefits are only attained upon appreciation of stock value
Competitiveness	We compare our practices with appropriate peer companies to ensure annual and long-term compensation correspond with industry and market standards
Internal Fairness	We assess total compensation packages across the executive team for consistency

We believe that these objectives align with our compensation philosophy and support the key factors identified by the Compensation Committee with respect to compensation decisions.

Components

The primary components of our executive compensation program consist of elements that are available to all employees, including base salary, annual performance-based bonuses, stock options and broad-based benefits. To help retain and motivate our executive officers, including our Named Executive Officers, we target total compensation that is competitive with both the San Francisco Bay Area and Northern New Jersey biotechnology employment markets through the utilization of a mix of short- and long-term compensation, fixed and variable pay and cash and equity-based compensation, as well as to reflect our philosophy of providing pay for performance. "Total compensation," as referred to in this Compensation Discussion and Analysis, consists of annual base salary, annual performance-based bonus and the grant date fair value of stock options as reported in the sub-section entitled "Summary Compensation Table."

In the table below, we describe each component, when it is paid, how we determine the amount or size of each component, and why we pay each component.

	/---------Fixed Pay-------/	/----------Variable Pay (At Risk)----------/	
	Base Salary	**Performance-Based Bonus[1]**	**Stock Options**
Form	Cash	Cash	Equity
When paid/vested	Ongoing, twice monthly	Annual	Fully vested after 4-years of continuous service
How determined	• Competitive data • Scope of responsibilities • Work experience • Critical skills • Internal equity • Individual performance	• Target awards are set as a percent of salary based on competitive data • Award payouts are based on achievement of weighted corporate and individual goals • CEO bonus tied 100% to corporate goal achievement	• Based on competitive data and industry standards • Takes into consideration potential projected benefit upon stock price appreciation
Why paid	Provides competitive levels of fixed pay to attract and retain executives	Motivates attainment of critical near-term priorities by linking annual company and individual performance to an annual incentive	Promotes retention of key talent, aligns executive and stockholder interests and encourages employee ownership in Geron

(1) Defined as non-equity incentive plan compensation in the Summary Compensation Table.

Process for Setting Executive Compensation

Role of the Compensation Committee

Appointed by our Board, the members of our Compensation Committee are independent of our management and meet the Nasdaq listing standards for independence. The Compensation Committee acts on behalf of the Board to oversee the compensation policies and practices applicable to all of our employees, including the administration of our equity plans and employee benefit plans. Typically, the Compensation Committee meets at least once quarterly, and may meet with greater frequency if necessary. The agenda for each meeting is usually developed by the Chair of the Compensation Committee, in consultation with the Chief Executive Officer, Vice President of Human Resources, Chief Legal Officer and our independent compensation consultant, Radford. The Compensation Committee also meets in executive session without the presence of any employees. Historically, the Compensation Committee makes decisions related to executive compensation after conducting multiple meetings during the fourth quarter of each calendar year and the first quarter of the ensuing year.

Role of Independent Compensation Consultant

The Compensation Committee actively reviews and assesses our executive compensation program in light of the highly competitive employment environment in the San Francisco Bay Area and northern New Jersey, the challenges of recruiting, motivating and retaining our executive officers, including our Named Executive Officers, in an industry such as ours, which has much longer business cycles than other commercial industries, and evolving compensation governance and best practices. To assist with this assessment, the Compensation Committee has the authority to retain special counsel and other experts, including compensation consultants, to support their responsibilities in determining executive officer compensation and related benefits. Since December 2011, the Compensation Committee has retained Radford as its independent compensation consultant due to its extensive analytical and compensation expertise in the biotechnology and pharmaceutical industry. Although the Company pays the costs of Radford's services, the Compensation Committee has the sole authority to engage and terminate Radford's services, as well as to approve fees for Radford's services. Radford makes recommendations to the Compensation Committee, but it has no authority to make compensation decisions on behalf of the Compensation Committee or the Company. The Compensation Committee, at its discretion, may communicate and meet with Radford with no Company employees present.

In January 2019, the Compensation Committee reviewed information from Radford about potential conflicts of interest and analyzed whether the work of Radford as a compensation consultant raised any conflict of interest, taking into consideration the following six factors:

(i) the provision of other services to Geron by Radford or any other Aon Hewitt Company or its affiliates (collectively, the "Radford Affiliates");

(ii) the amount of fees Geron paid to Radford or any Radford Affiliate as a percentage of the firm's total revenue;

(iii) Radford's policies and procedures to prevent conflicts of interest;

(iv) any business or personal relationship of Radford, any Radford Affiliates or the individual compensation advisors employed by Radford with an executive officer of the Company;

(v) any business or personal relationship of the individual compensation advisors employed by Radford with any member of the Compensation Committee; and

(vi) any Geron Common Stock owned by the individual compensation advisors employed by Radford.

Based on these factors, the Compensation Committee determined that there were no conflicts of interest with respect to the provision of services by Radford to the Compensation Committee. In 2019, fees paid to Radford for their services as a compensation consultant to the Compensation Committee amounted to less than 1.0% of Radford's total revenue for the same period and were less than $120,000. In January 2020, the Compensation Committee performed a similar analysis of Radford's independence, and determined that there were no conflicts of interest with respect to the provision of services by Radford to the Compensation Committee.

For 2019, Radford provided the following services to the Compensation Committee:

- reviewed emerging trends and topics regarding executive and non-employee director compensation;
- recommended the companies to comprise a defined peer group to reference in determining executive and non-employee director compensation;
- provided compensation data and practices related to executive officers for the defined peer group based on data from SEC filings and Radford's Life Sciences Survey;
- conducted a competitive review of the compensation of our executive officers and non-employee directors, including advising on the design and structure of compensation; and
- prepared an analysis of share usage under our equity incentive plan in comparison to the defined peer group based on data from SEC filings.

Role of Management

To aid the Compensation Committee in its responsibilities, during the first quarter of each year, the Chief Executive Officer, with assistance from the Chief Legal Officer and Vice President of Human Resources, provides the Compensation Committee with recommendations relating to the level of achievement the Company has attained with respect to our annual corporate goals. In addition, the Chief Executive Officer presents to the Compensation Committee written assessments of the performance and achievements, including support of our corporate values, for each of the Named Executive Officers (other than himself) for the prior year and recommends an individual performance factor and the corporate values performance factor for each Named Executive Officer (other than himself). The Compensation Committee gives considerable weight to the Chief Executive Officer's performance evaluations of the other Named Executive Officers, since he has direct knowledge of the criticality of their work, performance and contributions. The Compensation Committee does not consult with any other executive officer with regard to its decisions. The Compensation Committee reviews the individual performance factor and the corporate values performance factor for each of the Named Executive Officers (other than the Chief Executive Officer) and adjusts the factors as necessary prior to approval. The Chief Executive Officer does not participate in the Compensation Committee's or Board's deliberations or decisions with regard to his own compensation, which is recommended by the Compensation Committee to, and approved by the Independent Board.

Use of Market Data and Peer Group Analysis

When considering executive compensation, the Compensation Committee believes it is important to be informed as to current compensation practices of comparable publicly traded companies in the life sciences industry and to understand the demand and competition that the Company faces in attracting and retaining individuals with specific expertise and experience.

In November 2018, based on the recommendation of Radford, the Compensation Committee determined that a defined peer group was appropriate to reference in connection with making 2019 executive officer compensation decisions. With the assistance of Radford, the Compensation Committee considered several factors in determining the companies to be included in the defined peer group for 2019 executive compensation decisions, including stage of development, market capitalization, number of employees, public status and length of time being public, primary location of operations and level of research and development expenditures and revenue. The following companies were identified by the Compensation Committee as the defined peer group for 2019 executive compensation decisions:

Achillion Pharmaceuticals, Inc.	Cytokinetics, Inc.	Rigel Pharmaceuticals, Inc.
Ardelyx, Inc.	Idera Pharmaceuticals, Inc.	Sesen Bio
AVEO Pharmaceuticals, Inc.	La Jolla Pharmaceutical Company	Stemline Therapeutics, Inc.
BioTime, Inc.	MediciNova, Inc.	Syndax Pharmaceuticals, Inc.
ChemoCentryx, Inc.	MEI Pharma, Inc.	TG Therapeutics, Inc.
Curis, Inc.	NewLink Genetics Corporation	ZIOPHARM Oncology, Inc.

As of January 2019, the average of the 30-day average market capitalization of these peer group companies was $239.0 million. These peer group companies had an average number of 75 full-time employees based on their most recent annual reports, compared to our 30-day average market capitalization of $221.0 million and 15 full-time employees. The market data supplied by Radford for the defined peer group provides information on the total compensation paid to executive officers in comparable positions and responsibilities. In 2019, as in prior years, the Compensation Committee believes considering Radford's market data, along with other factors as outlined below under "2019 Base Salaries," including individual performance and overall Company performance; internal pay equity; tenure, experience, skills and responsibilities; managerial leadership; and the cost of living in the San Francisco Bay Area and northern New Jersey, are important to understand when setting total compensation for our Named Executive Officers because competition for executive management is intense in our industry and in our geographic areas, and continued leadership from our Named Executive Officers is critical to our success.

Setting Base Salaries

The Compensation Committee (or the Independent Board with respect to the Chief Executive Officer, upon recommendation from the Compensation Committee), in consultation with Radford, sets base salaries for our Named Executive Officers when they join our Company or upon promotion. In addition, at the beginning of each calendar year, the Compensation Committee, in consultation with Radford (or the Independent Board with respect to our Chief Executive Officer, upon recommendation from the Compensation Committee), reviews and determines base salaries for our Named Executive Officers. The Compensation Committee (or the Independent Board with respect to our Chief Executive Officer, upon recommendation from the Compensation Committee) considers various factors, as noted above, in determining whether any base salary adjustments are necessary. The Compensation Committee does not apply any specific formulas in determining increases in base salaries for our Named Executive Officers and instead employs a holistic analysis of multiple relevant factors using its professional judgement and experience in determining base salary increases. Increases in base salary typically are effective as of January 1st of each calendar year.

Assessing Annual Corporate Performance

At the beginning of each calendar year, the Chief Executive Officer develops, with input from our Named Executive Officers, our annual corporate goals, including recommended weightings for each goal. The weighting for each corporate goal depends on its importance and business value for Geron and our stockholders. In addition, each goal is established with criteria to measure target goal accomplishment (100%), as well as criteria to measure stretch goal accomplishment (up to an additional 50%) in certain cases. The Chief Executive Officer submits the corporate goals and recommended weightings to the Compensation Committee and the Independent Board for their review and approval. The Compensation Committee and Independent Board review the corporate goals and weightings and modify them as necessary prior to approval.

During the first quarter of the year, as part of the annual year-end performance review process, the Compensation Committee evaluates our achievement of the corporate goals for the preceding year. To aid the Compensation Committee in its responsibilities, the Chief Executive Officer, with assistance from the Chief Legal Officer and Vice President of Human Resources, provides the Compensation Committee with recommendations relating to the achievement the Company has attained with respect to our annual corporate goals, known as the corporate goal achievement factor. The Compensation Committee does not use a rigid formula to determine the corporate goal achievement factor, and to date, has not established a minimum threshold or maximum value that may be potentially realized for the corporate goal achievement factor. Also, the Compensation Committee can take into account additional achievements by the Company not originally set forth in the annual corporate goals. The corporate goal achievement factor can range from 0% to 150%. The Compensation Committee evaluates the corporate goal achievement factor, and recommends the corporate goal achievement factor to the Independent Board, which has the final approval. In assessing the corporate goal achievement factor, the Compensation Committee and Independent Board consider the following:

- the degree of success in achieving each corporate goal;
- the degree of difficulty in achieving the corporate goal;

- whether significant unforeseen obstacles or favorable circumstances altered the expected difficulty of achieving the desired results;
- other conditions that may have made the stated goal more or less important to our success; and
- any other significant company accomplishments not included in the formal goals, but nonetheless deemed important to our near- and long-term success.

The Compensation Committee recommends the corporate goal achievement factor to the Independent Board, which considers the recommendation of the Compensation Committee and may accept or modify such recommendation before approval. The Independent Board has the discretion to approve a corporate goal achievement factor above 100% in extraordinary circumstances where it determines such an increase is warranted. Calculation of annual performance-based bonuses for all employees, including our Named Executive Officers, generally occurs at the beginning of each calendar year based on performance of the prior year. Payment of annual performance-based bonuses typically occurs in the first quarter of the calendar year.

Determining Equity Grants

The Compensation Committee (or the Independent Board with respect to our Chief Executive Officer, upon recommendation from the Compensation Committee), in consultation with Radford, determines the size of any stock option grant according to each executive officer's position. To do so, the Compensation Committee considers numerous factors, as outlined below under "2019 Stock Option Grants" and has the discretion to give relative weight to each of these factors as it sets the size of the stock option grant to appropriately create an opportunity for future reward based on increasing stockholder value. There is no set formula for the granting of stock options to employees, including our Named Executive Officers; however, we reference the grant ranges based on the market data provided by Radford for each position. While we have not adopted formal stock ownership or holding guidelines, our Named Executive Officers generally have held a substantial portion of the stock options they have received, even long after the stock options have vested, which helps to maintain the alignment between the interests of our Named Executive Officers and those of our stockholders over the longer term.

Stock Option Granting Practices

Our general policy is to grant stock options on fixed dates determined in advance. All required approvals are obtained in advance of or on the actual grant date. The exercise price of all stock option grants, including to executive officers, is equal to the closing price of Geron Common Stock as reported by the Nasdaq Global Select Market on the date of grant. Geron's standard vesting schedule for the first stock option grant awarded to newly hired employees, including executive officers, provides that 12.5% of the shares granted will vest six months after the vesting commencement date of the grant, and the remaining shares will vest in equal monthly installments over the following 42 months, so that vesting is complete four years from the date of grant, provided the employee continues to provide services to the Company during that time. Additional stock option grants made after an employee, including an executive officer, has provided services to the Company for more than six months, generally vest monthly from the date of grant over four years.

The Compensation Committee (or the Independent Board with respect to our Chief Executive Officer, upon recommendation from the Compensation Committee) grants stock options to newly hired and existing executive officers. Other than stock option grants to new hires, stock option grants to executive officers are generally approved once a year (typically near the beginning of the year). If an executive officer is promoted, a stock option will normally be granted at the time of such promotion, or, in rare circumstances, for recognition of outstanding performance.

We recognize that public disclosure of important information about the Company in close proximity to an executive stock option grant may appear to be an effort to time the dissemination of such information to a grantee's benefit (even if no such benefit was intended). Accordingly, we have a general practice whereby if the Compensation Committee (or the Independent Board, in the case of the Chief Executive Officer, upon recommendation from the Compensation Committee) approves annual stock option grants to our executive officers when our trading window is closed, then such annual stock option grant will be made on the second trading day following our trading window re-opening. This practice is intended to allow the market to absorb the disclosure of financial and other information that was the basis of the closure of the trading window, so the market price of our Common Stock reflects our then-current results and prospects at the time the annual stock

option grant is made and the exercise price is set. As a result, the timing of annual stock option grants to our continuing executive officers is not coordinated in a manner that intentionally benefits our executive officers.

Allocating Amongst Compensation Components

The Compensation Committee does not have any formal policies for allocating total compensation among the various components of the executive compensation program. Instead, the Compensation Committee uses its judgment, in consultation with Radford, to establish a mix of current, short-term and long-term incentive compensation, and cash and equity compensation for each Named Executive Officer. In setting the annual level of total compensation for our Named Executive Officers, the Compensation Committee considers various factors, which typically include:

- defined peer group market data provided by Radford;
- corporate performance, including performance in light of current business challenges;
- our level of achievement of our corporate goals;
- internal pay equity among Named Executive Officers;
- each executive officer's individual performance;
- the criticality of each executive officer's skill set, and the need to retain such skills;
- executive officer stock ownership information;
- analyses of historical executive officer compensation levels and current company-wide compensation levels; and
- trends for executive compensation for our industry.

Each of these factors is considered in the context of our overall compensation structure and balanced against Geron's financial resources and ability to award cash and equity incentives.

Compensation Decisions in 2019

2019 Base Salaries

The Compensation Committee believes base salaries should be consistent with the base salaries provided by companies in our defined peer group. In January 2019, the Compensation Committee performed its annual analysis of base salaries for all of our Named Executive Officers, except for Dr. Rizo who was hired at the end of January 2019, using the defined peer group market data provided by Radford. The market data analysis showed that at the end of 2018, the base salary of all of our Named Executive Officers, except for Dr. Grethlein, was at or above the 75th percentile of the defined peer group market data provided by Radford. Dr. Grethlein's base salary was at the 60th percentile of the defined peer group market data provided by Radford. Dr. Rizo's base salary is set forth in her employment agreement and was determined using peer group market data for an executive officer in a similar position and negotiations in connection with the commencement of her employment. Dr. Rizo's base salary was above the 75th percentile of the defined peer group market data provided by Radford.

The Compensation Committee concluded, with respect to each Named Executive Officer whose base salary was at or above the 75th percentile of the defined peer group market data provided by Radford, that such base salary appropriately reflected the broad responsibilities of each Named Executive Officer and the level of difficulty required to achieve the individual's goals for 2018. In addition to the market data analysis, the Compensation Committee considered a number of other factors, including:

- the individual performance of each Named Executive Officer in 2018;
- internal pay equity among our Named Executive Officers;
- tenure, experience, skills and responsibilities of each Named Executive Officer;

- managerial leadership exhibited by each Named Executive Officer;
- expected cost of living increases in the San Francisco Bay Area and northern New Jersey;
- annual corporate goals and Company performance; and
- the anticipated level of difficulty in replacing an executive officer with someone of comparable experience and skill, especially given significant uncertainty relating to our future operations.

Given the collaborative team-oriented effort and broad job responsibilities of our Named Executive Officers, and therefore, the desire for internal pay equity among the executive team, and based on guidance provided by Radford as to an appropriate cost of living adjustment, the Compensation Committee and, with respect to Dr. Scarlett, the Independent Board, approved a cost of living base salary adjustment of 3.4% for Dr. Scarlett and Ms. Bloom in 2019. The Compensation Committee adjusted the base salary of Dr. Grethlein by 7.0% to reflect his expanded responsibilities in connection with his appointment to Chief Operating Officer in January 2019. Also, the Compensation Committee adjusted the base salary of Ms. Behrs by 6.3% to reflect her multiplicity of responsibilities from internal management to forming new external alliances and the desire to maintain internal pay equity with the other Named Executive Officers.

The following base salaries for our Named Executive Officers were effective as of January 1, 2019.

Named Executive Officer	2018 Base Salary	Salary Increase (%)	2019 Base Salary
John A. Scarlett, M.D.	$ 667,000	3.4%	$ 690,000
Olivia K. Bloom	$ 445,000	3.4%	$ 460,000
Andrew J. Grethlein, Ph.D.	$ 430,000	7.0%	$ 460,000
Aleksandra Rizo, M.D., Ph.D.	N/A	N/A	$ 475,000 (1)
Melissa A. Kelly Behrs	$ 400,000	6.3%	$ 425,000

(1) Dr. Rizo joined the Company on January 30, 2019.

2019 Annual Performance-Based Bonuses

Named Executive Officers' 2019 annual performance-based bonus targets, as a percentage of base salary, as shown in the table below, remained at the same historical levels that we have applied since 2010. The defined peer group market data provided by Radford showed that the annual performance-based bonus targets for Ms. Bloom and Ms. Behrs in 2019 were above the 75th percentile of the defined peer group data provided by Radford. Dr. Scarlett's annual performance-based bonus target was at the 60th percentile of defined peer group market data. Dr. Grethlein's annual performance-based bonus target was between the 50th and 75th percentile of defined peer group market data. Dr. Rizo's annual performance-based bonus target was set in her negotiated employment agreement, aligns with the other Named Executives Officers at her level and was above the 75th percentile of the defined peer group data provided by Radford. The Compensation Committee determined that these annual performance-based targets were appropriate for 2019 in light of the functions for which our Named Executive Officers were accountable to ensure achievement of our 2019 corporate goals, and strengthened our ability to retain our Named Executive Officers in a competitive job market.

The table below summarizes the annual performance-based bonus targets as a percentage of annual salary for each of our Named Executive Officers for 2019.

Named Executive Officer	Annual Incentive Bonus Target as a % of Salary
John A. Scarlett, M.D.	60%
Olivia K. Bloom	45%
Andrew J. Grethlein, Ph.D.	45%
Aleksandra Rizo, M.D., Ph.D.	45%
Melissa A. Kelly Behrs	45%

In keeping with our pay for performance philosophy, the amount of an annual performance-based bonus that can be earned by each Named Executive Officer is variable and at risk due to its dependency on the performance of the individual and the overall Company. Consistent with prior years, for 2019, other than Dr. Scarlett, each Named Executive Officer's annual performance-based bonus was contingent on the following: 50% upon the level of achievement of our corporate goals, 30% upon the level of achievement of individual goals, and 20% upon individual support and manifestation of our corporate values. Dr. Scarlett's annual performance-based bonus was 100% contingent upon the level of achievement of our corporate goals.

2019 Corporate Goal Achievement Factor

The table below summarizes the corporate goals approved by the Independent Board for 2019, including assigned weightings, and the Compensation Committee's and Independent Board's assessments of the level of achievement of those goals for 2019. The corporate goals for 2019 primarily focused on:

- transitioning the imetelstat program from Janssen to us;
- initiating and dosing the first patient in the Phase 3 clinical trial in MDS;
- conducting an End of Phase 2 meeting with FDA to discuss results from the IMbark Phase 2 clinical trial in MF;
- seeking potential collaboration partners for ex-U.S. commercialization of imetelstat;
- rebuilding internal development capability through hiring and re-establishing a manufacturing supply chain; and
- managing expenditures to budget.

In addition, stretch goals were added in 2019 to incentivize and motivate accelerated achievement of certain goals. Also for the 2019 fiscal year, the Compensation Committee and the Independent Board considered additional achievements by the Company that were not included in the annual corporate goals, but nonetheless were deemed important to our near- and long-term success. Recognition of these additional achievements ties executive compensation to Company performance, consistent with our pay-for-performance compensation philosophy. Based on the achievements noted below, the Independent Board deemed the corporate goal achievement factor to be 90% for 2019.

2019 Corporate Goals	**Weighting**	**Highlights of Company Performance**	**Achieved? (Yes/No)**	**Total**
1) Complete transition of imetelstat program from Janssen to us.	15%	• Completed transfer of Investigational New Drug ("IND") sponsorship in May 2019 enabling Geron to become sponsor of ongoing imetelstat clinical trials. • Completed transition of imetelstat program in September 2019, including transfer of nonclinical, manufacturing and ex-U.S. clinical activities.	Yes	15%
2) Initiate Phase 3 trial in MDS with first patient dosed in the third quarter.	30%	• Although sites opened for screening and enrollment in August 2019 and first patient was dosed in October 2019, the goal was not achieved by the time period specified.	No	0%

2019 Corporate Goals	Weighting	Highlights of Company Performance	Achieved? (Yes/No)	Total
3) Conduct End of Phase 2 meeting with FDA by the end of the year.	30%	• Announced outcome from End of Phase 2 meeting with the FDA in December 2019. • Based on feedback from the meeting, in 2020 we plan to submit Phase 3 trial design proposals in MF and to have further discussions with the FDA regarding a potential regulatory approval path for imetelstat in MF.	Yes	30%
4) Commence technology transfer and supply chain start-up activities.	10%	• Signed agreements with contract manufacturing vendors to supply raw materials and manufacture drug substance and drug product. • Established drug product distribution to clinical sites for ongoing clinical trials and new Phase 3 trial in MDS.	Yes	10%
5) Introduce and present ex-U.S. commercialization opportunity to specified number of potential collaboration partners.	5%	• Identified several viable potential ex-U.S. commercialization partners and presented imetelstat opportunity to each party. • Number of actual presentations exceeded specified number in corporate goal.	Yes	5%
6) Increase sell-side research coverage of the Company	5%	• Coverage from two sell-side analysts added.	Yes	5%
7) Manage expenditures to Board-approved budget.	5%	• Controlled expenses to be in line with established budget, maintaining sufficient cash resources to support growth of the Company and advancement into Phase 3 development.	Yes	5%
Total 2019 Corporate Goal Achieved:				70%

2019 Stretch Goals	Weighting	Highlights of Company Performance	Achieved? (Yes/No)	Total
a) Initiate Phase 3 trial in MDS with first patient dosed in the second quarter	+10%	• Stretch goal not achieved.	No	0%
b) Enroll specified number of patients in MDS Phase 3 trial by year end	+10%	• Stretch goal not achieved.	No	0%
c) Initiate clinical trial in a new indication by year end	+10%	• Stretch goal not achieved.	No	0%
d) Identify potential asset additions to the pipeline	+10%	• Stretch goal not achieved.	No	0%
e) Hire certain key positions before mid-year	+10%	• Hired senior leadership in clinical operations, regulatory affairs, quality and manufacturing before mid-year.	Yes	10%
Total 2019 Stretch Goals Achieved:				10%

2019 Additional Achievements	Weighting	Highlights of Company Performance	Achieved? (Yes/No)	Total
	N/A	• Obtained Fast Track designation from the FDA for imetelstat in adult patients with relapsed/refractory MF. • Raised approximately $20 million through managed usage of the at-market financing facility. • In addition to adding key senior leadership, built core capabilities in all critical development functions. • Established new office in New Jersey, including integration of communications and administration with headquarters in California.	N/A	
Total 2019 Additional Achievements:				10%

Total Corporate Goal Achievement Factor:	Potential: Up to 150%	Actual: 90%

As summarized above, the Independent Board deemed that the Company achieved 70% of the annual corporate goals, 10% of the 2019 stretch goals, and 10% of additional achievements, for a total corporate goal achievement factor of 90% for 2019.

2019 Individual Performance and Corporate Values Performance Factors

Each Named Executive Officer's 2019 individual performance factor was assessed on a holistic, non-formulaic basis taking into account multiple factors including, personal performance in accomplishing individual, team, departmental and functional goals and objectives, the overall performance of the functional areas for which the executive officer has responsibility, the manner in which the executive officer contributes to the overall success of the Company, including areas outside of his or her responsibility, and the overall management of staff within the department for which the executive officer is responsible. Each Named Executive Officer's individual corporate values performance factor was based on actions during 2019 demonstrating his or her full support and manifestation of our corporate values. Our corporate values are authenticity, accountability, excellence, integrity and respect. Using the evaluations conducted by the Chief Executive Officer, the Compensation Committee determined the actual individual performance factor for our Named Executive Officers (other than the Chief Executive Officer) for 2019 which ranged from 1.10 to 1.25, and the actual corporate values performance factor was 1.0.

2019 Individual Achievements by Named Executive Officers

Consistent with prior years, Dr. Scarlett's 2019 annual performance-based bonus was tied 100% to the corporate goal achievement factor. Accordingly, with the Independent Board approval of the corporate goal achievement factor of 90% and Dr. Scarlett's direct responsibility and contributions for the achievement of such goals, the Compensation Committee recommended, and the Independent Board approved, that Dr. Scarlett receive 90% of his 2019 target annual performance-based bonus.

Ms. Bloom was awarded an individual performance factor of 1.25 and a corporate values performance factor of 1.0 based on the achievements and contributions made by Ms. Bloom during 2019, including, in particular:

- facilitated capital raising through managed usage of At-Market financing facility (ATM) to raise approximately $20 million in gross proceeds to support company growth;
- directed and managed the Investor Relations function to form new corporate messaging for imetelstat's development by Geron, to regain institutional investor interest and expand sell-side analyst coverage;

- constructed and enhanced financial processes, practices and policies to support increasing headcount, two office sites and global development activities, as well as streamline manual operations;
- directed creation of new system to track, monitor and report budgeted versus actual spending on a timely basis; and
- directly supervised Accounting/Finance function and conducted operational activities to ensure no delays in complying with SEC, Nasdaq or PCAOB filing deadlines.

Dr. Grethlein was awarded an individual performance factor of 1.10 and a corporate values performance factor of 1.0 based on the achievements and contributions made by Dr. Grethlein during 2019, including, in particular:

- assembled and led integrated team of consultants to achieve timely transfer of IND sponsorship;
- recruited and onboarded high caliber senior leadership for key development functions;
- directed start-up activities to establish imetelstat supply chain;
- seamlessly transitioned consultant team responsibilities to Geron employees and functional department heads, including regulatory, drug safety, clinical operations, program management, manufacturing, supply chain, quality, and clinical pharmacology; and
- actively participated in developing regulatory strategy for End of Phase 2 meeting with the FDA on imetelstat in relapsed/refractory MF.

Dr. Rizo was awarded an individual performance factor of 1.20 and a corporate values performance factor of 1.0 based on the achievements and contributions made by Dr. Rizo during 2019, including, in particular:

- recruited several key senior leaders with prior experience with the imetelstat program to fulfill functional responsibilities for clinical operations, clinical science, biometrics and translational research;
- formed strong collaboration with our clinical research organization and other clinical vendors to maintain accountability for performance, including ensuring qualified personnel are assigned to Geron's activities;
- actively participated in imetelstat program transition activities to achieve timely transfer of IND sponsorship; and
- served as medical lead in presentation to the FDA at the End of Phase 2 meeting on imetelstat in relapsed/refractory MF.

Ms. Behrs was awarded an individual performance factor of 1.10 and a corporate values performance factor of 1.0 based on the achievements and contributions made by Ms. Behrs during 2019, including, in particular:

- played key alliance leadership role to achieve timely transfer of IND sponsorship and completion of imetelstat program transition, including coordinating activities across all development functions with our contract research organization, Janssen and external consultants;
- led business development efforts for identifying and presenting imetelstat opportunity to potential ex-U.S. commercialization partners;
- established New Jersey office operations, including identifying appropriate location, developing local office practices and culture and aligning communication and administrative systems with Menlo Park headquarters; and
- directed agenda topics and schedules for executive team meetings, including drafting meeting minutes and organizing comprehensive presentations to the Board on a quarterly basis.

Following are the annual performance-based bonus targets and weighting percentages for each of the factors used to calculate the 2019 annual performance-based bonus for each of our Named Executive Officers as well as the 2019 actual bonus percentage awarded.

Named Executive Officer	(A) Annual Incentive Bonus Target as a % of Salary	(B) Corporate Goal Achievement Weighting	(C) 2019 Corporate Goal Achievement Factor	(D) Individual Performance Weighting	(E) 2019 Individual Performance Factor	(F) Corporate Values Weighting	(G) 2019 Corporate Values Performance Factor	= (A*B*C) + (A*D*E) + (A*F*G) Annual Incentive Bonus Awarded as a % of Salary
John A. Scarlett, M.D.	60%	100%	90%	N/A	N/A	N/A	N/A	54.0%
Olivia K. Bloom	45%	50%	90%	30%	1.25	20%	1.0	46.1%
Andrew J. Grethlein, Ph.D.	45%	50%	90%	30%	1.10	20%	1.0	44.1%
Aleksandra Rizo, M.D., Ph.D.	45%	50%	90%	30%	1.20	20%	1.0	45.5%
Melissa A. Kelly Behrs	45%	50%	90%	30%	1.10	20%	1.0	44.1%

2019 Stock Option Grants

Consistent with the objectives of our executive compensation program to link pay with performance, align the interests of stockholders and employees, and encourage employee ownership in Geron, in January 2019, the Compensation Committee (or the Independent Board with respect to our Chief Executive Officer, upon recommendation from the Compensation Committee) approved stock option grants to our Named Executive Officers. In determining the appropriate size and value of stock option grants in January 2019 for our Named Executive Officers, the Compensation Committee (or the Independent Board with respect to our Chief Executive Officer, upon recommendation from the Compensation Committee) considered the following factors for each Named Executive Officer:

- overall corporate performance in the prior year;
- a Named Executive Officer's recent performance history and his or her potential for future responsibility;
- internal pay equity among the Named Executive Officers;
- criticality of the individual to the long-term success of the Company;
- stock options previously granted to the individual;
- the amount of actual versus theoretical equity value per year that has been derived to date by the individual;
- the current actual value of unvested equity grants for each individual;
- the percentage of stock option grants with exercise prices greater than Geron's current stock price; and
- the number of stock option grants that have expired unexercised as a result of market conditions.

In addition to the above factors, the Compensation Committee (or the Independent Board with respect to our Chief Executive Officer, upon recommendation from the Compensation Committee) generally referenced the defined peer group market data provided by Radford and determined that in 2019 referencing the 50th to 75th percentile of the defined peer group market data provided by Radford for total compensation (consisting of annual base salary, annual performance-based bonus and the grant date fair value of stock options) was appropriate for determining the level of stock option grants for our Named Executive Officers.

The Compensation Committee (and the Independent Board with respect to the Chief Executive Officer, upon recommendation from the Compensation Committee) also determined that the equity awards granted to our Named Executive Officers in 2019 should continue to consist only of stock options, rather than restricted stock awards that vest over time, because stock options deliver future value only if the price per share of our Common Stock increases above the exercise price, thus aligning the interests of our Named Executive Officers and stockholders for the long-term success of Geron. In accordance with Geron's equity grant practices, the exercise price for the January 2019 stock option grants was equal to the closing price of Geron Common Stock as reported by the Nasdaq Global Select Market on the date of grant and the vesting schedule is monthly over four years from the date of grant, provided the employee continues to provide services to Geron.

In connection with Dr. Rizo's negotiated employment agreement, the Compensation Committee approved a stock option grant of 750,000 shares with an exercise price equal to the closing price of Geron Common Stock as reported by the Nasdaq Global Select Market on the date of grant. Consistent with the standard vesting schedule for newly hired employees, Dr. Rizo's stock option agreement provided that 12.5% of the shares granted vested six months after the date of grant, and the remaining shares will vest in equal monthly installments over the following 42 months, so that vesting will be complete four years from the date of grant, provided Dr. Rizo continues to provide services to the Company during that time. In determining the appropriate size and value of the new hire stock option grant for Dr. Rizo, the Compensation Committee generally referenced the 50th percentile of defined peer group market data provided by Radford. In addition, the Compensation Committee approved performance-based stock option grants to Dr. Rizo to align with the other executive officers in the Company who had received similar stock option grants in 2018. The size of the performance-based stock option grants is consistent with the size of awards granted to the other executive vice presidents at the Company in 2018. Such grants are also intended to enable the Company to retain Dr. Rizo and incentivize her to meet key strategic milestones. Accordingly, Dr. Rizo received a stock option grant for 250,000 shares that vests in full upon written certification by the Compensation Committee of the achievement of acceptance for review by the FDA of a New Drug Application ("NDA") for the first imetelstat indication and a stock option grant for 500,000 shares that vests in full upon written certification by the Compensation Committee of the achievement of regulatory approval by the FDA of a NDA for the first imetelstat indication. Each of the performance-based stock option grants have an exercise price equal to the closing price of Geron Common Stock as reported by the Nasdaq Global Select Market on the date of grant.

Our Named Executive Officers received the following stock option grants in January 2019:

Named Executive Officer	January 2019 Stock Option Grant (# of shares)
John A. Scarlett, M.D.	1,050,000
Olivia K. Bloom	300,000
Andrew J. Grethlein, Ph.D.	300,000
Aleksandra Rizo, M.D., Ph.D.	1,500,000 (1)
Melissa A. Kelly Behrs	300,000

(1) Dr. Rizo joined the Company on January 30, 2019. The total shares granted to Dr. Rizo represent three separate stock option grants: (a) an option to purchase 750,000 shares of our Common Stock that vests monthly over four years, subject to a six-month cliff period and Dr. Rizo's continuous service to us through each vesting date; (b) an option to purchase 250,000 shares of our Common Stock that vests in full upon achievement of a strategic regulatory filing and (c) an option to purchase 500,000 shares of our Common Stock that vests in full upon achievement of a strategic regulatory approval.

We did not reprice any stock options in 2019, despite the fact that our Named Executive Officers hold a significant number of stock options whose exercise price is greater than the closing price of our stock as reported by the Nasdaq Global Select Market (also referred to as "underwater").

2019 Perquisites

Dr. Scarlett received reimbursement for up to $4,000 per month in housing expenses and up to $20,000 for travel costs incurred over the course of the year, in connection with the commute from his personal

residence in Texas to our headquarters in Menlo Park, California in 2019. These commuting expense benefits were negotiated with Dr. Scarlett at the time of his initial employment and were deemed a reasonable expense and necessary inducement to his commencement of employment with us. Dr. Scarlett does not receive separate compensation for serving as a member of our Board.

In connection with her relocation from California to New Jersey, Ms. Behrs received a one-time relocation allowance of $10,000. Also, she receives reimbursement for up to $3,000 per month in out-of-pocket expenses with respect to housing in New Jersey.

Broad-Based Benefits

Geron offers a comprehensive array of benefits to its employees, including our Named Executive Officers. These include:

- comprehensive medical, dental, vision coverage and life insurance;
- a "cafeteria" plan administered pursuant to Section 125 of the Code, which includes Geron's medical and dental insurance, medical reimbursement, and dependent care reimbursement plans;
- a 401(k) plan, which is a retirement savings defined contribution plan established in accordance with Section 401(a) of the Code (in 2019, we provided a fully vested employer matching contribution in cash equal to 50% of each employee's annual contributions); and
- an Employee Stock Purchase Plan, which is implemented and administered pursuant to Section 423 of the Code.

Executive officers pay for 30% of their health premium cost, which is deducted from their gross salary. Other employees pay either 16% or 25% of their health premium cost. We do not offer any defined benefit pension plans or health benefits during retirement.

Employment Agreements and Severance and Change in Control Benefits

We have entered into written employment agreements with each of our executive officers, including our Named Executive Officers, that set forth the terms of their employment, including initial base salaries, and eligibility to participate in the Company's annual performance-based bonus program. In addition, each employment agreement includes restrictive covenants, such as non-compete and non-solicitation provisions, that would apply in the event of termination, which our Board believe helps protect the value invested by the Company in its personnel and operations. Each of our executive officers, including our Named Executive Officers, is employed "at will."

Our executive officers, including our Named Executive Officers, are entitled to certain severance and change in control benefits under the terms of our Amended Severance Plan, their employment agreements and our equity plans, as further described under the sub-section entitled "Potential Payments Upon Termination or Change in Control." Given the nature of the life sciences industry and the range of strategic initiatives we may explore, the Compensation Committee believes these severance and change in control provisions are essential elements of our executive compensation program and assist us in recruiting, retaining and developing key management talent in the competitive San Francisco Bay Area and northern New Jersey employment markets. Our change in control benefits are intended to allow employees, including our Named Executive Officers, to focus their attention on the business operations of the Company in the face of the potentially disruptive impact of a rumored or actual change in control transaction, to assess takeover bids objectively without regard to the potential impact on their own job security and to allow for a smooth transition in the event of a change in control of the Company. In addition, our severance benefits provide reasonable protection to our executive officers, including our Named Executive Officers, in the event that he or she is not retained. We do not provide for any excise tax gross-ups in the Amended Severance Plan or in an individual employment agreement with any of our executive officers, including our Named Executive Officers.

Compensation Recovery Provisions

Each of our executive officers has an employment agreement that contains a "clawback provision" which requires that the executive officer forfeit his or her entire annual performance-based bonus if we determine that such executive officer has engaged in any misconduct intended to affect the payment of his or her annual performance-based bonus, or has otherwise engaged in any act or omission that would constitute cause for termination of his or her employment, as defined by his or her employment agreement.

Tax and Accounting Implications of Executive Compensation

Under Section 162(m) of the Code ("Section 162(m)"), compensation paid to any publicly held corporation's "covered employees" that exceeds $1 million per taxable year for any covered employee is generally non-deductible. Prior to the enactment of the Tax Cuts and Jobs Act, Section 162(m) provided a performance-based compensation exception, pursuant to which the deduction limit under Section 162(m) did not apply to any compensation that qualified as "performance-based compensation" under Section 162(m). Pursuant to the Tax Cuts and Jobs Act, the performance-based compensation exception under Section 162(m) was repealed with respect to taxable years beginning after December 31, 2017, except that certain transition relief is provided for compensation paid pursuant to a written binding contract which was in effect on November 2, 2017 and which is not modified in any material respect on or after such date.

As a result, compensation paid to any of the Company's "covered employees" in excess of $1 million per taxable year generally will not be deductible unless it qualifies for the performance-based compensation exception under Section 162(m) pursuant to the transition relief provided by the Tax Cuts and Jobs Act. Because of certain ambiguities and uncertainties as to the application and interpretation of Section 162(m), no assurance can be given that any compensation paid by the Company will be eligible for such transition relief and qualify for the performance-based compensation exception under Section 162(m). Although the Compensation Committee will continue to monitor the applicability of Section 162(m) to the Company's ongoing compensation arrangements, the Compensation Committee also intends to continue to provide compensation for the Company's Named Executive Officers in a manner consistent with the best interests of the Company and its stockholders (which may include providing for compensation that is non-deductible due to the deduction limit under Section 162(m)).

In addition to considering the tax consequences, the Compensation Committee considers the accounting consequences of its decisions, including the impact of expenses being recognized in connection with stock awards, in determining the size and form of different stock awards.

Forward-Looking Statements

Except for the historical information contained herein, this Compensation Discussion and Analysis contains forward-looking statements, including, but not limited to, statements relating to the continued development of imetelstat by Geron; the therapeutic and commercial potential of imetelstat; potential regulatory approvals for imetelstat; our plans, considerations, expectations and determinations regarding future compensation decisions; and other statements that are not historical facts. These statements involve risks and uncertainties that can cause actual results to differ materially from those in such forward-looking statements. These risks and uncertainties, include, without limitation, risks and uncertainties related to: (i) whether regulatory authorities permit the further development of imetelstat for MF and/or MDS and/or potential additional indications on a timely basis, or at all, without any clinical holds; (ii) after further interactions with the FDA, whether Geron decides not to pursue late-stage development of imetelstat in MF; (iii) whether Geron overcomes all the clinical, safety, efficacy, technical, scientific, intellectual property, manufacturing and regulatory challenges to continue development of imetelstat in any indication, including due to circumstances caused by or related to the COVID-19 pandemic; (iv) whether imetelstat is demonstrated to be safe and efficacious in clinical trials; (v) whether any future efficacy or safety results may cause the benefit-risk profile of imetelstat to become unacceptable; (vi) whether Geron can complete the significant additional research, non-clinical testing and clinical testing that will be required before any application with the FDA or other regulatory authorities can be submitted or filed for regulatory approval of imetelstat and whether such regulatory authorities will approve imetelstat for commercial sale, in a timely manner or at all; (vii) Geron's need for substantial additional capital, which may not be available in a timely manner or at all, including as a result of

worsening global economic conditions and the recent disruptions to, and volatility in, the credit and financial markets in the United States and worldwide resulting from the ongoing COVID-19 pandemic; and (viii) whether imetelstat has adequate patent protection and freedom to operate. In addition, the actual executive compensation program that we adopt in the future may differ materially from the current executive compensation program summarized in this Compensation Discussion and Analysis. Additional information on the above-stated risks and uncertainties and additional risks, uncertainties and factors that could cause actual results to differ materially from those in the forward-looking statements are contained in our periodic reports filed with the Securities and Exchange Commission under the heading "Risk Factors," including our Annual Report on Form 10-K for the year ended December 31, 2019 and in our future filings and reports, including our Quarterly Report on Form 10-Q for the quarter ended March 31, 2020. Undue reliance should not be placed on forward-looking statements, which speak only as of the date of this proxy statement and the facts and assumptions underlying the forward-looking statements may change. Except as required by law, we disclaim any obligation to update these forward-looking statements to reflect future information, events or circumstances.

COMPENSATION COMMITTEE REPORT

Our Compensation Committee has reviewed and discussed the Compensation Discussion and Analysis required by Item 402(b) of Regulation S-K and contained within this Proxy Statement with management and, based on such review and discussions, our Compensation Committee recommended to our Board that the Compensation Discussion and Analysis be included in this Proxy Statement and incorporated into our Annual Report on Form 10-K for the year ended December 31, 2019.

Submitted on April 7, 2020 by the members of the Compensation Committee of the Board of Directors:

Robert J. Spiegel, M.D., FACP	Compensation Committee Chair
Karin Eastham	Compensation Committee Member
V. Bryan Lawlis, Ph.D.	Compensation Committee Member

This Section is not "soliciting material," is not deemed "filed" with the SEC and is not to be incorporated by reference in any filing of the Company under the Securities Exchange Act of 1934, as amended, or the Securities Act of 1933, as amended, other than in Geron's Annual Report on Form 10-K where it shall be deemed to be furnished, whether made before or after the date hereof and irrespective of any general incorporation language in any such filing.

EXECUTIVE COMPENSATION TABLES AND RELATED NARRATIVE DISCLOSURE

Summary Compensation Table

The following table includes information concerning compensation for the years ended December 31, 2019, 2018 and 2017 with respect to our Named Executive Officers.

Name and Principal Position	Year	Salary ($)	Bonus ($)	Option Awards ($)[4]	Non-Equity Incentive Plan Compensation ($)[5]	All Other Compensation ($)[6]	Total ($)
John A. Scarlett, M.D.	2019	690,000	41,400 [2]	788,550	331,200	89,985	1,941,135
Chairman of the Board, President and	2018	667,000	—	1,738,590	280,140	86,779	2,772,509
Chief Executive Officer	2017	644,000	—	1,625,925	386,400	62,985	2,719,310
Olivia K. Bloom	2019	460,000	10,350 [2]	225,300	201,825	14,992	912,467
Executive Vice President, Finance,	2018	445,000	—	579,530	185,230	14,494	1,224,254
Chief Financial Officer and Treasurer	2017	410,000	—	464,550	201,100	28,338	1,103,988
Andrew J. Grethlein, Ph.D.	2019	460,000	10,350 [2]	225,300	192,510	42,834	930,994
Executive Vice President,	2018	430,000	—	496,740	181,890	41,605	1,150,235
Chief Operating Officer	2017	416,200	—	464,550	204,100	38,779	1,123,629
Aleksandra Rizo, M.D., Ph.D. [1]	2019	475,000	284,809 [3]	563,250	188,334	20,061	1,531,454
Executive Vice President, Chief Medical Officer							
Melissa A. Kelly Behrs	2019	425,000	9,563 [2]	225,300	177,863	60,931	898,657
Executive Vice President,	2018	400,000	—	496,740	169,200	41,081	1,107,021
Chief Business Officer	2017	386,500	—	464,550	189,600	37,892	1,078,542

(1) Dr. Rizo joined the Company as Executive Vice President, Chief Medical Officer on January 30, 2019.

(2) Amount represents the discretionary portion of the annual performance-based bonus earned pursuant to our annual performance-based bonus plan. For further discussion, see the sub-section entitled, "Compensation Discussion and Analysis – 2019 Annual Performance-Based Bonuses.

(3) Amount represents sign-on bonus upon joining the Company as negotiated in Dr. Rizo's employment agreement plus the discretionary portion of the annual performance-based bonus earned pursuant to our annual performance-based bonus plan in 2019. For further discussion, see the sub-section entitled, "Compensation Discussion and Analysis – 2019 Annual Performance-Based Bonuses.

(4) Amounts do not reflect dollar amounts actually received by our Named Executive Officer and instead, in accordance with SEC rules, represent the aggregate grant date fair value of stock option awards granted during the applicable fiscal year as calculated in accordance with FASB ASC Topic 718. Refer to Note 8 of the financial statements in our Annual Report on Form 10-K for the year ended December 31, 2019 regarding assumptions underlying the valuation of stock option awards and the calculation method. The grant date fair value for the performance-based stock options of 750,000 shares granted in January 2019 to Dr. Rizo that vest upon attainment of certain performance conditions, based upon the then-probable outcome of the performance conditions as computed in accordance with FASB ASC Topic 718, was zero for each stock option. Accordingly, for 2019, amounts shown under the "Option Awards" column do not include any value for these performance-based stock options. The grant date fair value of Dr. Rizo's performance-based stock options determined in accordance with FASB ASC Topic 718 based upon achieving the maximum level of performance (which is also the target level of performance) under the respective performance conditions is $610,775. Refer to the tables under the sub-section entitled "Outstanding Equity Awards at Fiscal Year-End" for information as to each Named Executive Officers' vested and unvested stock option holdings, and under the sub-section entitled "Grants of Plan-Based Awards for 2019" for the number of stock options granted during 2019.

(5) Amounts disclosed under the "Non-Equity Incentive Plan Compensation" column represent the portion of the annual performance-based bonuses earned pursuant to our annual performance-based bonus plan for

the indicated year for the achievement of pre-established corporate and other goals. For further discussion on performance-based bonuses paid for 2019, see the sub-section entitled "Compensation Discussion and Analysis – 2019 Annual Performance-Based Bonuses."

(6) Amounts shown include, as applicable: (i) reimbursements for housing and travel expenses; (ii) the portion of life and health insurance premiums paid by the Company; and (iii) the matching contribution made to the Geron 401(k) Plan on behalf of each Named Executive Officer. Amounts for the 2019 fiscal year were as follows:

Named Executive Officer	Housing and Travel Reimbursements ($)	Insurance Premiums ($)	401(k) Match ($)[a]	Total ($)
John A. Scarlett, M.D.	68,000	21,985	—	89,985
Olivia K. Bloom	—	2,492	12,500	14,992
Andrew J. Grethlein, Ph.D.	—	30,334	12,500	42,834
Aleksandra Rizo, M.D., Ph.D.	—	10,561	9,500	20,061
Melissa A. Kelly Behrs	18,150	30,334	12,447	60,931

(a) Under Geron's 401(k) Plan, all participating employees may contribute up to the annual Internal Revenue Service contribution limit. In November 2018, the Compensation Committee approved a matching contribution equal to 50% of each employee's annual contributions during 2019. The matching contributions were paid in cash in January 2020.

Grants of Plan-Based Awards for 2019

The following table sets forth information regarding grants of plan-based awards with respect to each of our Named Executive Officers for the 2019 fiscal year:

Named Executive Officer	Approval Date	Grant Date	Estimated Possible Payouts Under Non-Equity Incentive Plan Awards Target [1] ($)	Estimated Possible Payouts Under Equity Incentive Plan Awards Target (#)	All Other Option Awards: Number of Securities Underlying Options (#)	All Other Option Awards: Exercise Price of Stock Options ($/Sh)	Grant Date Fair Value of Stock Option Awards [6] ($)
John A. Scarlett, M.D.	1/30/19	1/30/19	—	—	1,050,000 [2]	1.03	788,550
	—	—	414,000	—	—	—	—
Olivia K. Bloom	1/29/19	1/30/19	—	—	300,000 [2]	1.03	225,300
	—	—	207,000	—	—	—	—
Andrew J. Grethlein, Ph.D.	1/29/19	1/30/19	—	—	300,000 [2]	1.03	225,300
	—	—	207,000	—	—	—	—
Aleksandra Rizo, M.D., Ph.D.	12/27/18	1/30/19	—	—	750,000 [3]	1.03	563,250
	12/27/18	1/30/19	—	250,000 [4]	—	1.03	—
	12/27/18	1/30/19	—	500,000 [5]	—	1.03	—
	—	—	213,750	—	—	—	—
Melissa A. Kelly Behrs	1/29/19	1/30/19	—	—	300,000 [2]	1.03	225,300
	—	—	191,250	—	—	—	—

(1) This column sets forth the target amount of each Named Executive Officer's annual performance-based bonus for the 2019 fiscal year under our annual performance-based bonus plan, which does not include threshold or maximum amounts. Accordingly, the amounts set forth in this column do not represent actual compensation earned by our Named Executive Officers for the 2019 fiscal year. For the actual compensation paid to our Named Executive Officers for the 2019 fiscal year, see the sub-section entitled "Summary Compensation Table." For further discussion, see the sub-section entitled "Compensation Discussion and Analysis – 2019 Annual Performance-Based Bonuses."

(2) Stock option vests in a series of 48 equal consecutive monthly installments commencing January 30, 2019, provided the executive officer continues to provide services to the Company.

(3) Stock option provides for 12.5% of shares vesting on July 30, 2019 (six months after hire date) and the remaining shares vest in a series of 42 equal consecutive monthly installments commencing July 30, 2019, provided the executive officer continues to provide services to the Company.

(4) Stock option vests fully and becomes exercisable upon written certification by the Compensation Committee of the achievement of acceptance for review by the FDA of an NDA for the first imetelstat indication. There are no threshold or maximum levels of achievement for this award.

(5) Stock option vests fully and becomes exercisable upon written certification by the Compensation Committee of the achievement of regulatory approval by the FDA of an NDA for the first imetelstat indication. There are no threshold or maximum levels of achievement for this award.

(6) Amounts represent the grant date fair value of each stock option granted in 2019 calculated in accordance with FASB ASC Topic 718. Refer to Note 8 of the financial statements in our Annual Report on Form 10-K for the year ended December 31, 2019 regarding assumptions underlying the valuation of stock option awards and the calculation method. For additional detail on the grant date fair value of the performance-based stock options granted to Dr. Rizo in 2019, see Summary Compensation Table – footnote (4) above.

Narrative Disclosure to Summary Compensation Table and Grants of Plan-Based Awards Table

Employment Agreements. Each of our Named Executive Officers has entered into a written employment agreement with Geron.

We entered into an employment agreement with Dr. Scarlett dated September 29, 2011, in connection with the commencement of his employment with us. Dr. Scarlett's employment agreement originally provided him with an annual base salary of $550,000, subject to increase, and an annual performance-based bonus targeted at 60% of his annual base salary. On February 11, 2014, we amended Dr. Scarlett's employment agreement to provide for an annual base salary of $586,500, subject to increase, and to include a "clawback provision," which clawback provision is described in more detail under the sub-section entitled "Compensation Discussion and Analysis – Compensation Recovery Provisions." On January 31, 2018, we further amended Dr. Scarlett's employment agreement to increase the reimbursement for housing expenses to not more than $4,000 per month. See the sub-section entitled "Compensation Discussion and Analysis – 2019 Perquisites" for more information on the reimbursement arrangements we provide to Dr. Scarlett for housing expenses and travel costs. On January 31, 2019, we amended and restated Dr. Scarlett's employment agreement to (a) consolidate all of the previous amendments; (b) provide for an annual base salary of $690,000, subject to increase; and (c) clarify that in the event of a covered termination or change in control transaction, Dr. Scarlett will receive the greater of the severance benefits set forth in his employment agreement or the severance benefits provided for in the Company's Amended Severance Plan (without duplication). See the sub-section entitled "Amended Severance Plan" for further information.

We entered into an employment agreement with Ms. Bloom dated December 7, 2012, in connection with her appointment as our Senior Vice President, Finance, Chief Financial Officer and Treasurer, to provide an annual base salary of $330,000 and an annual performance-based bonus targeted at 40% of her annual base salary. On September 24, 2013, we amended Ms. Bloom's employment agreement to include a clawback provision. On February 11, 2014, in connection with her promotion to Executive Vice President, we amended Ms. Bloom's employment agreement to provide for an annual base salary of $365,000, subject to increase, and an annual performance-based bonus targeted at 45% of her annual base salary. On January 31, 2019, we amended and restated Ms. Bloom's employment agreement to (a) consolidate all of the previous amendments; (b) provide for an annual base salary of $460,000, subject to increase; and (c) clarify that in the event of a covered termination or change in control transaction, Ms. Bloom will receive the greater of the severance benefits set forth in her employment agreement or the severance benefits provided for in the Company's Amended Severance Plan (without duplication). See the sub-section entitled "Amended Severance Plan" for further information.

We entered into an employment agreement with Dr. Grethlein effective September 17, 2012, in connection with commencement of his employment with us, to provide an annual base salary of $355,000 and an annual performance-based bonus targeted at 45% of his annual base salary. On February 11, 2014, we amended Dr. Grethlein's employment agreement to provide for an annual base salary of $379,000, subject to increase, and to include a clawback provision. On January 31, 2019, we amended and restated Dr. Grethlein's

employment agreement to (a) consolidate all of the previous amendments; (b) incorporate his new title of Chief Operating Officer; (c) provide for an annual base salary of $460,000, subject to increase; and (d) clarify that in the event of a covered termination or change in control transaction, Dr. Grethlein will receive the greater of the severance benefits set forth in his employment agreement or the severance benefits provided for in the Company's Amended Severance Plan (without duplication). See the sub-section entitled "Amended Severance Plan" for further information.

We entered into an employment agreement with Dr. Rizo effective January 30, 2019, in connection with commencement of her employment with us, to provide an annual base salary of $475,000, subject to increase, and an annual performance-based bonus targeted at 45% of her annual base salary. The terms of Dr. Rizo's employment agreement are consistent with the other Named Executive Officers, including a clawback provision and severance benefits in the event of a covered termination or change in control transaction. Dr. Rizo will receive the greater of the severance benefits set forth in her employment agreement or the severance benefits provided for in the Company's Amended Severance Plan (without duplication). See the sub-section entitled "Amended Severance Plan" for further information.

We entered into an employment agreement with Ms. Behrs effective January 31, 2013, in connection with her appointment as our Senior Vice President, Portfolio and Alliance Management, to provide an annual base salary of $341,550, subject to increase, and an annual performance-based bonus targeted at 40% of her annual base salary. On September 24, 2013, we amended Ms. Behrs' employment agreement to include a clawback provision. On February 11, 2014, in connection with her promotion to Executive Vice President, we amended Ms. Behrs' employment agreement to provide for an annual base salary of $352,000, subject to increase, and an annual performance-based bonus targeted at 45% of her annual base salary. On January 31, 2019, we amended and restated Ms. Behrs' employment agreement to (a) consolidate all of the previous amendments; (b) incorporate her new title of Chief Business Officer; (c) provide for an annual base salary of $425,000, subject to increase; and (d) clarify that in the event of a covered termination or change in control transaction, Ms. Behrs will receive the greater of the severance benefits set forth in her employment agreement or the severance benefits provided for in the Company's Amended Severance Plan (without duplication). See the sub-section entitled "Amended Severance Plan" for further information. In addition, we added a one-time relocation allowance of $10,000 to cover moving expenses for Ms. Behrs' relocation from California to New Jersey in connection with her transfer to the anticipated new Geron office in New Jersey. In addition, we provided a monthly reimbursement of up to $3,000 per month for housing costs in New Jersey.

See also the sub-section entitled "Potential Payments Upon Termination or Change in Control" with respect to severance benefits payable under the employment agreements with our Named Executive Officers and under our Amended Severance Plan.

Annual Performance-Based Bonuses. We provide for annual bonuses to reward Named Executive Officers for performance in the prior fiscal year. For more information regarding our annual performance-based bonus plan, see the sub-section entitled "Compensation Discussion and Analysis – 2019 Annual Performance-Based Bonuses."

Equity Awards. Stock options awarded to our Named Executive Officers in January 2019 were granted under our 2018 Plan, except for stock options granted to Dr. Rizo which were granted from our Inducement Plan. Descriptions of the terms of the stock options granted to our Named Executive Officers are included under the sub-section entitled "Compensation Discussion and Analysis – 2019 Stock Option Grants."

Our 2018 Plan was approved by our Board and our stockholders in 2018 and replaced our 2011 Incentive Award Plan. The 2018 Plan provides for the grant of stock options, restricted stock, restricted stock units, performance awards and other stock and cash awards. The exercise price of a stock option grant may not be less than 100% of the closing price of our Common Stock as reported by the Nasdaq Global Select Market on the date of grant. Stock option grants generally have a term of ten years, but may terminate sooner in connection with the holder's termination of service with us. Stock option grants vest based on conditions determined by the Compensation Committee or the Independent Board, which typically include continued service, but may also include performance goals and/or other conditions.

Our Inducement Plan was approved by our Board in December 2018 in order to award nonstatutory stock options and other stock-based awards to individuals not previously an employee or director of the Company, other than following a bona fide period of non-employment, as an inducement material to such individual entering into employment with the Company. The Inducement Plan is a non-stockholder approved stock plan pursuant to the "inducement exception" provided under Nasdaq Listing Rule 5635(c)(4).

The vesting of all stock options granted under the 2018 Plan, the 2011 Plan and the Inducement Plan are subject to acceleration under certain termination or change in control circumstances as described under the sub-section entitled "Potential Payments Upon Termination or Change in Control."

Outstanding Equity Awards at Fiscal Year-End

The following table includes information with respect to all outstanding stock options held by our Named Executive Officers as of December 31, 2019:

	Option Awards					
Named Executive Officer	Grant Date	Number of Securities Underlying Unexercised Options Exercisable (#)	Number of Securities Underlying Unexercised Options Unexercisable (#)	Equity Incentive Plan Awards: Number of Securities Underlying Unexercised Unearned Options (#)	Option Exercise Price ($/Sh)	Option Expiration Date
John A. Scarlett, M.D.	9/29/11	1,000,000	—	—	2.16	9/29/21
	5/17/12	505,000	—	—	1.41	5/17/22
	2/13/13	1,340,000	—	—	1.50	2/13/23
	2/11/14	1,340,000	—	—	5.09	2/11/24
	3/13/15	600,000	—	—	4.34	3/13/25
	2/11/16[1]	575,000	25,000	—	2.54	2/11/26
	2/9/17 [1]	743,750	306,250	—	2.15	2/9/27
	1/31/18[1]	503,125	546,875	—	2.45	1/31/28
	11/7/18	—	—	500,000 [2]	1.72	11/6/28
	11/7/18	—	—	1,000,000 [3]	1.72	11/6/28
	1/30/19[1]	240,625	809,375	—	1.03	1/29/29
Olivia K. Bloom	5/19/10	20,000	—	—	5.29	5/19/20
	5/20/11	50,000	—	—	4.65	5/20/21
	5/17/12	215,000	—	—	1.41	5/17/22
	2/12/13	400,000	—	—	1.51	2/12/23
	2/10/14	400,000	—	—	5.01	2/10/24
	3/13/15	210,000	—	—	4.34	3/13/25
	2/11/16[1]	201,250	8,750	—	2.54	2/11/26
	2/9/17 [1]	212,500	87,500	—	2.15	2/9/27
	1/31/18[1]	167,708	182,292	—	2.45	1/31/28
	11/7/18	—	—	250,000 [2]	1.72	11/6/28
	11/7/18	—	—	500,000 [3]	1.72	11/6/28
	1/30/19[1]	68,750	231,250	—	1.03	1/29/29

	Option Awards					
Named Executive Officer	Grant Date	Number of Securities Underlying Unexercised Options Exercisable (#)	Number of Securities Underlying Unexercised Options Unexercisable (#)	Equity Incentive Plan Awards: Number of Securities Underlying Unexercised Unearned Options (#)	Option Exercise Price ($/Sh)	Option Expiration Date
Andrew J. Grethlein, Ph.D.	9/19/12	600,000	—	—	1.70	9/19/22
	2/12/13	300,000	—	—	1.51	2/12/23
	2/10/14	400,000	—	—	5.01	2/10/24
	3/13/15	210,000	—	—	4.34	3/13/25
	2/11/16 (1)	201,250	8,750	—	2.54	2/11/26
	2/9/17 (1)	212,500	87,500	—	2.15	2/9/27
	1/31/18 (1)	143,750	156,250	—	2.45	1/31/28
	11/7/18	—	—	250,000 (2)	1.72	11/6/28
	11/7/18	—	—	500,000 (3)	1.72	11/6/28
	1/30/19 (1)	68,750	231,250	—	1.03	1/29/29
Aleksandra Rizo, M.D., Ph.D.....	1/30/19 (4)	171,875	578,125	—	1.03	1/29/29
	1/30/19	—	—	250,000 (2)	1.03	1/29/29
	1/30/19	—	—	500,000 (3)	1.03	1/29/29
Melissa A. Kelly Behrs	5/19/10	50,000	—	—	5.29	5/19/20
	5/19/10	10,000	—	—	5.29	5/19/20
	5/20/11	50,000	—	—	4.65	5/20/21
	5/17/12	300,000	—	—	1.41	5/17/22
	2/12/13	300,000	—	—	1.51	2/12/23
	2/10/14	400,000	—	—	5.01	2/10/24
	3/13/15	210,000	—	—	4.34	3/13/25
	2/11/16 (1)	201,250	8,750	—	2.54	2/11/26
	2/9/17 (1)	212,500	87,500	—	2.15	2/9/27
	1/31/18 (1)	143,750	156,250	—	2.45	1/31/28
	11/7/18	—	—	250,000 (2)	1.72	11/6/28
	11/7/18	—	—	500,000 (3)	1.72	11/6/28
	1/30/19 (1)	68,750	231,250	—	1.03	1/29/29

(1) Stock option vests in a series of 48 equal consecutive monthly installments commencing from the date of grant, provided the executive officer continues to provide services to the Company. In addition to the specific vesting schedule for each stock option, each unvested stock option is subject to potential future vesting acceleration as described under the sub-section entitled “Potential Payments Upon Termination or Change in Control” below.

(2) Stock option vests fully and becomes exercisable upon written certification by the Compensation Committee of the achievement of acceptance for review by the FDA of an NDA for the first imetelstat indication.

(3) Stock option vests fully and becomes exercisable upon written certification by the Compensation Committee of the achievement of regulatory approval by the FDA of an NDA for the first imetelstat indication.

(4) Stock option provides for 12.5% of shares vesting six months on July 30, 2019 and the remaining shares vest in a series of 42 equal consecutive monthly installments commencing July 30, 2019, provided the executive officer continues to provide services to the Company.

Option Exercises and Stock Awards Vested in 2019

None of our Named Executive Officers exercised any stock options or vested any restricted stock awards during the 2019 fiscal year.

Pension Benefits

Other than with respect to tax-qualified defined contribution plans such as the 401(k) Plan, the Named Executive Officers do not participate in any plan that provides for retirement payments and benefits, or payments and benefits that will be provided primarily following retirement.

Non-Qualified Deferred Compensation

During the 2019 fiscal year, the Named Executive Officers did not contribute to, or earn any amounts with respect to, any defined contribution or other plan sponsored by us that provides for the deferral of compensation on a basis that is not tax-qualified.

Additional Benefits

Our Named Executive Officers are eligible to participate in our benefit plans generally available to all employees, as described in the sub-section entitled "Compensation Discussion and Analysis – Broad-Based Benefits."

Pay Ratio Disclosure

Under SEC rules, we are required to calculate and disclose the annual total compensation of our median employee, as well as the ratio of the annual total compensation of our median employee as compared to the annual total compensation of our Chief Executive Officer (the "CEO Pay Ratio"). To identify our median employee, we used the following methodology:

- To determine our total population of employees, excluding our Chief Executive Officer, we included all 45 full-time employees and one part-time employee as of December 31, 2019.
- We annualized the base salary for the one part-time employee, as well as any full-time employees who were employed by us for less than the entire 2019 fiscal year.
- To identify our median employee from our total population of employees, we ranked each employee's 2019 fiscal year base salary as of December 31, 2019 from lowest to highest, excluding the Chief Executive Officer's 2019 fiscal year base salary, and identified the median base salary from the list.

Once the median employee was identified, we calculated the annual total compensation of this employee for the 2019 fiscal year in a manner consistent with that used to calculate the annual total compensation for our Named Executive Officers in the Summary Compensation Table above.

For the 2019 fiscal year, the annual total compensation (including base salary, grant date fair value of stock option awards granted during the year, and annual performance-based bonus) of the median employee of our total population of employees (other than our Chief Executive Officer) was $466,225 and the annual total compensation of our Chief Executive Officer, as reported in the Summary Compensation Table above, was $1,941,135. Based on this information, the ratio of the annual total compensation of our Chief Executive Officer to the median of the annual total compensation of all employees was 4.2 to 1.

The CEO Pay Ratio above represents our reasonable estimate calculated in a manner consistent with SEC rules and applicable guidance. SEC rules and guidance provide significant flexibility in how companies identify the median employee, and each company may use a different methodology and make different assumptions particular to that company. As a result, and as explained by the SEC when it adopted these rules, in considering the pay ratio disclosure, stockholders should keep in mind that the rule was not designed to facilitate comparisons of pay ratios among different companies, even companies within the same industry, but rather to

allow stockholders to better understand and assess each particular company's compensation practices and pay ratio disclosures.

The Compensation Committee, the Independent Board and our management did not use the CEO Pay Ratio measure in making compensation decisions for our employees or Named Executive Officers in 2019.

Potential Payments Upon Termination or Change in Control

Employment Agreements

Our executive officers, including our Named Executive Officers, are entitled to certain severance benefits payable in connection with a Covered Termination (as defined below) under their employment agreements. Pursuant to these employment agreements, in the event of a Covered Termination and subject to a release of claims against Geron, each Named Executive Officer will be entitled to (i) a lump-sum severance payment equal to 12 months (24 months, with respect to Dr. Scarlett) of his or her base salary in effect as of such termination, (ii) a lump-sum payment equal to the pro-rated portion of any target annual performance-based bonus (except for Dr. Scarlett, who will receive a lump-sum equal to any annual bonus for any fiscal year that ends on or before the termination date that he would have received had he remained employed through the payment date), and (iii) continued COBRA coverage for a period of one year following a Covered Termination. In addition, the vested portion of any stock options, or other exercisable equity award in Geron, will remain exercisable until the earlier of the second anniversary of the date of termination and the original expiration date of such award.

For the purposes of our Named Executive Officers' employment agreements, the following definitions apply:

- "Covered Termination" generally means an Involuntary Termination Without Cause that occurs at any time, provided that such termination constitutes a "separation from service" within the meaning of Section 409A of the Code.
- "Involuntary Termination Without Cause" generally means an executive officer's dismissal or discharge other than: a) for Cause or b) following an involuntary or voluntary filing of bankruptcy, an assignment for the benefit of creditors, a liquidation of our assets in a formal proceeding or otherwise or any other event of insolvency by Geron, in any case, without an offer of comparable employment by Geron or a successor, acquirer, or affiliate of Geron.
- "Cause" generally means the executive officer's:
  - (i) willful act or omission constituting dishonesty, fraud or other malfeasance against the Company;
  - (ii) conviction of a felony;
  - (iii) debarment by the FDA from working in or providing services to any pharmaceutical or biotechnology company or other ineligibility under any law or regulation to perform the employee's duties to the Company; or
  - (iv) breach of any material Company policies.

Amended Severance Plan

In September 2002, the Board approved a Severance Plan that became effective on January 21, 2003 and was subsequently amended and restated in May 2013 and in January 2019 (collectively referred to herein as the "Amended Severance Plan"). The Amended Severance Plan applies to all employees, including our Named Executive Officers, who are not subject to a performance improvement plan.

The Amended Severance Plan provides for cash severance benefits to be paid to employees, including our Named Executive Officers, under a "double trigger" situation, defined below as a Change in Control Triggering Event. Under this double trigger requirement, severance benefits are paid only upon the occurrence of a Change in Control and a termination of employment, with such termination being either by the Company or because the employee resigns due to a material change in their employment terms. The Board believes that a double trigger

requirement is industry standard and provides appropriate protection for our employees, including our Named Executive Officers, from post-Change in Control events that are not related to the employee's performance, encourages employees to stay throughout a transition period in the event of a Change in Control and does not provide for benefits for an employee who remains with the surviving company in a comparable position.

Under the Amended Severance Plan, the following definitions apply:

- "Change in Control Triggering Event" is defined as a termination without Cause in connection with a Change in Control (which has the same definition as under the 2018 Plan) or within 12 months following a Change in Control. Additionally, if an individual is terminated by the Company in connection with a Change in Control but immediately accepts employment with the Company's successor or acquirer, they will not be deemed to have had a Change in Control Triggering Event unless:
  - (i) such individual is subsequently terminated without Cause by the successor or acquirer within the 12 months following the Change in Control;
  - (ii) such individual resigns employment with the Company because in connection with a Change in Control he or she is offered terms of employment (new or continuing) by the Company or the Company's successor or acquirer within 30 days after the Change in Control that results in a material change in the terms of employment; or
  - (iii) after accepting (or continuing) employment with the Company or the Company's successor or acquirer after a Change in Control, such individual resigns employment within 12 months following the Change in Control due to a material change in terms of employment as defined below.
- "Cause" generally means an employee's continued failure to satisfactorily perform duties, willful act or omission constituting dishonesty, fraud or other malfeasance against the Company, conviction of a felony, debarment by the FDA from working in or providing services to any pharmaceutical or biotechnology company or other ineligibility under any law or regulation to perform the employee's duties to the Company, or breach of any material Company policies.
- "material change in terms of employment" shall occur if one of the following events occurs without the employee's consent:
  - (i) base salary is materially reduced from that in effect immediately prior to the Change in Control;
  - (ii) if at the time of the Change in Control they are employed at the director level or above, they are subject to a material reduction in their duties (including responsibilities and/or authority);
  - (iii) their principal work location is to be moved to a location that is either more than 45 miles from their principal work location immediately prior to the Change in Control or more than 30 miles farther from their principal weekday residence than was their principal work location immediately prior to the Change in Control; or
  - (iv) the Company or the Company's successor or acquirer materially breaches the terms of any employment or similar service agreement with the employee.

Additionally, in order for the resignation to be deemed due to a material change in terms of their employment, the employee must provide written notice to the Company's Chief Legal Officer within 30 days after the first occurrence of the event giving rise to a material change in their terms of employment setting forth the basis for their resignation, allow the Company at least 30 days from receipt of such written notice to cure such event, and if such event is not reasonably cured within such period, the employee's resignation from all positions they then hold with the Company is effective not later than 90 days after the expiration of the cure period.

Upon a Change in Control Triggering Event, each of our Named Executive Officers is entitled to: (i) a severance payment equal to 15 months (18 months, with respect to Dr. Scarlett) of his or her base salary then in effect as of such Change in Control Triggering Event; (ii) payment of his or her target annual bonus, at the

target bonus percentage in effect immediately prior to his or her separation from service, prorated for the length of service provided in the termination year; and (iii) payment of COBRA premiums for up to 15 months (18 months, with respect to Dr. Scarlett). These benefits are consistent with severance plans offered at companies similar in size in our industry and competitive market environment. Payment of any severance benefits under the Amended Severance Plan is conditioned on the timely provision of an effective release of claims against Geron. If a Named Executive Officer is entitled to severance benefits upon a termination of employment under both the Amended Severance Plan and an employment agreement, the Named Executive Officer will receive the greater of such severance benefits (without duplication). The benefits provided under the Amended Severance Plan are not intended to be duplicative of those provided in any employment agreement.

Equity Plans

As set forth in each individual stock option under the 2018 Plan and the Inducement Plan, in the event of a Change in Control of Geron (defined below), the vesting of each outstanding stock option held by all employees and non-employee directors will accelerate so that each stock option shall become fully exercisable for all of the outstanding shares subject to such stock option immediately prior to the consummation of such transaction and each other type of award shall be fully vested with all forfeiture restrictions on any or all of such awards to lapse. For purposes of the 2018 Plan and Inducement Plan, a "Change in Control" generally means and includes each of the following:

a) as a result of any merger or consolidation, the voting securities of Geron outstanding immediately prior thereto represent (either by remaining outstanding or by being converted into voting securities of the surviving or acquiring entity) less than 49% of the combined voting power of the voting securities of Geron or such surviving or acquiring entity outstanding immediately after such merger or consolidation; during any period of 24 consecutive calendar months, the individuals who at the beginning of such period constitute the board of directors, and any new directors whose election by such board of directors or nomination for election by stockholders was approved by a vote of at least two-thirds of the members of such board of directors who were either directors on such board of directors at the beginning of the period or whose election or nomination for election as directors was previously so approved, for any reason cease to constitute at least a majority of the members thereof;

b) any individual, entity or group becomes the beneficial owner of more than 20% of the then outstanding shares of Geron Common Stock;

c) any sale of all or substantially all of the assets of Geron; or

d) the complete liquidation or dissolution of Geron.

In the event an employee or non-employee director experiences a termination of service as a result of the employee's or non-employee director's total and permanent disability (as defined in Section 22(e)(3) of the Code) or death, the 2018 Plan and Inducement Plan provides through each respective plan or the individual stock option agreement, that the portion of each outstanding stock option with time-based vesting held by such employee or non-employee director that would have vested during the 24 months after the date of such employee's termination of service (36 months for non-employee directors), will automatically vest. The stock options that were already vested upon the date of termination and those that automatically vested in connection with an employee's total and permanent disability or death will remain exercisable until the earlier of the second anniversary of the date of termination and the original expiration date of such stock option. For a non-employee director, the post-termination exercise period is the earlier of the third anniversary of the date of termination and the original expiration date of such stock option.

In the event an employee experiences a termination of service as a result of the employee's total and permanent disability (as defined in Section 22(e)(3) of the Code) or death, the individual stock option agreement for stock options with performance-based vesting permits the unvested portion of such stock option to continue to be eligible to vest and become exercisable upon the achievement of the performance goal set forth in the stock option grant notice to the extent such performance goal has not already been achieved as of the date of the employee's total and permanent disability or death, if and only if the performance goal occurs within the thirty-six (36) months following the date of the employee's total and permanent disability or death, however, not beyond the original term of the stock option.

Potential Payments Table

The table below summarizes potential maximum payments under the Amended Severance Plan, individual employment agreements or equity plans, as applicable, for our Named Executive Officers if a qualifying termination and/or change in control event had occurred on December 31, 2019, the last business day of our last completed fiscal year. As of December 31, 2019, most of the unvested stock options held by the Named Executive Officers were out-of-the-money, meaning that such unvested stock options had exercise prices that were higher than the closing price of our Common Stock on December 31, 2019 ($1.36 per share). The actual value that the Named Executive Officers would receive as a result of stock option vesting acceleration benefits can be determined only at the time of such termination and/or change in control event.

Named Executive Officer	Qualifying Event	Severance	Continued Healthcare Benefits	Option Vesting	Total
John A. Scarlett, M.D.	Covered Termination – No Change in Control[1]	$ 1,794,000	$ 29,615	$ —	$ 1,823,615
	Termination Without Cause or for Good Reason – With Change in Control[2][3]	1,794,000	44,422	267,094	2,105,516
	Without Termination – With Change in Control[3]	—	—	267,094	267,094
	Death[4]	—	—	252,656	252,656
	Disability[5]	—	—	252,656	252,656
Olivia K. Bloom.....	Covered Termination – No Change in Control[1]	$ 667,000	$ 2,492	$ —	$ 669,492
	Termination Without Cause or for Good Reason – With Change in Control[2][3]	782,000	3,115	76,313	861,428
	Without Termination – With Change in Control[3]	—	—	76,313	76,313
	Death[4]	—	—	72,188	72,188
	Disability[5]	—	—	72,188	72,188
Andrew J. Grethlein, Ph.D.	Covered Termination – No Change in Control[1]	$ 667,000	$ 41,086	$ —	$ 708,086
	Termination Without Cause or for Good Reason – With Change in Control[2][3]	782,000	51,357	76,313	909,670
	Without Termination – With Change in Control[3]	—	—	76,313	76,313
	Death[4]	—	—	72,188	72,188
	Disability[5]	—	—	72,188	72,188
Aleksandra Rizo, M.D., Ph.D.....	Covered Termination – No Change in Control[1]	$ 688,750	$ 15,000	$ —	$ 703,750
	Termination Without Cause or for Good Reason – With Change in Control[2][3]	807,500	18,749	438,281	1,264,530
	Without Termination – With Change in Control[3]	—	—	438,281	438,281
	Death[4]	—	—	180,469	180,469
	Disability[5]	—	—	180,469	180,469
Melissa A. Kelly Behrs	Covered Termination – No Change in Control[1]	$ 616,250	$ 41,086	$ —	$ 657,336
	Termination Without Cause or for Good Reason – With Change in Control[2][3]	722,500	51,357	76,313	850,170
	Without Termination – With Change in Control[3]	—	—	76,313	76,313
	Death[4]	—	—	72,188	72,188
	Disability[5]	—	—	72,188	72,188

(1) Amounts represent lump-sum severance payments (including the target annual performance-based bonus) and continued healthcare benefits that could be paid to a Named Executive Officer upon a Covered Termination as of December 31, 2019, not in connection with a Change in Control transaction. The amounts in this row do not include any value associated with the extension, if any, of the post-termination exercise period applicable to the Named Executive Officers' stock options.

(2) Amounts represent lump-sum severance payments (including the target annual performance-based bonus), continued healthcare benefits and the intrinsic value of acceleration of unvested stock options, based on a market value of $1.36 per share of Common Stock as of December 31, 2019, that could be paid to a Named Executive Officer under such Named Executive Officer's employment agreement and/or

our Amended Severance Plan in the event of a Covered Termination or Change in Control Triggering Event on December 31, 2019, as applicable. Any payments made under a Named Executive Officer's employment agreement would not duplicate any payments due under the Amended Severance Plan. The amounts in this row do not include any value associated with the extension, if any, of the post-termination exercise period applicable to the Named Executive Officers' stock options.

(3) Amounts represent or include, as applicable, the intrinsic value of unvested stock options that would become fully vested and exercisable upon a Change in Control regardless of termination, based on a market value of $1.36 per share of Common Stock as of December 31, 2019. The amounts in this row do not include any value associated with the extension, if any, of the post-termination exercise period applicable to the Named Executive Officers' stock options.

(4) Amounts represent intrinsic value of unvested stock options that would become fully vested and exercisable upon a termination of service as a result of death, based on a market value of $1.36 per share of Common Stock as of December 31, 2019. The amounts in this row do not include any value associated with the extension, if any, of the post-termination exercise period applicable to the Named Executive Officers' stock options.

(5) Amounts represent the intrinsic value of unvested stock options that would become fully vested and exercisable upon a termination of service as a result of total and permanent disability (as defined in Section 22(e)(3) of the Code), based on a market value of $1.36 per share of Common Stock as of December 31, 2019. The amounts in this row do not include any value associated with the extension, if any, of the post-termination exercise period applicable to the Named Executive Officers' stock options.

PROPOSAL 4

RATIFICATION OF SELECTION OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

The Audit Committee of the Board has selected Ernst & Young LLP as our independent registered public accounting firm for the fiscal year ending December 31, 2020, and has further directed that management submit the selection of the independent registered public accounting firm for ratification by our stockholders at the Annual Meeting. Ernst & Young LLP has served as our independent registered public accounting firm since 1992.

Representatives of Ernst & Young LLP are expected to be present at the Annual Meeting, will have an opportunity to make a statement if they so desire, and will be available to respond to appropriate questions from stockholders.

We have been informed by Ernst & Young LLP that, to the best of their knowledge, neither the firm nor any of its members or their associates has any direct financial interest or material indirect financial interest in Geron or our affiliates.

Stockholder ratification of the selection of Ernst & Young LLP as our independent registered public accounting firm is not required by our Bylaws or otherwise. However, the Board is submitting the selection of Ernst & Young LLP to our stockholders for ratification as a matter of good corporate practice. If our stockholders fail to ratify the selection, the Audit Committee and the Board will reconsider whether or not to retain that firm. Even if the selection is ratified, the Audit Committee and the Board in their discretion may direct the appointment of a different independent registered public accounting firm at any time during the year if they determine that such a change would be in the best interests of Geron and our stockholders.

Vote Required

Stockholder ratification of the selection of Ernst & Young LLP as our independent registered public accounting firm requires the affirmative vote of the holders of a majority of the shares having voting power

present in person or represented by proxy at the Annual Meeting. Abstentions will have the same effect as a vote against this proposal.

The Board of Directors Unanimously Recommends
That Stockholders Vote FOR Proposal 4

PRINCIPAL ACCOUNTANT FEES AND SERVICES

The Audit Committee maintains policies and procedures for the pre-approval of work performed by the independent registered public accounting firm. Under the Audit Committee's charter, all engagements of the independent registered public accounting firm must be approved in advance by the Audit Committee. Management recommendations will be considered in connection with such engagements, but management has no authority to approve engagements. For each quarterly Audit Committee meeting, management prepares a schedule of all fees paid to Ernst & Young LLP during the previous quarter and estimated fees for projects contemplated in the following quarter. The Chairperson of the Audit Committee must be notified at any time the fees for a specific project exceed 20% of the approved budget for authorization to continue the project.

Audit Fees and All Other Fees

The Audit Committee approved 100% of all audit and other services provided by Ernst & Young LLP in 2019 and 2018. The total fees paid to Ernst & Young LLP for the last two fiscal years are as follows:

	Fiscal Year Ended December 31, 2019	Fiscal Year Ended December 31, 2018
Audit Fees[1]	$ 664,285	$ 652,750
Audit Related Fees[2]	—	28,000
Tax Fees	—	—
All Other Fees[3]	1,735	2,000
Total	$ 666,020	$ 682,750

(1) Audit Fees include the integrated audit of annual financial statements and internal control over financial reporting, reviews of quarterly financial statements included in Quarterly Reports on Forms 10-Q, consultations on matters addressed during the audit or quarterly reviews, and services provided in connection with SEC filings, including consents and comment and comfort letters.

(2) Audit Related Fees include accounting consultations, due diligence and audits in connection with a potential acquisition candidate.

(3) Amounts represent fees for access to Ernst & Young LLP's technical research portal.

AUDIT COMMITTEE REPORT

The Audit Committee of Geron Corporation's Board of Directors is comprised of three independent directors as required by the listing standards of Nasdaq. The Audit Committee operates pursuant to a written charter that was last amended and restated by the Board in November 2017. A copy of the Audit Committee's amended and restated charter is available on our website at https://ir.geron.com/investors/corporate-governance/.

The members of the Audit Committee are Ms. Eastham (Chairperson), Dr. Lawlis and Ms. O'Farrell. The Board has determined that all members of the Audit Committee are financially literate as required by Nasdaq. The Board has also determined that Ms. Eastham and Ms. O'Farrell are audit committee financial experts as defined by Nasdaq.

The function of the Audit Committee is to assist the Board in fulfilling its oversight responsibilities regarding:

(i) the quality and integrity of our financial statements,

(ii) our compliance with legal and regulatory requirements,

(iii) the qualifications and independence of the independent registered public accounting firm serving as our auditors, and

(iv) the performance of the independent registered public accounting firm.

Management is responsible for Geron's internal controls and financial reporting. The independent registered public accounting firm is responsible for performing an independent audit of Geron's financial statements in accordance with generally accepted auditing standards and to issue a report thereon. The Audit Committee's responsibility is to monitor and oversee these processes.

In this context, the Audit Committee hereby reports as follows:

1) The Audit Committee has reviewed and discussed the audited financial statements of the Company as of and for the year ended December 31, 2019 with management and the independent registered public accounting firm serving as the Company's independent auditors.

2) The Audit Committee has discussed with the independent auditors the matters required to be discussed by Auditing Standard No. 1301 (Communication with Audit Committees) as adopted by the Public Company Accounting Oversight Board, other professional standards, membership provisions of the SEC Practice Session, and other SEC rules, as currently in effect.

3) The Audit Committee has received the written disclosures and the letter from the independent auditors required by applicable requirements of the Public Company Accounting Oversight Board regarding the independent auditor's communications with the Audit Committee concerning independence, and has discussed with the independent auditors the independent auditor's independence.

4) The Audit Committee has considered whether the independent auditor's provision of non-audit services to the Company is compatible with maintaining the independent auditor's independence.

Based on the reports and discussions described above, the Audit Committee recommended to the Board that the audited financial statements be included in Geron's Annual Report on Form 10-K for the year ended December 31, 2019, for filing with the SEC.

Submitted on March 5, 2020 by the members of the Audit Committee of Geron's Board of Directors.

Karin Eastham (Chairperson)
V. Bryan Lawlis, Ph.D.
Elizabeth G. O'Farrell

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

EQUITY COMPENSATION PLAN INFORMATION

The following table summarizes information with respect to equity awards under Geron's equity compensation plans at December 31, 2019:

	Number of securities to be issued upon exercise of outstanding options, warrants and rights[1]		Weighted-average exercise price of outstanding options, warrants and rights		Number of securities remaining available for future issuance under equity compensation plans (excluding securities reflected in column (a))[1]	
	(a)		(b)		(c)	
Equity compensation plans approved by security holders	29,884,613	(2)	$ 2.48		6,026,264	(3)(4)
Equity compensation plans not approved by security holders	7,729,400	(5)	$ 1.43		1,217,450	(6)
Total	37,614,013		$ 2.26		7,243,714	

(1) The table does not include information regarding Geron's 401(k) Plan. Under Geron's 401(k) Plan, all participating employees may contribute up to the annual Internal Revenue Service contribution limit. The Geron 401(k) Plan permits us to make matching contributions on behalf of plan participants, which matching contributions can be made in Common Stock that vests ratably over four years for each year of service completed by the employee, commencing from the date of hire, until it is fully vested when the employee has completed four years of service. As of December 31, 2019, there were approximately 531,000 shares of Common Stock held in this plan.

(2) Consists of 254,950 shares to be issued upon exercise of outstanding options under the 2002 Equity Incentive Plan, 19,494,463 shares to be issued upon exercise of outstanding options under the 2011 Plan, 9,552,200 shares to be issued upon exercise of outstanding options under the 2018 Plan and 583,000 shares to be issued upon exercise of outstanding options under the 2006 Directors' Option Plan.

(3) Consists of 836,359 shares of Common Stock available for issuance under the 2014 Employee Stock Purchase Plan, including an estimated 202,000 shares subject to purchase during the current offering period that commenced January 1, 2020 and ends on June 30, 2020, and 5,189,905 shares of Common Stock available for issuance under the 2018 Plan.

(4) Shares reserved under the 2018 Plan can also be adjusted if (i) any shares of Common Stock subject to a stock award because the stock award expires or otherwise terminates without all of the shares covered by the stock award having been issued or is settled in cash, (ii) any shares of Common Stock issued pursuant to a stock award are forfeited back to or repurchased by the Company because of the failure to meet a contingency or condition required for the vesting of such shares, or (iii) with respect to a Full Value Award, any shares of Common Stock are reacquired or withheld (or not issued) by the Company to satisfy a tax withholding obligation in connection with the award, then such shares will again become available for issuance under the 2018 Plan (collectively, the "2018 Plan Returning Shares"). For each 2018 Plan Returning Share subject to a Full Value Award, or Prior Plans' Returning Share subject to a stock award other than a Prior Plans' Appreciation Award, the number of shares of Common Stock available for issuance under the 2018 Plan will increase by 2.0 shares.

(5) Consists of 7,729,400 shares to be issued upon exercise of outstanding options under the 2018 Inducement Award Plan (the "2018 Inducement Plan").

(6) Consists of 246,600 of Common Stock available for issuance under the 2018 Inducement Plan and 970,850 shares of Common Stock issuable under the Directors Market Value Plan. The 2018 Inducement Plan provides for the grant of equity awards to individuals who were not previously Geron employees or directors, other than following a bona fide period of non-employment. All equity awards under the 2018 Inducement Plan are intended to meet the standards of Rule 5635(c)(4) of the Nasdaq Listing rules. The terms and conditions of the 2018 Inducement Plan and the equity awards to be granted thereunder are substantially similar to the 2018 Plan. Under the Directors Market Value Plan, to the extent permitted by the Director Compensation Policy, the cash compensation payable to a non-employee director who has

properly elected to receive such cash compensation instead in the form of shares of Common Stock will be used to purchase shares of Common Stock from Geron under the Directors Market Value Plan on the date that such cash compensation is payable to the non-employee director under the Director Compensation Policy. On such date, we apply the amount of such cash compensation to the purchase of shares of Common Stock, subject to the limitations and other terms of the Directors Market Value Plan. The purchase price of each share of Common Stock acquired pursuant to the Directors Market Value Plan is equal to the "market value" on the purchase date (which generally means the consolidated closing bid price per share of Common Stock as reported by Nasdaq on the purchase date). The Directors Market Value Plan is intended to qualify for the limited exemption from stockholder approval pursuant to the Nasdaq Listing Rule 5635(c)(2), as a plan that merely provides a convenient way to purchase shares from the Company at market value.

SECURITY OWNERSHIP OF CERTAIN BENEFICIAL OWNERS AND MANAGEMENT

The following table sets forth the amount and percentage of the outstanding shares of Common Stock, which, according to the information supplied to us, are beneficially owned by: (i) each person, or group of affiliated persons, who is known by us to be a beneficial owner of more than 5% of our outstanding Common Stock, (ii) each of our directors and nominees for director, (iii) each of our Named Executive Officers and (iv) all current directors and executive officers as a group. Unless otherwise indicated, the address for each of the stockholders in the table below is c/o Geron Corporation, 919 E. Hillsdale Blvd., Suite 250, Foster City, California 94404. Beneficial ownership is stated as of March 31, 2020.

	Beneficial Ownership[1]	
Beneficial Owner	Number of Shares	Percent of Total
Directors/Nominees and Named Executive Officers:		
Dawn C. Bir[2]	40,000	*
Karin Eastham[3]	382,047	*
V. Bryan Lawlis, Ph.D.[4]	380,000	*
Susan M. Molineaux, Ph.D.[5]	452,980	*
Elizabeth G. O'Farrell[6]	43,000	*
Robert J. Spiegel, M.D., FACP[7]	308,001	*
Melissa A. Kelly Behrs[8]	2,003,690	1.0%
Olivia K. Bloom[9]	2,159,675	1.1%
Andrew J. Grethlein, Ph.D.[10]	2,252,978	1.1%
Aleksandra Rizo, M.D., Ph.D.[11]	268,211	*
John A. Scarlett, M.D.[12]	7,340,172	3.5%
All directors and executive officers as a group (13 persons)[13]	16,717,839	7.7%
5% Beneficial Holders:		
FMR LLC[14]	15,536,850	7.8%
245 Summer Street, Boston, MA 02210		
BlackRock, Inc.[15]	15,591,560	7.8%
55 East 52nd Street, New York, NY 10055		

* Represents beneficial ownership of less than 1% of the outstanding Common Stock as of March 31, 2020.

(1) Beneficial ownership is determined in accordance with the rules of the SEC. In computing the number of shares beneficially owned by a person and the percentage of ownership of that person, shares of Common Stock exercisable pursuant to the exercise of options held by that person that are currently exercisable or exercisable within 60 days of March 31, 2020 are deemed outstanding. Such shares, however, are not deemed outstanding for the purpose of computing the percentage ownership of each other person. Applicable percentages are based on 200,350,848 shares outstanding on March 31, 2020, adjusted as required by rules promulgated by the SEC. The persons named in this table, to the best of our knowledge, have sole voting and investment power with respect to all shares of Common Stock shown as beneficially owned by them, subject to community property laws where applicable and except as indicated in the other footnotes to this table.

(2) Consists of 40,000 shares issuable upon the exercise of outstanding options held by Dawn C. Bir exercisable within 60 days of March 31, 2020.

(3) Consists of 39,047 shares held directly by Karin Eastham and 343,000 shares issuable upon the exercise of outstanding options held by Ms. Eastham exercisable within 60 days of March 31, 2020.

(4) Consists of 380,000 shares issuable upon the exercise of outstanding options held by V. Bryan Lawlis exercisable within 60 days of March 31, 2020.

(5) Consists of 107,980 shares held by the Molineaux Family Trust and 345,000 shares issuable upon the exercise of outstanding options held by Dr. Molineaux exercisable within 60 days of March 31, 2020.

(6) Consists of 800 shares held directly by Elizabeth G. O'Farrell, 2,200 shares beneficially owned by Ms. O'Farrell's spouse and 40,000 shares issuable upon the exercise of outstanding options held by Ms. O'Farrell exercisable within 60 days of March 31, 2020.

(7) Consists of 103,001 shares held directly by Robert J. Spiegel and 205,000 shares issuable upon exercise of outstanding options held by Dr. Spiegel exercisable within 60 days of March 31, 2020.

(8) Consists of 2,979 shares held directly by Melissa A. Kelly Behrs and 2,000,711 shares issuable upon exercise of outstanding options held by Ms. Behrs exercisable within 60 days of March 31, 2020.

(9) Consists of 115,839 shares held directly by Olivia K. Bloom and 2,043,836 shares issuable upon the exercise of outstanding options held by Ms. Bloom exercisable within 60 days of March 31, 2020.

(10) Consists of 2,267 shares held directly by Andrew J. Grethlein and 2,250,711 shares issuable upon the exercise of outstanding options held by Dr. Grethlein exercisable within 60 days of March 31, 2020.

(11) Consists of 268,211 shares issuable upon the exercise of outstanding options held by Aleksandra Rizo exercisable within 60 days of March 31, 2020.

(12) Consists of 125,000 shares held by the John A. Scarlett III 1999 Trust and 7,215,172 shares issuable upon exercise of outstanding options held by Dr. Scarlett exercisable within 60 days of March 31, 2020.

(13) Consists of shares beneficially owned by all our current directors and executive officers as a group.

(14) The indicated ownership is based solely on a Schedule 13G/A filed with the SEC by FMR LLC ("FMR") on February 13, 2019, reporting beneficial ownership as of December 31, 2018. The Schedule 13G/A filed by the reporting person provides information only as of December 31, 2018, and, consequently, the beneficial ownership of the above-mentioned reporting person may have changed since December 31, 2018. FMR has sole voting power with respect to none of the shares and sole dispositive power with respect to all of the shares. FMR is the beneficial owner of 15,536,850 shares. Members of the Johnson family, including Abigail P. Johnson, are the predominant owners, directly or through trusts, of Series B voting common shares of FMR, representing 49% of the voting power of FMR. The Johnson family group and all other Series B shareholders have entered into a shareholders' voting agreement under which all Series B voting common shares will be voted in accordance with the majority vote of Series B voting common shares. Accordingly, through their ownership of voting common shares and the execution of the shareholders' voting agreement, members of the Johnson family may be deemed, under the Investment Company Act of 1940, to form a controlling group with respect to FMR. Neither FMR nor Abigail P. Johnson has the sole power to vote or direct the voting of the shares owned directly by the various investment companies registered under the Investment Company Act ("Fidelity Funds") advised by Fidelity Management & Research Company, a wholly owned subsidiary of FMR, which power resides with the Fidelity Funds' Boards of Trustees. Fidelity Management & Research Company carries out the voting of the shares under written guidelines established by the Fidelity Funds' Boards of Trustees.

(15) The indicated ownership is based solely on a Schedule 13G/A filed with the SEC by BlackRock, Inc. ("BlackRock") on February 5, 2020, reporting beneficial ownership as of December 31, 2019. The Schedule 13G/A filed by the reporting person provides information only as of December 31, 2019, and, consequently, the beneficial ownership of the above-mentioned reporting person may have changed since December 31, 2019. BlackRock has sole voting power with respect to 15,203,317 shares and sole dispositive power with respect to all of the shares. BlackRock is the beneficial owner of 15,591,560 shares.

DELINQUENT SECTION 16(A) REPORTS

None.

CERTAIN TRANSACTIONS

Certain Transactions With or Involving Related Persons

Since January 1, 2018, there has not been, nor is there currently proposed, any transaction or series of similar transactions to which the Company was or is to be a party in which the amount involved exceeds $120,000 and in which any current director, executive officer, holder of more than 5% of our Common Stock, or any immediate family member of any of the foregoing persons, had or will have a direct or indirect material interest other than with respect to compensation arrangements described under the sections entitled "Executive Compensation Tables and Related Narrative Disclosure" and "Compensation of Directors."

Policies and Procedures

Our Audit Committee is responsible for reviewing and approving all related party transactions, which would include a transaction, arrangement or relationship (or any series of similar transactions, arrangements or relationships) in which we and any "related person" are participants involving an amount that exceeds $120,000, not including transactions involving compensation for services provided to Geron as an employee, director, consultant or similar capacity by a related person. Related parties include any of our directors or executive officers, certain of our stockholders and their immediate family members. This obligation is set forth in writing in the Audit Committee charter. A copy of the Audit Committee charter is available on our website at https://ir.geron.com/investors/corporate-governance/.

Where a transaction has been identified as a related-person transaction, management would present information regarding the proposed related-person transaction to the Audit Committee (or, where Audit Committee approval would be inappropriate, to another independent body of the Board) for consideration and approval or ratification. The presentation would include a description of, among other things, the material facts, the interests, direct and indirect, of the related persons, the benefits to Geron of the transaction and whether any alternative transactions were available. To identify related-person transactions in advance, the Audit Committee relies on information supplied by Geron's executive officers and directors. In considering related-person transactions, the Audit Committee takes into account the relevant available facts and circumstances including, but not limited to:

(i) the risks, costs and benefits to Geron;

(ii) the impact on a director's independence in the event the related person is a director, immediate family member of a director or an entity with which a director is affiliated;

(iii) the terms of the transaction;

(iv) the availability of other sources for comparable services or products; and

(v) the terms available to or from, as the case may be, unrelated third parties or to or from employees generally.

In the event a director has an interest in the proposed transaction, the director must recuse himself or herself from the deliberations and approval. In determining whether to approve, ratify or reject a related-person transaction, the Audit Committee considers, in light of known circumstances, whether the transaction is in, or is not inconsistent with, the best interests of Geron and our stockholders, as the Audit Committee determines in the good faith exercise of its discretion.

OTHER MATTERS

Stockholder Nominations and Proposals for 2021 Annual Meeting

We expect to hold our 2021 Annual Meeting of Stockholders in May 2021. All proposals or director nominations by stockholders intended to be presented at the 2021 Annual Meeting of Stockholders must be directed to the attention of our Corporate Secretary, at the address set forth on the first page of this Proxy Statement.

To be considered for inclusion in next year's proxy materials, your proposal must be submitted in writing by December 18, 2020, to our Corporate Secretary at Geron Corporation, 919 E. Hillsdale Blvd., Suite 250, Foster City, California, 94404, and must comply with all applicable requirements of Rule 14a-8 promulgated under the Exchange Act. However, if our 2021 Annual Meeting of Stockholders is not held between May 6, 2021 and July 5, 2021, then the deadline will be a reasonable time prior to the time we begin to print and send our proxy materials.

If you wish to bring a proposal before the stockholders or nominate a director at the 2021 Annual Meeting of Stockholders, but you are not requesting that your proposal or nomination be included in next year's proxy materials, you must notify our Corporate Secretary, in writing, not earlier than February 5, 2021 and not later than March 7, 2021. However, if the 2021 Annual Meeting of Stockholders is not held between May 6, 2021 and August 4, 2021, the notice must be delivered no later than the 90th day prior to the 2021 Annual Meeting of Stockholders or, if later, the 10th day following the day on which public disclosure of the date of the 2021 Annual Meeting of Stockholders is made. You are also advised to review our Bylaws, which contain additional requirements about advance notice of stockholder proposals and director nominations proposals and director nominations.

Director Nominees Recommended by Stockholders

The Nominating and Corporate Governance Committee, to date, has not adopted a formal policy with regard to the consideration of director candidates recommended by stockholders and will consider director candidates recommended by stockholders on a case-by-case basis, as appropriate. Stockholders who wish to recommend individuals for consideration by the Nominating and Corporate Governance Committee should send written notice to the Nominating and Corporate Governance Committee Chairman, Geron Corporation, 919 E. Hillsdale Blvd., Suite 250, Foster City, California 94404, within the time periods set forth above. Such notification should set forth all information relating to such nominee as is required to be disclosed in solicitations of proxies for elections of directors pursuant to Regulation 14A under the Exchange Act, including such person's written consent to being named in a proxy statement as a nominee and to serving as a director if elected, the name and address of such stockholder or beneficial owner on whose behalf the nomination is being made, the class and number of shares of the Company owned beneficially and of record by such stockholder or beneficial owner, and all information regarding the nominee that would be required to be included in the Company's proxy statement by the rules of the SEC, including the nominee's age, business experience for the past five years and any directorships held by the nominee during the past five years. The Nominating and Corporate Governance Committee does not intend to alter the procedure by which it evaluates candidates based on whether the candidate was recommended by a stockholder or not.

Director Qualifications

The Nominating and Corporate Governance Committee believes that nominees for election to the Board must possess certain minimum qualifications and attributes. The nominee:

- must meet the objective independence requirements set forth by the SEC and Nasdaq,
- must exhibit strong personal integrity, character and ethics, and a commitment to ethical business and accounting practices,
- must not be involved in on-going litigation with the Company or be employed by an entity which is engaged in such litigation, and
- must not be the subject of any on-going criminal investigations, including investigations for fraud or financial misconduct.

In addition, the Nominating and Corporate Governance Committee may consider the following criteria, among others:

(i) experience in corporate management, such as serving as an officer or former officer of a publicly held company, and a general understanding of marketing, finance and other elements relevant to the success of a publicly traded company in today's business environment;

(ii) experience in our industry and with relevant social policy concerns;

(iii) experience as a board member of other publicly held companies;

(iv) expertise in an area of our operations;

(v) practical and mature business judgment, including the ability to make independent analytical inquiries;

(vi) diversity of personal background, perspective, experience and other characteristics, such as gender, gender identity, ethnicity, sexual orientation and age; and

(vii) diversity of, business and professional background, perspective and experience relevant to the success of the Company.

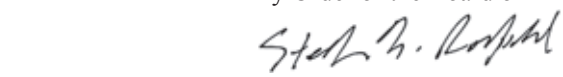
In general, the Nominating and Corporate Governance Committee aspires the Board to be comprised of individuals that represent a diversity of professional experiences and perspectives and who portray characteristics of diligence, commitment, mutual respect and professionalism with an emphasis on consensus building. The Board does not follow any ratio or formula to determine the appropriate mix. Rather, it uses its judgment to identify nominees whose backgrounds, attributes and experiences, taken as a whole, will contribute to the high standards of board service at Geron. As stated in our Nominating and Corporate Governance Committee Charter and our Corporate Governance Guidelines, as part of the director search process, the Nominating and Corporate Governance Committee endeavors to consider qualified candidates, including women and minorities, who meet the relevant business and search criteria. In furtherance of the foregoing, in 2019, the Company engaged a third-party search firm that furnished a list of qualified candidates meeting the above criteria. As a result, our Board is now comprised of four women and three men. In addition, our Lead Independent Director is a woman. In connection with its annual assessment of the performance of the Board, the Board committees and individual directors, the Nominating and Corporate Governance Committee evaluates board composition, including diversity of gender, personal background and professional experience.

Directors are expected to rigorously prepare for, attend and participate in Board meetings and meetings of the committees of the Board on which they serve, to ask direct questions and require straight answers, and to spend the time needed and meet as frequently as necessary to properly discharge their responsibilities and duties as directors. Each Board member is expected to ensure that other existing and planned future commitments do not materially interfere with the member's service as an outstanding director.

General

Your proxy is solicited on behalf of our Board. Unless otherwise directed, proxies will be voted at the virtual Annual Meeting (or an adjournment or postponement thereof), "FOR" all of the nominees listed in Proposal 1 and "FOR" Proposals 2, 3 and 4. If any matter other than those described in this Proxy Statement were to be properly submitted for a vote at the virtual Annual Meeting, or with respect to any adjournment or postponement thereof, the proxy holders appointed by the Board will have the discretion to vote on those matters for you as they see fit.

By Order of the Board of Directors,



Stephen N. Rosenfield
Executive Vice President, Chief Legal Officer and Corporate Secretary

April 14, 2020

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APPENDIX A

GERON CORPORATION
2018 EQUITY INCENTIVE PLAN
Adopted by the Board of Directors: March 27, 2018
Approved by the Stockholders: May 15, 2018
Amended by the Board of Directors: February 12, 2020
[Approved by the Stockholders: June 5, 2020]

1. GENERAL.

(a) Successor to and Continuation of Prior Plans. The Plan is intended as the successor to and **continuation** of the Geron Corporation 2011 Incentive Award Plan (the "***2011 Plan***") and the Geron Corporation 1992 Stock Option Plan (the "***1992 Plan***"), the Geron Corporation 1996 Directors' Stock Option Plan (the "***1996 Directors' Plan***) and the Geron Corporation Amended and Restated 2002 Equity Incentive Plan (the "***2002 Plan***", and together with the 2011 Plan, the 1992 Plan, the 1996 Directors' Plan, the "***Prior Plans***"). Following the Effective Date, no additional stock awards may be granted under the Prior Plans. Any unallocated shares remaining available for grant under the Prior Plans as of 12:01 a.m., Pacific Time on the Effective Date (the "***Prior Plans' Available Reserve***") will cease to be available under the such Prior Plans at such time and will be added to the Share Reserve (as further described in Section 3(a) below) and be then immediately available for grant and issuance pursuant to Stock Awards granted under the Plan. In addition, from and after 12:01 a.m., Pacific Time on the Effective Date, all outstanding stock awards granted under the Prior Plans will remain subject to the terms of such Prior Plans, as applicable; *provided, however*, that any shares subject to outstanding stock awards granted under the Prior Plans that (i) expire or terminate for any reason prior to exercise or settlement, (ii) are forfeited, cancelled or otherwise returned to the Company because of the failure to meet a contingency or condition required for the vesting of such shares, or (iii) other than with respect to outstanding options and stock appreciation rights granted under the Prior Plans, with respect to which the exercise or strike price is at least one hundred percent (100%) of the Fair Market Value of the Common Stock subject to the option or stock appreciation right on the date of grant (the "***Prior Plans' Appreciation Awards***"), are reacquired or withheld (or not issued) by the Company to satisfy a tax withholding obligation in connection with a stock award (collectively, the "***Prior Plans' Returning Shares***") will immediately be added to the Share Reserve (as further described in Section 3(a) below) as and when such shares become Prior Plans' Returning Shares and become available for issuance pursuant to Awards granted hereunder. All Stock Awards granted on or after 12:01 a.m., Pacific Time on the Effective Date will be subject to the terms of this Plan.

(b) Eligible Award Recipients. Employees, Directors and Consultants are eligible to receive Stock Awards under this Plan.

(c) Available Stock Awards. The Plan provides for the grant of the following types of Stock Awards: (i) Incentive Stock Options, (ii) Nonstatutory Stock Options, (iii) Stock Appreciation Rights, (iv) Restricted Stock Awards, (v) Restricted Stock Unit Awards, (vi) Performance Stock Awards, and (vii) Other Stock Awards.

(d) Purpose. The Plan, through the granting of Stock Awards, is intended to help the Company and any Affiliate secure and retain the services of eligible Stock Award recipients, provide incentives for such persons to exert maximum efforts for the success of the Company and any Affiliate and provide a means by which the eligible recipients may benefit from increases in value of the Common Stock. The Plan is also intended to provide long-term incentives that align the interests of our eligible Stock Award recipients with the interests of our stockholders.

2. ADMINISTRATION.

(a) Administration by Board. The Board will administer the Plan. The Board may delegate administration of the Plan to a Committee or Committees, as provided in Section 2(c).

(b) Powers of Board. The Board will have the power, subject to, and within the limitations of, the express provisions of the Plan:

(i) To determine (A) who will be granted Stock Awards; (B) when and how each Stock Award will be granted; (C) what type of Stock Award will be granted; (D) the provisions of each Stock Award (which need not be identical), including when a person will be permitted to exercise or otherwise receive cash or Common Stock under the Stock Award; (E) the number of shares of Common Stock subject to, or the cash value of, a Stock Award; and (F) the Fair Market Value applicable to a Stock Award.

(ii) To construe and interpret the Plan and Stock Awards granted under it, and to establish, amend and revoke rules and regulations for administration of the Plan and Stock Awards. The Board, in the exercise of these powers, may correct any defect, omission or inconsistency in the Plan or in any Stock Award Agreement, in a manner and to the extent it will deem necessary or expedient to make the Plan or Stock Award fully effective.

(iii) To settle all controversies regarding the Plan and Stock Awards granted under it.

(iv) To accelerate, in whole or in part, the time at which a Stock Award may be exercised or vest (or the time at which cash or shares of Common Stock may be issued in settlement thereof).

(v) To suspend or terminate the Plan at any time. Except as otherwise provided in the Plan or a Stock Award Agreement, suspension or termination of the Plan will not materially impair a Participant's rights under his or her then-outstanding Stock Award without his or her written consent except as provided in subsection (viii) below.

(vi) To amend the Plan in any respect the Board deems necessary or advisable, including, without limitation, by adopting amendments relating to Incentive Stock Options and certain nonqualified deferred compensation under Section 409A of the Code and/or to make the Plan or Stock Awards granted under the Plan compliant with the requirements for Incentive Stock Options or exempt from or compliant with the requirements for nonqualified deferred compensation under Section 409A of the Code, subject to the limitations, if any, of applicable law. However, if required by applicable law or listing requirements (including NASDAQ Listing Rule 5635), and except as provided in Section 9(a) relating to Capitalization Adjustments, the Company will seek stockholder approval of any amendment of the Plan that (A) materially increases the number of shares of Common Stock available for issuance under the Plan, (B) materially expands the class of individuals eligible to receive Stock Awards under the Plan, (C) materially increases the benefits accruing to Participants under the Plan, (D) materially reduces the price at which shares of Common Stock may be issued or purchased under the Plan, or (E) materially expands the types of Stock Awards available for issuance under the Plan. Except as provided in the Plan (including Section 2(b)(viii)) or a Stock Award Agreement, no amendment of the Plan will materially impair a Participant's rights under an outstanding Stock Award without the Participant's written consent.

(vii) To submit any amendment to the Plan for stockholder approval, including, but not limited to, amendments to the Plan intended to satisfy the requirements of (A) Section 422 of the Code regarding incentive stock options or (B) Rule 16b-3.

(viii) To approve forms of Stock Award Agreements for use under the Plan and to amend the terms of any one or more Stock Awards, including, but not limited to, amendments to provide terms more favorable to the Participant than previously provided in the Stock Award Agreement, subject to any specified limits in the Plan that are not subject to Board discretion; *provided, however,* that a Participant's rights under any Stock Award will not be impaired by any such amendment unless (A) the Company requests the consent of the affected Participant, and (B) such Participant consents in writing. Notwithstanding the foregoing, (1) a Participant's rights will not be deemed to have been impaired by any such amendment if the Board, in its sole discretion, determines that the amendment, taken as a whole, does not materially impair the Participant's rights, and (2) subject to the limitations of applicable law, if any, the Board may amend the terms of any one or more Stock Awards without the affected Participant's consent (A) to maintain the qualified status of the Stock Award as an Incentive Stock Option under Section 422 of the Code; (B) to change the terms of an Incentive Stock

Option, if such change results in impairment of the Stock Award solely because it impairs the qualified status of the Stock Award as an Incentive Stock Option under Section 422 of the Code; (C) to clarify the manner of exemption from, or to bring the Stock Award into compliance with, Section 409A of the Code; or (D) to comply with other applicable laws or listing requirements.

(ix) Generally, to exercise such powers and to perform such acts as the Board deems necessary or expedient to promote the best interests of the Company and that are not in conflict with the provisions of the Plan or Stock Awards.

(x) To adopt such procedures and sub-plans as are necessary or appropriate to permit participation in the Plan by Employees, Directors or Consultants who are foreign nationals or employed outside the United States (provided that Board approval will not be necessary for immaterial modifications to the Plan or any Stock Award Agreement that are required for compliance with the laws of the relevant foreign jurisdiction).

(c) Delegation to Committee.

(i) General. The Board may delegate some or all of the administration of the Plan to a Committee or Committees. If administration of the Plan is delegated to a Committee, the Committee will have, in connection with the administration of the Plan, the powers theretofore possessed by the Board that have been delegated to the Committee, including the power to delegate to a subcommittee of the Committee any of the administrative powers the Committee is authorized to exercise (and references in this Plan to the Board will thereafter be to the Committee or subcommittee, as applicable). Any delegation of administrative powers will be reflected in resolutions, not inconsistent with the provisions of the Plan, adopted from time to time by the Board or Committee (as applicable). The Committee may, at any time, abolish the subcommittee and/or revest in the Committee any powers delegated to the subcommittee. The Board may retain the authority to concurrently administer the Plan with the Committee and may, at any time, revest in the Board some or all of the powers previously delegated.

(ii) Rule 16b-3 Compliance. The Committee may consist solely of two or more Non-Employee Directors, in accordance with Rule 16b-3.

(d) Delegation to an Officer. The Board may delegate to one or more Officers the authority to do one or both of the following (i) designate Employees who are not Officers to be recipients of Options and SARs (and, to the extent permitted by applicable law, other Stock Awards) and, to the extent permitted by applicable law, the terms of such Stock Awards, and (ii) determine the number of shares of Common Stock to be subject to such Stock Awards granted to such Employees; *provided, however*, that the Board resolutions regarding such delegation will specify the total number of shares of Common Stock that may be subject to the Stock Awards granted by such Officer and that such Officer may not grant a Stock Award to himself or herself. Any such Stock Awards will be granted on the form of Stock Award Agreement most recently approved for use by the Committee or the Board, unless otherwise provided in the resolutions approving the delegation authority. The Board may not delegate authority to an Officer who is acting solely in the capacity of an Officer (and not also as a Director) to determine the Fair Market Value pursuant to Section 13(s)(iii) below.

(e) Effect of Board's Decision. All determinations, interpretations and constructions made by the Board in good faith will not be subject to review by any person and will be final, binding and conclusive on all persons.

(f) Repricing; Cancellation and Re-Grant of Stock Awards. Neither the Board nor any Committee will have the authority to (i) reduce the exercise, purchase or strike price of any outstanding Option or SAR under the Plan, or (ii) cancel any outstanding Option or SAR that has an exercise price or strike price greater than the then-current Fair Market Value of the Common Stock in exchange for cash or other Stock Awards under the Plan, unless the stockholders of the Company have approved such an action within 12 months prior to such an event.

(g) Dividends and Dividend Equivalents. Dividends or dividend equivalents may be paid or credited, as applicable, with respect to any shares of Common Stock subject to a Stock Award, as determined by the Board and contained in the applicable Stock Award Agreement; *provided, however*, that (i) no dividends or dividend equivalents may be paid with respect to any such shares before the date such shares have vested under the terms of such Stock Award Agreement, (ii) any dividends or dividend equivalents that are credited with respect to any such shares will be subject to all of the terms and conditions applicable to such shares under the terms of such Stock Award Agreement (including, but not limited to, any vesting conditions), and (iii) any dividends or dividend equivalents that are credited with respect to any such shares will be forfeited to the Company on the date, if any, such shares are forfeited to or repurchased by the Company due to a failure to meet any vesting conditions under the terms of such Stock Award Agreement.

3. SHARES SUBJECT TO THE PLAN.

(a) Share Reserve.

(i) Subject to Section 9(a) relating to Capitalization Adjustments, the aggregate number of shares of Common Stock that may be issued pursuant to Stock Awards from and after the Effective Date will not exceed (A) 18,595,419 shares (which number is the sum of (i) the number of shares (2,895,419) subject to the Prior Plans' Available Reserve, (ii) 10,000,000 shares subject to the Plan as of the Effective Date, and (iii) an additional 5,700,000 shares that were approved at the Company's 2020 Annual Meeting of Stockholders, *plus* (B) the Prior Plans' Returning Shares, if any, which become available for grant under this Plan from time to time (such aggregate number of shares described in (A) and (B) above, the "***Share Reserve***").

(ii) For clarity, the Share Reserve in this Section 3(a) is a limitation on the number of shares of Common Stock that may be issued pursuant to the Plan. Accordingly, this Section 3(a) does not limit the granting of Stock Awards except as provided in Section 7(a). Shares may be issued in connection with a merger or acquisition as permitted by NASDAQ Listing Rule 5635(c) or, if applicable, NYSE Listed Company Manual Section 303A.08, AMEX Company Guide Section 711 or other applicable rule, and such issuance will not reduce the number of shares available for issuance under the Plan.

(iii) Subject to Section 3(b), the number of shares of Common Stock available for issuance under the Plan will be reduced by: (A) one share for each share of Common Stock issued pursuant to an Option or SAR with respect to which the exercise or strike price is at least 100% of the Fair Market Value of the Common Stock subject to the Option or SAR on the date of grant; and (B) two (2.0) shares for each share of Common Stock issued pursuant to a Full Value Award.

(b) Reversion of Shares to the Share Reserve.

(i) Shares Available For Subsequent Issuance. If (A) any shares of Common Stock subject to a Stock Award are not issued because such Stock Award or any portion thereof expires or otherwise terminates without all of the shares covered by such Stock Award having been issued or is settled in cash (*i.e.*, the Participant receives cash rather than stock), (B) any shares of Common Stock issued pursuant to a Stock Award are forfeited back to or repurchased by the Company because of the failure to meet a contingency or condition required for the vesting of such shares, or (C) with respect to a Full Value Award, any shares of Common Stock are reacquired or withheld (or not issued) by the Company to satisfy a tax withholding obligation in connection with such Full Value Award, such shares will again become available for issuance under the Plan (collectively, the "***2018 Plan Returning Shares***"). For each (1) 2018 Plan Returning Share subject to a Full Value Award or (2) Prior Plans' Returning Share subject to a stock award other than a Prior Plans' Appreciation Award, the number of shares of Common Stock available for issuance under the Plan will increase by two (2.0) shares.

(ii) Shares Not Available For Subsequent Issuance. Any shares of Common Stock reacquired or withheld (or not issued) by the Company to satisfy the exercise or purchase price of a Stock Award will no longer be available for issuance under the Plan, including any shares subject to a Stock Award that are not delivered to a Participant because such Stock Award is exercised through a reduction of shares subject to such Stock Award (*i.e.*, "net exercised"). In addition, any shares reacquired or withheld (or not

issued) by the Company to satisfy a tax withholding obligation in connection with an Option or Stock Appreciation Right or a Prior Plans' Appreciation Award, or any shares repurchased by the Company on the open market with the proceeds of the exercise or strike price of an Option or Stock Appreciation Right or a Prior Plans' Appreciation Award will no longer be available for issuance under the Plan.

(c) Incentive Stock Option Limit. Subject to the Share Reserve and Section 9(a) relating to Capitalization Adjustments, the aggregate maximum number of shares of Common Stock that may be issued pursuant to the exercise of Incentive Stock Options will be 25,807,454 shares of Common Stock.

(d) Source of Shares. The stock issuable under the Plan will be shares of authorized but unissued or reacquired Common Stock, including shares repurchased by the Company on the open market or otherwise.

4. ELIGIBILITY.

(a) Eligibility for Specific Stock Awards. Incentive Stock Options may be granted only to employees of the Company or a "parent corporation" or "subsidiary corporation" thereof (as such terms are defined in Sections 424(e) and 424(f) of the Code). Stock Awards other than Incentive Stock Options may be granted to Employees, Directors and Consultants; provided, however, that Stock Awards may not be granted to Employees, Directors and Consultants who are providing Continuous Service only to any "parent" of the Company, as such term is defined in Rule 405, unless (i) the stock underlying such Stock Awards is treated as "service recipient stock" under Section 409A of the Code (for example, because the Stock Awards are granted pursuant to a corporate transaction such as a spin off transaction) or (ii) the Company, in consultation with its legal counsel, has determined that such Stock Awards are otherwise exempt from or alternatively comply with the distribution requirements of Section 409A of the Code.

(b) Ten Percent Stockholders. A Ten Percent Stockholder will not be granted an Incentive Stock Option unless the exercise price of such Option is at least 110% of the Fair Market Value on the date of grant and the Option is not exercisable after the expiration of five years from the date of grant.

5. PROVISIONS RELATING TO OPTIONS AND STOCK APPRECIATION RIGHTS.

Each Option or SAR will be in such form and will contain such terms and conditions as the Board deems appropriate. All Options will be separately designated Incentive Stock Options or Nonstatutory Stock Options at the time of grant, and, if certificates are issued, a separate certificate or certificates will be issued for shares of Common Stock purchased on exercise of each type of Option. If an Option is not specifically designated as an Incentive Stock Option, or if an Option is designated as an Incentive Stock Option but some portion or all of the Option fails to qualify as an Incentive Stock Option under the applicable rules, then the Option (or portion thereof) will be a Nonstatutory Stock Option. The provisions of separate Options or SARs need not be identical; *provided, however*, that each Stock Award Agreement will conform to (through incorporation of provisions hereof by reference in the applicable Stock Award Agreement or otherwise) the substance of each of the following provisions:

(a) Term. Subject to the provisions of Section 4(b) regarding Ten Percent Stockholders, no Option or SAR will be exercisable after the expiration of ten (10) years from the date of its grant or such shorter period specified in the Stock Award Agreement.

(b) Exercise Price. Subject to the provisions of Section 4(b) regarding Ten Percent Stockholders, the exercise or strike price of each Option or SAR will be not less than 100% of the Fair Market Value of the Common Stock subject to the Option or SAR on the date the Stock Award is granted. Notwithstanding the foregoing, an Option or SAR may be granted with an exercise or strike price lower than 100% of the Fair Market Value of the Common Stock subject to the Stock Award if such Stock Award is granted pursuant to an assumption of or substitution for another option or stock appreciation right pursuant to a Corporate Transaction and in a manner consistent with the provisions of Section 409A of the Code and, if applicable, Section 424(a) of the Code. Each SAR will be denominated in shares of Common Stock equivalents.

(c) Purchase Price for Options. The purchase price of Common Stock acquired pursuant to the exercise of an Option may be paid, to the extent permitted by applicable law and as determined by the Board in its sole discretion, by any combination of the methods of payment set forth below. The Board will have the authority to grant Options that do not permit all of the following methods of payment (or that otherwise restrict the ability to use certain methods) and to grant Options that require the consent of the Company to use a particular method of payment. The permitted methods of payment are as follows:

(i) by cash, check, bank draft or money order payable to the Company;

(ii) pursuant to a program developed under Regulation T as promulgated by the Federal Reserve Board that, prior to the issuance of the Common Stock subject to the Option, results in either the receipt of cash (or check) by the Company or the receipt of irrevocable instructions to pay the aggregate exercise price to the Company from the sales proceeds;

(iii) by delivery to the Company (either by actual delivery or attestation) of shares of Common Stock;

(iv) if an Option is a Nonstatutory Stock Option, by a "net exercise" arrangement pursuant to which the Company will reduce the number of shares of Common Stock issuable upon exercise by the largest whole number of shares with a Fair Market Value that does not exceed the aggregate exercise price; *provided, however*, that the Company will accept a cash or other payment from the Participant to the extent of any remaining balance of the aggregate exercise price not satisfied by such reduction in the number of whole shares to be issued. Shares of Common Stock will no longer be subject to an Option and will not be exercisable thereafter to the extent that (A) shares issuable upon exercise are used to pay the exercise price pursuant to the "net exercise," (B) shares are delivered to the Participant as a result of such exercise, and (C) shares are withheld to satisfy tax withholding obligations; or

(v) in any other form of legal consideration that may be acceptable to the Board and specified in the applicable Stock Award Agreement.

(d) Exercise and Payment of a SAR. To exercise any outstanding SAR, the Participant must provide written notice of exercise to the Company in compliance with the provisions of the Stock Award Agreement evidencing such SAR. The appreciation distribution payable on the exercise of a SAR will be not greater than an amount equal to the excess of (A) the aggregate Fair Market Value (on the date of the exercise of the SAR) of a number of shares of Common Stock equal to the number of Common Stock equivalents in which the Participant is vested under such SAR, and with respect to which the Participant is exercising the SAR on such date, over (B) the aggregate strike price of the number of Common Stock equivalents with respect to which the Participant is exercising the SAR on such date. The appreciation distribution may be paid in Common Stock, in cash, in any combination of the two or in any other form of consideration, as determined by the Board and contained in the Stock Award Agreement evidencing such SAR.

(e) Transferability of Options and SARs. The Board may, in its sole discretion, impose such limitations on the transferability of Options and SARs as the Board may determine. In the absence of such a determination by the Board to the contrary, the restrictions set forth in this Section 5(e) on the transferability of Options and SARs will apply. Notwithstanding the foregoing or anything in the Plan or a Stock Award Agreement to the contrary, no Option or SAR may be transferred to any financial institution without prior stockholder approval.

(i) Restrictions on Transfer. An Option or SAR will not be transferable except by will or by the laws of descent and distribution (and pursuant to Sections 5(e)(ii) and 5(e)(iii) below) and will be exercisable during the lifetime of the Participant only by the Participant. Subject to the foregoing paragraph, the Board may permit transfer of the Option or SAR in a manner that is not prohibited by applicable tax and securities laws. Except as explicitly provided in the Plan, neither an Option nor a SAR may be transferred for consideration.

(ii) Domestic Relations Orders. Subject to the approval of the Board or a duly authorized Officer, an Option or SAR may be transferred pursuant to the terms of a domestic relations order, official marital settlement agreement or other divorce or separation instrument as permitted by Treasury Regulations Section 1.421-1(b)(2). If an Option is an Incentive Stock Option, such Option may be deemed to be a Nonstatutory Stock Option as a result of such transfer.

(iii) Beneficiary Designation. Subject to the approval of the Board or a duly authorized Officer, a Participant may, by delivering written notice to the Company, in a form approved by the Company (or the designated broker), designate a third party who, upon the death of the Participant, will thereafter be entitled to exercise the Option or SAR and receive the Common Stock or other consideration resulting from such exercise. In the absence of such a designation, upon the death of the Participant, the executor or administrator of the Participant's estate will be entitled to exercise the Option or SAR and receive the Common Stock or other consideration resulting from such exercise. However, the Company may prohibit designation of a beneficiary at any time, including due to any conclusion by the Company that such designation would be inconsistent with the provisions of applicable laws.

(f) Vesting Generally. The total number of shares of Common Stock subject to an Option or SAR may vest and become exercisable in periodic installments that may or may not be equal. The Option or SAR may be subject to such other terms and conditions on the time or times when it may or may not be exercised (which may be based on the satisfaction of Performance Goals or other criteria) as the Board may deem appropriate. The vesting provisions of individual Options or SARs may vary. The provisions of this Section 5(f) are subject to any Option or SAR provisions governing the minimum number of shares of Common Stock as to which an Option or SAR may be exercised.

(g) Termination of Continuous Service. Except as otherwise provided in the applicable Stock Award Agreement or other agreement between the Participant and the Company or an Affiliate, if a Participant's Continuous Service terminates (other than for Cause and other than upon the Participant's death or Disability), the Participant may exercise his or her Option or SAR (to the extent that the Participant was entitled to exercise such Option or SAR as of the date of termination of Continuous Service), but only within such period of time ending on the earlier of (i) the date three months following such termination of Continuous Service (or such longer or shorter period specified in the Stock Award Agreement), and (ii) the expiration of the term of the Option or SAR as set forth in the Stock Award Agreement. If, after termination of Continuous Service, the Participant does not exercise his or her Option or SAR (as applicable) within the applicable time frame, the Option or SAR (as applicable) will terminate.

(h) Extension of Termination Date. Except as otherwise provided in the applicable Stock Award Agreement or other agreement between the Participant and the Company or an Affiliate, if the exercise of an Option or SAR following the termination of the Participant's Continuous Service (other than for Cause and other than upon the Participant's death or Disability) would be prohibited at any time solely because the issuance of shares of Common Stock would violate the registration requirements under the Securities Act, then the Option or SAR will terminate on the earlier of (i) the expiration of a total period of time (that need not be consecutive) equal to the applicable post-termination exercise period after the termination of the Participant's Continuous Service during which the exercise of the Option or SAR would not be in violation of such registration requirements, or (ii) the expiration of the term of the Option or SAR as set forth in the applicable Stock Award Agreement. In addition, unless otherwise provided in a Participant's Stock Award Agreement, if the sale of any Common Stock received upon exercise of an Option or SAR following the termination of the Participant's Continuous Service (other than for Cause) would violate the Company's insider trading policy, then the Option or SAR will terminate on the earlier of (i) the expiration of a period of time (that need not be consecutive) equal to the applicable post-termination exercise period after the termination of the Participant's Continuous Service during which the sale of the Common Stock received upon exercise of the Option or SAR would not be in violation of the Company's insider trading policy, or (ii) the expiration of the term of the Option or SAR as set forth in the applicable Stock Award Agreement.

(i) Disability of Participant. Except as otherwise provided in the applicable Stock Award Agreement or other agreement between the Participant and the Company or an Affiliate, if a Participant's Continuous Service terminates as a result of the Participant's Disability, the Participant may exercise his or her Option or SAR (to the extent that the Participant was entitled to exercise such Option or SAR as of the date of

termination of Continuous Service), but only within such period of time ending on the earlier of (i) the date 24 months following such termination of Continuous Service (or such longer or shorter period specified in the Stock Award Agreement), and (ii) the expiration of the term of the Option or SAR as set forth in the Stock Award Agreement. If, after termination of Continuous Service, the Participant does not exercise his or her Option or SAR (as applicable) within the applicable time frame, the Option or SAR (as applicable) will terminate.

(j) Death of Participant. Except as otherwise provided in the applicable Stock Award Agreement or other agreement between the Participant and the Company or an Affiliate, if (i) a Participant's Continuous Service terminates as a result of the Participant's death, or (ii) the Participant dies within the period (if any) specified in the Stock Award Agreement for exercisability after the termination of the Participant's Continuous Service (for a reason other than death), then the Participant's Option or SAR may be exercised (to the extent that the Participant was entitled to exercise such Option or SAR as of the date of death) by the Participant's estate, by a person who acquired the right to exercise the Option or SAR by bequest or inheritance or by a person designated to exercise the Option or SAR upon the Participant's death, but only within such period of time ending on the earlier of (i) the date 24 months following the date of death (or such longer or shorter period specified in the Stock Award Agreement), and (ii) the expiration of the term of such Option or SAR as set forth in the Stock Award Agreement. If, after the Participant's death, the Option or SAR (as applicable) is not exercised within the applicable time frame, the Option or SAR (as applicable) will terminate.

(k) Termination for Cause. Except as explicitly provided otherwise in a Participant's Stock Award Agreement or other individual written agreement between the Participant and the Company or an Affiliate, if a Participant's Continuous Service is terminated for Cause, the Participant's Option or SAR will terminate immediately upon such termination of Continuous Service, and the Participant will be prohibited from exercising his or her Option or SAR from and after the time of such termination of Continuous Service.

(l) Non-Exempt Employees. If an Option or SAR is granted to an Employee who is a non-exempt employee for purposes of the Fair Labor Standards Act of 1938, as amended, the Option or SAR will not be first exercisable for any shares of Common Stock until at least six months following the date of grant of the Option or SAR (although the Stock Award may vest prior to such date). Consistent with the provisions of the Worker Economic Opportunity Act, (i) if such non-exempt employee dies or suffers a Disability, (ii) upon a Corporate Transaction in which such Option or SAR is not assumed, continued, or substituted, (iii) upon a Change in Control, or (iv) upon the Participant's retirement (as such term may be defined in the Participant's Stock Award Agreement, in another agreement between the Participant and the Company or an Affiliate, or, if no such definition, in accordance with the Company's or Affiliate's then current employment policies and guidelines), the vested portion of any Options and SARs may be exercised earlier than six months following the date of grant. The foregoing provision is intended to operate so that any income derived by a non-exempt employee in connection with the exercise or vesting of an Option or SAR will be exempt from his or her regular rate of pay. To the extent permitted and/or required for compliance with the Worker Economic Opportunity Act to ensure that any income derived by a non-exempt employee in connection with the exercise, vesting or issuance of any shares under any other Stock Award will be exempt from the employee's regular rate of pay, the provisions of this Section 5(l) will apply to all Stock Awards and are hereby incorporated by reference into such Stock Award Agreements.

6. PROVISIONS OF STOCK AWARDS OTHER THAN OPTIONS AND SARS.

(a) Restricted Stock Awards. Each Restricted Stock Award Agreement will be in such form and will contain such terms and conditions as the Board deems appropriate. To the extent consistent with the Company's bylaws, at the Board's election, shares of Common Stock underlying a Restricted Stock Award may be (i) held in book entry form subject to the Company's instructions until any restrictions relating to the Restricted Stock Award lapse, or (ii) evidenced by a certificate, which certificate will be held in such form and manner as determined by the Board. The terms and conditions of Restricted Stock Award Agreements may change from time to time, and the terms and conditions of separate Restricted Stock Award Agreements need not be identical. Each Restricted Stock Award Agreement will conform to (through incorporation of the provisions hereof by reference in the agreement or otherwise) the substance of each of the following provisions:

(i) Consideration. A Restricted Stock Award may be awarded in consideration for (A) cash, check, bank draft or money order payable to the Company, (B) past services to the Company or an Affiliate, or (C) any other form of legal consideration (including future services) that may be acceptable to the Board, in its sole discretion, and permissible under applicable law.

(ii) Vesting. Shares of Common Stock awarded under the Restricted Stock Award Agreement may be subject to forfeiture to the Company in accordance with a vesting schedule to be determined by the Board.

(iii) Termination of Participant's Continuous Service. If a Participant's Continuous Service terminates, the Company may receive through a forfeiture condition or a repurchase right any or all of the shares of Common Stock held by the Participant as of the date of termination of Continuous Service under the terms of the Restricted Stock Award Agreement.

(iv) Transferability. Rights to acquire shares of Common Stock under the Restricted Stock Award Agreement will be transferable by the Participant only upon such terms and conditions as are set forth in the Restricted Stock Award Agreement, as the Board will determine in its sole discretion, so long as Common Stock awarded under the Restricted Stock Award Agreement remains subject to the terms of the Restricted Stock Award Agreement. Notwithstanding the foregoing or anything in the Plan or a Restricted Stock Award Agreement to the contrary, no Restricted Stock Award may be transferred to any financial institution without prior stockholder approval.

(b) Restricted Stock Unit Awards. Each Restricted Stock Unit Award Agreement will be in such form and will contain such terms and conditions as the Board deems appropriate. The terms and conditions of Restricted Stock Unit Award Agreements may change from time to time, and the terms and conditions of separate Restricted Stock Unit Award Agreements need not be identical. Each Restricted Stock Unit Award Agreement will conform to (through incorporation of the provisions hereof by reference in the Agreement or otherwise) the substance of each of the following provisions:

(i) Consideration. At the time of grant of a Restricted Stock Unit Award, the Board will determine the consideration, if any, to be paid by the Participant upon delivery of each share of Common Stock subject to the Restricted Stock Unit Award. The consideration to be paid (if any) by the Participant for each share of Common Stock subject to a Restricted Stock Unit Award may be paid in any form of legal consideration that may be acceptable to the Board, in its sole discretion, and permissible under applicable law.

(ii) Vesting. At the time of the grant of a Restricted Stock Unit Award, the Board may impose such restrictions on or conditions to the vesting of the Restricted Stock Unit Award as it, in its sole discretion, deems appropriate.

(iii) Payment. A Restricted Stock Unit Award may be settled by the delivery of shares of Common Stock, their cash equivalent, any combination thereof or in any other form of consideration, as determined by the Board and contained in the Restricted Stock Unit Award Agreement.

(iv) Additional Restrictions. At the time of the grant of a Restricted Stock Unit Award, the Board, as it deems appropriate, may impose such restrictions or conditions that delay the delivery of the shares of Common Stock (or their cash equivalent) subject to a Restricted Stock Unit Award to a time after the vesting of such Restricted Stock Unit Award.

(v) Termination of Participant's Continuous Service. Except as otherwise provided in the applicable Restricted Stock Unit Award Agreement, such portion of the Restricted Stock Unit Award that has not vested will be forfeited upon the Participant's termination of Continuous Service.

(c) Performance Stock Awards.

(i) Performance Stock Awards. A Performance Stock Award is a Stock Award that is payable (including that may be granted, vest or be exercised) contingent upon the attainment during a

Performance Period of certain Performance Goals. A Performance Stock Award may, but need not, require the Participant's completion of a specified period of Continuous Service. The length of any Performance Period, the Performance Goals to be achieved during the Performance Period, and the measure of whether and to what degree such Performance Goals have been attained will be conclusively determined by the Board, in its sole discretion. In addition, to the extent permitted by applicable law and the applicable Stock Award Agreement, the Board may determine that cash may be used in payment of Performance Stock Awards.

(ii) Board Discretion. The Board retains the discretion to reduce or eliminate the compensation or economic benefit due upon the attainment of any Performance Goals and to define the manner of calculating the Performance Criteria it selects to use for a Performance Period.

(d) Other Stock Awards. Other forms of Stock Awards valued in whole or in part by reference to, or otherwise based on, Common Stock, including the appreciation in value thereof (*e.g.*, options or stock appreciation rights with an exercise price or strike price less than 100% of the Fair Market Value of the Common Stock at the time of grant) may be granted either alone or in addition to Stock Awards granted under Section 5 and this Section 6. Subject to the provisions of the Plan (including, but not limited to, Section 2(g)), the Board will have sole and complete authority to determine the persons to whom and the time or times at which such Other Stock Awards will be granted, the number of shares of Common Stock (or the cash equivalent thereof) to be granted pursuant to such Other Stock Awards and all other terms and conditions of such Other Stock Awards.

7. COVENANTS OF THE COMPANY.

(a) Availability of Shares. The Company will keep available at all times the number of shares of Common Stock reasonably required to satisfy then-outstanding Stock Awards.

(b) Securities Law Compliance. The Company will seek to obtain from each regulatory commission or agency having jurisdiction over the Plan the authority required to grant Stock Awards and to issue and sell shares of Common Stock upon exercise of the Stock Awards; *provided, however*, that this undertaking will not require the Company to register under the Securities Act the Plan, any Stock Award or any Common Stock issued or issuable pursuant to any such Stock Award. If, after reasonable efforts and at a reasonable cost, the Company is unable to obtain from any such regulatory commission or agency the authority that counsel for the Company deems necessary for the lawful issuance and sale of Common Stock under the Plan, the Company will be relieved from any liability for failure to issue and sell Common Stock upon exercise of such Stock Awards unless and until such authority is obtained. A Participant will not be eligible for the grant of a Stock Award or the subsequent issuance of cash or Common Stock pursuant to the Stock Award if such grant or issuance would be in violation of any applicable securities law.

(c) No Obligation to Notify or Minimize Taxes. The Company will have no duty or obligation to any Participant to advise such holder as to the time or manner of exercising a Stock Award. Furthermore, the Company will have no duty or obligation to warn or otherwise advise such holder of a pending termination or expiration of a Stock Award or a possible period in which the Stock Award may not be exercised. The Company has no duty or obligation to minimize the tax consequences of a Stock Award to the holder of such Stock Award.

8. MISCELLANEOUS.

(a) Use of Proceeds from Sales of Common Stock. Proceeds from the sale of shares of Common Stock issued pursuant to Stock Awards will constitute general funds of the Company.

(b) Corporate Action Constituting Grant of Stock Awards. Corporate action constituting a grant by the Company of a Stock Award to any Participant will be deemed completed as of the date of such corporate action, unless otherwise determined by the Board, regardless of when the instrument, certificate, or letter evidencing the Stock Award is communicated to, or actually received or accepted by, the Participant. In the event that the corporate records (*e.g.*, Board consents, resolutions or minutes) documenting the corporate action constituting the grant contain terms (*e.g.*, exercise price, vesting schedule or number of shares) that are inconsistent with those in the Stock Award Agreement or related grant documents as a result of a clerical error

in the preparation of the Stock Award Agreement or related grant documents, the corporate records will control and the Participant will have no legally binding right to the incorrect terms in the Stock Award Agreement or related grant documents.

(c) Stockholder Rights. No Participant will be deemed to be the holder of, or to have any of the rights of a holder with respect to, any shares of Common Stock subject to a Stock Award unless and until (i) such Participant has satisfied all requirements for exercise of, or the issuance of shares of Common Stock under, the Stock Award pursuant to its terms, and (ii) the issuance of the Common Stock subject to such Stock Award has been entered into the books and records of the Company.

(d) No Employment or Other Service Rights. Nothing in the Plan, any Stock Award Agreement or any other instrument executed thereunder or in connection with any Stock Award granted pursuant thereto will confer upon any Participant any right to continue to serve the Company or an Affiliate in the capacity in effect at the time the Stock Award was granted or will affect the right of the Company or an Affiliate to terminate (i) the employment of an Employee with or without notice and with or without cause, (ii) the service of a Consultant pursuant to the terms of such Consultant's agreement with the Company or an Affiliate, or (iii) the service of a Director pursuant to the bylaws of the Company or an Affiliate, and any applicable provisions of the corporate law of the state in which the Company or the Affiliate is incorporated, as the case may be.

(e) Change in Time Commitment. In the event a Participant's regular level of time commitment in the performance of his or her services for the Company or any Affiliate is reduced (for example, and without limitation, if the Participant is an Employee of the Company and the Employee has a change in status from a full-time Employee to a part-time Employee) after the date of grant of any Stock Award to the Participant, the Board has the right in its sole discretion to (x) make a corresponding reduction in the number of shares or cash amount subject to any portion of such Stock Award that is scheduled to vest or become payable after the date of such change in time commitment, and (y) in lieu of or in combination with such a reduction, extend the vesting or payment schedule applicable to such Stock Award. In the event of any such reduction, the Participant will have no right with respect to any portion of the Stock Award that is so reduced or extended.

(f) Incentive Stock Option Limitations. To the extent that the aggregate Fair Market Value (determined at the time of grant) of Common Stock with respect to which Incentive Stock Options are exercisable for the first time by any Optionholder during any calendar year (under all plans of the Company and any Affiliates) exceeds $100,000 (or such other limit established in the Code) or otherwise does not comply with the rules governing Incentive Stock Options, the Options or portions thereof that exceed such limit (according to the order in which they were granted) or otherwise do not comply with such rules will be treated as Nonstatutory Stock Options, notwithstanding any contrary provision of the applicable Option Agreement(s).

(g) Investment Assurances. The Company may require a Participant, as a condition of exercising or acquiring Common Stock under any Stock Award, (i) to give written assurances satisfactory to the Company as to the Participant's knowledge and experience in financial and business matters and/or to employ a purchaser representative reasonably satisfactory to the Company who is knowledgeable and experienced in financial and business matters and that he or she is capable of evaluating, alone or together with the purchaser representative, the merits and risks of exercising the Stock Award; and (ii) to give written assurances satisfactory to the Company stating that the Participant is acquiring Common Stock subject to the Stock Award for the Participant's own account and not with any present intention of selling or otherwise distributing the Common Stock. The foregoing requirements, and any assurances given pursuant to such requirements, will be inoperative if (A) the issuance of the shares upon the exercise or acquisition of Common Stock under the Stock Award has been registered under a then currently effective registration statement under the Securities Act, or (B) as to any particular requirement, a determination is made by counsel for the Company that such requirement need not be met in the circumstances under the then applicable securities laws. The Company may, upon advice of counsel to the Company, place legends on stock certificates issued under the Plan as such counsel deems necessary or appropriate in order to comply with applicable securities laws, including, but not limited to, legends restricting the transfer of the Common Stock.

(h) Withholding Obligations. Unless prohibited by the terms of a Stock Award Agreement, the Company may, in its sole discretion, satisfy any federal, state or local tax withholding obligation relating to a Stock Award by any of the following means or by a combination of such means: (i) causing the Participant to

tender a cash payment; (ii) withholding shares of Common Stock from the shares of Common Stock issued or otherwise issuable to the Participant in connection with the Stock Award; *provided, however,* that no shares of Common Stock are withheld with a value exceeding the maximum amount of tax that may be required to be withheld by law (or such other amount as may be permitted while still avoiding classification of the Stock Award as a liability for financial accounting purposes); (iii) withholding cash from a Stock Award settled in cash; (iv) withholding payment from any amounts otherwise payable to the Participant; or (v) by such other method as may be set forth in the Stock Award Agreement.

(i) Electronic Delivery. Any reference herein to a "written" agreement or document will include any agreement or document delivered electronically, filed publicly at www.sec.gov (or any successor website thereto) or posted on the Company's intranet (or other shared electronic medium controlled by the Company to which the Participant has access).

(j) Deferrals. To the extent permitted by applicable law, the Board, in its sole discretion, may determine that the delivery of Common Stock or the payment of cash, upon the exercise, vesting or settlement of all or a portion of any Stock Award may be deferred and may establish programs and procedures for deferral elections to be made by Participants. Deferrals by Participants will be made in accordance with Section 409A of the Code. Consistent with Section 409A of the Code, the Board may provide for distributions while a Participant is still an employee or otherwise providing services to the Company or an Affiliate. The Board is authorized to make deferrals of Stock Awards and determine when, and in what annual percentages, Participants may receive payments, including lump sum payments, following the Participant's termination of Continuous Service, and implement such other terms and conditions consistent with the provisions of the Plan and in accordance with applicable law.

(k) Compliance with Section 409A of the Code. Unless otherwise expressly provided for in a Stock Award Agreement, the Plan and Stock Award Agreements will be interpreted to the greatest extent possible in a manner that makes the Plan and the Stock Awards granted hereunder exempt from Section 409A of the Code, and, to the extent not so exempt, in compliance with Section 409A of the Code. To the extent that the Board determines that any Stock Award granted hereunder is not exempt from and is therefore subject to Section 409A of the Code, the Stock Award Agreement evidencing such Stock Award will incorporate the terms and conditions necessary to avoid the consequences specified in Section 409A(a)(1) of the Code, and, to the extent applicable, the Plan and Stock Award Agreements will be interpreted in accordance with the requirements of Section 409A of the Code. Notwithstanding anything to the contrary in this Plan (and unless the Stock Award Agreement specifically provides otherwise), if the shares of Common Stock are publicly traded and a Participant holding a Stock Award that constitutes "deferred compensation" under Section 409A of the Code is a "specified employee" for purposes of Section 409A of the Code, no distribution or payment of any amount will be made upon a "separation from service" before a date that is six months following the date of such Participant's "separation from service" (as defined in Section 409A of the Code without regard to alternative definitions thereunder) or, if earlier, the date of the Participant's death.

(l) Clawback/Recovery. All Stock Awards granted under the Plan will be subject to recoupment in accordance with any clawback provisions in a Participant's employment agreement or other agreement with the Company or any clawback policy that the Company is required to adopt pursuant to the listing standards of any national securities exchange or association on which the Company's securities are listed or as is otherwise required by the Dodd-Frank Wall Street Reform and Consumer Protection Act or other applicable law. In addition, the Board may impose such other clawback, recovery or recoupment provisions in a Stock Award Agreement as the Board determines necessary or appropriate, including but not limited to a reacquisition right in respect of previously acquired shares of Common Stock or other cash or property upon the occurrence of Cause. No recovery of compensation under such a clawback policy will be an event giving rise to a right to resign for "good reason" or "constructive termination" (or similar term) under any agreement with the Company or an Affiliate.

9. ADJUSTMENTS UPON CHANGES IN COMMON STOCK; OTHER CORPORATE EVENTS.

(a) Capitalization Adjustments. In the event of a Capitalization Adjustment, the Board will appropriately and proportionately adjust: (i) the class(es) and maximum number of securities subject to the Plan pursuant to Section 3(a), (ii) the class(es) and maximum number of securities that may be issued pursuant to the

exercise of Incentive Stock Options pursuant to Section 3(c), and (iii) the class(es) and number of securities and price per share of stock subject to outstanding Stock Awards. The Board will make such adjustments, and its determination will be final, binding and conclusive.

(b) Dissolution or Liquidation. Except as otherwise provided in the Stock Award Agreement, in the event of a dissolution or liquidation of the Company, all outstanding Stock Awards (other than Stock Awards consisting of vested and outstanding shares of Common Stock not subject to a forfeiture condition or the Company's right of repurchase) will terminate immediately prior to the completion of such dissolution or liquidation, and the shares of Common Stock subject to the Company's repurchase rights or subject to a forfeiture condition may be repurchased or reacquired by the Company notwithstanding the fact that the holder of such Stock Award is providing Continuous Service, *provided, however*, that the Board may, in its sole discretion, cause some or all Stock Awards to become fully vested, exercisable and/or no longer subject to repurchase or forfeiture (to the extent such Stock Awards have not previously expired or terminated) before the dissolution or liquidation is completed but contingent on its completion.

(c) Corporate Transaction. The following provisions will apply to Stock Awards in the event of a Corporate Transaction unless otherwise provided in the Stock Award Agreement or any other written agreement between the Company or any Affiliate and the Participant or unless otherwise expressly provided by the Board at the time of grant of a Stock Award. In the event of a Corporate Transaction, then, notwithstanding any other provision of the Plan, the Board may take one or more of the following actions with respect to Stock Awards, contingent upon the closing or completion of the Corporate Transaction:

(i) arrange for the surviving corporation or acquiring corporation (or the surviving or acquiring corporation's parent company) to assume or continue the Stock Award or to substitute a similar stock award for the Stock Award (including, but not limited to, an award to acquire the same consideration paid to the stockholders of the Company pursuant to the Corporate Transaction);

(ii) arrange for the assignment of any reacquisition or repurchase rights held by the Company in respect of Common Stock issued pursuant to the Stock Award to the surviving corporation or acquiring corporation (or the surviving or acquiring corporation's parent company);

(iii) accelerate the vesting, in whole or in part, of the Stock Award (and, if applicable, the time at which the Stock Award may be exercised) to a date prior to the effective time of such Corporate Transaction as the Board determines (or, if the Board does not determine such a date, to the date that is five (5) days prior to the effective date of the Corporate Transaction), with such Stock Award terminating if not exercised (if applicable) at or prior to the effective time of the Corporate Transaction; *provided, however*, that the Board may require Participants to complete and deliver to the Company a notice of exercise before the effective date of a Corporate Transaction, which exercise is contingent upon the effectiveness of such Corporate Transaction;

(iv) arrange for the lapse, in whole or in part, of any reacquisition or repurchase rights held by the Company with respect to the Stock Award;

(v) cancel or arrange for the cancellation of the Stock Award, to the extent not vested or not exercised prior to the effective time of the Corporate Transaction, in exchange for such cash consideration, if any, as the Board, in its sole discretion, may consider appropriate; and

(vi) make a payment, in such form as may be determined by the Board equal to the excess, if any, of (A) the value of the property the Participant would have received upon the exercise of the Stock Award immediately prior to the effective time of the Corporate Transaction, over (B) any exercise price payable by such holder in connection with such exercise. For clarity, this payment may be zero ($0) if the value of the property is equal to or less than the exercise price. Payments under this provision may be delayed to the same extent that payment of consideration to the holders of the Company's Common Stock in connection with the Corporate Transaction is delayed as a result of escrows, earn outs, holdbacks or any other contingencies.

The Board need not take the same action or actions with respect to all Stock Awards or portions thereof or with respect to all Participants. The Board may take different actions with respect to the vested and unvested portions of a Stock Award.

(d) Change in Control. A Stock Award may be subject to additional acceleration of vesting and exercisability upon or after a Change in Control as may be provided in the Stock Award Agreement for such Stock Award or as may be provided in any other written agreement between the Company or any Affiliate and the Participant, but in the absence of such provision, no such acceleration will occur.

10. TERMINATION OR SUSPENSION OF THE PLAN.

(a) The Board may suspend or terminate the Plan at any time. No Incentive Stock Option will be granted after the tenth anniversary of the earlier of (i) the date the Plan is adopted by the Board, or (ii) the date the Plan is approved by the stockholders of the Company. No Stock Awards may be granted under the Plan while the Plan is suspended or after it is terminated.

(b) No Impairment of Rights. Suspension or termination of the Plan will not materially impair rights and obligations under any Stock Award granted while the Plan is in effect except with the written consent of the affected Participant or as otherwise permitted in the Plan.

11. EFFECTIVE DATE OF PLAN.

This Plan will become effective on the Effective Date.

12. CHOICE OF LAW.

The laws of the State of Delaware will govern all questions concerning the construction, validity and interpretation of this Plan, without regard to that state's conflict of laws rules.

13. DEFINITIONS.

As used in the Plan, the following definitions will apply to the capitalized terms indicated below:

(a) "***Affiliate***" means, at the time of determination, any "parent" or "subsidiary" of the Company as such terms are defined in Rule 405. The Board will have the authority to determine the time or times at which "parent" or "subsidiary" status is determined within the foregoing definition.

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

(c) "***Capitalization Adjustment***" means any change that is made in, or other events that occur with respect to, the Common Stock subject to the Plan or subject to any Stock Award after the Effective Date without the receipt of consideration by the Company through merger, consolidation, reorganization, recapitalization, reincorporation, stock dividend, dividend in property other than cash, large nonrecurring cash dividend, stock split, reverse stock split, liquidating dividend, combination of shares, exchange of shares, change in corporate structure or any similar equity restructuring transaction, as that term is used in Statement of Financial Accounting Standards Board Accounting Standards Codification Topic 718 (or any successor thereto). Notwithstanding the foregoing, the conversion of any convertible securities of the Company will not be treated as a Capitalization Adjustment.

(d) "***Cause***" will have the meaning ascribed to such term in any written agreement between the Participant and the Company or an Affiliate defining such term and, in the absence of such agreement, such term will mean, with respect to a Participant and for purposes of the application of this Plan, the occurrence of any of the following events: (i) such Participant's conviction of, or plea of no contest with respect to, any crime involving fraud, dishonesty or moral turpitude; (ii) such Participant's attempted commission of or participation in a fraud or act of dishonesty against the Company or an Affiliate that results in (or might have reasonably resulted in) material harm to the business of the Company or an Affiliate; (iii) such Participant's intentional,

material violation of any contract or agreement between the Participant and the Company or an Affiliate, or any statutory duty the Participant owes to the Company or an Affiliate; or (iv) such Participant's conduct that constitutes gross misconduct, insubordination, incompetence or habitual neglect of duties and that results in (or might have reasonably resulted in) material harm to the business of the Company or an Affiliate. The determination that a termination of the Participant's Continuous Service is either for Cause or without Cause will be made by the Company, in its sole discretion. Any determination by the Company that the Continuous Service of a Participant was terminated with or without Cause for the purposes of outstanding Stock Awards held by such Participant will have no effect upon any determination of the rights or obligations of the Company or an Affiliate or such Participant for any other purpose.

(e) "***Change in Control***" will be deemed to have occurred upon the first to occur of an event set forth in any one of the following paragraphs:

(i) As a result of any merger or consolidation, the voting securities of the Company outstanding immediately prior thereto represent (either by remaining outstanding or by being converted into voting securities of the surviving or acquiring entity) less than 49% of the combined voting power of the voting securities of the Company or such surviving or acquiring entity outstanding immediately after such merger or consolidation;

(ii) during any period of twenty-four consecutive calendar months, the individuals who at the beginning of such period constitute the Board, and any new directors whose election by such Board or nomination for election by stockholders was approved by a vote of at least two-thirds of the members of such Board who were either directors on such Board at the beginning of the period or whose election or nomination for election as directors was previously so approved, for any reason cease to constitute at least a majority of the members thereof;

(iii) any individual, entity or group (within the meaning of Section 13(d)(3) or 14(d)(2) of the Exchange Act) shall become the beneficial owner (within the meaning of Rule 13d-3 promulgated under the Exchange Act) of more than 20% of the then outstanding shares of Common Stock of the Company;

(iv) any sale of all or substantially all of the assets of the Company; or

(v) the complete liquidation or dissolution of the Company.

Notwithstanding the foregoing, if a Change in Control constitutes a payment event with respect to any Stock Award which provides for the deferral of compensation and is subject to Section 409A of the Code, the transaction or event with respect to such Stock Award must also constitute a "change in control event," as defined in Treasury Regulation §1.409A-3(i)(5) to the extent required by Section 409A.

The Committee shall have full and final authority, which shall be exercised in its discretion, to determine conclusively whether a Change in Control of the Company has occurred pursuant to the above definition, and the date of the occurrence of such Change in Control and any incidental matters relating thereto.

Notwithstanding the foregoing, a Change in Control shall not be deemed to occur solely because the threshold voting power of the Company's then outstanding securities in Section 13(e)(i) or (iii) is acquired by (A) a trustee or other fiduciary holding securities under one or more employee benefit plans maintained by the Company or any of its subsidiaries or (B) any corporation which, immediately prior to such acquisition, is owned directly or indirectly by the stockholders of the Company in the same proportion as their ownership of stock in the Company immediately prior to such acquisition.

For the avoidance of doubt, the term Change in Control shall not include a sale of assets, merger or other transaction effected exclusively for the purpose of changing the domicile of the Company.

Notwithstanding the foregoing or any other provision of this Plan, the definition of Change in Control (or any analogous term) in an individual written agreement between the Company or any Affiliate and the Participant shall supersede the foregoing definition with respect to Stock Awards subject to such agreement;

provided, however, that if no definition of Change in Control or any analogous term is set forth in such an individual written agreement, the foregoing definition shall apply.

(f) "***Code***" means the Internal Revenue Code of 1986, as amended, including any applicable regulations and guidance thereunder.

(g) "***Committee***" means a committee of one or more Directors to whom authority has been delegated by the Board in accordance with Section 2(c).

(h) "***Common Stock***" means the common stock of the Company.

(i) "***Company***" means Geron Corporation, a Delaware corporation.

(j) "***Consultant***" means any person, including an advisor, who is (i) engaged by the Company or an Affiliate to render consulting or advisory services and is compensated for such services, or (ii) serving as a member of the board of directors of an Affiliate and is compensated for such services. However, service solely as a Director, or payment of a fee for such service, will not cause a Director to be considered a "Consultant" for purposes of the Plan. Notwithstanding the foregoing, a person is treated as a Consultant under this Plan only if a Form S-8 Registration Statement under the Securities Act is available to register either the offer or the sale of the Company's securities to such person.

(k) "***Continuous Service***" means that the Participant's service with the Company or an Affiliate, whether as an Employee, Director or Consultant, is not interrupted or terminated. A change in the capacity in which the Participant renders service to the Company or an Affiliate as an Employee, Director or Consultant or a change in the Entity for which the Participant renders such service, provided that there is no interruption or termination of the Participant's service with the Company or an Affiliate, will not terminate a Participant's Continuous Service; *provided, however,* that if the Entity for which a Participant is rendering services ceases to qualify as an Affiliate, as determined by the Board, in its sole discretion, such Participant's Continuous Service will be considered to have terminated on the date such Entity ceases to qualify as an Affiliate. For example, a change in status from an Employee of the Company to a Consultant of an Affiliate or to a Director will not constitute an interruption of Continuous Service. To the extent permitted by law, the Board or the chief executive officer of the Company, in that party's sole discretion, may determine whether Continuous Service will be considered interrupted in the case of (i) any leave of absence approved by the Board or chief executive officer, including sick leave, military leave or any other personal leave, or (ii) transfers between the Company, an Affiliate, or their successors. Notwithstanding the foregoing, a leave of absence will be treated as Continuous Service for purposes of vesting in a Stock Award only to such extent as may be provided in the Company's or Affiliate's leave of absence policy, in the written terms of any leave of absence agreement or policy applicable to the Participant, or as otherwise required by law.

(l) "***Corporate Transaction***" means the consummation, in a single transaction or in a series of related transactions, of any one or more of the following events:

(i) a sale, lease or other disposition of all or substantially all of the assets of the Company;

(ii) a sale or other disposition of at least ninety percent (90%) of the outstanding securities of the Company;

(iii) a merger, consolidation or similar transaction in which the Company is not the surviving corporation; or

(iv) a reverse merger, consolidation or similar transaction in which the Company is the surviving corporation but the shares of Common Stock outstanding immediately preceding the merger, consolidation or similar transaction are converted by virtue of the merger, consolidation or similar transaction into other property, whether in the form of securities, cash or otherwise.

Notwithstanding the foregoing definition or any other provision of this Plan, the term Corporate Transaction will not include a sale of assets, merger or other transaction effected exclusively for the purpose of changing the domicile of the Company.

(m) "***Director***" means a member of the Board.

(n) "***Disability***" means, with respect to a Participant, the inability of such Participant to engage in any substantial gainful activity by reason of any medically determinable physical or mental impairment that can be expected to result in death or that has lasted or can be expected to last for a continuous period of not less than 12 months, as provided in Sections 22(e)(3) and 409A(a)(2)(c)(i) of the Code, and will be determined by the Board on the basis of such medical evidence as the Board deems warranted under the circumstances.

(o) "***Effective Date***" means the effective date of this Plan document, which is the date of the annual meeting of stockholders of the Company held in 2018, provided this Plan is approved by the Company's stockholders at such meeting.

(p) "***Employee***" means any person employed by the Company or an Affiliate. However, service solely as a Director, or payment of a fee for such services, will not cause a Director to be considered an "Employee" for purposes of the Plan.

(q) "***Entity***" means a corporation, partnership, limited liability company or other domestic or foreign entity.

(r) "***Exchange Act***" means the Securities Exchange Act of 1934, as amended, and the rules and regulations promulgated thereunder.

(s) "***Fair Market Value***" means, as of any date, the value of the Common Stock determined as follows:

(i) If the Common Stock is listed on any established stock exchange or traded on any established market, the Fair Market Value of a share of Common Stock will be, unless otherwise determined by the Board, the closing sales price for such stock as quoted on such exchange or market (or the exchange or market with the greatest volume of trading in the Common Stock) on the date of determination, as reported in a source the Board deems reliable.

(ii) Unless otherwise provided by the Board, if there is no closing sales price for the Common Stock on the date of determination, then the Fair Market Value will be the closing selling price on the last preceding date for which such quotation exists.

(iii) In the absence of such markets for the Common Stock, the Fair Market Value will be determined by the Board in good faith and in a manner that complies with Sections 409A and 422 of the Code.

(t) "***Full Value Award***" means any Stock Award granted under this Plan, other than an Option or SAR that has a per share exercise or strike price that is at least 100% of the Fair Market Value of the Common Stock on its original date of grant.

(u) "***Incentive Stock Option***" means an option granted pursuant to Section 5 that is intended to be, and that qualifies as, an "incentive stock option" within the meaning of Section 422 of the Code.

(v) "***Non-Employee Director***" means a Director who either (i) is not a current employee or officer of the Company or an Affiliate, does not receive compensation, either directly or indirectly, from the Company or an Affiliate for services rendered as a consultant or in any capacity other than as a Director (except for an amount as to which disclosure would not be required under Item 404(a) of Regulation S-K promulgated pursuant to the Securities Act ("***Regulation S-K***")), does not possess an interest in any other transaction for which disclosure would be required under Item 404(a) of Regulation S-K, and is not engaged in a business

relationship for which disclosure would be required pursuant to Item 404(b) of Regulation S-K; or (ii) is otherwise considered a "non-employee director" for purposes of Rule 16b-3.

(w) "***Nonstatutory Stock Option***" means any option granted pursuant to Section 5 that does not qualify as an Incentive Stock Option.

(x) "***Officer***" means a person who is an officer of the Company within the meaning of Section 16 of the Exchange Act.

(y) "***Option***" means an Incentive Stock Option or a Nonstatutory Stock Option to purchase shares of Common Stock granted pursuant to the Plan.

(z) "***Option Agreement***" means a written agreement between the Company and an Optionholder evidencing the terms and conditions of an Option grant. Each Option Agreement will be subject to the terms and conditions of the Plan.

(aa) "***Optionholder***" means a person to whom an Option is granted pursuant to the Plan or, if applicable, such other person who holds an outstanding Option.

(bb) "***Other Stock Award***" means an award based in whole or in part by reference to the Common Stock which is granted pursuant to the terms and conditions of Section 6(d).

(cc) "***Other Stock Award Agreement***" means a written agreement between the Company and a holder of an Other Stock Award evidencing the terms and conditions of an Other Stock Award grant. Each Other Stock Award Agreement will be subject to the terms and conditions of the Plan.

(dd) "***Own,***" "***Owned,***" "***Owner,***" "***Ownership***" means a person or Entity will be deemed to "Own," to have "Owned," to be the "Owner" of, or to have acquired "Ownership" of securities if such person or Entity, directly or indirectly, through any contract, arrangement, understanding, relationship or otherwise, has or shares voting power, which includes the power to vote or to direct the voting, with respect to such securities.

(ee) "***Participant***" means a person to whom a Stock Award is granted pursuant to the Plan or, if applicable, such other person who holds an outstanding Stock Award.

(ff) "***Performance Criteria***" means the one or more criteria that the Board shall select for purposes of establishing the Performance Goals for a Performance Period. The Performance Criteria that shall be used to establish such Performance Goals may be based on any one of, or combination of, the following: (i) net earnings (either before or after one or more of the following: (A) interest, (B) taxes, (C) depreciation and (D) amortization); (ii) gross or net sales or revenue; (iii) net income (either before or after taxes); (iv) adjusted net income; (v) operating earnings or profit; (vi) cash flow (including, but not limited to, operating cash flow and free cash flow); (vii) return on assets; (viii) return on capital; (ix) return on stockholders' equity; (x) total stockholder return; (xi) return on sales; (xii) gross or net profit or operating margin; (xiii) costs; (xiv) funds from operations; (xv) expenses; (xvi) working capital; (xvii) earnings per share; (xviii) adjusted earnings per share; (xix) price per Share; (xx) regulatory body approval for commercialization of a product; (xxi) positive results from clinical trials; (xxii) initiation of clinical trials; (xxiii) implementation, completion or maintenance of critical projects or relationships; (xxiv) closing of significant financing; (xxv) execution or completion of strategic initiatives; (xxvi) market share; (xxvii) economic value; (xxviii) cash flow return on capital; (xxix) return on net assets; and (xxx) other measures of performance selected by the Board. Partial achievement of the specified criteria may result in the payment or vesting corresponding to the degree of achievement as specified in the Stock Award Agreement. The Board shall, in its sole discretion, define the manner of calculating the Performance Criteria it selects to use for such Performance Period.

(gg) "***Performance Goals***" means, for a Performance Period, the one or more goals established by the Board for the Performance Period based upon the Performance Criteria. Performance Goals may be based on a Company-wide basis, with respect to one or more business units, divisions, Affiliates, or business segments, and in either absolute terms or relative to the performance of one or more comparable companies or

the performance of one or more relevant indices. The Board may, in its sole discretion, provide that one or more objectively determinable adjustments shall be made to one or more of the Performance Goals. Such adjustments may include one or more of the following: (i) items related to a change in accounting principle; (ii) items relating to financing activities; (iii) expenses for restructuring or productivity initiatives; (iv) other non-operating items; (v) items related to acquisitions; (vi) items attributable to the business operations of any entity acquired by the Company during the Performance Period; (vii) items related to the disposal of a business or segment of a business; (viii) items related to discontinued operations that do not qualify as a segment of a business under Applicable Accounting Standards; (ix) items attributable to any stock dividend, stock split, combination or exchange of stock occurring during the Performance Period; (x) any other items of significant income or expense which are determined to be appropriate adjustments; (xi) items relating to unusual or extraordinary corporate transactions, events or developments, (xii) items related to amortization of acquired intangible assets; (xiii) items that are outside the scope of the Company's core, on-going business activities; (xiv) items related to acquired in-process research and development; (xv) items relating to changes in tax laws; (xvi) items relating to major licensing or partnership arrangements; (xvii) items relating to asset impairment charges; (xviii) items relating to gains or losses for litigation, arbitration and contractual settlements; (xix) items relating to any other unusual or nonrecurring events or changes in applicable laws, accounting principles or business conditions; or (xx) any other items selected by the Board.

(hh) "***Performance Period***" means the period of time selected by the Board over which the attainment of one or more Performance Goals will be measured for the purpose of determining a Participant's right to and the payment of a Performance Stock Award. Performance Periods may be of varying and overlapping duration, at the sole discretion of the Board.

(ii) "***Performance Stock Award***" means a Stock Award granted under the terms and conditions of Section 6(c)(i).

(jj) "***Plan***" means this Geron Corporation 2018 Equity Incentive Plan.

(kk) "***Restricted Stock Award***" means an award of shares of Common Stock which is granted pursuant to the terms and conditions of Section 6(a).

(ll) "***Restricted Stock Award Agreement***" means a written agreement between the Company and a holder of a Restricted Stock Award evidencing the terms and conditions of a Restricted Stock Award grant. Each Restricted Stock Award Agreement will be subject to the terms and conditions of the Plan.

(mm) "***Restricted Stock Unit Award***" means a right to receive shares of Common Stock which is granted pursuant to the terms and conditions of Section 6(b).

(nn) "***Restricted Stock Unit Award Agreement***" means a written agreement between the Company and a holder of a Restricted Stock Unit Award evidencing the terms and conditions of a Restricted Stock Unit Award grant. Each Restricted Stock Unit Award Agreement will be subject to the terms and conditions of the Plan.

(oo) "***Rule 16b-3***" means Rule 16b-3 promulgated under the Exchange Act or any successor to Rule 16b-3, as in effect from time to time.

(pp) "***Rule 405***" means Rule 405 promulgated under the Securities Act.

(qq) "***Securities Act***" means the Securities Act of 1933, as amended.

(rr) "***Stock Appreciation Right***" or "***SAR***" means a right to receive the appreciation on Common Stock that is granted pursuant to the terms and conditions of Section 5.

(ss) "***Stock Appreciation Right Agreement***" means a written agreement between the Company and a holder of a Stock Appreciation Right evidencing the terms and conditions of a Stock Appreciation Right grant. Each Stock Appreciation Right Agreement will be subject to the terms and conditions of the Plan.

(tt) "***Stock Award***" means any right to receive Common Stock granted under the Plan, including an Incentive Stock Option, a Nonstatutory Stock Option, a Stock Appreciation Right, a Restricted Stock Award, a Restricted Stock Unit Award, a Performance Stock Award or any Other Stock Award.

(uu) "***Stock Award Agreement***" means a written agreement between the Company and a Participant evidencing the terms and conditions of a Stock Award grant. Each Stock Award Agreement will be subject to the terms and conditions of the Plan.

(vv) "***Subsidiary***" means, with respect to the Company, (i) any corporation of which more than 50% of the outstanding capital stock having ordinary voting power to elect a majority of the board of directors of such corporation (irrespective of whether, at the time, stock of any other class or classes of such corporation will have or might have voting power by reason of the happening of any contingency) is at the time, directly or indirectly, Owned by the Company, and (ii) any partnership, limited liability company or other entity in which the Company has a direct or indirect interest (whether in the form of voting or participation in profits or capital contribution) of more than 50%.

(ww) "***Ten Percent Stockholder***" means a person who Owns (or is deemed to Own pursuant to Section 424(d) of the Code) stock possessing more than 10% of the total combined voting power of all classes of stock of the Company or any Affiliate.

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

FORM 10-K

(Mark One)

☒ **ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**
For the Fiscal Year Ended December 31, 2019

or

☐ **TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**

For the transition period from _____ to _____ .

Commission File Number: 0-20859

GERON CORPORATION
(Exact name of registrant as specified in its charter)

Delaware	**75-2287752**
(State or other jurisdiction of incorporation or organization)	**(I.R.S. Employer Identification No.)**
149 Commonwealth Drive, Suite 2070, Menlo Park, CA	**94025**
(Address of principal executive offices)	**(Zip Code)**

Registrant's telephone number, including area code: (650) 473-7700

Securities registered pursuant to Section 12(b) of the Act:

Title of each class:	**Trading symbol(s):**	**Name of each exchange on which registered:**
Common Stock, $0.001 par value	GERN	The Nasdaq Stock Market LLC

Securities registered pursuant to Section 12(g) of the Act: **None**

Indicate by check mark if the registrant is a well-known seasoned issuer, as defined in Rule 405 of the Securities Act. Yes ☐ No ☒

Indicate by check mark if the registrant is not required to file reports pursuant to Section 13 or Section 15(d) of the Act. Yes ☐ No ☒

Indicate by check mark whether the registrant (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days. Yes ☒ No ☐

Indicate by check mark whether the registrant has submitted electronically every Interactive Data File required to be submitted pursuant to Rule 405 of Regulation S-T (§232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit such files). Yes ☒ No ☐

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, a smaller reporting company, or emerging growth company. See the definitions of "large accelerated filer," "accelerated filer," "smaller reporting company," and "emerging growth company" in Rule 12b-2 of the Exchange Act.

Large accelerated filer	☐	Accelerated filer	☒
Non-accelerated filer	☐	Smaller reporting company	☒
		Emerging growth company	☐

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 13(a) of the Exchange Act. ☐

Indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Act). Yes ☐ No ☒

The aggregate market value of voting and non-voting common equity held by non-affiliates of the registrant was approximately $262,459,000 based upon the closing price of the registrant's common stock on June 28, 2019 on the Nasdaq Global Select Market. The calculation of the aggregate market value of voting and non-voting common equity held by non-affiliates of the registrant excludes shares of common stock held by each officer, director and stockholder that the registrant concluded were affiliates on that date. This determination of affiliate status is not necessarily a conclusive determination for other purposes.

As of March 2, 2020, there were 200,344,809 shares of common stock outstanding.

DOCUMENTS INCORPORATED BY REFERENCE:

Document	**Form 10-K Parts**
Portions of the Registrant's definitive proxy statement for the 2020 annual meeting of stockholders to be filed pursuant to Regulation 14A within 120 days of the Registrant's fiscal year ended December 31, 2019	III

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In this report, unless otherwise indicated or the context otherwise requires, "Geron," "the registrant," "we," "us," and "our" refer to Geron Corporation, a Delaware corporation.

Forward-Looking Statements

This annual report on Form 10-K, including "Business" in Part I, Item 1 and "Management's Discussion and Analysis of Financial Condition and Results of Operations" in Part II, Item 7, contains forward-looking statements that involve risks and uncertainties, as well as assumptions that, if they never materialize or prove incorrect, could cause the results of Geron Corporation, or Geron or the Company, to differ materially from those expressed or implied by such forward-looking statements. All statements other than statements of historical fact are statements that could be deemed forward-looking statements. In some cases, forward-looking statements can be identified by the use of terminology such as "may," "expects," "plans," "intends," "will," "should," "projects," "believes," "predicts," "anticipates," "estimates," "potential," or "continue" or the negative thereof or other comparable terminology. The risks and uncertainties referred to above include, without limitation, risks related to uncertainty of non-clinical and clinical trial results or regulatory approvals or clearances, the future development of imetelstat, including any future efficacy or safety results that may cause the benefit-risk profile of imetelstat to become unacceptable, our need for additional capital to support the development and commercialization of imetelstat and to otherwise grow our business, transition of the imetelstat program to us, establishing and maintaining imetelstat manufacture and supply, enforcement of our patent and proprietary rights, managing our business growth, litigation risks, the effects of any health epidemics, potential competition and other risks that are described herein and that are otherwise described from time to time in our Securities and Exchange Commission reports including, but not limited to, the factors described in Part I, Item 1A, "Risk Factors," of this annual report on Form 10-K. Geron assumes no obligation for and except as required by law, disclaims any obligation to update these forward-looking statements to reflect future information, events or circumstances.

Calculation of Aggregate Market Value of Non-Affiliate Shares

For purposes of calculating the aggregate market value of shares of our common stock held by non-affiliates as set forth on the cover page of this annual report on Form 10-K, we have assumed that all outstanding shares are held by non-affiliates, except for shares held by each of our executive officers, directors and 5% or greater stockholders. In the case of 5% or greater stockholders, we have not deemed such stockholders to be affiliates unless there are facts and circumstances which would indicate that such stockholders exercise any control over our Company. These assumptions should not be deemed to constitute an admission that all executive officers, directors and 5% or greater stockholders are, in fact, affiliates of our Company, or that there are no other persons who may be deemed to be affiliates of our Company. Further information concerning shareholdings of our executive officers, directors and principal stockholders is incorporated by reference in Part III, Item 12 of this annual report on Form 10-K.

PART I

ITEM 1. BUSINESS

Company Overview

We are a late-stage clinical biopharmaceutical company that is focused on the development and potential commercialization of imetelstat, an innovative therapeutic for hematologic myeloid malignancies. We have global rights to imetelstat, a first-in-class telomerase inhibitor, which was discovered and developed at Geron. We believe targeting telomerase has the potential to inhibit the uncontrolled proliferation of malignant progenitor cells in hematologic myeloid malignancies to reduce dysfunctional blood cell production and enable recovery of normal blood cell production. Data reported from our Phase 2/3 clinical trial in lower risk myelodysplastic syndromes, or MDS, indicate imetelstat may induce meaningful and durable transfusion independence and increases in hemoglobin levels, suggesting potential recovery of normal blood cells occurring in the bone marrow, or hematopoiesis. In addition, data reported from our Phase 2 clinical trial in relapsed/refractory myelofibrosis, or MF, suggest imetelstat potentially improves overall survival, or OS, in MF. We believe these data, taken together, suggest potential disease-modifying activity from imetelstat treatment.

Imetelstat has been granted both Orphan Drug and Fast Track designations by the United States Food and Drug Administration, or FDA, for the treatment of patients with Low or Intermediate-1 risk MDS, or lower risk MDS, and for the treatment of patients with Intermediate-2 or High-risk MF relapsed after or refractory to janus kinase inhibitor treatment, or relapsed/refractory MF.

Myelodysplastic Syndromes (MDS)

We are currently conducting IMerge, our Phase 2/3 clinical trial in lower risk MDS. The ongoing Phase 3 portion of IMerge is a randomized and placebo-controlled trial that, based on discussions with United States, or U.S., and European regulatory authorities, we expect will support, if successful, the registration of imetelstat in lower risk MDS. Many key aspects from the Phase 2 portion of IMerge remained the same for the Phase 3 portion, including the primary and secondary endpoints, the dose and schedule of imetelstat administration, and patient eligibility criteria. We expect the Phase 3 trial to be conducted at multiple medical centers globally, including North America, Europe, Middle East and Asia. As of the end of February 2020, approximately 63% of the planned sites were opened for enrollment. The Phase 3 portion of IMerge opened to new patient enrollment in August 2019 and the first patient was dosed in October 2019. We plan to complete patient enrollment in the Phase 3 portion of IMerge by the end of 2020 and expect top-line results by mid-year 2022.

The Phase 2 portion of IMerge is closed to enrollment, and patients remaining in the treatment phase continue to receive imetelstat treatment. We expect more mature data, including treatment and follow-up, from the patients remaining in the Phase 2 portion of IMerge to be available in 2020 and expect to present such data at a future medical conference in 2020.

Myelofibrosis (MF)

In the fourth quarter of 2019, we conducted an End of Phase 2 meeting with the FDA to discuss the results of IMbark, our Phase 2 clinical trial in relapsed/refractory MF. Based on feedback from the meeting, we plan to submit Phase 3 trial design proposals in MF to the FDA, and, in the second quarter of 2020, to have further discussions with the FDA regarding a potential regulatory approval path, if any, for imetelstat in MF. Subsequent to these additional discussions, and after considering the timing and resources required, as well as other clinical development opportunities for imetelstat, we plan to make a decision regarding potential late-stage development of imetelstat in MF by mid-year 2020.

In February 2020, we closed IMbark, our Phase 2 clinical trial in relapsed/refractory MF, since we believe we have obtained sufficient data from the trial to support potential late-stage development in MF. As of the end of February 2020, no further follow-up of remaining patients is being conducted.

Other Indications

In 2020, we plan to expand the imetelstat program through the commencement of a potential proof-of-concept study in Intermediate-2 or High-risk, or higher risk, MDS and acute myeloid leukemia and expect to commence such a study by the end of the fourth quarter of 2020.

Recent Data from IMerge (Ongoing Phase 2/3 Trial in Lower Risk MDS)

In June 2019, we reported updated results from the Phase 2 portion of IMerge in which 42% of patients experienced red blood cell transfusion independence for at least 8 consecutive weeks, or an 8-week RBC-TI rate. Importantly, this 8-week RBC-TI rate was observed in patients with red blood cell transfusion burdens of greater than or equal to four units per eight weeks prior to starting treatment with imetelstat. Higher transfusion burdens are considered an indicator of a more difficult to treat patient population. Patients enrolled in the Phase 2 portion of IMerge had a baseline median red blood cell transfusion burden of eight units per eight weeks with a range of four to 14 units. Our results compare favorably to currently used treatments in a similar patient population. Hypomethylating agents, or HMAs, and lenalidomide have been used to improve anemia, but with limited success, such as reported 8-week RBC-TI rates of 17% for azacitidine, an HMA, and 27% for lenalidomide. In addition, 29% of patients in the Phase 2 portion of IMerge experienced a durable response, as reflected by achieving a 24-week RBC-TI, and 75% of patients who achieved an 8-week RBC-TI reported a hemoglobin rise of ≥3.0 g/dL compared to baseline during the transfusion-free interval. We believe these data indicate potential recovery of normal hematopoiesis and suggest potential disease-modifying activity of imetelstat treatment for these patients.

Recent Data from IMbark (Closed Phase 2 Trial in Relapsed/Refractory MF)

Also in June 2019, an analysis was presented of the OS in relapsed/refractory MF patients treated with imetelstat 9.4 mg/kg in IMbark, compared to OS calculated from real world data, or RWD, collected at the Moffitt Cancer Center for patients who had discontinued treatment with ruxolitinib, a janus kinase, or JAK, inhibitor, and who were subsequently treated with best available therapy, or BAT. To make a comparison between the IMbark data and RWD, a cohort from the real-world dataset was identified that closely matched the IMbark patients, using guidelines for inclusion and exclusion criteria as defined in the IMbark clinical protocol, such as platelet count and spleen size. Calculations from two propensity score analysis approaches resulted in a median OS of 30.7 months for the imetelstat-treated patients from IMbark, which is more than double the median OS of 12.0 months using RWD for patients treated with BAT. These analyses also indicated a 65-67% lower risk of death for the imetelstat-treated patients vs. BAT-treated patients. We believe these analyses suggest favorable OS for imetelstat-treated relapsed/refractory MF patients, compared to BAT in closely-matched patients from RWD.

In February 2020, we closed IMbark since we believe we have obtained sufficient data from the trial to support potential late-stage development of imetelstat in MF. As of the end of February 2020, no further follow-up of remaining patients is being conducted.

Transition of Imetelstat Program to Geron

As of the end of September 2019, the transition of the imetelstat program to us from our former collaboration partner, Janssen Biotech, Inc., or Janssen, was completed. See the section entitled “Status of Former Collaboration Agreement with Janssen” below for further information.

Financial Resources and Plan for Potential Commercialization

We had approximately $159.2 million in cash, cash equivalents, restricted cash and current and noncurrent marketable securities as of December 31, 2019, which we believe is sufficient to continue the IMerge Phase 2/3 trial through 2020 and to commence a proof-of-concept study in additional hematologic myeloid malignancies in 2020. We will require substantial additional capital in order to further advance the imetelstat program, including conducting the research and development, clinical, regulatory and potential commercialization activities necessary to bring imetelstat to market. In this regard, our ability to complete the Phase 3 portion of IMerge and to commence, conduct and complete potential future clinical trials of imetelstat, such as potential Phase 3 clinical trials in MF or potential additional proof-of-concept studies in other hematologic myeloid malignancies, is dependent on our ability

to raise substantial additional capital. In addition, our ability to commercialize imetelstat in the United States, if regulatory approval is granted, depends on us being able to establish sales and marketing capabilities. If approved for marketing by regulatory authorities, we plan to commercialize imetelstat in the United States and seek potential commercialization partners for territories outside of the United States.

We hold issued patents covering imetelstat composition of matter. In the United States, our composition of matter patent coverage extends through 2025. In Europe, our composition of matter patent coverage expires in 2024, and includes patent rights in Germany, France, the United Kingdom, and other member countries of the European Patent Convention. In Japan, our composition of matter patent coverage expires in 2024. Potential five-year patent term extensions may also be available in the United States and Europe, which could extend patent terms in these jurisdictions to 2030 in the United States and 2029 in Europe and Japan, respectively. In some countries, such as the United States, the scope of protection under such patent term extensions, if any, would be defined by the scope of the imetelstat composition of matter as approved. In addition, we have issued patents pertaining to methods of use that extend patent coverage into 2033. The issued U.S. patent covers the treatment of both MF and MDS with imetelstat. The issued European patent covers the treatment of MF with imetelstat. Also, we have received orphan drug designations for both MDS and MF in the United States and for MF in Europe. Orphan drug designation in the United States allows for market exclusivity for up to seven years. Orphan drug designation in Europe allows for market exclusivity for up to ten years.

Telomerase: Scientific Rationale

Telomeres and Telomerase in Normal Development

In the human body, normal growth and maintenance of tissues occurs by cell division. However, most cells are only able to divide a limited number of times, and this number of divisions is regulated by telomere length. Telomeres are repetitions of a deoxyribonucleic acid, or DNA, sequence located at the ends of chromosomes. They act as protective caps to maintain stability and integrity of the chromosomes, which contain the cell's genetic material. Normally, every time a cell divides, the telomeres shorten. Eventually, they shrink to a critically short length, and as a result, the cell either dies by apoptosis or stops dividing and senesces.

Telomerase is a naturally occurring enzyme that maintains telomeres and prevents them from shortening during cell division, such as stem cells that must remain immortalized to support normal health. Telomerase consists of at least two essential components: a ribonucleic acid, or RNA, template (hTR), which binds to the telomere, and a catalytic subunit (human telomerase reverse transcriptase, or hTERT) with reverse transcriptase activity, which adds a specific DNA sequence to the chromosome ends. The 2009 Nobel Prize for Physiology or Medicine was awarded to Drs. Elizabeth H. Blackburn, Carol W. Greider and Jack Szostak, former Geron collaborators, for the discovery of how chromosomes are protected by both telomeres and telomerase.

Telomerase is active during embryonic development, enabling the rapid cell division that supports normal growth. During the latter stages of human fetal development and in adulthood, telomerase is repressed in most cells, and telomere length gradually decreases during a lifetime. In tissues that have a high turnover throughout life, such as blood and gut, telomerase can be transiently upregulated in progenitor cells to enable controlled, self-limited proliferation to replace cells lost through natural cell aging processes. As the progeny of progenitor cells mature, telomerase is downregulated and telomeres shorten with cell division, preventing uncontrolled proliferation.

Telomeres and Telomerase in Cancer

Telomerase is upregulated in many tumor progenitor cells, enabling the continued and uncontrolled proliferation of the malignant cells that drive tumor growth and progression. Telomerase expression has been found to be present in approximately 90% of biopsies taken from a broad range of human cancers. Our non-clinical studies, in which the telomerase gene was artificially introduced and expressed in normal cells grown in culture, have suggested that telomerase does not itself cause a normal cell to become malignant. Instead, the sustained upregulation of telomerase enables tumor cells to maintain telomere length, providing them with the capacity for limitless proliferation. We believe that the sustained upregulation of telomerase is critical for tumor progression as it enables malignant progenitor cells to acquire cellular immortality and avoid apoptosis, or cell death.

Telomerase Inhibition and Hematologic Malignancies: Inducing Cancer Cell Death

We believe that inhibiting telomerase may be an attractive approach to treating cancer because it may limit the proliferative capacity of malignant progenitor cells, which are believed to be important drivers of tumor growth and progression. We and others have observed in various in vitro and rodent tumor models that inhibiting telomerase results in telomere shortening and arrests uncontrolled malignant cell proliferation and tumor growth.

Hematologic malignancies, or blood cancers, are classified according to the precursor cell type. A hematologic myeloid malignancy is a cancer that occurs in the hematopoietic myeloid progenitor cells, such as the precursor cells of red blood cells, platelets and certain myeloid white blood cells, such as granulocytes. Myeloid neoplasms include myeloproliferative neoplasms, MDS and acute myeloid leukemia, or AML. Examples of myeloproliferative neoplasms include chronic myeloid leukemia, essential thrombocythemia, or ET, polycythemia vera and MF. These myeloid neoplasms are different from lymphocytic malignancies which typically occur in the lymphoid cell progenitor lineage, such as precursor cells of T lymphocytes and B lymphocytes. Examples of lymphoid malignancies include acute lymphoblastic leukemia, chronic lymphocytic leukemia, lymphomas and multiple myeloma.

Many hematologic myeloid malignancies, such as ET, MF, and MDS, have been shown to arise from malignant progenitor cells that express higher telomerase activity and have shorter telomeres when compared to normal healthy cells. In vitro studies have suggested that tumor cells with short telomeres may be especially sensitive to the anti-proliferative effects of inhibiting telomerase.

Imetelstat: The First Telomerase Inhibitor to Advance to Clinical Development

Imetelstat is a lipid conjugated 13-mer oligonucleotide that we designed to be complementary to and bind with high affinity to the RNA template of telomerase, thereby directly inhibiting telomerase activity. Imetelstat does not elicit its effect through an antisense inhibition of protein translation. The compound has a proprietary thio-phosphoramidate backbone, which is designed to provide resistance to the effect of cellular nucleases, thus conferring improved stability in plasma and tissues, as well as improved binding affinity to its target. To improve the ability of imetelstat to penetrate cellular membranes, we conjugated the oligonucleotide to a lipid group. Imetelstat's IC50, or half maximal inhibitory concentration, is 0.5 – 10 nM in cell free assays. Single-dose kinetics in patients has shown dose-dependent increases in exposure to imetelstat, with a plasma half-life, which is the time it takes for the concentration or amount of imetelstat to be reduced by half, ranging from 4 – 5 hours. Data from animal studies and clinical trials have suggested that the residence time of imetelstat in bone marrow is long, with 0.19 – 0.51 μM observed at 41 – 45 hours after a 7.5 mg/kg dose in patients. Imetelstat also has been shown in non-clinical studies to exhibit relatively preferential inhibition of the clonal proliferation of malignant progenitor cells compared to normal progenitor cells. For these reasons, imetelstat has been studied as a potential treatment for malignant diseases.

Imetelstat is the first telomerase inhibitor to advance to clinical development. The Phase 1 trials that we completed evaluated the safety, tolerability, pharmacokinetics and pharmacodynamic effects of imetelstat. We established doses and dosing schedules that were tolerable and achieved target exposures in patients that were consistent with those required for efficacy in animal models. Following intravenous administration of imetelstat using tolerable dosing regimens, clinically relevant and significant inhibition of telomerase activity was observed in various types of tissue in which telomerase activity is measurable, including normal bone marrow hematopoietic cells, malignant plasma cells, hair follicle cells and peripheral blood mononuclear cells. Dose-limiting toxicities included thrombocytopenia, or reduced platelet count, and neutropenia, or reduced neutrophil count.

Proof-of-Concept of Imetelstat's Disease-Modifying Potential

We believe that imetelstat may have the potential to suppress the proliferation of malignant progenitor cell clones to allow recovery of normal hematopoiesis in patients with hematologic myeloid malignancies. Early clinical data from a Phase 2 trial of imetelstat in patients with ET, or the ET Trial, and a pilot study of imetelstat in patients with MF conducted at Mayo Clinic, or the Pilot Study, suggest imetelstat inhibits the progenitor cells of the malignant clones believed to be responsible for the underlying diseases in a relatively select manner indicating

potential disease-modifying activity. These data were published in two separate articles in a September 2015 issue of *The New England Journal of Medicine*.

Reported adverse events, or AEs, and laboratory investigations associated with imetelstat in the ET Trial and the Pilot Study included cytopenias, gastrointestinal symptoms, constitutional symptoms, and hepatic biochemistry abnormalities. Dose-limiting toxicities, such as profound and prolonged thrombocytopenia and neutropenia, and other safety issues, including death, were observed in the ET Trial and the Pilot Study. In those trials, such myelosuppression was managed by dose holds and modification rules.

Lead Clinical Indication in Clinical Development: Lower Risk Myelodysplastic Syndromes

Unmet Medical Need in Myelodysplastic Syndromes (MDS)

MDS is a group of blood disorders in which the proliferation of malignant progenitor cells produces multiple malignant cell clones in the bone marrow resulting in disordered and ineffective production of the myeloid lineage, which includes red blood cells, white blood cells and platelets. In MDS, bone marrow and peripheral blood cells may have abnormal, or dysplastic, cell morphology. MDS is frequently characterized clinically by severe anemia, or low red blood cell counts, and low hemoglobin. In addition, other peripheral cytopenias, or low numbers of white blood cells and platelets, may cause life-threatening infections and bleeding. Transformation to AML occurs in up to 30% of MDS cases and results in poorer overall survival.

MDS is the most common of the myeloid malignancies. There are approximately 60,000 people in the United States living with the disease and approximately 16,000 reported new cases of MDS in the United States every year. MDS is primarily a disease of the elderly, with median age at diagnosis around 70 years. The majority of patients, approximately 70%, fall into what are considered to be the lower risk groups at diagnosis, according to the International Prognostic Scoring System that takes into account the presence of a number of disease factors, such as cytopenias and cytogenetics, to assign relative risk of progression to AML and overall survival.

Chronic anemia is the predominant clinical problem in patients who have lower risk MDS. Many of these patients become dependent on red blood cell transfusions due to low hemoglobin. Serial red blood cell transfusions can lead to elevated levels of iron in the blood and other tissues, which the body has no normal way to eliminate. Iron overload is a potentially dangerous condition. Studies in patients with MDS have shown that iron overload resulting from regular red blood cell transfusions is associated with a poorer overall survival and a higher risk of developing AML.

There have been no new drugs approved by the FDA for MDS therapy since 2006 and clinicians note that currently available therapies are likely to fail the majority of patients within two to three years after treatment initiation even if there is initial favorable response. Typically, patients with lower risk MDS are treated with erythropoiesis stimulating agents, or ESAs, such as erythropoietin, or EPO. Although ESAs provide an improvement in anemia in approximately 50% of patients, the effect is transient with a median duration of response of approximately two years. Once ESAs fail for patients, HMAs and lenalidomide have been used to improve anemia, but with limited success, such as reported 8-week RBC-TI rates of 17% for azacitidine, an HMA, and 27% for lenalidomide. No drug therapy has been shown prospectively to alter or delay disease progression.

IMerge: Ongoing Phase 2/3 Clinical Trial in Lower Risk MDS

Trial Design

IMerge is a two-part Phase 2/3 clinical trial evaluating imetelstat in transfusion dependent patients with Low or Intermediate-1 risk, also referred to as lower risk MDS, who are relapsed after or refractory to prior treatment with an ESA, relapsed or refractory to an ESA. To be eligible for IMerge, patients are required to be transfusion dependent, defined as requiring at least four units of packed red blood cells, or RBCs, over an eight-week period during the 16 weeks prior to entry into the trial. Part 1 of IMerge was designed as a Phase 2, open-label, single-arm trial to assess the efficacy and safety of a 7.5 mg/kg dose of imetelstat administered as an intravenous infusion every four weeks in approximately 30 patients. Part of 2 IMerge is a Phase 3 double-blind, randomized, placebo-controlled clinical trial that, based on discussions with U.S. and European regulatory authorities, we expect will support, if successful, the registration of imetelstat in lower risk MDS. The trial is designed to enroll approximately 170

patients with lower risk transfusion dependent MDS who are relapsed or refractory to an ESA, have not received prior treatment with either an HMA or lenalidomide and do not have a deletion 5q chromosomal abnormality.

The primary efficacy endpoint of IMerge is the rate of RBC transfusion independence, or RBC-TI, lasting at least eight weeks, defined as the proportion of patients without any RBC transfusion during any consecutive eight weeks since entry to the trial, or 8-week RBC-TI rate. Key secondary endpoints include the rate of RBC-TI lasting at least 24 weeks, or 24-week RBC-TI rate, and the rate of hematologic improvement-erythroid, or HI-E, defined as a rise in hemoglobin of at least 1.5 g/dL above the pretreatment level for at least eight weeks or a reduction of at least four units of RBC transfusions over eight weeks compared with the prior RBC transfusion burden. Other secondary efficacy endpoints include the time to and duration of RBC-TI; the proportion of patients achieving Complete Response, or CR, or Partial Response, or PR, according to the 2006 International Working Group, or IWG, criteria for MDS; the proportion of patients requiring RBC transfusions and the transfusion burden; the proportion of patients requiring the use of myeloid growth factors and the dose; assessments of the change in the patients' quality of life using several validated instruments; as well as an assessment of overall survival and time to progression to AML.

Current Status of the Phase 3 Portion of IMerge

The Phase 3 portion of IMerge opened for patient screening and enrollment in August 2019, and the first patient was dosed in October 2019. We plan to complete enrollment by the end of 2020 and expect top-line results by mid-year 2022. This trial is an important step in developing imetelstat as a potential alternative for lower risk MDS patients, who have limited treatment options

Many key aspects from the Phase 2 portion of IMerge remained the same for the Phase 3 portion, including the primary and secondary endpoints, the dose and schedule of imetelstat administration, and patient eligibility criteria. We expect the Phase 3 trial to be conducted at multiple medical centers globally, including North America, Europe, Middle East and Asia. Further information on the Phase 3 portion of IMerge, including the trial design, patient eligibility criteria and locations of clinical sites, is posted on clinicaltrials.gov.

Recently Reported Clinical Data from the Phase 2 Portion of IMerge Continue to Support Phase 3 Development

Thirty-two patients were initially enrolled in the Phase 2 portion of IMerge, of which a cohort of 13 patients had not received prior treatment with either an HMA or lenalidomide and did not have a deletion 5q chromosomal abnormality, also known as non-del(5q). Preliminary data from the Phase 2 portion of IMerge showed that the 13-patient initial cohort exhibited an increased rate and durability of transfusion independence compared to the overall trial population (8-week RBC-TI rate: 54% vs. 34%).

To increase the clinical experience and confirm the benefit-risk profile of imetelstat from the 13-patient initial cohort, new patient enrollment in the Phase 2 portion of IMerge was expanded and 25 additional patients were enrolled in an expansion cohort.

The combined initial cohort of 13 patients and the expansion cohort of 25 patients (n=38) represent a target patient population of transfusion dependent, non-del(5q) lower risk MDS patients who were relapsed/refractory to ESAs and naïve to HMA and lenalidomide treatment. These patients depend on serial RBC transfusions to manage anemia and fatigue. Moreover, dependency on RBC transfusions is associated with iron overload leading to secondary organ complications which results in poor survival. Therefore, the ultimate goal for most clinical trials in lower risk MDS is to enable patients to become transfusion independent for as long as possible.

In June 2019, an oral presentation was made at the EHA Annual Congress meeting reporting updated efficacy and safety data for an aggregate of 38 patients from the combined initial and expansion cohorts of the Phase 2 portion of IMerge. In the EHA presentation, data were reported using a clinical cut-off date of April 30, 2019. The 8-week RBC-TI rate for the combined cohorts was 42% (16/38) and 29% (11/38) of patients achieved a durable response with 24-week RBC-TI. The median duration of RBC-TI was 85.9 weeks (range: 8.0-140.9). The median follow-up was 15.7 months (range: 5.6-37.5) and the median treatment duration was 8.5 months (range: 0.02-37.5). The median number of treatment cycles was 9.0 (range: 1-39) and the median dose intensity was 95.2% of the dose of 7.5 mg/kg every four weeks. The baseline characteristics of the 38 patients highlight the high transfusion burden

of these patients, with a median baseline transfusion burden of 8 units per 8 weeks, and with the majority of the patients having received more than 4 units per 8 weeks prior to study entry.

Patient Baseline Characteristics	**n=38**
Median age (range), years	71.5 (46-83)
Male, n (%)	25 (66%)
Eastern Cooperative Oncology Group (ECOG) Performance Standard 0-1, n (%)	34 (89%)
International Prognostic Scoring System risk, n (%) Low Intermediate-1	 24 (63%) 14 (37%)
Baseline median RBC transfusion burden (range), units/8 weeks Patients with >4 units/8 weeks at baseline, n (%)	8 (4-14) 35 (92%)
World Health Organization 2001 category, n (%) Refractory Anemia with Ringed Sideroblasts (RARS) or Refractory Cytopenia with Multilineage Dysplasia and Ringed Sideroblasts (RCMD-RS) All others	 27 (71%) 11 (29%)
Prior ESA use, n (%)	34 (89%)
Serum erythropoietin (sEPO) > 500 mU/mL, n (%)	12[a] (32%)

[a] Of the 37 patients with sEPO levels reported.

Key efficacy data reported in the June 2019 EHA presentation are summarized in the table below:

Key Efficacy Outcomes	**n=38**
Rate of 8-week RBC-TI, n (%)	16 (42%)
Rate of 24-week RBC-TI, n (%)	11 (29%)
Median time to onset of RBC-TI (range), weeks	8.3 (0.1-40.7)
Median duration[a] of RBC-TI (range), weeks	85.9 (8.0-140.9)
Hematologic improvement-erythroid[b], or HI-E, n (%) ≥1.5 g/dL increase in hemoglobin lasting ≥ 8 weeks Transfusion reduction by ≥ 4 units/8 weeks	26 (68%) 12 (32%) 26 (68%)
Mean relative reduction of RBC transfusion burden from baseline, %	-68%

[a] Kaplan Meier method.

[b] As defined by International Working Group 2006 guidelines

These Phase 2 data highlight several key outcomes of imetelstat treatment in the trial, including meaningful and durable transfusion independence responses, notably in patients with high transfusion burdens, an indicator of a more difficult to treat population; similar transfusion independence activity across different MDS patient subtypes, such as, ring sideroblast positive, or RS+, and ring sideroblast negative, or RS-; and indications of potential disease-modifying activity, such as, a hemoglobin rise of ≥3.0 g/dL compared to baseline during the transfusion-free interval in 75% of 8-week TI responders. In addition, the 42% 8-week RBC-TI rate observed in the Phase 2 portion of IMerge compares favorably to currently used treatments in a similar patient population, such as azacitidine, an HMA, which has a reported 8-week RBC-TI rate of 17%, or lenalidomide, which has a reported 8-week RBC-TI rate of 27%.

As summarized in the table below, the safety profile was consistent with prior clinical trials of imetelstat in hematologic malignancies, and no new safety signals were identified. Reversible and manageable Grade 3/4 neutropenias and cytopenias were reported in 61% and 55% of the patients, respectively, and they were without

significant clinical consequences. Furthermore, 91% of the observed Grade 3/4 neutropenias and 92% of the observed Grade 3/4 thrombocytopenias were reversible within four weeks. Most frequent non-hematologic toxicities are listed in the table below. Grade 3 liver function test, or LFT, elevations reported in the trial were reversible.

Treatment Emergent Adverse Events (TEAE)	**All Grades n=38 (n, %)**	**Grade 3/4 n=38 (n, %)**
Hematologic Adverse Events		
Thrombocytopenia	25 (66%)	23 (61%)
Neutropenia	22 (58%)	21 (55%)
Anemia	10 (26%)	8 (21%)
Non-Hematologic Adverse Events		
Back Pain[a]	7 (18%)	0
Alanine Aminotransferase increased	7 (18%)	2 (5%)
Aspartate Aminotransferase increased	6 (16%)	3 (8%)
Bronchitis	6 (16%)	3 (8%)
Other Adverse Events[b]	6 (16%)	0
Headache	6 (16%)	1 (3%)

[a] In 3/7 (43%) patients back pain was an adverse event associated with infusion-related reaction.

[b] Nasopharyngitis, diarrhea, constipation, edema peripheral and asthenia.

Current Status of the Phase 2 Portion of IMerge

The Phase 2 portion of IMerge is closed to new patient enrollment, and patients remaining in the treatment phase are eligible to continue to receive imetelstat treatment, per investigator discretion. We expect more mature data, including treatment and follow-up, from the patients remaining in the Phase 2 portion of IMerge to be available in 2020 and expect to present such data at a future medical conference in 2020.

Potential Late-Stage Development Indication: Myelofibrosis

Unmet Medical Need in Myelofibrosis

MF, a type of myeloproliferative neoplasm, is a chronic blood cancer in which abnormal or malignant precursor cells in the bone marrow proliferate rapidly, causing scar tissue, or fibrosis, to form. As a result, normal blood production in the bone marrow is impaired and may shift to other organs, such as the spleen and liver, which can cause them to enlarge substantially. People with MF may have abnormally low or high numbers of circulating red blood cells, white blood cells or platelets, and abnormally high numbers of immature cells in the blood or bone marrow. MF patients can also suffer from debilitating constitutional symptoms, such as drenching night sweats, fatigue, severe itching, or pruritus, abdominal pain, fever and bone pain. There are approximately 13,000 patients living with MF in the United States and approximately 3,000 reported new cases each year. Up to 20% of patients with MF develop AML.

Approximately 70% of MF patients are classified as having Intermediate-2 or High-risk disease, as defined by the Dynamic International Prognostic Scoring System Plus described in a 2011 *Journal of Clinical Oncology* article. The only drug therapies approved by the FDA and other regulatory authorities for treating these MF patients are JAK inhibitors, ruxolitinib and fedratinib. Currently, no drug therapy is approved for those patients who fail or no longer respond to JAK inhibitor treatment, and median survival for MF patients after discontinuation from ruxolitinib is only approximately 14 – 16 months, representing a significant unmet medical need.

IMbark: Closed Phase 2 Trial in Relapsed/Refractory MF

Trial Design

IMbark was designed as a Phase 2 clinical trial to evaluate two doses of imetelstat (either 4.7 mg/kg or 9.4 mg/kg administered by intravenous infusion every three weeks) in patients with Intermediate-2 or High-risk MF who have relapsed after or are refractory to prior treatment with a JAK inhibitor, or relapsed/refractory MF. In December 2018, at the American Society of Hematology, or ASH, Annual Meeting, with a clinical cut-off date of October 22, 2018 and a median follow-up of 27.4 months (range: 0.2-33.0), we reported a median OS for the 9.4 mg/kg dosing arm of 29.9 months. In May 2019 with a clinical cut-off date of April 30, 2019, we reported a median OS in the 9.4 mg/kg dosing arm of 28.1 months. Our data compare favorably to the median overall survival of 14 – 16 months reported in medical literature for patients previously treated with JAK inhibitors.

Current Status of IMbark

In February 2020, we closed IMbark since we believe we have obtained sufficient data from the trial to support potential late-stage development in MF. As of the end of February 2020, no further follow-up of remaining patients is being conducted.

Recently Reported Comparative Analyses of IMbark Data and Real-World Data Suggest Potential Survival Benefit

Statistical analyses comparing IMbark clinical trial data to closely matched RWD were presented in a poster presentation at the EHA Annual Congress meeting in June 2019. The goal of the analyses was to further assess the potential OS benefit of imetelstat in relapsed/refractory MF patients treated with 9.4 mg/kg in IMbark compared to a closely matched patient population from RWD who were treated with best available therapy, or BAT.

The RWD were collected at the Moffitt Cancer Center from patients who had discontinued treatment with a JAK inhibitor and were subsequently treated with BAT. To mimic the effect of randomization and improve comparability, a propensity score analysis was conducted to match individual patients within each of the datasets with respect to baseline characteristics and prognostic factors that may impact OS. Guidelines for inclusion and exclusion criteria as defined in the IMbark clinical protocol and the following baseline patient characteristics were used for matching purposes:

- Age
- Platelet count
- Time from diagnosis to JAK inhibitor discontinuation
- JAK inhibitor duration
- Spleen size
- Janus Kinase-2 mutation
- Sex
- Dynamic International Prognostic Scoring System score
- ECOG performance status
- MF type
- Transfusion status

Of the 59 patients treated with imetelstat 9.4 mg/kg in IMbark, two could not be matched with RWD and were excluded from the analyses. Similarly, of the 96 patients treated with BAT from RWD, 58 patients did not meet the matching criteria. Therefore, the populations used for the analyses consisted of 57 patients from IMbark and 38 patients from RWD. Using the data from these matched populations prior to statistical adjustments, the calculated median OS was 33.8 months for the imetelstat-treated patients and 12.0 months for the patients from RWD treated with BAT, resulting in a hazard ratio of 0.35 and a p-value of 0.0003, as shown in the table below.

A propensity score analysis was conducted for each of the datasets and two statistical adjustment methods were applied to calculate median OS for each of the datasets (ATO and sIPTW, as indicated in the table below). Based on either of the statistical adjustment methods used, median OS of 30.7 months was reported for the imetelstat-treated patients. This was more than double the median OS of 12.0 months for patients from RWD treated with BAT. The hazard ratios for all three statistical methods were similar (0.33-0.35). Based on hazard ratios, there

was a 65% to 67% lower risk of death for patients treated with imetelstat, compared to closely matched patients from RWD treated with BAT in relapsed/refractory MF.

	Unadjusted Statistical Method		Statistical Adjustment Methods			
			Average Treatment Effect for Overlap Population (ATO)		Stabilized Inverse Probability Treatment Weighting (sIPTW)	
Main Analysis	**Imetelstat (IMbark)**	**RWD BAT (Moffitt)**	**Imetelstat (IMbark)**	**RWD BAT (Moffitt)**	**Imetelstat (IMbark)**	**RWD BAT (Moffitt)**
Median overall survival	33.77 months	12.04 months	30.69 months	12.04 months	30.69 months	12.04 months
Hazard ratio	0.35		0.35		0.33	
P-value	0.0003		0.0019		0.0003	

Two sensitivity analyses were conducted on the datasets to assess the potential impact on OS of early deaths post-JAK inhibitor discontinuation that were observed in RWD and the use of hematopoietic stem cell transplantation as a subsequent therapy. The results of the sensitivity analyses were consistent with results from the main analysis.

While we believe these analyses suggest favorable OS for imetelstat-treated relapsed/refractory MF patients compared to BAT in closely matched patients from RWD, comparative analyses between RWD and our clinical trial data have several limitations. For instance, the analyses create a balance between treatment groups with respect to commonly available covariates, but do not take into account the unmeasured and unknown covariates that may affect the outcomes of the analyses. Potential biases are introduced by factors which include, for example, the selection of the patients included in the analyses, misclassification in the matching process, the small sample size, and estimates that may not represent the outcomes for the true treated patient population. For these and other reasons, such comparative analyses should be considered carefully and with caution, and should not be relied upon as demonstrative or otherwise predictive or indicative of any future clinical trial results of imetelstat in relapsed/refractory MF.

In February 2020, we closed IMbark since we believe we have obtained sufficient data from the trial to support potential late-stage development of imetelstat in MF. As of the end of February 2020, no further follow-up of remaining patients is being conducted.

Potential Late-Stage Development in MF

In the fourth quarter of 2019, we conducted an End of Phase 2 meeting with the FDA to discuss the results of the IMbark Phase 2 clinical trial. Based on feedback from the meeting, we plan to submit Phase 3 trial design proposals in MF to the FDA, and, in the second quarter of 2020, to have further discussions with the FDA regarding a potential regulatory approval path, if any, for imetelstat in MF. Subsequent to these additional discussions, and after considering the timing and resources required, as well as other clinical development opportunities for imetelstat, we plan to make a decision regarding potential late-stage development of imetelstat in MF by mid-year 2020.

Status of Former Collaboration Agreement with Janssen

On November 13, 2014, we entered into a Collaboration and License Agreement with Janssen, or the Collaboration Agreement, pursuant to which we granted Janssen the exclusive worldwide rights to develop and commercialize imetelstat worldwide for all human therapeutic uses, including hematologic myeloid malignancies. Janssen terminated the Collaboration Agreement effective September 28, 2018. Upon the effective date of termination, we regained the global rights to the imetelstat program and are continuing development of imetelstat on our own. As a result of the termination of the Collaboration Agreement, we will not receive any milestone payments or royalties from Janssen for the development or commercialization of imetelstat, and Janssen has no obligations to us or any third parties, such as clinical sites or vendors, to fund any of the ongoing or any potential future imetelstat clinical trials. Since the effective termination date of the Collaboration Agreement, we have been fully responsible for all imetelstat development costs, including ongoing clinical trials, as well as costs for the prosecution of patents

that were formerly licensed to Janssen under the Collaboration Agreement. As of the end of September 2019, the transition of the imetelstat program to us from Janssen was completed.

For a further discussion of the former Collaboration Agreement with Janssen, see Note 4 on License Agreements in Notes to Financial Statements of this Form 10-K. Information about the transition of the imetelstat program from Janssen to us should be reviewed in the context of the section entitled "Risks Related to Transition of the Imetelstat Program to Geron" included in Part I, Item 1A, "Risk Factors" of this Form 10-K.

Intellectual Property

Intellectual property, including patent protection, is very important to our business. We file patent applications in the United States and other jurisdictions, and we also rely on trade secret protection and contractual arrangements to protect aspects of our business. An enforceable patent with appropriate claim coverage can provide an advantage over competitors who may seek to employ similar approaches to develop therapeutics, and so the future commercial success of imetelstat, and therefore our future success, will be in part dependent on our intellectual property strategy. The information provided in this section should be reviewed in the context of the section entitled "Risks Related to Protecting Our Intellectual Property" included in Part I, Item 1A, "Risk Factors" of this Form 10-K.

Our intellectual property strategy includes the early development of a technology, such as imetelstat, followed by rounds of increasingly focused innovation around a product opportunity, including identification and definition of a specific product candidate and uses thereof, manufacturing processes, product formulation and administration methods. The result of this process is that products in development are often protected by several families of patent filings that are filed at different times during the development process and cover different aspects of the product. Consequently, earlier filed, broad technology patents will usually expire ahead of patents covering later developments, such as product formulations, so that patent expirations on a product may span several years. Patent coverage may also vary from country to country based on the scope of available patent protection. There are also opportunities to obtain an extension of patent coverage for a product in certain countries, which adds further complexity to the determination of patent life.

We endeavor to monitor worldwide patent filings by third parties that are relevant to our business. Based on this monitoring, we may determine that an action is appropriate to protect our business interests. Such actions may include negotiating patent licenses where appropriate, filing oppositions against a patent, filing a request for post grant review against a patent or filing a request for the declaration of an interference with a patent application or issued patent.

Imetelstat

We own issued patents related to imetelstat in the United States, Europe and other countries. Composition of matter patents generally provide the most material coverage, and therefore may convey competitive advantages. Because imetelstat is still under development, subsequent innovation and associated patent filings may provide additional patent coverage with later expiration dates. Examination of overseas patent applications typically lags behind U.S. examination particularly where cases are filed first in the United States. It may be possible to obtain patent term extensions of some patents in some countries for claims covering imetelstat which could further extend the patent term.

We hold issued patents covering imetelstat composition of matter. In the United States, our composition of matter patent coverage extends through 2025. In Europe, our composition of matter patent coverage expires in 2024, and includes patent rights in Germany, France, the United Kingdom, and other member countries of the European Patent Convention. In Japan, our composition of matter patent coverage expires in 2024. It may be possible to obtain patent term extensions of some patents in some of these countries for claims covering imetelstat that could further extend the patent term, in some cases potentially for five years, which could extend the patent coverage protection for imetelstat until 2030 in the United States and 2029, in Europe and Japan, respectively. In some countries, such as the United States, the scope of protection under such patent term extensions, if any, would be defined by the scope of imetelstat composition as approved. We have issued patents pertaining to methods of use that extend patent coverage into 2033.The issued U.S. patent covers the treatment of both MF and MDS with imetelstat. The issued European patent covers the treatment of MF with imetelstat.

Our patent rights relating to imetelstat include those covering composition claims to the drug molecule and related nucleic acid telomerase inhibiting molecules, as well as reagents useful in manufacturing processes for the drug, and method of treatment and kit claims, certain of which are co-owned with other entities.

Upon the effective date of termination of the Collaboration Agreement with Janssen on September 28, 2018, we regained global rights to imetelstat and are continuing development of imetelstat on our own. In accordance with the termination provisions of the Collaboration Agreement, we have an exclusive worldwide license for intellectual property developed under the Collaboration Agreement for the further development of imetelstat, without any economic obligations to Janssen with respect to such license. Janssen has assigned to us certain intellectual property developed by it under the Collaboration Agreement. We now are responsible for the costs for maintaining, prosecuting and litigating all imetelstat intellectual property that we own.

Licensing

Former Collaboration and License Agreement with Janssen; Supply Agreement

On November 13, 2014, we entered into the Collaboration Agreement with Janssen, pursuant to which we granted to Janssen exclusive worldwide rights to develop and commercialize imetelstat for all human therapeutic uses, including hematologic myeloid malignancies.

Janssen terminated the Collaboration Agreement effective September 28, 2018. As of the end of September 2019, the imetelstat program was fully transferred from Janssen to us. In addition, in June 2019, we entered into a Clinical Supply Agreement, or Supply Agreement, under which we will purchase from Janssen certain inventories of drug product, drug substance and raw materials for imetelstat manufacturing, for current and potential future clinical trials of imetelstat. As of December 31, 2019, Janssen has shipped drug product to our specified drug distribution centers, and we plan to pay Janssen approximately $7.5 million for such drug product in the first quarter of 2020. In addition, Janssen has delivered to us drug substance and raw materials conforming to our required specifications, and we expect to pay Janssen approximately $6.7 million for such materials in the first quarter of 2020. Some of this material will require further processing in order to be used in clinical trials, and/or may also require regulatory review and acceptance prior to use. We do not expect to receive any further material from Janssen under the Supply Agreement.

Since September 28, 2018, we have been responsible for 100% of the development costs for the imetelstat program. We will not receive any milestone payments or royalties from Janssen for the development or commercialization of imetelstat, and Janssen has no obligations to us or any third parties, such as clinical sites or vendors, to fund any of the ongoing or any potential future imetelstat clinical trials.

For a further discussion of the Collaboration Agreement, see Note 4 on License Agreements in Notes to Financial Statements of this Form 10-K. Information about the transition of the imetelstat program from Janssen to us should be reviewed in the context of the section entitled “Risks Related to Transition of the Imetelstat Program to Geron” included in Part I, Item 1A, “Risk Factors” of this Form 10-K.

Other License Agreements

We have granted a license to Janssen Pharmaceuticals, Inc., or Janssen Pharmaceuticals, an affiliate of Janssen, for the research, development and commercialization of products based on specialized oligonucleotide backbone chemistry and novel amidates for disorders, excluding cancers originating from the blood or bone marrow. In connection with this license, we also granted to Janssen Pharmaceuticals a non-exclusive worldwide license under our patent rights covering the synthesis of monomers, which are the building blocks of oligonucleotides.

We previously granted patent licenses to a number of other organizations to utilize aspects of our technologies to develop and commercialize products outside of the imetelstat program. Revenues under our patent license agreements related to our telomerase technology have ceased due to patent expirations on such technology. With the exception of one patent license, our patent license agreements related to our telomerase technology expired or were terminated by the end of the fourth quarter of 2019. Our last remaining patent license agreement related to

telomerase technology was terminated in January 2020, and the final payment of $50,000 under that license was received in the first quarter of 2020.

See Item 7, "Management's Discussion and Analysis of Financial Condition and Results of Operations—Revenues" for a further discussion of revenues from our license agreements.

Manufacturing

A typical sequence of steps in the manufacture of imetelstat drug product includes the following key components:

- starting materials, which are well-defined raw materials that are used to make bulk drug substance;
- bulk drug substance, which is the active pharmaceutical ingredient in a drug product that provides pharmacological activity or other direct effect in the treatment of disease; and
- final drug product, which is the finished dosage form that contains the drug substance that is shipped to the clinic for patient treatment.

In June 2019 we entered into a Supply Agreement with Janssen to purchase certain inventories of drug product, drug substance and raw materials for imetelstat manufacturing. Delivery of all materials under the Supply Agreement was completed in December 2019. Some of this material will require further processing in order to be used in clinical trials, and/or may also require regulatory review and acceptance prior to use. See the section entitled, "Licensing--Former Collaboration and License Agreement with Janssen; Supply Agreement" for further information. During 2019, we engaged third-party contractors to re-establish our own manufacturing supply chain in order to further process the Janssen purchased materials as well as to be able to manufacture and supply additional quantities of imetelstat that meet applicable regulatory standards for current and potential future clinical trials and potential commercial uses. Many of these contractors previously had relationships with Geron related to the manufacture and/or supply of imetelstat.

We do not have direct control over third-party personnel or operations. These third-party contractors, and/or any other contractors that we may rely upon for the manufacture and/or supply of imetelstat, typically complete their services on a proposal by proposal basis under master supply agreements and may need to make substantial investments to enable sufficient capacity increases and cost reductions, and to implement those regulatory and compliance standards necessary for successful Phase 3 clinical trials and commercial production. These third-party contractors, and/or any other contractors that we may rely upon for the manufacture and/or supply of imetelstat, may not be able to achieve such capacity increases, cost reductions, or regulatory and compliance standards, and even if they do, such achievements may not be at a commercially reasonable cost. We are responsible for establishing any long-term commitments or commercial supply agreements with any of the third-party contractors for imetelstat. The information provided in this section should be reviewed in the context of the section entitled "Risks Related to Manufacturing" and "Risks Related to Transition of the Imetelstat Program to Geron" under Part I, Item 1A, "Risk Factors".

Consultants

We have established, and expect to continue to establish, consulting agreements with drug development professionals, clinicians, attorneys and regulatory experts with experience in numerous fields, including clinical science, biostatistics, clinical operations, pharmacovigilance, quality, manufacturing and regulatory affairs. We retain each consultant according to the terms of a consulting agreement. Under such agreements, we pay them a consulting fee and reimburse them for out-of-pocket expenses incurred in performing their services for us. In addition, we have in the past and may again in the future grant options to purchase our common stock to consultants, subject to the vesting requirements contained in the consulting agreements. Our consultants may be employed by other entities and therefore may have commitments to their employer, or may have other consulting or advisory agreements that may limit their availability to us.

Competition

The pharmaceutical and biotechnology industries are characterized by intense and dynamic competition with rapidly advancing technologies and a strong emphasis on proprietary products. While we believe our proprietary oligonucleotide chemistry; experience with the biological mechanisms related to imetelstat, telomeres and telomerase; clinical data to date indicating potential disease-modifying activity with imetelstat treatment; and knowledge and expertise around the development of potential treatments for hematologic myeloid malignancies provide us with competitive advantages, we face competition from many different sources, including major pharmaceutical, specialty pharmaceutical and biotechnology companies, academic institutions and governmental agencies and public and private research institutions. Imetelstat will compete, if approved, with other products and therapies that currently exist, are being developed or will in the future be developed, some of which we may not currently be aware.

Competition in Lower Risk Myelodysplastic Syndromes (MDS)

The current standard of care for the treatment of lower risk MDS is the use of erythropoiesis stimulating agents, or ESAs, to address the patient's chronic anemia. Once ESAs are no longer effective, serial blood transfusions are often administered that can cause damaging effects to other organs due to iron overload, resulting in shorter survival. In addition, other best available therapies are used without durable effect for the patient.

In lower risk MDS, data from the Phase 2 portion of IMerge suggest potentially meaningful and durable transfusion independence, activity across MDS patient subtypes, and potential disease-modifying activity achievable with imetelstat treatment. We believe that these key features are differentiators compared to currently approved products as well as investigational drugs currently in clinical development.

If approved for commercial sale for the treatment of lower risk MDS, imetelstat would compete against a number of currently existing therapies, including ESAs and other hematopoietic growth factors that are indicated for anemia; immunomodulators, such as Revlimid (lenalidomide) by Celgene Corporation, a Bristol-Myers Squibb Corporation, or Celgene; hypomethylating agents, such as Vidaza (azacitidine) by Celgene or other manufacturers of generic azacitidine, and Dacogen (decitabine) by Otsuka America Pharmaceutical, Inc. and other manufacturers in the United States and Janssen in the European Union, or EU.

Other therapies currently in Phase 3 development, some of which may obtain regulatory approval earlier than imetelstat include, Reblozyl (luspatercept), a TGF-beta inhibitor, by Acceleron Pharma, Inc., or Acceleron, in collaboration with Celgene, whose new drug application (NDA) has been submitted to the FDA for potential approval; oral versions of azacitidine by Celgene; roxadustat, a hypoxia-inducible factor prolyl hydroxylase inhibitor, by FibroGen, Inc.; and APR-246, an activator of p53 protein, by Aprea Therapeutics, Inc.

Competition in Intermediate-2 or High-Risk Myelofibrosis (MF)

The current standard of care for the treatment of Intermediate-2 or High-risk MF is the use of janus kinase, or JAK, inhibitors, to address the patient's symptoms. Once JAK inhibitors fail or are no longer effective, a variety of best available therapies are used since there are no approved treatments for this patient population and median overall survival is 14 – 16 months after discontinuation from the predominant JAK inhibitor being used today.

In Intermediate-2 or High-risk relapsed/refractory MF, data from the IMbark Phase 2 clinical trial suggest potential disease-modifying activity with imetelstat treatment and a potential meaningful improvement in overall survival, which is supported in a comparison to real-world data.

If approved for commercial sale for the treatment of MF, imetelstat would compete against currently approved JAK inhibitors, Jakafi (ruxolitinib) by Incyte Corporation and Inrebic (fedratinib) by Celgene. Other treatment modalities for MF include hydroxyurea for the management of splenomegaly, leukocytosis, thrombocytosis and constitutional symptoms; splenectomy and splenic irradiation for the management of splenomegaly and co-existing cytopenias, or low blood cell counts; chemotherapy and pegylated interferon. Drugs for the treatment of MF-associated anemia include ESAs, androgens, danazol, corticosteroids, thalidomide and lenalidomide.

Other therapies currently in Phase 3 development, some of which may obtain regulatory approval earlier than imetelstat include pacritinib, a JAK inhibitor, by CTI Biopharma, and momelotinib, a JAK inhibitor, by Sierra Oncology. Non-JAK inhibitor approaches for MF currently under investigation that could compete with imetelstat in the future include CPI-0610, a BET inhibitor, by Constellation Pharmaceuticals, Inc.; luspatercept, a TGF-beta inhibitor, by Acceleron, in collaboration with Celgene; PRM-151, an anti-fibrosis antibody, by Promedior, Inc.; navitoclax , a BCLXL, BCL-2 and BCLW inhibitor, by AbbVie; LCL 161, an inhibitor of apoptosis protein (IAP), by Novartis; and KRT-232, an inhibitor of MDM2, by Kartos Therapeutics, Inc.

Many of our competitors, either alone or with their strategic partners, could have substantially greater financial, technical and human resources than we do and significantly greater experience in obtaining FDA and other regulatory approvals of treatments and commercializing those treatments. We believe that the commercial success of imetelstat is subject to a number of factors, including: product efficacy and safety; method of product administration; cost of manufacturing; the timing and scope of regulatory consents; status of coverage and reimbursement; price; the level of generic competition; and our patent position.

As a result of the foregoing, competitors may develop more commercially desirable or affordable products than imetelstat, or achieve earlier patent protection or product commercialization than we may be able to achieve with imetelstat. Competitors have developed, or are in the process of developing, technologies that are, or in the future may be, competitive to imetelstat. Some of these products may have an entirely different approach or means of accomplishing therapeutic effects similar or superior to those that may be demonstrated by imetelstat. Competitors may develop products that are safer, more effective, or less costly than imetelstat, or more convenient to administer to patients and, therefore, present a serious competitive threat to imetelstat. In addition, competitors may price their products below what we may determine to be an acceptable price for imetelstat, may receive better third-party payor coverage and/or reimbursement, or may be more cost-effective than imetelstat. Such competitive products or activities by competitors may render imetelstat obsolete, which may cause us to cease any further development or future commercialization of imetelstat, which would severely and adversely affect our financial results, business and business prospects, and the future of imetelstat, and might cause us to cease operations.

Government Regulation

Regulation by governmental authorities in the United States and other countries is a significant factor in the development, manufacture and marketing of imetelstat. Imetelstat will require regulatory approval by governmental agencies prior to commercialization. In particular, potential human therapeutic products, such as imetelstat, are subject to rigorous preclinical and clinical testing and other approval procedures of the FDA and similar regulatory authorities in European and other countries. Various governmental statutes and regulations also govern or influence testing, manufacturing, safety, labeling, storage, import, export, distribution and recordkeeping related to such products and their marketing. The process of obtaining these approvals and the subsequent compliance with appropriate statutes and regulations require the expenditure of substantial time and money, and there can be no guarantee that approvals will be granted. The information provided in this section should be reviewed in the context of the sections entitled “Risks Related to the Development of Imetelstat” and “Risks Related to Regulatory Compliance Matters and Commercialization of Imetelstat” under Part I, Item 1A, “Risk Factors”.

United States Food and Drug Administration Regulatory Approval Process

Prior to commencement of clinical trials involving humans, preclinical testing of new pharmaceutical products is generally conducted on animals in the laboratory to evaluate the potential efficacy and safety of a product candidate. The results of these trials are submitted to the FDA as part of an Investigational New Drug, or IND, application, which must become effective before clinical testing in humans can begin. For example, we have two active INDs for our imetelstat program. The FDA can place an IND on clinical hold at any time, which prevents the conduct of clinical trials under the IND until safety concerns are addressed by the IND sponsor to the FDA’s satisfaction. Typically, clinical evaluation involves a time consuming and costly three phase trial process. In Phase 1, clinical trials are conducted with a small number of healthy volunteers or patients afflicted with a specific disease to assess safety and to evaluate the pattern of drug distribution and metabolism within the body. In Phase 2, clinical trials are conducted with groups of patients afflicted with a specific disease in order to determine preliminary efficacy, optimal dosages and expanded evidence of safety. The Phase 2 trials can be conducted comparing the investigational treatment to a comparator arm, or not. If used, a comparator usually includes standard of care therapy. Safety and efficacy data from

Phase 2 clinical trials, even if favorable, may not provide sufficient rationale for proceeding to a Phase 3 clinical trial. In Phase 3, large scale, multi-center, comparative trials are conducted with patients afflicted with a target disease to provide sufficient data to demonstrate the efficacy and safety required by the FDA. The FDA closely monitors the progress of each of the three phases of clinical testing and may, at its discretion, re-evaluate, alter, suspend, or terminate the trials. Human clinical trials must be conducted in compliance with Good Clinical Practice regulations and applicable laws, with the oversight of Institutional Review Boards for the protection of human subjects. The manufacture of drug product candidates is subject to requirements that drugs be manufactured, packaged and labeled in conformity with current Good Manufacturing Practices and applicable laws.

The results of the preclinical and clinical testing of drugs and complete manufacturing information are submitted to the FDA in the form of a New Drug Application, or NDA, for review and approval prior to commencement of commercial sales. Submission of an NDA requires the payment of a substantial user fee to the FDA, which may be waived in certain cases. In responding to an NDA submission, the FDA may approve the drug for commercialization, impose limitations on its indications for use and labeling, including in the form of Risk Evaluation and Mitigation Strategies or may issue a complete response letter. Even if an NDA is approved, its sponsor is subject to ongoing and pervasive regulatory compliance requirements.

European and Other Regulatory Approval Process

Prior to initiating clinical trials in a region outside of the United States, a clinical trial application must be submitted and reviewed by the appropriate regulatory authority regulating the country in which the trial will be conducted. Whether or not FDA clearance or approval has been obtained, approval of a product by comparable regulatory authorities in Europe and other countries is necessary prior to commencement of marketing the product in such countries. The regulatory authorities in each country may impose their own requirements and may refuse to grant an approval, or may require additional data before granting it, even though the relevant product has been cleared or approved by the FDA or another authority. As with the FDA, the regulatory authorities in the European Union, or EU, and other developed countries have lengthy approval processes for pharmaceutical products. The process for gaining approval in particular countries varies, but generally follows a similar sequence to that described for FDA approval. In Europe, the European Medicine Agency, or EMA, and the European Committee for Proprietary Medicinal Products for Human Use, or CHMP, provide a mechanism for EU member states to exchange information on all aspects of product licensing. The EU has established the EMA for the evaluation of medical products, with a centralized procedure which is mandatory for orphan and oncology products and which grants a single marketing authorization valid in all EU member states.

Orphan Drug Designation

For a drug to qualify for orphan drug designation by the FDA, both the drug and the disease or condition must meet certain criteria specified in the Orphan Drug Act, or ODA, and FDA's implementing regulations. Orphan drug designation is granted by the FDA's Office of Orphan Drug Products in order to support development of medicines for underserved or rare diseases and patient populations that affect fewer than 200,000 people in the United States or, if the disease or condition affects more than 200,000 individuals annually in the United States, if there is no reasonable expectation that the cost of developing and making the drug would be recovered from sales in the United States. Orphan drug designation qualifies the sponsor of the drug for various development incentives of the ODA, including, if regulatory approval is received, the potential for seven years of market exclusivity with certain limited exceptions and certain tax credits for qualified clinical testing. A marketing application for a prescription drug product that has received orphan drug designation is not subject to a prescription drug user fee unless the application includes an indication for a disease or condition other than the rare disease or condition for which the drug was granted orphan drug designation. The granting of orphan drug designation does not alter the standard regulatory requirements and process for obtaining marketing approval. The safety and effectiveness of a drug must be established through adequate and well-controlled studies. Orphan drug exclusivity does not prevent the FDA from approving a different drug for the same disease or condition, or the same drug for a different disease or condition.

On June 11, 2015 and December 23, 2015, the FDA granted orphan drug designation to imetelstat for the treatment of MF and MDS, respectively.

Orphan drug designation by the European Commission provides regulatory and financial incentives for companies to develop and market therapies that treat a life-threatening or chronically debilitating condition affecting no more than five in 10,000 persons in the EU, and where no satisfactory treatment is available. In the EU, orphan drug designation also entitles a party to financial incentives such as reduction of fees or fee waivers, as well as protocol assistance from the EMA during the product development phase, and direct access to the centralized authorization procedure. In addition, ten years of market exclusivity is granted following drug product approval, meaning that another application for marketing authorization of a later similar medicinal product for the same therapeutic indication will generally not be approved in the EU. This period may be reduced to six years if the orphan drug designation criteria are no longer met, including where it is shown that the product is sufficiently profitable to not justify maintenance of market exclusivity.

On December 14, 2015, the EMA granted orphan drug designation to imetelstat for the treatment of MF.

Fast Track Designation

Fast Track designation provides opportunities for frequent interactions with FDA review staff, as well as eligibility for priority review, if relevant criteria are met, and rolling review. Fast Track designation is intended to facilitate and expedite development and review of a New Drug Application to address unmet medical needs in the treatment of serious or life-threatening conditions. However, Fast Track designation does not accelerate conduct of clinical trials or mean that the regulatory requirements are less stringent, nor does it ensure that imetelstat will receive marketing approval or that approval will be granted within any particular timeframe. In addition, the FDA may withdraw Fast Track designation if it believes that the designation is no longer supported by data emerging from the imetelstat clinical development program.

In October 2017, the FDA granted Fast Track designation to imetelstat for the treatment of adult patients with transfusion-dependent anemia due to Low or Intermediate-1 risk MDS who are non-del(5q) and who are refractory or resistant to treatment with an ESA.

In September 2019, the FDA granted Fast Track designation to imetelstat for the treatment of adult patients with Intermediate-2 or High-risk MF whose disease has relapsed after or is refractory to janus kinase (JAK) inhibitor treatment, or relapsed/refractory MF.

Fraud and Abuse, Data Privacy and Security, and Transparency Laws and Regulations

We may also be subject to additional healthcare regulation and enforcement by the federal government and by authorities in the states and foreign jurisdictions in which we conduct our business. These additional healthcare regulations could affect our current and future arrangements with healthcare professionals, principal investigators, consultants, customers and third-party payors. Such laws include, without limitation, state and federal anti-kickback, fraud and abuse, false claims, privacy and security, and physician payment sunshine laws.

The federal Anti-Kickback Statute makes it illegal for any person or entity, including a prescription drug manufacturer (or a party acting on its behalf) to knowingly and willfully, directly or indirectly, solicit, receive, offer, or pay any remuneration that is intended to induce the referral of business, including the purchase, order, or lease of any good, facility, item or service for which payment may be made under a federal healthcare program, such as Medicare or Medicaid. The term "remuneration" has been broadly interpreted to include anything of value. Several courts have interpreted the statute's intent requirement to mean that if any one purpose of an arrangement involving remuneration is to induce referrals of federal healthcare covered business, the Anti-Kickback Statute has been violated. The Patient Protection and Affordable Care Act of 2010, as amended by the Health Care and Education Reconciliation Act, collectively the Affordable Care Act or ACA, among other things, amended the intent requirement of the federal Anti-Kickback Statute such that a person or entity no longer needs to have actual knowledge of the statute or specific intent to violate, in order to commit a violation.

Federal civil and criminal false claims and false statement laws, including the federal civil False Claims Act and its whistleblower or *qui tam* provisions that permit private individuals to bring an action on behalf of the government to enforce the civil False Claims Act, prohibit, among other things, any person or entity from knowingly presenting, or causing to be presented, for payment to, or approval by, federal programs, including Medicare and

Medicaid, claims for items or services, including drugs, that are false or fraudulent or not provided as claimed. Entities can be held liable under these laws if they are deemed to "cause" the submission of false or fraudulent claims by, for example, providing inaccurate billing or coding information to customers, promoting a product off-label, or for providing medically unnecessary services or items. In addition, a claim including items or services resulting from a violation of the federal Anti-Kickback Statute constitutes a false or fraudulent claim for purposes of the federal civil False Claims Act. Criminal prosecution is also possible for making or presenting a false, fictitious or fraudulent claim to the federal government.

The federal Health Insurance Portability and Accountability Act of 1996, or HIPAA, created criminal and civil liability for, among other things, knowingly and willfully executing, or attempting to execute, a scheme to defraud any healthcare benefit program, including private third-party payors, knowingly and willfully embezzling or stealing from a healthcare benefit program, willfully obstructing a criminal investigation of a healthcare offense, and knowingly and willfully falsifying, concealing or covering up a material fact or making any materially false, fictitious or fraudulent statement in connection with the delivery of or payment for healthcare benefits, items or services.

HIPAA, as amended by the Health Information Technology for Economic and Clinical Health Act, or HITECH, and their implementing regulations, imposes obligations, including mandatory contractual terms, with respect to safeguarding the privacy, security, transmission and breach reporting of individually identifiable health information, upon entities subject to the law, such as health plans, healthcare clearinghouses and certain healthcare providers and their respective business associates that perform services for them that involve individually identifiable health information. HITECH also created new tiers of civil monetary penalties, amended HIPAA to make civil and criminal penalties directly applicable to business associates, and gave state attorneys general new authority to file civil actions for damages or injunctions in U.S. federal courts to enforce the federal HIPAA laws and seek attorneys' fees and costs associated with pursuing federal civil actions.

The federal Physician Payments Sunshine Act requires certain manufacturers of drugs, devices, biologics and medical supplies for which payment is available under Medicare, Medicaid or the Children's Health Insurance Program, with specific exceptions, to report annually to the Centers for Medicare & Medicaid Services, or CMS, information related to payments or other transfers of value made to physicians, as defined by such law, and teaching hospitals, and applicable manufacturers and applicable group purchasing organizations to report annually to CMS ownership and investment interests held by physicians and their immediate family members.

Analogous state and foreign laws and regulations, such as state anti-kickback and false claims laws, may apply to sales or marketing arrangements and claims involving healthcare items or services reimbursed by non-governmental third-party payors, including private insurers. Additionally, we may be subject to state laws that require pharmaceutical companies to comply with the pharmaceutical industry's voluntary compliance guidelines and the relevant compliance guidance promulgated by the federal government. Further, we may be subject to state laws that require drug manufacturers to report information related to payments and other transfers of value to physicians, other healthcare providers and healthcare entities, or marketing expenditures, as well as state and local laws that require the registration of pharmaceutical sales representatives; state laws that require the reporting of information related to drug pricing; and state and foreign laws governing the privacy and security of health information, including the General Data Protection Regulation, or GDPR, from the European Union, or EU, many of which differ from each other in significant ways and often are not preempted by HIPAA, thus complicating compliance efforts.

Efforts to ensure that our current and future business arrangements will comply with applicable healthcare, privacy and data security laws and regulations will involve substantial costs. For example, the GDPR, which became effective on May 25, 2018, imposes several requirements relating to the consent of the individuals to whom the personal data relates, the information provided to the individuals, the security and confidentiality of the personal data, data breach notification and the use of third-party processors in connection with the processing of personal data. The GDPR also imposes strict rules on the transfer of personal data out of the EU, provides an enforcement authority and authorizes the imposition of large penalties for noncompliance, including the potential for fines of up to €20 million or 4% of the annual global revenues of the noncompliant company, whichever is greater. The GDPR has increased our responsibility and potential liability in relation to personal data that we process or control compared to prior EU law, including in clinical trials, and we may be required to put in place additional mechanisms

to ensure compliance with the GDPR, which could divert management's attention and increase our cost of doing business. Likewise, we expect that there will continue to be new proposed laws, regulations and industry standards relating to privacy and data protection in the United States, the EU and other jurisdictions, such as the California Consumer Privacy Act of 2018, which has been characterized as the first "GDPR-like" privacy statute to be enacted in the United States because it mirrors a number of the key provisions in the GDPR, that went into effect beginning January 1, 2020, and we cannot determine the impact that such laws, regulations and standards will have on our business. In any event, it is possible that governmental authorities will conclude that our business practices do not comply with current or future statutes, regulations, agency guidance or case law involving applicable healthcare or privacy laws, including the GDPR, in light of the lack of applicable precedent and regulations. Federal and state enforcement bodies have recently increased their scrutiny of interactions between healthcare companies and healthcare providers, which has led to a number of investigations, prosecutions, convictions and settlements in the healthcare industry.

If our operations are found to be in violation of any of these or any other healthcare and privacy-related regulatory laws that may apply to us, we may be subject to significant penalties, including the imposition of significant civil, criminal and administrative penalties, damages, monetary fines, disgorgement, imprisonment, possible exclusion from participation in Medicare, Medicaid and other federal healthcare programs, reputational harm, diminished profits and future earnings, additional reporting requirements and oversight if we become subject to a corporate integrity agreement or similar agreement to resolve allegations of non-compliance with these laws, and curtailment of our operations, any of which could adversely affect our ability to operate our business and our results of operations. Defending against any such actions can be costly, time-consuming and may require significant financial and personnel resources. Therefore, even if we are successful in defending against any such actions that may be brought against us, our business may be impaired.

Reimbursement and Healthcare Reform

Significant uncertainty exists as to the coverage and reimbursement status of any product candidate that receives regulatory approval. In the United States and markets in other countries, sales of imetelstat, if approved for commercial sale, will depend, in part, on the extent to which third-party payors provide coverage and establish adequate reimbursement levels for imetelstat.

In the United States, third-party payors include federal and state healthcare programs, government authorities, private managed care providers, private health insurers and other organizations. There has been increasing legislative and enforcement interest in the United States with respect to specialty drug pricing practices. Specifically, there have been several recent U.S. Congressional inquiries and federal and state legislative activity designed to, among other things, bring more transparency to drug pricing, review the relationship between pricing and manufacturer patient programs, reduce the cost of drugs under Medicare, and reform government program reimbursement methodologies for drugs, some of which are included in the Trump Administration's budget proposal for fiscal year 2020. Additionally, at the federal level, the Trump Administration released a "Blueprint" that contains additional proposals to increase manufacturer competition, increase the negotiating power of certain federal healthcare programs, incentivize manufacturers to lower the list price of their products and reduce the out of pocket costs of drug products paid by consumers. The Department of Health and Human Services, or HHS, has solicited feedback on some of these measures and, at the same time, has implemented others under its existing authority. For example, in May 2019, CMS issued a final rule to allow Medicare Advantage plans the option to use step therapy for Part B drugs beginning January 1, 2020. This final rule codified CMS's policy change that was effective January 1, 2019. While a number of these and other measures may require additional authorization to become effective, Congress and the Trump Administration have each indicated that they will continue to seek new legislative and/or administrative measures to control drug costs. At the state level, legislatures have increasingly passed legislation and implemented regulations designed to control pharmaceutical and biological product pricing, including price or patient reimbursement constraints, discounts, restrictions on certain product access and marketing cost disclosure and transparency measures, and, in some cases, to encourage importation from other countries and bulk purchasing. Further, third-party payors are increasingly challenging the price, examining the medical necessity and reviewing the cost-effectiveness of medical drug products and medical services, in addition to questioning their safety and efficacy. Such payors may limit coverage to specific drug products on an approved list, also known as a formulary, which might not include all of the FDA-approved drugs for a particular indication. We may need to conduct expensive pharmacoeconomic studies in order to demonstrate the medical necessity and cost-effectiveness of

imetelstat, in addition to the costs required to obtain the FDA approvals. Nonetheless, imetelstat may not be considered medically necessary or cost-effective.

Moreover, the process for determining whether a third-party payor will provide coverage for a drug product may be separate from the process for setting the price of a drug product or for establishing the reimbursement rate that such a payor will pay for the drug product. A payor's decision to provide coverage for a drug product does not imply that an adequate reimbursement rate will be approved. Further, one payor's determination to provide coverage for a drug product does not assure that other payors will also provide coverage for the drug product, as there is no uniform coverage and reimbursement policy among third-party payors in the United States. Adequate third-party reimbursement may not be available to enable us to maintain price levels sufficient to realize an appropriate return on our investment in imetelstat.

The United States and some foreign jurisdictions are considering or have enacted legislative and regulatory proposals to contain healthcare costs, as well as to improve quality and expand access. For example, in March 2010, the ACA was signed into law, which included a number of provisions of importance to the biopharmaceutical industry. There remain judicial and Congressional challenges to certain aspects of the ACA, as well as efforts by the Trump Administration to repeal or replace certain aspects of the ACA. For example, since January 2017, President Trump has signed two executive orders and other directives designed to delay, circumvent, or loosen certain requirements mandated by the ACA. Concurrently, Congress has considered legislation that would repeal or repeal and replace all or part of the ACA. While Congress has not passed comprehensive repeal legislation, several bills affecting the implementation of certain taxes under the ACA have been signed into law. The Tax Cuts and Jobs Act of 2017, or Tax Act, includes a provision which repealed, effective January 1, 2019, the tax-based shared responsibility payment imposed by the ACA on certain individuals who fail to maintain qualifying health coverage for all or part of a year, that is commonly referred to as the "individual mandate." In addition, the 2020 federal spending package permanently eliminated, effective January 1, 2020, the ACA-mandated "Cadillac" tax on high-cost employer-sponsored health coverage and medical device tax and, effective January 1, 2021, will also eliminate the health insurer tax.

The Bipartisan Budget Act of 2018, among other things, amended the ACA, effective January 1, 2019, to close the coverage gap in most Medicare Part D drug plans, commonly referred to as the "donut hole". In December 2018, CMS published a new final rule permitting further collections and payments to and from certain ACA qualified health plans and health insurance issuers under the ACA risk adjustment program in response to the outcome of federal district court litigation regarding the method CMS uses to determine this risk adjustment. On December 14, 2018, a Texas U.S. District Court Judge ruled that the ACA is unconstitutional in its entirety because the "individual mandate" was repealed by Congress as part of the Tax Act. Additionally, on December 18, 2019, the U.S. Court of Appeals for the 5th Circuit upheld the District Court ruling that the individual mandate was unconstitutional and remanded the case back to the District Court to determine whether the remaining provisions of the ACA are invalid as well. It is unclear how this decision, future decisions, subsequent appeals, and other efforts to repeal and replace the ACA will impact the ACA. We expect that other healthcare reform measures that may be adopted in the future may result in more rigorous coverage criteria and lower reimbursement, and additional downward pressure on the price that may be charged for imetelstat.

In addition, other legislative changes have been proposed and adopted since the ACA was enacted. For example, in August 2011, the Budget Control Act of 2011 was enacted, which, among other things, created the Joint Select Committee on Deficit Reduction to recommend to Congress proposals in spending reductions. The Joint Select Committee on Deficit Reduction did not achieve a targeted deficit reduction of at least $1.2 trillion for fiscal years 2012 through 2021, triggering the legislation's automatic reduction to several government programs. This includes aggregate reductions to Medicare payments to providers of up to 2% per fiscal year, which went into effect beginning on April 1, 2013 and, due to subsequent legislative amendments to the statute, including the Bipartisan Budget Act of 2018, will stay in effect through 2029 unless additional Congressional action is taken. Additionally, in January 2013, the American Taxpayer Relief Act of 2012 was signed into law, which, among other things, reduced Medicare payments to several providers, including hospitals and imaging centers. More recently, there has been heightened governmental scrutiny in the United States to control the rising cost of healthcare.

Information About Our Officers

The following table sets forth certain information with respect to our executive officers as of January 31, 2020:

Name	Age	Position
John A. Scarlett, M.D.	68	President, Chief Executive Officer and Chairman of the Board
Olivia K. Bloom	51	Executive Vice President, Finance, Chief Financial Officer and Treasurer
Anil Kapur	50	Executive Vice President, Corporate Strategy and Chief Commercial Officer
Melissa A. Kelly Behrs	56	Executive Vice President, Chief Business Officer
Andrew J. Grethlein, Ph.D.	55	Executive Vice President, Chief Operating Officer
Aleksandra Rizo, M.D., Ph.D.	45	Executive Vice President, Chief Medical Officer
Stephen N. Rosenfield, J.D.	70	Executive Vice President, Chief Legal Officer and Corporate Secretary

John A. Scarlett, M.D., has served as our Chief Executive Officer and a director since September 2011 and President since January 2012 and was appointed to Chairman of the Board in December 2018. Dr. Scarlett has served as a director for Chiasma, Inc., a biopharmaceutical company focused on transforming injectable drugs into oral medications, since February 2015 and CytomX Therapeutics, Inc., a biopharmaceutical company focused on developing antibody therapeutics for the treatment of cancer, since June 2016. Prior to joining Geron, Dr. Scarlett served as President, Chief Executive Officer and a member of the board of directors of Proteolix, Inc., a privately held, oncology-oriented biopharmaceutical company, from February 2009 until its acquisition by Onyx Pharmaceuticals, Inc., an oncology-oriented biopharmaceutical company, in November 2009. From February 2002 until its acquisition by Ipsen, S.A. in October 2008, Dr. Scarlett served as the Chief Executive Officer and a member of the board of directors of Tercica, Inc., an endocrinology-oriented biopharmaceutical company, and also as its President from February 2002 through February 2007. From March 1993 to May 2001, Dr. Scarlett served as President and Chief Executive Officer of Sensus Drug Development Corporation. In 1995, he co-founded Covance Biotechnology Services, Inc., a contract biopharmaceutical manufacturing operation, and served as a member of its board of directors from inception to 2000. From 1991 to 1993, Dr. Scarlett headed the North American Clinical Development Center and served as Senior Vice President of Medical and Scientific Affairs at Novo Nordisk Pharmaceuticals, Inc., a wholly owned subsidiary of Novo Nordisk A/S. Dr. Scarlett received his B.A. degree in chemistry from Earlham College and his M.D. from the University of Chicago, Pritzker School of Medicine.

Olivia K. Bloom has served as our Executive Vice President, Finance since February 2014, Chief Financial Officer since December 2012 and Treasurer since February 2011. Ms. Bloom previously served as our Senior Vice President, Finance from December 2012 to February 2014, Chief Accounting Officer from September 2010 to December 2012 and Vice President, Finance from January 2007 to December 2012. Ms. Bloom joined the Company in 1994 as a Senior Financial Analyst and from 1996 to 2011 served as our Controller. Prior to joining Geron, Ms. Bloom started her career in public accounting at KPMG Peat Marwick and became a Certified Public Accountant in 1994. Ms. Bloom graduated Phi Beta Kappa with a B.S. in Business Administration from the University of California at Berkeley.

Anil Kapur has served as our Executive Vice President, Corporate Strategy and Chief Commercial Officer since December 2019. Prior to joining Geron, Mr. Kapur was Chief Commercial Officer at Actinium Pharmaceuticals, Inc., a clinical stage biopharmaceutical company, from February 2018 to November 2019. From October 2016 until February 2018, Mr. Kapur was Vice President, Head of Early Assets, Biomarkers and External Innovation for Worldwide Oncology Commercialization at Bristol-Myers Squibb Company, a global biopharmaceutical company. Mr. Kapur served as Vice President, Global Head of Commercial and Portfolio Strategy at Baxalta, Incorporated, in a newly created Oncology Division, from November 2015 until after its acquisition by Shire plc in July 2016. Before joining Baxalta, Mr. Kapur held marketing and sales leadership roles of increasing responsibility during his 15-year tenure at the Janssen Pharmaceutical Companies of Johnson & Johnson (Janssen). As Vice President, Commercial Leader, Hematology Franchise in Janssen's Global Commercial Strategy Organization, he led the development and execution of commercial strategy and launch plans for in-market development, late development, and early pipeline assets, including imetelstat. Among Mr. Kapur's most recognized achievements while at Janssen were the successful global launches of two transformational blockbuster hematology-oncology drugs, Imbruvica and Darzalex. Mr. Kapur holds a Bachelor of Engineering from Birla Institute of

Technology in India; an M.S. in Industrial Engineering from Louisiana Tech University; and an M.B.A from the Fuqua School of Business at Duke University.

Melissa A. Kelly Behrs has served as our Executive Vice President, Chief Business Officer since January 2019. Previously, she was our Executive Vice President, Business Development and Portfolio & Alliance Management, from February 2014 to January 2019, and our Senior Vice President, Portfolio and Alliance Management from September 2012 to February 2014. Ms. Behrs joined Geron in November 1998 as Director of Corporate Development. Since then, she has also served in various managerial positions, including General Manager, R&D Technologies; Vice President, Corporate Development; Senior Vice President, Therapeutic Development, Oncology; and Senior Vice President, Strategic Portfolio Management. From 1990 to 1998, Ms. Behrs worked at Genetics Institute, Inc., a biotechnology research and development company, serving initially as Assistant Treasurer and then as Associate Director of Preclinical Operations where she was responsible for all business development, regulatory, and project management activities for the Preclinical Development function. Ms. Behrs received a B.S. from Boston College and an M.B.A. from Babson College.

Andrew J. Grethlein, Ph.D., has served as our Executive Vice President, Chief Operating Officer since January 2019. Previously, he served as our Executive Vice President, Development and Technical Operations, from July 2014 to January 2019. He joined Geron in September 2012 as our Executive Vice President, Technical Operations. Prior to joining Geron, Dr. Grethlein was Executive Vice President and Chief Operating Officer for Inspiration Biopharmaceuticals, a biopharmaceutical company, from January 2010 to September 2012. From October 2008 until January 2010, Dr. Grethlein was Senior Vice President of Biotechnology and Portfolio Management Team Leader for Hematology at Ipsen S.A., a global specialty pharmaceutical company. His responsibilities at Ipsen included planning and execution of worldwide strategy for product and portfolio development in the hematologic therapeutic area. From 2003 to 2008, Dr. Grethlein served as Senior Vice President of Pharmaceutical Operations at Tercica, Inc., an endocrinology-oriented biopharmaceutical company, where he was a member of the senior executive team that governed corporate strategy, business planning and company operations, and had responsibility for all manufacturing and quality functions. Before joining Tercica, Dr. Grethlein served in various positions at Elan Corporation, a biotechnology company, from 1997 to 2003, including as Senior Director, South San Francisco Pharmaceutical Operations. From 1995 to 1997, Dr. Grethlein served as Manager, Biologics Development and Manufacturing, for Athena Neurosciences, Inc., a pharmaceutical company. Prior to this, he served in various engineering positions for the Michigan Biotechnology Institute, a nonprofit technology research and business development corporation. Dr. Grethlein received his A.A. degree in liberal arts from Simon's Rock Early College, his B.S. in biology from Bates College, and his M.S. and Ph.D. in chemical engineering from Michigan State University.

Aleksandra Rizo, M.D., Ph.D., has served as our Executive Vice President, Chief Medical Officer since January 2019. Prior to joining Geron, Dr. Rizo was Executive Director, Strategy and Clinical Lead at Celgene Corporation, a biopharmaceutical company, from March 2018 to January 2019, where she led submission activities and participated in strategic and business development initiatives. From October 2008 to March 2018, Dr. Rizo served in a number of oncology drug development functions at Janssen Research and Development, LLC, a pharmaceutical company, including Senior Director, Compound Development Team Leader for all Phase 1 myeloid assets, and Global Clinical Leader for all late-stage myeloid assets, including imetelstat from November 2014 to March 2018, as well as Global Clinical Leader for the ibrutinib mantle cell lymphoma program. In these roles, she had oversight and leadership responsibilities for overall clinical development strategy, study designs, execution and data interpretation. In addition, Dr. Rizo was a core member of Janssen's Hematology Strategy Team where she participated and led diligence projects in hematology. During her initial tenure with Janssen, Dr. Rizo also worked on a variety of Velcade clinical trials in lymphoma and multiple myeloma. Dr. Rizo holds an M.D. from the University Ss Cyril and Methodius, Skopje, Macedonia, where she also completed a residency in internal medicine/hematology. She also has a Ph.D. in human leukemic stem cell biology from the University of Groningen, Groningen, Netherlands, and a Ph.D. in mouse stem cell biology from the University of Tokyo, Tokyo, Japan.

Stephen N. Rosenfield, J.D., has served as our Executive Vice President, Chief Legal Officer and Corporate Secretary since January 2019. Previously, he served as our Executive Vice President, General Counsel and Corporate Secretary from February 2012 to January 2019, General Counsel and Secretary since January 2012 and Secretary since October 2011. From July 2009 to February 2012, Mr. Rosenfield served as a consultant to private companies. From June 2004 until June 2009, Mr. Rosenfield held several positions at Tercica, Inc., an

endocrinology-oriented biopharmaceutical company, and through its acquisition by Ipsen, S.A. in October 2008, including General Counsel and Secretary. Prior to joining Tercica, Mr. Rosenfield served as the Executive Vice President of Legal Affairs, General Counsel and Secretary of InterMune, Inc., a biotechnology company that focused on pulmonology and fibrotic diseases. Prior to joining InterMune, Mr. Rosenfield was an attorney at Cooley LLP, an international law firm, where he served as outside counsel for biotechnology and technology clients. Mr. Rosenfield received a B.S. from Hofstra University and a J.D. from Northeastern University School of Law.

Employees

As of December 31, 2019, we had 45 full-time employees and 1 part-time employee. Four of our employees hold Ph.D. degrees and 19 hold other advanced degrees. Of this current total workforce, 24 employees were engaged in, or directly supported, our research and development activities, and 22 employees were engaged in business development, legal, finance and administration. None of our employees are covered by a collective bargaining agreement; nor have we experienced work stoppages. We consider relations with our employees to be good. We will need to maintain and continue to hire additional experienced personnel in clinical science, biostatistics, clinical operations, pharmacovigilance, quality, manufacturing, regulatory affairs, medical affairs and sales and marketing, in order to enable us to further develop and potentially commercialize imetelstat.

Corporate Information

Geron Corporation was incorporated in the State of Delaware on November 28, 1990.

Available Information

Our internet address is www.geron.com. Information included on our website is not part of this annual report on Form 10-K. We make available free of charge on our website our annual reports on Form 10-K, quarterly reports on Form 10-Q, current reports on Form 8-K, and all amendments to those reports as soon as reasonably practicable after such material is electronically filed with or furnished to the United States Securities and Exchange Commission, or the SEC. In addition, copies of our annual reports are available free of charge upon written request.

ITEM 1A. RISK FACTORS

Our business is subject to various risks and uncertainties that may have a material adverse effect on our business, financial condition or results of operations. You should carefully consider the risks and uncertainties described below, together with all of the other information included in this annual report on Form 10-K. Our business faces significant risks and uncertainties, and those described below may not be the only risks and uncertainties we face. Additional risks and uncertainties not presently known to us or that we currently believe are immaterial may also significantly impair our business, financial condition or results of operations. If any of these risks or uncertainties occur, our business, financial condition or results of operations could suffer, the market price of our common stock could decline and you could lose all or part of your investment in our common stock.

RISKS RELATED TO THE DEVELOPMENT OF IMETELSTAT

Our future success depends solely on imetelstat, our only product candidate, and we cannot be certain that we will be able to continue to develop imetelstat or advance imetelstat to subsequent clinical trials, or that we will be able to receive regulatory approval for imetelstat on a timely basis, or at all.

Imetelstat is our sole product candidate, upon whose success we are wholly dependent. We do not have any other products or product candidates. Our ability to develop imetelstat to and through regulatory approval and potential commercial launch is subject to significant risks and uncertainties, including, among other things, our ability to:

- successfully recruit, enroll and retain patients in, and complete the Phase 3 portion of IMerge;
- obtain agreement from the United States Food and Drug Administration, or FDA, to any of our Phase 3 trial design proposals in MF, to support a potential regulatory approval path in MF, if any;

- proceed with further development of imetelstat in Phase 3 for MF, even if we obtain the agreement of the FDA on a Phase 3 trial design and/or feasible regulatory approval pathway in MF;
- obtain substantial additional capital in order to enable us to conduct our operations and to advance imetelstat to and through current and potential future clinical trials, including completing the Phase 3 portion of IMerge and commencing, conducting and completing potential Phase 3 clinical trials in MF and potential proof-of-concept studies in other hematologic myeloid malignancies, as well as regulatory approval and potential commercial launch;
- develop clinical plans for, and successfully commence, enroll and complete, potential future clinical trials of imetelstat, such as potential Phase 3 clinical trials in MF and potential proof-of-concept studies in other hematologic myeloid malignancies;
- cause the INDs for imetelstat to be maintained without such INDs being placed on full or partial clinical hold by the FDA;
- generate sufficient safety and efficacy data from current and potential future clinical trials of imetelstat that provide a positive benefit-risk profile and support the continued and future development of imetelstat in hematologic myeloid malignancies;
- ascertain that the use of imetelstat does not result in significant systemic or organ toxicities, including hepatotoxicity, or other safety issues resulting in an unacceptable benefit-risk profile;
- collaborate successfully with clinical trial sites, academic institutions, clinical research organizations, or CROs, contractors, physician investigators and other third parties;
- obtain and maintain required regulatory clearances and approvals for imetelstat; for example, it is uncertain:
  - whether the FDA and regulatory authorities in other countries will require us to obtain and submit additional non-clinical, manufacturing, or clinical data to proceed with any potential future clinical trials,
  - how the FDA and other regulatory authorities will interpret safety and efficacy data from any clinical trial, including from IMbark or IMerge,
  - what scope and type of clinical development and other data will be required before the FDA and other regulatory authorities might grant us marketing approval, if any, and
  - what the length of time and cost for us will be to complete any such requirements;
- enter into and maintain arrangements with third parties to provide services needed to further research and develop imetelstat, including maintaining the agreement with our CROs, or to manufacture imetelstat, in each case at commercially reasonable costs;
- enter into and maintain arrangements with third parties, or establish internal capabilities, to provide sales, marketing, distribution and other commercialization functions in compliance with applicable laws;
- obtain appropriate coverage and reimbursement levels for the cost of imetelstat from governmental authorities, private health insurers and other third-party payors;
- obtain, maintain and enforce adequate intellectual property protection for imetelstat; and
- recruit and retain personnel to support the development and potential commercialization of imetelstat, including completion of the Phase 3 portion of IMerge and potential clinical development of imetelstat in other indications and commercial resources to launch imetelstat.

If we are not able to successfully achieve the above-stated goals and overcome other challenges that we may encounter in the research, development, manufacturing and potential commercialization of imetelstat, we may be forced to abandon our development of imetelstat, which would severely harm our business and prospects, and might cause us to cease operations.

Completion of current clinical trials of imetelstat, including the Phase 3 portion of IMerge, and commencement of potential future clinical trials of imetelstat could be interrupted, further delayed or abandoned for a variety of reasons.

Currently, the ongoing clinical trials of imetelstat are the Phase 2 and Phase 3 portions of IMerge. Completion of these clinical trials, and the commencement of any potential future clinical trials of imetelstat, such as potential Phase 3 clinical trials in MF or potential proof-of-concept studies in other hematologic myeloid malignancies, could be interrupted, delayed or abandoned for a variety of reasons, including as a result of failures or delays in:

- demonstrating sufficient safety and efficacy of imetelstat in current and potential future clinical trials, without safety issues, side effects or dose-limiting toxicities, including any additional or more severe safety issues in addition to those that have been observed to date in previous or ongoing clinical trials related to imetelstat, whether or not in the same indications or therapeutic areas;
- obtaining and/or maintaining regulatory clearances in the United States or other countries to conduct clinical trials, such as obtaining or maintaining regulatory clearances to commence, conduct or modify current or potential future clinical trials of imetelstat, in a timely manner, or at all, which could, for example, prevent us from, or result in substantial delays in, conducting or completing the Phase 3 portion of IMerge, and even if such regulatory clearances are obtained, we may be unable to commence, conduct or complete current or potential future clinical trials of imetelstat, or may discontinue such trials, whether due to our inability to raise substantial additional capital or otherwise;
- maintaining the INDs for imetelstat without such INDs being placed on full or partial clinical hold, suspended or subject to other requirements by the FDA or other regulatory authorities;
- properly (i) completing the Phase 2 portion of IMerge, including assessing the durability of RBC-TI responses; and (ii) recruiting, enrolling, conducting and completing the Phase 3 portion of IMerge, and promptly or adequately reporting data from such trials;
- obtaining funding on commercially reasonable terms necessary to advance the development of imetelstat, including completing the Phase 3 portion of IMerge, and commencing, conducting and completing potential future clinical trials of imetelstat in other indications, such as potential Phase 3 clinical trials in MF or potential proof-of-concept studies in other hematologic myeloid malignancies;
- determining a feasible registration path, if any, for late-stage development of imetelstat in MF, after submitting to the FDA Phase 3 trial design proposals in MF and conducting further discussions with the FDA regarding a potential regulatory approval path, if any;
- obtaining or accessing necessary clinical data in accordance with appropriate clinical or quality practices to ensure complete data sets;
- responding to safety findings by the data review committees of current clinical trials, and safety or futility findings by the data review committees of potential future clinical trials of imetelstat, based on emerging data occurring during such clinical trials, such as significant systemic or organ toxicities, including severe cytopenias, hepatotoxicity, fatal bleeding with or without any associated thrombocytopenia, patient injury or death, or other safety issues, resulting in an unacceptable benefit-risk profile;
- manufacturing sufficient quantities of imetelstat, or other clinical trial materials, in a manner that meets the quality standards of the FDA and other regulatory authorities, and responding to any disruptions to drug supply, clinical trial materials or quality issues that may arise;
- ensuring the ability to manufacture and supply imetelstat at acceptable costs for potential Phase 3 clinical trials and commercialization;
- obtaining sufficient quantities of any study-related treatments, materials (including comparator products, placebo or combination therapies) or ancillary supplies;
- obtaining acceptance by regulatory authorities of any manufacturing changes for imetelstat, as well as successfully implementing any such manufacturing changes;

- complying with current and future regulatory requirements, policies or guidelines, including domestic and international laws and regulations pertaining to fraud and abuse, transparency, and the privacy and security of health information;
- reaching agreement on acceptable terms and on a timely basis, if at all, with collaborators and vendors located in the United States or foreign jurisdictions, including our CROs, laboratory service providers and clinical trial sites, on all aspects of clinical development;
- obtaining timely review and clearances by regulatory authorities for any clinical protocol amendments or modifications to our manufacturing process which may be sought for current and potential future clinical trials of imetelstat, including responding to questions or comments from these authorities in a timely and adequate manner, which could, for example, prevent us from conducting or completing the Phase 3 portion of IMerge, potential Phase 3 clinical trials in MF, or potential proof-of-concept studies in other hematologic myeloid malignancies; and
- obtaining institutional review board or ethics committee approvals for clinical trial protocols or protocol amendments, including any future refinements to the trial design we may seek for the Phase 3 portion of IMerge, which could, for example, prevent us from conducting or completing the Phase 3 portion of IMerge, potential Phase 3 clinical trials in MF, or potential proof-of-concept studies in other hematologic myeloid malignancies.

Failures or delays with respect to any of these events could adversely affect our ability to conduct or complete any current clinical trials of imetelstat, including the Phase 3 portion of IMerge, or commence, conduct and complete potential future clinical trials of imetelstat, such as potential Phase 3 clinical trials in MF or potential proof-of-concept studies in other hematologic myeloid malignancies, which could increase development costs, or interrupt, further delay or halt our development or potential commercialization of imetelstat, any of which could severely and adversely affect our financial results, business and business prospects, and the future of imetelstat, and might cause us to cease operations.

If we encounter difficulties enrolling or retaining patients in clinical trials of imetelstat, including in the Phase 3 portion of IMerge, clinical development and commercialization activities could be further delayed or otherwise adversely affected, which would cause our business and business prospects to be severely harmed, and we might cease operations.

The timely completion of a clinical trial in accordance with its protocol depends, among other things, on the ability to enroll a sufficient number of patients who remain in the trial until its conclusion. For example, if we encounter challenges in screening, enrolling and retaining patients in the Phase 3 portion of IMerge, our completion of the Phase 3 portion of IMerge may be delayed or discontinued. If we experience difficulties in retaining patients in the treatment or follow-up phase of the Phase 2 portion of IMerge, our ability to continue to assess longer-term durability of RBC-TI responses would be adversely affected. The enrollment and retention of patients in clinical trials of imetelstat, including the Phase 3 portion of IMerge, depends on many factors, such as:

- our ability to identify and screen patients who meet the patient eligibility criteria specified in the protocol;
- the size of the patient population required for analysis of the trial's primary endpoint;
- the proximity of patients to trial sites;
- the design of the trial, including potential patients' reluctance to participate in the trial due to the possibility of being assigned to a placebo control arm;
- our ability to recruit and retain clinical trial investigators with the appropriate competencies and experience;
- clinicians' and patients' perceptions of the potential advantages of imetelstat, both in relation to other available therapies, including any new drugs that may be approved for the indications being investigated, and as a result of data reported from previous or current clinical trials of imetelstat, and their willingness to participate in clinical trials of imetelstat;
- the ability to obtain and maintain patient consents; and

- the risk that patients enrolled in any imetelstat clinical trial will drop out of the trial before completion due to lack of efficacy, adverse side effects, investigator decision, progressive disease, slow progress to later stage clinical trials, perceptions based on the decision by Janssen Biotech, Inc., or Janssen, to terminate the Collaboration and License Agreement, or Collaboration Agreement, alternate treatments being approved for the indication, or personal issues.

In addition, current and potential future clinical trials of imetelstat, such as the Phase 3 portion of IMerge, will compete with other clinical trials for product candidates that are in the same therapeutic areas with imetelstat and such trials may also be conducted at the same clinical sites. This competition will reduce the number and type of patients available to enroll or remain in current and potential future imetelstat clinical trials. Moreover, because imetelstat represents a departure from more commonly used methods for cancer treatment, potential patients and their doctors may be inclined to use conventional therapies, rather than enroll patients into imetelstat clinical trials, or may decide not to enroll, or may not recommend enrollment, in clinical trials of imetelstat, including the Phase 3 portion of IMerge, based on efficacy and safety results reported to date and that may be reported in the future.

Delays in patient enrollment or the inability to retain or treat patients could result in increased costs, lead to incomplete data sets, or adversely affect the timing or outcome of current and potential future clinical trials of imetelstat, such as the Phase 3 portion of IMerge, which could prevent completion of these trials and adversely affect the clinical development and potential commercialization of imetelstat. Such occurrences would severely and adversely affect our financial results, business and business prospects, and the future of imetelstat, and might cause us to cease operations.

Imetelstat may cause, or have attributed to it, undesirable or unintended side effects or other adverse events that could further delay or prevent the commencement and/or completion of clinical trials for imetelstat, further delay or prevent its regulatory approval, or limit its commercial potential.

Imetelstat may cause, or have attributed to it, undesirable or unintended side effects or other adverse events affecting its safety or efficacy that could interrupt, further delay or halt current or potential future clinical trials of imetelstat, such as the Phase 3 portion of IMerge. For example, adverse events and dose-limiting toxicities observed in previous and ongoing clinical trials of imetelstat include:

- hematologic toxicities, such as profound and/or prolonged thrombocytopenia or neutropenia, including one case of febrile neutropenia after prolonged myelosuppression with intracranial hemorrhage resulting in patient death, which the investigator assessed as possibly related to imetelstat;
- bleeding events, with or without thrombocytopenia;
- hepatotoxicity, such as liver function test, or LFT, abnormalities, the clinical significance and long-term consequences of which are currently undetermined, and hepatic failure;
- gastrointestinal events;
- infections;
- muscular and joint pain;
- fatigue;
- headache, and
- infusion-related reactions.

If patients in any clinical trials of imetelstat, including the Phase 2 and Phase 3 portions of IMerge, potential Phase 3 clinical trials in MF, or potential proof-of-concept studies in other hematologic myeloid malignancies, experience similar or more severe adverse events, or new or unusual adverse events, or if the FDA or other regulatory authorities determine that efficacy and safety data in current or potential future clinical trials of imetelstat do not support an adequate benefit-risk profile to justify continued treatment of patients, then the FDA or other regulatory authorities may again place the INDs for imetelstat on clinical hold, as occurred in March 2014.

Further, clinical trials by their nature examine the effect of a potential therapy in a sample of the potential future patient population. As such, clinical trials conducted with imetelstat, to date and in the future, may not uncover all possible adverse events that patients treated with imetelstat may experience. Because remaining patients in the treatment phase of the Phase 2 portion of IMerge and patients in the Phase 3 portion of IMerge continue to receive imetelstat treatment, additional or more severe toxicities or safety issues, including additional serious adverse events and dose-limiting toxicities, may be observed as patient treatment continues and more data become available. In addition, since additional data are being generated from the Phase 2 and Phase 3 portions of IMerge, the benefit-risk profile of imetelstat will continue to be assessed, including the risk of hepatotoxicity, severe cytopenias, fatal bleeding with or without any associated thrombocytopenia, patient injury or death, and any other severe adverse effects that may be associated with life-threatening clinical outcomes. If such toxicities or other safety issues in any clinical trial of imetelstat are determined by us, the FDA or any other regulatory authority to result in an unacceptable benefit-risk profile, then:

- additional information supporting the benefit-risk profile of imetelstat may be requested by the FDA or other regulatory authorities and if any such information supplied by us, or by Janssen, is not deemed acceptable, current clinical trials of imetelstat could be suspended, terminated, or placed on clinical hold by the FDA or other regulatory authorities;
- the ability to retain enrolled patients in current clinical trials may be negatively affected, resulting in incomplete data sets and the inability to adequately assess the benefit-risk profile of imetelstat in a specific patient population; or
- additional, unexpected clinical trials or non-clinical studies may be required to be conducted.

The occurrence of any of these events could interrupt, further delay, or halt, any development and potential commercialization of imetelstat by us, which would have a severe adverse effect on our results of operations, financial condition, business prospects and the future of imetelstat, any of which might cause us to cease operations.

Results and data we disclosed from prior non-clinical studies and clinical trials may not predict success in later clinical trials, and we cannot assure you that any ongoing or future clinical trials of imetelstat will lead to similar results and data that could potentially enable us to obtain any regulatory approvals.

Success in non-clinical testing and early clinical trials does not ensure that later clinical trials will be successful, nor does it predict final clinical trial results. We cannot be certain that any of the prior, current or potential future clinical trials of imetelstat will generate sufficient, consistent or adequate efficacy and safety data demonstrating a positive benefit-risk profile, which would be necessary to obtain regulatory approval to market imetelstat in any indication. Imetelstat in later stages of clinical trials may fail to show the desired benefit-risk profile despite having progressed through non-clinical studies and initial clinical trials. Many companies in the biopharmaceutical industry have frequently suffered significant setbacks in later clinical trials, even after achieving promising results in earlier non-clinical studies or clinical trials.

A trial design that is considered appropriate for regulatory approval includes a sufficiently large sample size with appropriate statistical power, as well as proper control of bias, to allow a meaningful interpretation of the results. The preliminary results of imetelstat clinical trials with smaller sample sizes can be disproportionately influenced by the impact the treatment had on a few individuals, which limits the ability to generalize the results across a broader community, making the trial results less reliable than trials with a larger number of patients. As a result, there may be less certainty that imetelstat would achieve a statistically significant effect in any future clinical trials. For example, in the Phase 2 portion of IMerge, the initial data review for the 25-patient expansion cohort that was conducted by Janssen in the second quarter of 2018, which Janssen called a "data snapshot," exhibited 8-week RBC-TI rate of 28%, while the 13-patient initial cohort exhibited 8-week RBC-TI rate of 54% resulting in an overall 8-week RBC-TI rate of 37% for the combined cohorts. Patients in both the initial and expansion cohorts were naïve to both HMA and lenalidomide and were non-del(5q). We believe the observed difference in 8-week RBC-TI rate between the 13-patient initial cohort and the 25-patient expansion cohort may be attributable to factors such as the maturity of the data at the time of the data snapshot since the median follow-up time of the expansion cohort at the time of the data snapshot was less than half the length of time the 13-patient initial cohort had been followed when their data were first reported, or the higher overall baseline transfusion burden of the expansion cohort. Although the latest reported 8-week RBC-TI rate in June 2019 is higher than that reported in the data snapshot from the second

quarter of 2018, we cannot assure you that the 8-week RBC-TI rate reported for the combined cohorts in the Phase 2 portion of IMerge will improve further with longer follow-up, or at all, or that the 8-week RBC-TI rate of patients enrolled in the Phase 3 portion of IMerge will be comparable to what has been reported in the 13-patient initial cohort, the 25-patient expansion cohort, or the combined cohorts in the Phase 2 portion of IMerge. In general, Phase 3 clinical trials with larger numbers of patients or longer durations of therapy may fail to replicate efficacy results observed in earlier clinical trials, or may reveal safety concerns that were not identified in smaller or shorter trials, any of which could adversely affect future development prospects of imetelstat.

In addition, non-clinical and clinical data are often susceptible to varying interpretations and analyses. In some instances, there can be significant variability between different clinical trials of imetelstat due to numerous factors, including changes in trial procedures set forth in trial protocols, differences in the size and type of patient populations, and changes in and adherence to the dosing regimens. For example, complete and partial remissions were observed in the pilot study of imetelstat conducted at Mayo Clinic, or the Pilot Study. However, similar activity was not observed in the MF patients enrolled in IMbark, as shown by the one partial remission observed in the IMbark primary analysis. We believe that differences in the IMbark study design when compared to the Pilot Study design, such as more restrictive patient enrollment criteria requiring either documented objective lack of response to a JAK inhibitor or evidence of progressive disease while on treatment with a JAK inhibitor, may have contributed to the data observed in IMbark differing significantly from data reported from the Pilot Study, but we cannot assure you that any future clinical trials of imetelstat in MF will yield results comparable to IMbark or the Pilot Study. In addition, the potential improvement in survival observed in the 9.4 mg/kg dosing arm in IMbark will need to be further assessed in a Phase 3 clinical trial comparing imetelstat to a control therapy, and similar results, including potential improvement in survival, if any, with respect to any patient population or patient population subgroup, may not be observed. Likewise, although the statistical analyses comparing IMbark data to closely matched real-world data, or RWD, reported at the EHA Annual Congress meeting in June 2019, suggest favorable overall survival for imetelstat-treated relapsed/refractory MF patients compared to best available therapy using closely matched patients' RWD, such comparative analyses between RWD and our clinical trial data have several limitations. For instance, the analyses create a balance between treatment groups with respect to commonly available covariates, but do not take into account the unmeasured and unknown covariates that may affect the outcomes of the analyses. Potential biases are introduced by factors which include, for example, the selection of the patients included in the analyses, misclassification in the matching process, the small sample size, and estimates that may not represent the outcomes for the true treated patient population. For these and other reasons, such comparative analyses and any conclusions from such analyses should be considered carefully and with caution, and should not be relied upon as demonstrative or otherwise predictive or indicative of any future clinical trial results of imetelstat in relapsed/refractory MF.

Failure to achieve positive results in current or potential future imetelstat clinical trials would interrupt, further delay, or halt, any development and potential commercialization of imetelstat by us, which would have a severe adverse effect on our results of operations, financial condition, business prospects and the future of imetelstat, any of which might cause us to cease operations.

Interim, "snapshot," "top-line," and preliminary data or statistical analyses from clinical trials that we announce or publish from time-to-time may change as more patient data become available, may not be similar to the final data, and are subject to audit and verification procedures that could result in material changes in the final data. Thus, such preliminary data should be considered carefully and with caution and not relied upon as indicative of future clinical results.

From time-to-time, preliminary or interim safety and efficacy data from previous and current imetelstat clinical trials have been reported or announced by us, clinical investigators or our prior collaboration partner(s). For example, preliminary data from the Phase 2 portion of IMerge were reported at the ASH Annual Meetings in December 2017 and December 2018, and at the EHA Annual Congress meetings in June 2018 and June 2019. We expect similar reports or announcements of safety and efficacy data from us or clinical investigators as data matures in current imetelstat clinical trials and from potential future clinical trials. Preliminary or interim results may not be reproduced in any potential future clinical trials of imetelstat, and thus should be considered carefully and with caution, and not relied upon as indicative of future clinical results. Material adverse differences in final data, compared to preliminary or interim data, could severely and adversely affect our financial results, business and business prospects, and the future of imetelstat, and might cause us to cease operations.

Additional or updated safety and efficacy data from current or potential future imetelstat clinical trials may result in a benefit-risk profile that does not justify the continued development of imetelstat in a particular patient population, or at all. For example, because patients remaining in the treatment phase continue to receive imetelstat in the Phase 2 portion of IMerge, efficacy and safety data continue to be generated from the trial and will continue to evolve until all patients have ceased treatment. More mature data that may be reported from the Phase 2 portion of IMerge and any data in the Phase 3 portion of IMerge in the future may materially differ from data previously reported in IMerge, including with respect to the data previously reported from the initial and expansion cohorts in the Phase 2 portion of IMerge. Thus, the reported data should be considered carefully and with caution, and not relied upon as indicative of future clinical results. Such additional data could result in a lower benefit-risk profile than initially expected, which could hinder the enrollment, completion and potential success of the Phase 3 portion of IMerge, or could cause us to abandon further development of imetelstat entirely.

The research and development of imetelstat is subject to numerous risks and uncertainties.

The science and technology of telomere biology, telomerase and our proprietary oligonucleotide chemistry are relatively new. There is no precedent for the successful commercialization of a therapeutic product candidate based on these technologies. Significant research and development activities will be necessary to further develop imetelstat, which is our sole product candidate, which may take years to accomplish, if at all.

Because of the significant scientific, regulatory and commercial challenges that must be overcome to successfully research, develop and commercialize imetelstat, the development of imetelstat in hematologic myeloid malignancies, including MF and MDS, or any other indications, may be further delayed or abandoned, even after significant resources have been expended on it. Examples of such situations include:

- in September 2012, the discontinuation of our Phase 2 clinical trial of imetelstat in metastatic breast cancer;
- in April 2013, the discontinuation of our development of imetelstat in solid tumors with short telomeres;
- in the third quarter of 2016, closure of the 4.7 mg/kg dosing arm in IMbark to new patient enrollment and suspension of enrollment in the 9.4 mg/kg dosing arm in IMbark because an insufficient number of patients in the 9.4 mg/kg dosing arm met the protocol defined interim efficacy criteria at 12 weeks;
- in the third quarter of 2017, expansion of the Phase 2 portion of IMerge to enroll additional lower risk MDS patients in a target patient population; and
- in September 2018, Janssen's decision to terminate the Collaboration Agreement.

Further delay, suspension or abandonment of the development of imetelstat in hematologic myeloid malignancies, including resulting from our inability to successfully conduct and complete the Phase 3 portion of IMerge, and to plan for, commence, conduct and complete potential future clinical trials of imetelstat, such as potential Phase 3 clinical trials in MF and potential proof-of-concept studies in other hematologic myeloid malignancies, could have a material adverse effect on the future of imetelstat and our business prospects, and we might cease operations.

We have limited experience as a company in conducting large-scale, late-stage clinical trials, such as the Phase 3 portion of IMerge or potential future similar trials, and no prior experience as a company in those functional areas that would be required for the successful commercialization of our sole product candidate, imetelstat.

Although we recently have hired individuals who have experience conducting Phase 3 clinical trials, as a company we have limited experience in conducting large-scale, late-stage clinical trials, such as the Phase 3 portion of IMerge. We cannot be certain that we will be able to enroll, conduct or complete the Phase 3 portion of IMerge, or any other future large-scale, late-stage clinical trial of imetelstat, in a timely fashion, or at all. Large-scale, late-stage clinical trials will require additional financial resources and certain internal development experience that we are developing, as well as increased reliance on third-party clinical investigators, CROs, service providers, vendors, suppliers and consultants. Relying on these third parties and establishing effective and collaborative relationships with them to conduct large-scale, late-stage clinical trials may cause further delays that are outside of our control. Any such further delays could have a material adverse effect on our business.

We do not have experience as a company with activities that would be required for the commercialization of imetelstat, should we receive future regulatory approval to do so. Developing an internal sales, marketing and distribution capability is an expensive and time-consuming process, and will require additional management expertise. We may not be able to negotiate and enter into third-party marketing and distribution agreements on terms that are economically attractive, or at all. Even if we do enter into such agreements, third-party marketers and distributors may not successfully market or distribute our sole product candidate, imetelstat.

Our inability to successfully plan, commence, enroll, conduct and complete large-scale, late-stage clinical trials, such as the Phase 3 portion of IMerge or future similar trials, or to successfully establish commercialization capabilities for imetelstat if we receive future regulatory approval to do so, would severely and adversely affect our financial results, business and business prospects, and the future of imetelstat, and might cause us to cease operations.

We rely on third parties to conduct our current and potential future clinical trials of imetelstat. If these third parties do not successfully carry out their contractual duties or meet expected deadlines, we may be unable to continue the development of, obtain regulatory approval for, or commercialize imetelstat.

We do not have the ability to independently conduct clinical trials. Therefore, we rely on medical institutions, clinical investigators, contract laboratories and other third parties, such as CROs, service providers, vendors, suppliers and consultants, to conduct clinical trials of imetelstat. The third parties with whom we contract for execution of our current and potential future clinical trials of imetelstat play a critical role in the conduct of these trials and the subsequent collection and analysis of data. However, these third parties are not our employees, and except for contractual duties and obligations, we have limited ability to control their performance, or the amount or timing of resources that they devote to imetelstat. For example, we have retained CROs to support our imetelstat clinical development activities, including the Phase 3 portion of IMerge, and any failure by our CROs to perform their contractual obligations, or disputes with our CROs about the quality of their performance or other matters, could prevent us from enrolling, conducting or completing the Phase 3 portion of IMerge, or could otherwise further delay or halt our imetelstat clinical development activities. These third parties may also have relationships with other commercial entities, some of which may compete with us. Under certain circumstances, these third parties may terminate their agreements with us without cause and upon immediate written notice.

Although we rely on third parties to conduct any imetelstat clinical trials, including the Phase 3 portion of IMerge, we remain responsible for ensuring that each clinical trial is conducted in accordance with its investigational plan and protocol. Moreover, the FDA and foreign regulatory authorities require us to comply with regulations and standards, including regulations commonly referred to as good clinical practices, or GCPs, for conducting, monitoring, recording and reporting the results of clinical trials to ensure that the data and results are scientifically credible and accurate, and that patients are adequately informed of the potential risks of participating in clinical trials. Our ability to comply with these regulations and standards is contingent upon activities conducted by third parties, and if they fail to perform in accordance with contractual obligations and legal requirements, our development of imetelstat may be interrupted, further delayed or halted, which would have a severe adverse effect on our results of operations, financial condition, business prospects and the future of imetelstat, any of which might cause us to cease operations.

In addition, the execution of clinical trials and the subsequent compilation and analysis of the data produced, requires coordination among various parties. In order for these functions to be carried out effectively and efficiently, it is imperative that these parties communicate and coordinate with one another. If the quality or accuracy of the clinical data obtained, compiled or analyzed by third parties is compromised due to their failure to adhere to our clinical trial protocols or GCPs, or for any other reason, we may need to enter into new arrangements with alternative third parties, which would cause delay, and could be difficult, costly or impossible. If third parties conducting our clinical trials do not perform their contractual duties or obligations, experience work stoppages, do not meet expected deadlines, terminate their agreements with us or need to be replaced, our clinical trials may be extended, delayed or terminated, or may be unsuccessful or need to be repeated, which could have a material adverse effect on our business and might cause us to cease operations.

RISKS RELATED TO TRANSITION OF THE IMETELSTAT PROGRAM TO GERON

Poor performance by Janssen of the imetelstat program prior to its transition to us, or lack of cooperation following its transition to us, could severely and adversely affect imetelstat's future value and our business and business prospects, and might cause us to cease operations.

Although transition of the imetelstat program to us was completed by the end of September 2019, risks to our ability to develop imetelstat related to our past collaboration remain, including:

- disputes may arise concerning the achievement of development, regulatory and commercial objectives, or our license to the proprietary rights, which may result in costly litigation or arbitration that diverts our management's attention and resources;
- we may become aware of errors or deficiencies in the conduct of the imetelstat program prior to its transition to us, and/or in the transition of the imetelstat program to us, which could adversely impact our future development of imetelstat;
- Janssen may refuse to provide, or may be unable to provide, information requested by the FDA or other regulatory authorities regarding the time period when Janssen was responsible for the imetelstat program;
- failure to comply with applicable regulatory guidelines prior to our assumption of sponsorship of the imetelstat program could result in administrative or judicially imposed sanctions on us, including warning letters, civil and criminal penalties, injunctions, product seizures or detention, product recalls, total or partial suspension of manufacturing activities, and the potential refusal to approve any new drug applications;
- our ability to maintain the INDs for imetelstat and to submit required regulatory reports within required timelines may be compromised if all data and information from the imetelstat program, including IMbark and IMerge, was not fully transferred to us; and
- Janssen may not properly maintain or defend intellectual property rights that we have licensed, may use our proprietary information in such a way as to cause disputes that could jeopardize or invalidate our proprietary information or expose us to potential litigation, or may disclose our proprietary information in a manner that could put our intellectual property rights at risk.

The occurrence of any of these events could severely and adversely affect imetelstat's future value and our business and business prospects, and might cause us to cease operations.

RISKS RELATED TO REGULATORY COMPLIANCE MATTERS AND COMMERCIALIZATION OF IMETELSTAT

Our inability to maintain regulatory clearances and approvals to continue the clinical development of, and to potentially commercialize, imetelstat, would severely and adversely affect imetelstat's future value and our business and business prospects, and might cause us to cease operations.

Federal, state and local governments in the United States and governments in other countries have significant regulations in place that govern drug research and development and may prevent us from successfully conducting development efforts or potentially commercializing imetelstat. Delays in obtaining or failure to maintain regulatory clearances and approvals or limitations in the scope of such clearances or approvals could:

- impede or halt our activities and plans for clinical development and commercialization;
- significantly harm the commercial potential of imetelstat;
- impose additional development costs;
- diminish any competitive advantages that may have been available to us; or
- further delay or preclude any revenue we may receive from the future commercialization of imetelstat, if any.

Before we can seek to obtain regulatory approval for the commercial sale of imetelstat, multiple clinical trials, including larger-scale Phase 3 clinical trials, will need to be conducted to demonstrate if imetelstat is safe and effective for use in a diverse population. We expect significant additional research, manufacturing activities and clinical testing to be required before we can file any application with the FDA or other regulatory authorities for regulatory approval of imetelstat. As such, we do not expect imetelstat to be commercially available for many years, if at all. Our clinical development program for imetelstat may not lead to regulatory approval from the FDA and similar foreign regulatory authorities if we fail to demonstrate that imetelstat is safe and effective. If imetelstat cannot be successfully developed in clinical trials, including in the Phase 3 portion of IMerge, our business and business prospects would be severely and adversely affected, and we might cease operations. Even if we do successfully complete one or more clinical trials of imetelstat in hematologic myeloid malignancies, including the Phase 3 portion of IMerge, those results are not necessarily predictive of results of future pivotal trials that may be needed before we may submit a New Drug Application, or NDA, to the FDA for the initial or other future indications. We may therefore fail to further develop or commercialize imetelstat, which would severely and adversely affect our business and business prospects, and might cause us to cease operations.

Obtaining potential future regulatory clearances to market imetelstat in the United States and other countries is a costly and lengthy process, and we cannot predict when or if regulatory authorities will approve imetelstat for commercial sale.

The process of obtaining marketing approvals, both in the United States and abroad, is lengthy, expensive and uncertain. It may take many years, if approval is obtained at all, and can vary substantially based upon a variety of factors, including the type, complexity and novelty of the product candidates involved. Securing marketing approval requires the submission of extensive non-clinical and clinical data and supporting information to regulatory authorities for each therapeutic indication to establish the product candidate's safety and efficacy. Securing marketing approval also requires the submission of information about the product manufacturing process to, and inspection of manufacturing facilities by, the regulatory authorities. The FDA or other regulatory authorities may determine that imetelstat is not safe and effective, only moderately effective or has undesirable or unintended side effects, toxicities or other characteristics that preclude us from obtaining marketing approval or prevent or limit imetelstat's commercial use. Any marketing approval we ultimately obtain may be limited or subject to restrictions or post-approval commitments that render imetelstat not commercially viable. We do not expect imetelstat to be approved for commercial sale for many years, if at all.

In addition, changes in marketing approval policies during the development period, changes in or the enactment or promulgation of additional statutes, regulations or guidance, or changes in regulatory review for a submitted product application, may cause delays in the approval or rejection of an application. Regulatory authorities have substantial discretion in the approval process and may refuse to accept any application or may decide that our data are insufficient for approval and require additional non-clinical, clinical or other studies. The FDA and regulatory authorities in other countries will assess the overall benefit-risk profile of imetelstat, and may conclude that the overall benefit-risk profile of imetelstat does not merit approval of imetelstat for marketing or further development for any indication. Varying interpretations of the data obtained from non-clinical and clinical testing could delay, limit or prevent marketing approval of imetelstat which would harm imetelstat's future value and our business and business prospects.

Imetelstat must receive all relevant regulatory approvals before it may be marketed in the United States or other countries. Obtaining regulatory approval is a lengthy, expensive and uncertain process. For example, following the result of a referendum in 2016, the United Kingdom left the European Union on January 31, 2020, commonly referred to as Brexit. Pursuant to the formal withdrawal arrangements agreed between the United Kingdom and the European Union, the United Kingdom will be subject to a transition period until December 31, 2020, during which EU rules will continue to apply. Negotiations between the United Kingdom and the European Union are expected to continue in relation to the customs and trading relationship between the United Kingdom and the European Union after December 31, 2020. Although the impact of the withdrawal of the United Kingdom from the European Union will not be known for some time, this could lead to a period of considerable uncertainty in relation to the regulatory process in Europe, which could result in a delay in the review of regulatory submissions made in Europe by biotechnology and pharmaceutical companies, including potentially by us in the future, and could also lead to less efficient, more expensive, and potentially lengthier regulatory review processes for companies like us, who may seek to obtain regulatory approval for drug products in the European Union or the United Kingdom. Such regulatory

changes in the United Kingdom or elsewhere could adversely affect and/or delay our ability to obtain approval of, and market and sell, imetelstat in the United States or other countries.

Regulatory agencies may also not approve the labeling claims that are necessary or desirable for the successful commercialization of a drug, such as imetelstat. For example, future regulatory clearances, if any, that we might obtain for imetelstat may be limited to fewer or narrower indications than we might request, or may be granted subject to the performance of post-marketing studies. Future regulatory clearances, if any, may be limited to a smaller patient population, or may require a different drug formulation or a different manufacturing process, than we might in the future decide to seek.

Any delay in obtaining or failure to obtain required approvals of imetelstat, or limitations on any regulatory approval that we might receive in the future, if any, could reduce the potential commercial use of imetelstat, and potential market demand for imetelstat and therefore result in decreased revenue for us from any commercialization of imetelstat, any of which would severely and adversely affect our financial results, the price of our common stock, our business and business prospects, and the future of imetelstat, and might cause us to cease operations.

Although orphan drug designation has been granted to imetelstat for the treatment of MF and MDS, these designations may not be maintained, which would eliminate the benefits associated with orphan drug designation, including the potential for market exclusivity, which would likely result in decreased sales revenue from commercialization of imetelstat, if any, and would likely harm our business and business prospects.

The FDA granted orphan drug designation to imetelstat in June 2015 for the treatment of MF and for the treatment of MDS in December 2015, and the European Medicines Agency, or EMA, granted it in December 2015 for the treatment of MF. The designation of imetelstat as an orphan drug does not guarantee that any regulatory authority will accelerate regulatory review of, or ultimately approve, imetelstat, nor does it limit the ability of any regulatory authority to grant orphan drug designation to product candidates of other companies that treat the same indications as imetelstat prior to imetelstat receiving any exclusive marketing approval.

We may lose orphan drug exclusivity if the FDA or EMA determines that the request for orphan drug designation was materially defective or if we cannot ensure sufficient quantities of imetelstat to meet the needs of patients with MF or MDS.

Even if we maintain orphan drug exclusivity for imetelstat, the exclusivity may not effectively protect imetelstat from competition because different drugs with different active moieties can be approved for the same condition. Even after an orphan drug product is approved, the FDA or EMA can subsequently approve a different drug with the same active moiety for the same condition, if the FDA or EMA concludes that the later drug is safer, more effective, or makes a major contribution to patient care. The occurrence of any of these events could result in decreased sales of imetelstat, should it ever receive marketing approval, and may harm our business and business prospects. In addition, orphan drug designation will neither shorten the development time nor regulatory review time for imetelstat, and does not give imetelstat any advantage in the regulatory review or approval process.

A Fast Track designation by the FDA, such as the Fast Track designations received for imetelstat for MDS and relapsed/refractory MF, does not guarantee approval and may not lead to a faster development, regulatory review or approval process.

In October 2017, the FDA granted Fast Track designation for the imetelstat clinical development program for the treatment of adult patients with transfusion-dependent anemia due to Low or Intermediate-1 risk MDS who are non-del(5q) and who are refractory or resistant to treatment with an erythropoiesis stimulating agent. In September 2019, the FDA granted Fast Track designation for the development of imetelstat for adult patients with Intermediate-2 or High-risk MF whose disease has relapsed after or is refractory to JAK inhibitor treatment.

Fast Track designation provides opportunities for frequent interactions with FDA review staff, as well as eligibility for priority review, if relevant criteria are met, and rolling review. Fast Track designation is intended to facilitate and expedite development and review of an NDA to address unmet medical needs in the treatment of serious or life-threatening conditions. However, Fast Track designation does not accelerate conduct of clinical trials

or mean that the regulatory requirements are less stringent, nor does it ensure that imetelstat will receive marketing approval or that approval will be granted within any particular timeframe. In addition, the FDA may withdraw Fast Track designation for any indication if it believes that the designation is no longer supported by data emerging from the imetelstat clinical development program.

Failure to achieve continued compliance with government regulations could delay or halt potential commercialization of imetelstat.

Approved products and their manufacturers are subject to continual review, and discovery of previously unknown problems with a product or its manufacturer may result in restrictions on the product or manufacturer, including import restrictions, seizure and withdrawal of the product from the market. If approved for commercial sale, future sales of imetelstat will be subject to government regulation related to numerous matters, including the processes of:

- manufacturing;
- advertising and promoting;
- selling and marketing;
- labeling; and
- distribution.

If, and to the extent that, we are unable to comply with these regulations, our ability to earn potential revenue from the commercialization of imetelstat, if any, would be materially and adversely impacted.

Failure to comply with regulatory requirements can result in severe civil and criminal penalties, including but not limited to:

- recall or seizure of products;
- injunctions against the import, manufacture, distribution, sales and/or marketing of products; and
- criminal prosecution.

The imposition of any of these penalties or other commercial limitations would severely and adversely affect our financial results, business and business prospects, and the future of imetelstat, and might cause us to cease operations.

RISKS RELATED TO OUR FINANCIAL POSITION AND NEED FOR ADDITIONAL FINANCING

Our failure to obtain additional capital would force us to further delay, reduce or eliminate development of imetelstat, including the Phase 3 portion of IMerge, potential Phase 3 clinical trials in MF, and potential proof-of-concept studies in other hematologic myeloid malignancies, and our potential future imetelstat commercialization efforts, any of which would severely and adversely affect our financial results, business and business prospects, and might cause us to cease operations.

Successful drug development and commercialization requires significant amounts of capital. In this regard, we believe that our existing capital resources and future interest income is sufficient to continue the IMerge Phase 2/3 clinical trial through 2020 and to commence a proof-of-concept study in additional hematologic myeloid malignancies in 2020. Accordingly, we will require substantial additional capital in order to further advance the imetelstat program, including conducting the research and development, clinical, regulatory and potential commercialization activities necessary to bring imetelstat to market. In this regard, our ability to complete the Phase 3 portion of IMerge and to commence, conduct and complete potential future clinical trials of imetelstat, such as potential Phase 3 clinical trials in MF or potential additional proof-of-concept studies in other hematologic myeloid malignancies, is dependent on our ability to raise substantial additional capital. In addition, our ability to commercialize imetelstat in the United States, if regulatory approval is granted, depends on us being able to establish sales and marketing capabilities. Because the outcome of any clinical activities and/or regulatory approval

process is highly uncertain, we cannot reasonably estimate whether any development activities we may undertake will succeed, and we may never recoup our investment in any imetelstat development, which would adversely affect our financial condition and our business and business prospects, and might cause us to cease operations. Our future capital requirements are difficult to forecast and will depend on many factors, including:

- the accuracy of the assumptions underlying our estimates for our capital needs;
- the progress, timing, magnitude, scope and costs of clinical development, manufacturing and potential commercialization of imetelstat, including the number of indications being pursued, subject to clearances and approvals by the FDA and other regulatory authorities;
- the scope, progress, duration, results and costs of current and potential future clinical trials, including the Phase 3 portion of IMerge, potential Phase 3 clinical trials in MF and potential proof-of-concept studies in other hematologic myeloid malignancies, as well as non-clinical studies and assessments, of imetelstat;
- the costs, timing and outcomes of regulatory reviews or other regulatory actions related to imetelstat, such as submitting Phase 3 trial design proposals in MF and conducting further discussions with the FDA regarding a potential regulatory approval path in MF, as well as obtaining regulatory clearances and approvals in the United States and in other countries;
- the costs of preparing, filing and prosecuting patent applications and maintaining, enforcing and defending intellectual property-related claims;
- the costs of manufacturing imetelstat, including our ability to achieve any meaningful reduction in manufacturing costs;
- the costs of multiple third-party vendors and service providers, including our CROs and CMOs, to pursue the development, manufacturing and potential commercialization of imetelstat;
- our ability to establish, enforce and maintain collaborative or other strategic arrangements for research, development, clinical testing and manufacturing of imetelstat and potential future commercialization and marketing;
- our ability to successfully market and sell imetelstat, if imetelstat receives future regulatory approval or clearance, in the United States and other countries;
- our need to successfully recruit and retain additional key personnel to support the development and potential future commercialization of imetelstat;
- the costs and timing necessary to build a U.S. sales force to market and sell imetelstat, should it receive regulatory clearance;
- the sales price for imetelstat;
- the availability of coverage and adequate third-party reimbursement for imetelstat;
- expenses associated with the pending putative securities class action lawsuits and potential additional related lawsuits, as well as any other litigation;
- the extent and scope of our general and administrative expenses, including expenses associated with pending and potential future litigation; and
- the costs of maintaining and operating facilities in California and New Jersey, including higher expenses for travel, telecommunications and administrative oversight.

As a result of the termination of the Collaboration Agreement effective September 28, 2018, we are responsible for funding all clinical development, manufacturing, intellectual property maintenance and potential commercial activities for the imetelstat program. In order to further advance the imetelstat program, including completing the Phase 3 portion of IMerge and commencing, conducting and completing potential future clinical trials in other indications, such as potential Phase 3 clinical trials in MF or potential proof-of-concept studies in other hematologic myeloid malignancies, we will need to raise substantial additional capital or establish additional collaborative arrangements with third-party collaborative partners, which may not be possible. In addition, as a

result of the termination of the Collaboration Agreement, we will not receive any milestone payments or royalties from Janssen for the development or sale of imetelstat, including any clinical development milestones. If we are unable to raise additional capital or establish alternative collaborative arrangements with third-party collaborative partners for imetelstat, the development of imetelstat may be further delayed, altered or abandoned, which might cause us to cease operations. Additional financing through public or private equity financings, including pursuant to our 2018 Sales Agreement with B. Riley FBR, capital lease transactions or other financing sources may not be available on acceptable terms, or at all. We may raise equity capital at a stock price or on other terms that could result in substantial dilution of ownership for our stockholders. The receptivity of the public and private equity markets to proposed financings is substantially affected by the general economic, market and political climate and by other factors which are unpredictable and over which we have no control. In this regard, volatility and instability in the global financial markets and political climate could adversely affect our ability to raise additional funds through financings and the terms upon which we may raise those funds.

In addition, we may seek additional capital due to market conditions or strategic considerations even if we believe we have sufficient funds for our current or future operating plans. To the extent that we raise additional capital through the sale of equity or convertible debt securities, the ownership interests of our stockholders may be diluted, and the terms may include liquidation or other preferences that materially and adversely affect the rights of our stockholders. 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. If we raise additional funds through alliance, collaborative or licensing arrangements with third parties, we may have to relinquish valuable rights to imetelstat or our technologies or grant licenses on terms that are not favorable to us.

We cannot assure you that our existing capital resources, future interest income, and potential future sales of our common stock, including under our 2018 Sales Agreement with B. Riley FBR, will be sufficient to fund our operating plans. In any event, we will need substantial additional funds to meet operational needs and capital requirements to advance the imetelstat program in clinical development and potential commercialization, and our need for additional funds may arise sooner than planned. If adequate funds are not available on a timely basis, if at all, we may be unable to pursue further development, including completing the Phase 3 portion of IMerge, and commencing, conducting and completing potential Phase 3 clinical trials in MF, or potential proof-of-concept studies in other hematologic myeloid malignancies, or to pursue potential commercialization of imetelstat, which would severely harm our business and we might cease operations.

We currently have no source of product revenue and may never become consistently profitable.

Although we were profitable in 2015 due to the recognition of revenue in connection with the upfront payment from Janssen under the Collaboration Agreement, we have otherwise never been profitable and have incurred operating losses every year since our operations began in 1990. We will not receive any future milestone-based or royalty payments from Janssen relating to imetelstat, nor will Janssen share the cost of ongoing or future clinical trials of imetelstat or the costs for patents that were licensed to them under the terminated Collaboration Agreement, after September 28, 2018. We expect to continue to incur significant additional operating losses and our operating losses are likely to substantially increase given our sole financial responsibility for imetelstat clinical development activities. As of December 31, 2019, our accumulated deficit was approximately $1.1 billion. Losses have resulted principally from costs incurred in connection with our research and development activities and from general and administrative costs associated with our operations.

Substantially all of our revenues to date have been payments under collaboration agreements and milestones, royalties and other revenues from our licensing arrangements. With the termination of the Collaboration Agreement effective September 28, 2018, we have no ongoing collaboration agreements related to imetelstat. The patents underlying our license agreements related to our human telomerase reverse transcriptase, or hTERT, technology have expired. Any final revenues generated from our remaining licensing agreements related to our hTERT technology are expected to be minimal, and will be insufficient to sustain our operations. We have no current plans to enter into any new corporate collaboration, partnership or license agreements that result in revenues.

We also expect to experience increased negative cash flow for the foreseeable future as we fund our operations and imetelstat clinical development activities advance. This will result in decreases in our working

capital, total assets and stockholders' equity. Further, we may be unable to replenish our working capital by future financings. We will need to generate significant revenues to achieve consistent future profitability. We may never achieve consistent future profitability. Even if we do become profitable in the future, we may not be able to sustain or increase profitability on a quarterly or annual basis. Our failure to achieve consistent future profitability could negatively impact the market price of our common stock and our ability to sustain operations.

The 2017 comprehensive tax reform bill and possible future changes in tax laws or regulations could adversely affect our business and financial condition.

On December 22, 2017, President Trump signed into law tax legislation, which we refer to as the Tax Act, which significantly revised the Internal Revenue Code of 1986, as amended, or the Code. Future guidance from the U.S. Internal Revenue Service and other tax authorities with respect to the Tax Act may affect us, and certain aspects of the Tax Act could be repealed or modified in future legislation. Changes in corporate tax rates, the realization of net deferred tax assets relating to our U.S. operations, the taxation of foreign earnings, and the deductibility of expenses under the Tax Act or future tax reform legislation could have a material impact on the value of our deferred tax assets, could result in significant one-time charges in the current or future taxable years, and could increase our future U.S. tax expense. The foregoing items, as well as any other future changes in tax laws, could have a material adverse effect on our business, cash flow, financial condition, or results of operations. In addition, it is uncertain if and to what extent various states will conform to the Tax Act or any newly enacted federal tax legislation.

Our ability to use our net operating loss carryforwards and certain other tax attributes may be limited.

Our net operating loss carryforwards attributable to tax years ending before 2018 could expire unused and be unavailable to offset future income tax liabilities. Under the Tax Act, federal net operating losses incurred in 2018 and in future years may be carried forward indefinitely, but the deductibility of such federal net operating losses is limited. It is uncertain if and to what extent various states will conform to the federal tax law changes. In addition, under Section 382 of the Code, and corresponding provisions of state law, if a corporation undergoes an "ownership change," generally defined as a greater than 50% change (by value) in its equity ownership over a three-year period, the corporation's ability to use its pre-change net operating loss carryforwards and other pre-change tax attributes (such as research tax credits) to offset its post-change taxable income or taxes may be limited. Changes in our stock ownership, some of which are outside of our control, may have resulted or could in the future result in an ownership change. If a limitation were to apply, utilization of a portion of our domestic net operating loss and tax credit carryforwards could be limited in future periods. In addition, a portion of the carryforwards may expire before being available to reduce future income tax liabilities which could adversely impact our financial position.

RISKS RELATED TO MANUFACTURING IMETELSTAT

Failure by us to establish and/or maintain a manufacturing supply chain to appropriately and adequately supply imetelstat for future clinical and commercial uses, would result in a further delay in or cessation of clinical trials and a further delay in or our inability to obtain regulatory approvals of imetelstat, and our business and business prospects could be severely harmed, and we could cease operations.

Although we have received inventories of drug product, drug substance and raw materials from Janssen under the Supply Agreement that meet our specifications, some of this material will require further processing in order to be used in clinical trials, and/or may also require regulatory review and acceptance prior to use. Therefore, we continue to work to re-establish our own manufacturing supply chain in order to further process the Janssen purchased materials as well as to be able to manufacture and supply additional quantities of imetelstat that meet applicable regulatory standards for current and potential future clinical trials and potential commercial uses. The process of manufacturing imetelstat is complex and subject to several risks, including:

- the ability to scale-up and attain sufficient production yields with appropriate quality control and quality assurance;
- reliance on third-party contract manufacturing organizations, or CMOs, and suppliers;

- supply chain issues, including the timely availability and shelf life requirements of raw materials and other supplies;
- shortage of qualified personnel; and
- regulatory acceptance and compliance with regulatory requirements, which are less well-defined for oligonucleotide products than for small molecule drugs and vary in each country where imetelstat might be sold or used.

As a result of these and other risks, we may be unable to establish and/or maintain a manufacturing supply chain capable of providing imetelstat for the Phase 3 portion of IMerge and/or potential future clinical trials of imetelstat, and potential future commercial uses, which would delay or result in a cessation of the Phase 3 portion of IMerge or potential future clinical trials of imetelstat. Occurrence of any such events would further delay or preclude any applications for regulatory approval and therefore further delay or preclude our ability to earn revenue from the commercialization, if any, of imetelstat, which would severely and adversely affect our financial results, business and business prospects, and might cause us to cease operations.

If third parties that manufacture imetelstat fail to perform as needed, then the clinical and commercial supply of imetelstat will be limited, and we may be unable to conduct or complete current or potential future clinical trials of imetelstat or to commercialize imetelstat in the future.

Our planned imetelstat manufacturing supply chain is expected to rely solely upon third-party contractors to perform certain process development or other technical and scientific work with respect to imetelstat, as well as to supply starting materials and manufacture drug substance and drug product. While we are currently in the process of establishing arrangements with third parties for the manufacture of imetelstat, our failure to establish such arrangements in a timely manner, or at all, could further delay, perhaps substantially, or preclude our ability to pursue imetelstat development on our own, increase our costs and otherwise negatively affect our financial results, business and business prospects. We may not be able to obtain third-party manufacturers for imetelstat on acceptable terms, or at all. We expect to rely on third-party contractors to produce and deliver sufficient quantities of imetelstat and other materials to support clinical trials on a timely basis and to comply with applicable regulatory requirements. We will not have direct control over these third-party personnel or operations. Reliance on these third-party manufacturers is subject to numerous risks, including:

- being unable to identify suitable third-party manufacturers, because the number of potential manufacturers is limited;
- regulatory authorities may require significant activities to validate and qualify any replacement manufacturer, which could involve new testing and compliance inspections;
- being unable to execute timely contracts with third-party manufacturers on acceptable terms, or at all;
- the inability of third-party manufacturers to timely formulate and manufacture imetelstat or to produce imetelstat in the quantities or of the quality required to meet clinical and commercial needs;
- decisions by third-party manufacturers to exit the contract manufacturing business during the time required to supply clinical trials or to successfully produce, store and distribute products;
- compliance by third-party manufacturers with current Good Manufacturing Practice, or cGMP, standards mandated by the FDA and state agencies and other government regulations corresponding to foreign regulatory authorities;
- breach or termination of manufacturing contracts;
- inadequate storage or maintenance at contracted facilities resulting in theft or spoilage;
- capacity limitation and scheduling imetelstat manufacturing activities as a priority in contracted facilities; and
- natural disasters that affect contracted facilities.

Each of these risks could lead to delays or shortages in drug supply, or the inability to manufacture drug supply necessary for non-clinical and clinical activities, and commercialization. For example, manufacturing delays could adversely impact the conduct or completion of the Phase 3 portion of IMerge or commencement of potential future clinical trials or preclude or delay potential future commercial sales, which could severely and adversely affect our financial results, business and business prospects, and the future of imetelstat, and might cause us to cease operations.

In addition, third-party contractors and/or any other contractors may need to make substantial investments to enable sufficient capacity increases and cost reductions, and to implement those regulatory and compliance standards necessary for successful Phase 3 clinical trials and commercial production of imetelstat. These third-party contractors may not be willing or able to achieve such capacity increases, cost reductions, or regulatory and compliance standards, and even if they do, such achievements may not be at commercially reasonable costs. Changing manufacturers may be prolonged and difficult due to inherent technical complexities and because the number of potential manufacturers is limited. It may be difficult or impossible for us to find a replacement manufacturer on acceptable terms, or at all.

It may not be possible to manufacture imetelstat at costs or scales necessary to conduct clinical trials or potential future commercialization activities.

Oligonucleotides are relatively large molecules produced using complex chemistry, and the cost of manufacturing an oligonucleotide like imetelstat is greater than the cost of making typical small molecule drugs. Therefore, imetelstat for clinical use is more expensive to manufacture than most other treatments currently available today or that may be available in the future. Similarly, the cost of manufacturing imetelstat for commercial use will need to be significantly lower than current costs in order for imetelstat to become a commercially successful product. We may not be able to achieve sufficient scale increases or cost reductions necessary for successful commercial production of imetelstat. Failure to achieve necessary cost reductions could result in decreased sales, if any, for us, which would materially and adversely affect our financial results, business and business prospects, and the future of imetelstat, and might cause us to cease operations.

RISKS RELATED TO MANAGING OUR GROWTH AND OTHER BUSINESS OPERATIONS

We may be unable to successfully retain or recruit key personnel to support the development and potential future commercialization of imetelstat or to otherwise successfully manage our growth.

Our ability to successfully develop imetelstat in the future and to potentially commercialize imetelstat depends to a significant extent on the skills, experience and efforts of our executive officers and key members of our staff. In addition, we will need to maintain and continue to hire experienced personnel in clinical science, biostatistics, clinical operations, pharmacovigilance, quality, manufacturing, regulatory affairs, medical affairs and sales and marketing, to enable us to further develop and potentially commercialize imetelstat.

We face intense competition for qualified individuals from numerous pharmaceutical, biopharmaceutical and biotechnology companies, as well as academic and other research institutions, and competition in our geographic regions is particularly intense. The substantial risks and uncertainties related to our development and potential commercialization of imetelstat, as well as the previous restructurings we implemented and the risks and uncertainties regarding our future business viability, could have an adverse impact on our ability to retain and recruit qualified personnel or we may incur unanticipated inefficiencies caused by our reduced personnel resources. We may also face higher than expected personnel costs in order to attract new management or development personnel, or to maintain our current executive officers and staff. If we are unable to successfully retain, motivate and incentivize our existing personnel, or to attract, assimilate and retain other highly qualified management and senior development personnel in the future on acceptable terms, our ability to further develop imetelstat will be impaired, and our business and the price of our common stock would be adversely impacted.

As our operations continue to expand, we expect that we will need to manage new and additional relationships with various service providers, vendors, suppliers and other third parties, as well as additional and expanded office locations, for example, our recently leased office in northern New Jersey and the planned relocation of our corporate headquarters in California. Our ability to timely occupy and relocate to our new corporate headquarters in California

depends on the performance by our lessor, as well as contractors and other third parties, of their contractual obligations. Such continued growth and expansion will require members of our management to assume significant added responsibilities. Our performance in managing any such future growth, if ineffective, could negatively impact our business prospects. We may not successfully manage our imetelstat development efforts effectively, including our current and potential future imetelstat clinical trials. If we fail to achieve key development goals, our abilities to grow as a company, and to further develop and potentially commercialize imetelstat, could be prevented or hindered, and our business and business prospects would be severely harmed, which might cause us to cease operations.

We expect imetelstat to remain our sole product candidate for the foreseeable future. If we are unable to successfully develop or commercialize imetelstat, our business and business prospects would be severely harmed, which might cause us to cease operations.

We plan to focus our efforts on the further development of imetelstat in hematologic myeloid malignancies. Accordingly, we do not currently have any plans to engage in any efforts to discover new product candidates. In addition, the outcome of our future efforts to seek to acquire and/or in-license other oncology products, product candidates, programs or companies in order to diversify our product candidate portfolio are highly uncertain and may be unsuccessful. As a result, we will be wholly reliant upon the development of imetelstat, our sole product candidate, for the foreseeable future. If we are unable to successfully develop and commercialize imetelstat, our business and business prospects would be severely harmed, which might cause us to cease operations.

If we are unable to establish potential future collaborative arrangements for imetelstat, we may have to delay, alter or abandon our imetelstat development and commercialization plans.

We intend to develop imetelstat broadly for hematologic myeloid malignancies, and to potentially commercialize, market and sell imetelstat in the United States. We plan to seek another collaborative partner or partners, at an appropriate time, to assist us in the potential development and commercialization of imetelstat outside the United States, and to provide funding for such activities. We face significant competition in seeking appropriate collaborative partners, and these potential collaborative arrangements are complex and time consuming to negotiate, document and implement. We may not be able to negotiate collaborative arrangements on acceptable terms, or at all. In this regard, collaborative arrangements with third parties may require us to relinquish material rights, including revenue from potential commercialization, on terms that are less attractive than under the Collaboration Agreement we had with Janssen, or to assume material ongoing development obligations that we would have to fund or otherwise support.

In any event, we are unable to predict when, if ever, we will enter into any collaborative arrangements because of the numerous risks and uncertainties associated with establishing collaborative arrangements. Moreover, as a result of the termination of the Collaboration Agreement and the significant risks and uncertainties regarding the future imetelstat development program, potential collaborative partners may be reluctant to enter into new collaborative arrangements with us, or may only be willing to do so on terms that are not favorable to us. As a result, we may not be successful in finding a new collaborative partner or partners on favorable terms, if at all. If we are unable to negotiate collaborative arrangements, we may have to:

- curtail the development of imetelstat,
- further delay, alter or abandon the imetelstat development program,
- further delay or abandon its potential commercialization,
- reduce the scope of potential future sales or marketing activities, or
- increase our expenditures and undertake development or commercialization activities at our own expense, which will require substantial additional capital than our current resources.

In order to advance the imetelstat program, including completing the Phase 3 portion of IMerge and commencing, conducting and completing potential future clinical trials of imetelstat, such as potential Phase 3 clinical trials in MF and potential proof-of-concept studies in other hematologic myeloid malignancies, as well as undertaking potential commercialization activities for imetelstat in the United States, we will need to raise substantial additional capital. In addition, if we elect to increase our expenditures to fund imetelstat development or commercialization activities outside the United States, we will be required to substantially increase our personnel resources and we will need to obtain substantial further capital, which may not be available to us on acceptable terms, or at all. If we are unable to raise substantial additional capital, we will not be able to advance the imetelstat program, including completing the Phase 3 portion of IMerge and commencing, conducting and completing potential future clinical trials of imetelstat, such as potential Phase 3 clinical trials in MF and potential proof-of-concept studies in other hematologic myeloid malignancies, nor will we be able to bring imetelstat to market and generate product revenues. Establishing the infrastructure necessary to further develop, commercialize, market and sell imetelstat worldwide will require substantial resources and may divert the attention of our management and key personnel and negatively impact our imetelstat development or commercialization efforts in the United States.

We currently have no products approved for commercial sale and we have not yet demonstrated an ability to obtain marketing approvals for any product candidates, which makes it difficult to assess our future viability.

We have never derived any revenue from the sales of any products. Our operations to date have been limited to organizing and staffing our company, acquiring, developing and securing our technology, undertaking non-clinical studies and clinical trials of imetelstat and past product candidates that we have subsequently discontinued, and engaging in research and development under collaboration agreements. We have not yet demonstrated an ability to obtain regulatory approvals for commercialization activities, formulate and manufacture commercial-scale products, or conduct sales and marketing activities necessary for successful product commercialization. Consequently, for these and other reasons discussed elsewhere in these risk factors, it is difficult to predict our future success and the viability of our business and the imetelstat program.

We may not be able to obtain or maintain sufficient insurance on commercially reasonable terms or with adequate coverage against potential liabilities in order to protect ourselves against product liability claims or claims related to clinical trial conduct.

Our business exposes us to potential product liability and other risks that are inherent in the testing, manufacturing and marketing of human therapeutic and diagnostic products. We may become subject to product liability claims or claims related to clinical trial conduct if the use of imetelstat is alleged to have injured patients, including any injuries alleged to arise from any hepatotoxicity or hemorrhagic event associated with the use of imetelstat. We currently have limited clinical trial liability insurance, and we may not be able to maintain this type of insurance for any clinical trials, including the Phase 3 portion of IMerge, or this type of insurance may become too expensive for us to afford because of the highly risky and uncertain nature of clinical trials generally and the high cost of insurance for our business activities. In addition, business liability and product liability insurance are becoming increasingly expensive, particularly for biotechnology and pharmaceutical companies, and the pool of insurers offering insurance coverage to biotechnology and pharmaceutical companies generally is becoming smaller, making it more difficult to obtain insurance for our business activities at a reasonable price, or at all. Being unable to obtain or maintain product liability, clinical trial liability, or other insurance for our business activities in the future on acceptable terms or with adequate coverage against potential liabilities would have a material adverse effect on our business, and could cause us to cease our development of imetelstat.

We and certain of our officers have been named as defendants in putative securities class action lawsuits. These lawsuits, and potential similar or related lawsuits, could result in substantial damages, divert management's time and attention from our business, and have a material adverse effect on our results of operations. These lawsuits, and any other lawsuits to which we are subject, will be costly to defend or pursue and are uncertain in their outcome.

Securities-related class action lawsuits and/or derivative lawsuits have often been brought against companies, including biotechnology and biopharmaceutical companies, that experience volatility in the market price of their securities. This risk is especially relevant for us because we often experience significant stock price volatility in connection with our product development activities. On January 23 and February 14, 2020, putative securities class

action lawsuits were commenced in the United States District Court for the Northern District of California, naming as defendants us and one of our officers. On March 5, 2020, a third putative securities class action lawsuit was commenced in the United States District Court for the District of New Jersey, naming as defendants us and two of our officers. All three lawsuits allege violations of the Securities Exchange Act of 1934 in connection with allegedly false and misleading statements made by us related to IMbark during the period from March 19, 2018 to September 26, 2018. The plaintiffs allege, among other things, that we failed to disclose facts related to the alleged failure by IMbark to meet the two primary endpoints of the trial, spleen response rate and Total Symptom Score, and that our stock price dropped when such information was disclosed. The plaintiffs seek damages and interest, and an award of reasonable costs, including attorneys' fees.

It is possible that additional lawsuits will be filed, or allegations received from stockholders, with respect to these same or other matters and also naming us and/or our officers and directors as defendants. Such lawsuits and any other related lawsuits are subject to inherent uncertainties, and the actual defense and disposition costs will depend upon many unknown factors. The outcome of such lawsuits is necessarily uncertain. We could be forced to expend significant resources in the defense of the pending lawsuits and any additional lawsuits, and we may not prevail. In addition, we may incur substantial legal fees and costs in connection with such lawsuits. We currently are not able to estimate the possible cost to us from these matters, as the pending lawsuits are currently at an early stage, and we cannot be certain how long it may take to resolve the pending lawsuits or the possible amount of any damages that we may be required to pay. Monitoring, initiating and defending against legal actions is time-consuming for our management, is likely to be expensive and may detract from our ability to fully focus our internal resources on our business activities. We could be forced to expend significant resources in the settlement or defense of the pending lawsuits and any potential future lawsuits, and we may not prevail in such lawsuits. Additionally, we may not be successful in having any such lawsuits dismissed or settled within the limits of our insurance coverage.

We have not established any reserve for any potential liability relating to the pending lawsuits or any potential future lawsuits. It is possible that we could, in the future, incur judgments or enter into settlements of claims for monetary damages. A decision adverse to our interests in the pending lawsuits, or in similar or related litigation, could result in the payment of substantial damages, or possibly fines, and could have a material adverse effect on our business, our stock price, cash flow, results of operations and financial condition.

We may be subject to third-party litigation, and such litigation would be costly to defend or pursue and uncertain in its outcome.

Our business may bring us into conflict with our licensees, licensors, or others with whom we have contractual or other business relationships, or with our competitors or others whose interests differ from ours. We may experience employment-related disputes as we seek to expand our personnel resources. We may face litigation with Janssen arising from or related to the Collaboration Agreement and/or its termination. We may become involved in performance or other disputes with the CROs we have retained to support our imetelstat clinical development activities, or with other third parties such as service providers, vendors, manufacturers, suppliers or consultants, which could result in a further delay or cessation of current and potential future clinical trials and otherwise significantly further delay our ability to develop imetelstat. If we are unable to resolve those conflicts on terms that are satisfactory to all parties, we may become involved in litigation brought by or against us.

Lawsuits are subject to inherent uncertainties, and defense and disposition costs depend upon many unknown factors. Despite the availability of insurance, we may incur substantial legal fees and costs in connection with litigation. Lawsuits could result in judgments against us that require us to pay damages, enjoin us from certain activities, or otherwise negatively affect our legal or contractual rights, which could have a significant adverse effect on our business. In addition, the inherent uncertainty of such litigation could lead to increased volatility in our stock price and a decrease in the value of our stockholders' investment in our common stock.

Our business could be adversely affected by the effects of health epidemics, including the recent coronavirus, or COVID-19, outbreak, in regions where we or third parties on which we rely have significant manufacturing facilities, concentrations of clinical trial sites or other business operations. We have a significant number of clinical trial sites in countries that have been directly affected by COVID-19, and depend on countries affected by COVID-19 for manufacturing operations for various stages of our supply chain. In addition, if COVID-19 becomes a worldwide pandemic, it could materially affect our operations globally, including at our headquarters in the San Francisco Bay Area and at our clinical trial sites throughout the globe.

Our business could be adversely affected by health epidemics in regions where we have significant manufacturing facilities, concentrations of clinical trial sites or other business operations.

If the COVID-19 outbreak continues to spread, we may need to limit operations or implement limitations, including limiting business travel and mandating work from home practices. There is a risk that other countries or regions may be less effective at containing COVID-19, or it may be more difficult to contain if the outbreak reaches a larger population or broader geography, in which case the risks described herein could be elevated significantly.

In particular, some of our suppliers of certain materials used in the production of imetelstat are located in countries affected by COVID-19. In these countries, closures and other restrictions resulting from the COVID-19 outbreak in the region may disrupt our supply chain or limit our ability to obtain sufficient materials for the manufacture of imetelstat.

In addition, our clinical trials may be affected by the COVID-19 outbreak. Site initiation, patient enrollment and patient monitoring may be delayed due to prioritization of hospital resources toward the COVID-19 outbreak. If COVID-19 becomes a worldwide pandemic, it may delay enrollment and monitoring in the Phase 3 portion of IMerge, and some patients may not be able to comply with clinical trial protocols if quarantines impede patient movement or interrupt healthcare services, and we may be unable to obtain blood samples for testing.

The ultimate impact of the COVID-19 outbreak or a similar health epidemic is highly uncertain and subject to change. We do not yet know the full extent of potential delays or impacts on our business, our supply chain, our clinical trials, healthcare systems or the global economy as a whole. However, these effects could have a material impact on our operations, and we continue to monitor the COVID-19 situation closely.

Business interruptions by natural disasters and other events beyond our control could negatively impact our business.

Our business operations are subject to interruption by natural disasters and catastrophic events beyond our control, including, but not limited to, earthquakes, hurricanes, typhoons, tropical storms, floods, tsunamis, fires, droughts, tornadoes, public health issues and pandemics, severe changes in climate, war, terrorism, and geo-political unrest and uncertainties. Further, outbreaks of pandemic diseases, such as coronavirus, or the fear of such events, could provoke responses, including government-imposed travel restrictions. Any delays or interruptions caused by any such events could negatively affect our business.

RISKS RELATED TO PROTECTING OUR INTELLECTUAL PROPERTY

Our success and the success of our planned future development and commercialization of imetelstat will depend on our ability to protect our technologies and imetelstat through patents and other intellectual property rights.

Protection of our proprietary technology is critically important to our business. Our success will depend in part on our ability to obtain, maintain, enforce and extend our patents and maintain trade secrets, both in the United States and in other countries.

The issuance of a patent is not conclusive as to its inventorship, scope, validity or enforceability, and our patents may be challenged in the courts or patent offices in the United States and abroad. Such challenges may result in loss of exclusivity or in patent claims being narrowed, invalidated or held unenforceable, which could limit our ability to stop others from using or commercializing imetelstat or our technology and/or limit the duration of the patent protection for imetelstat and our technology. In the event that we are unsuccessful in obtaining, maintaining,

enforcing and extending our patents and other intellectual property rights or having our licensors maintain the intellectual property rights we have licensed, the value of imetelstat and/or our technologies will be adversely affected, and we may not be able to further develop or potentially commercialize imetelstat. Loss or impairment of our intellectual property related to imetelstat might further delay or halt ongoing or potential future clinical trials of imetelstat and any applications for regulatory approval, and therefore further delay or preclude any future development or commercialization of imetelstat by us. Further, if imetelstat is approved for commercial sale, such loss of intellectual property rights could impair our ability to exclude others from commercializing products similar or identical to imetelstat and therefore result in decreased sales for us. Occurrence of any of these events would materially and adversely affect our financial results, business and business prospects, and the future of imetelstat, and might cause us to cease operations.

Obtaining and maintaining our patent rights depends on compliance with various procedural, document submission, fee payment and other requirements imposed by government patent agencies, and our patent protection could be reduced or eliminated for noncompliance with these requirements.

The U.S. Patent and Trademark Office, or the Patent Office, and various foreign governmental patent agencies require compliance with a number of procedural, documentary, fee payment and other similar provisions during the patent application process. In addition, periodic maintenance fees, renewal fees, annuity fees and various other government fees on patents and/or patent applications will have to be paid to the Patent Office and various government patent agencies outside the United States over the lifetime of our owned and licensed patents and/or patent applications and any patent rights we may own or license in the future. Noncompliance events that could result in abandonment or lapse of a patent or patent application include, but are not limited to, failure to respond to official actions within prescribed time limits, nonpayment of fees and failure to properly legalize and submit formal documents. In many cases, an inadvertent lapse can be cured by payment of a late fee or by other means in accordance with the applicable rules. There are situations, however, in which noncompliance can result in abandonment or lapse of the patent or patent application, resulting in partial or complete loss of patent rights in the relevant jurisdiction. In such an event, potential competitors might be able to enter the market with imetelstat or similar products, and this circumstance could harm our business and business prospects and the future of imetelstat. In addition, if we are responsible for patent prosecution and maintenance of patent rights in-licensed to us, any of the foregoing could expose us to liability to the applicable patent owner.

Patent terms may be inadequate to protect our competitive position on imetelstat for an adequate amount of time.

Patents have a limited lifespan. In the United States, the natural expiration of a patent is generally 20 years after its first effective filing date. Given the amount of time required for the development, testing and regulatory review of imetelstat, patents protecting imetelstat might expire before imetelstat is commercialized. As a result, our intellectual property may not provide us with sufficient rights to exclude others from commercializing products similar or identical to imetelstat.

Under the Hatch-Waxman Act, a patent may be eligible for future patent term restoration of up to five years under certain circumstances. Depending upon the timing, duration and specifics of any potential marketing approval of imetelstat, one or more of our owned or licensed U.S. patents may be eligible for patent term extension under the Hatch-Waxman Act. Similar extensions are also available in certain foreign countries and territories, such as in Japan and in Europe. If we fail to apply for applicable patent term extensions or adjustments, we will have a more limited time during which we can enforce our granted patent rights. In addition, should we seek such a patent term extension, we may not be granted any such patent term extension and/or the applicable time period of such patent term extension could be less than five years. Moreover, in some countries the scope of protection for claims under such patent term extensions, if any, does not extend to the full scope of the claims but is limited to the product composition as approved. If we do not have sufficient patent life to protect imetelstat, our financial results, business and business prospects, and the future of imetelstat would be materially and adversely affected, which might cause us to cease operations.

Changes in U.S. or foreign patent law or interpretations of such patent laws could diminish the value of our patents in general, thereby impairing our ability to protect our technologies and imetelstat.

The patent positions of pharmaceutical and biopharmaceutical companies, including ours, are highly uncertain and involve complex legal and technical questions. In particular, legal principles for biotechnology and pharmaceutical patents in the United States and in other countries are evolving, and the extent to which we will be able to obtain patent coverage to protect our technologies and imetelstat, or enforce or defend issued patents, is uncertain.

A number of significant changes to U.S. patent law occurred when the Leahy-Smith America Invents Act, or the AIA, was signed into law on September 16, 2011. These include provisions that affect the way patent applications are examined and may affect patent litigation. Many of the substantive changes to patent law associated with the AIA, and in particular, the first to file provisions, became effective on March 16, 2013. For example, the AIA limits where a patentee may file a patent infringement suit. The AIA and its implementation could increase the uncertainties and costs surrounding the prosecution of our patent applications and the enforcement or defense of our issued patents.

Since the publication of discoveries in scientific or patent literature tends to lag behind actual discoveries by at least several months and sometimes several years, the persons or entities that we name as inventors in our patents and patent applications may not have been the first to invent the inventions disclosed in the patent applications or patents, or the first to file patent applications for these inventions. As a result, we may not be able to obtain patents for discoveries that we otherwise would consider patentable and that we consider to be extremely significant to the future success of imetelstat. Thus, our ability to protect our patentable intellectual property depends, in part, on our ability to be the first to file patent applications with respect to our inventions or inventions that were developed by Janssen under the Collaboration Agreement and to which we have an exclusive license for the future development, commercialization and manufacture of imetelstat. Delay in the filing of a patent application for any purpose, including further development or refinement of an invention, may result in the risk of loss of patent rights.

U.S. court rulings have narrowed the scope of patent protection available in certain circumstances and weakened the rights of patent owners in certain situations. On March 20, 2012, in *Mayo Collaborative Services, DBA Mayo Medical Laboratories, et al. v. Prometheus Laboratories, Inc.*, the Court held that several claims drawn to measuring drug metabolite levels from patient samples and correlating them to drug doses were not patentable subject matter. In addition, court rulings in cases such as *BRCA1- & BRCA2-Based Hereditary Cancer Test Patent Litig*. and *Promega Corp. v. Life Technologies Corp.* have also narrowed the scope of patent protection available in certain circumstances. In addition to increasing uncertainty with regard to our ability to obtain certain patent claims in the future, this combination of events may have created uncertainty with respect to the value of certain patents we have previously obtained or in-licensed.

Following the result of a referendum in 2016, the United Kingdom left the European Union on January 31, 2020, commonly referred to as Brexit. Pursuant to the formal withdrawal arrangements agreed between the United Kingdom and the European Union, the United Kingdom will be subject to a transition period until December 31, 2020, during which EU rules will continue to apply. Negotiations between the United Kingdom and the European Union are expected to continue in relation to the customs and trading relationship between the United Kingdom and the European Union after December 31, 2020. The impact of the withdrawal of the United Kingdom from the European Union will not be known for some time, which could lead to a period of considerable uncertainty relating to our ability to obtain and maintain Supplementary Protection Certificates of imetelstat based on our United Kingdom patents and our ability to establish and maintain European trademarks in the United Kingdom.

In 2012, the European Union Patent Package, or EU Patent Package, regulations were passed with the goal of providing for a single pan-European Unity Patent, or UP, and a new European Unified Patent Court, or UPC, for litigation of European patents. Once established, the UPC would have jurisdiction over traditional European patents and new UPs in the United Kingdom and all Contracting Member States of the European Union. However, political activity in the United Kingdom and a legal challenge in Germany has delayed ratification of the EU Patent Package in these countries. There have been many delays in the implementation of the EU Patent Package, and further delays may occur. When the EU Patent Package is ratified and in effect, all European patents, including those issued prior to ratification, would by default automatically fall under the jurisdiction of the UPC and allow for the possibility of

obtaining pan-European injunctions. Under the EU Patent Package as currently proposed, once the UPC is established, patent holders are permitted to "opt out" of the UPC on a patent-by-patent basis, although the time permitted for this opt-out is not yet known. Owners of traditional European patent applications who receive notice of grant after the EU Patent Package is ratified could validate the patent nationally, and file an opt-out demand. The EU Patent Package may increase the uncertainties and costs surrounding the enforcement or defense of our issued European patents. The full impact on future European patent filing strategy and the enforcement or defense of our issued European patents in member states and/or the UPC is not known.

Depending on decisions by the U.S. federal courts, the Patent Office and similar authorities in foreign jurisdictions, the interpretation of laws and regulations governing patents could change in unpredictable ways that would weaken our ability to obtain new patents or to enforce our existing patents. Occurrence of these events and/or significant impairment of our imetelstat patent rights would severely and adversely affect our financial results, business and business prospects, and the future of imetelstat, which might cause us to cease operations.

Challenges to our owned or licensed patent rights would result in costly and time-consuming legal proceedings that could prevent or limit development of imetelstat.

Our patents or those patent rights we have licensed, including patent rights that we may seek with respect to inventions made by past or future collaborators, may be challenged through administrative or judicial proceedings, which could result in the loss of important patent rights. For example, where more than one party seeks U.S. patent protection for the same technology in patent applications that are subject to the law before the implementation of the AIA, the Patent Office may declare an interference proceeding in order to ascertain the party to which the patent should be issued. Patent interferences are typically complex, highly contested legal proceedings, subject to appeal. They are usually expensive and prolonged, and can cause significant delay in the issuance of patents. Our pending patent applications or our issued patents, or those we have licensed and may license from others, may be drawn into interference proceedings or be challenged through post-grant review procedures or litigation, any of which could delay or prevent the issuance of patents, or result in the loss of issued patent rights. We may not be able to obtain from our past or future collaborators the information needed to support our patent rights which could result in the loss of important patent rights.

Under the AIA, interference proceedings between patent applications filed on or after March 16, 2013 have been replaced with other types of proceedings, including derivation proceedings. The AIA also includes post-grant review procedures subjecting U.S. patents to post-grant review procedures similar to European oppositions, such as *inter partes* review, or IPR, covered business method post-grant reviews and other post-grant reviews. This applies to all of our U.S. patents and those we have licensed and may license from others, even those issued before March 16, 2013. Because of a lower evidentiary standard necessary to invalidate a patent claim in Patent Office proceedings compared to the evidentiary standard in U.S. federal court, a third-party could potentially provide evidence in a Patent Office proceeding sufficient for the Patent Office to hold a claim invalid even though the same evidence would be insufficient to invalidate the claim if first presented in a district court action. Accordingly, a third-party could attempt to use the Patent Office procedures to invalidate patent claims that would not have been invalidated if first challenged by the third-party as a defendant in a district court action. U.S. patents owned or licensed by us may therefore be subject to post-grant review procedures, as well as other forms of review and re-examination. In addition, the IPR process under the AIA permits any person, whether they are accused of infringing the patent at issue or not, to challenge the validity of certain patents. As a result, entities associated with hedge funds have challenged valuable pharmaceutical patents through the IPR process. Significant impairment of our imetelstat patent rights would severely and adversely affect our financial results, business and business prospects, and the future of imetelstat, which might cause us to cease operations.

Certain jurisdictions, such as Europe, New Zealand and Australia, permit oppositions to be filed against granted patents or patents proposed to be granted. Because we seek to enable potential global commercialization of imetelstat, securing both proprietary protection and freedom to operate outside of the United States is important to our business. Opposition proceedings require significant time and costs, and if we are unsuccessful or are unable to commit these types of resources to protect our imetelstat patent rights, we could lose our patent rights and we could be prevented or limited in the development and commercialization of imetelstat.

As more groups become engaged in scientific research and product development in the areas of telomerase biology and hematologic malignancies, the risk of our patents, or patents that we have in-licensed, being challenged through patent interferences, derivation proceedings, IPRs, post-grant proceedings, oppositions, re-examinations, litigation or other means will likely increase. For example, litigation may arise as a result of our decision to enforce our patent rights against third parties. Challenges to our patents through these procedures would be extremely expensive and time-consuming, even if the outcome was favorable to us. An adverse outcome in a patent dispute could severely harm our ability to further develop or commercialize imetelstat, or could otherwise have a material adverse effect on our business, and might cause us to cease operations, by:

- causing us to lose patent rights in the relevant jurisdiction(s);
- subjecting us to litigation, or otherwise preventing us from commercializing imetelstat in the relevant jurisdiction(s);
- requiring us to obtain licenses to the disputed patents;
- forcing us to cease using the disputed technology; or
- requiring us to develop or obtain alternative technologies.

We may not be able to protect our intellectual property rights throughout the world.

Filing, prosecuting, maintaining, defending and enforcing patents on imetelstat and our technologies in all countries throughout the world would be prohibitively expensive, and our intellectual property rights in some countries outside the United States are less extensive than those in the United States. The requirements for patentability may differ in certain countries, particularly in developing countries; thus, even in countries where we do pursue patent protection, there can be no assurance that any patents will issue with claims that cover imetelstat and our technologies. There can be no assurance that we will obtain or maintain patent rights in or outside the United States under any future license agreements. In addition, the laws of some foreign countries do not protect intellectual property rights to the same extent as federal and state laws in the United States. Consequently, we may not be able to prevent third parties from practicing our inventions in all countries outside the United States, even in jurisdictions where we pursue patent protection, or from selling or importing products made using our inventions in and into the United States or other jurisdictions. Competitors may use our technologies in jurisdictions where we have not pursued and obtained patent protection to develop their own products and, further, may export otherwise infringing products to territories where we have patent protection, but enforcement is not as strong as that in the United States. These products may compete with imetelstat and our technologies and our patents or other intellectual property rights may not be effective or sufficient to prevent them from competing.

Many companies have encountered significant problems in protecting and defending intellectual property rights in foreign jurisdictions. The legal systems of certain countries, particularly certain developing countries, do not favor the enforcement of patents, trade secrets and other intellectual property protection, particularly those relating to biotechnology and pharmaceutical products, which could make it difficult for us to stop the infringement of our patents or marketing of competing products in violation of our proprietary rights generally. For example, many foreign countries have compulsory licensing laws under which a patent owner must grant licenses to third parties. Proceedings to enforce our patent rights, even if obtained, in foreign jurisdictions could result in substantial costs and divert our efforts and attention from other aspects of our business, could put our patents at risk of being invalidated or interpreted narrowly and our patent applications at risk of not issuing and could provoke third parties to assert claims against us. We may not prevail in any lawsuits that we initiate and the damages or other remedies awarded, if any, may not be commercially meaningful. While we intend to protect our intellectual property rights in major markets for imetelstat, we cannot ensure that we will be able to initiate or maintain similar efforts in all jurisdictions in which we may wish to market imetelstat. Accordingly, our efforts to enforce our intellectual property rights around the world may be inadequate to obtain a significant commercial advantage from the intellectual property that we develop.

We may be subject to infringement claims that are costly to defend, and such claims may limit our ability to use disputed technologies and prevent us from pursuing research, development, manufacturing or commercialization of imetelstat.

The commercial success of imetelstat will depend upon our ability to research, develop, manufacture, market and sell imetelstat without infringing or otherwise violating the intellectual property and other proprietary rights of third parties. There is considerable intellectual property litigation in the biotechnology and pharmaceutical industries, and many pharmaceutical companies, including potential competitors, have substantial patent portfolios. In the event our technologies infringe the rights of others or require the use of discoveries and technologies controlled by third parties, we may be prevented from pursuing research, development, manufacturing or commercialization of imetelstat, or may be required to obtain licenses to those patents or other proprietary rights or develop or obtain alternative technologies. For example, we are aware that certain third parties have or may be prosecuting patents and patent estates that may relate to imetelstat, and while we believe these patents will expire before imetelstat is able to be commercialized and/or that these patents are invalid and/or would not be infringed by the manufacture, use or sale of imetelstat, it is possible that the owner(s) of these patents will assert claims against us in the future. If that were to occur, we might need to obtain unblocking licenses from such third parties, develop alternative non-infringing technologies, which we may not be able to do at an acceptable cost or on acceptable terms, or at all, or cease the development of imetelstat. In addition, while our past collaboration agreements have terminated, we are still subject to indemnification obligations to our collaborators, including with respect to claims of third-party patent infringement.

Since we cannot be aware of all intellectual property rights potentially relating to imetelstat and its uses, we do not know with certainty that imetelstat, or the intended commercialization thereof, does not and will not infringe or otherwise violate any third-party's intellectual property. Any infringement claims against us would likely be expensive to resolve, and the cost of any unblocking license that we could be required to obtain is unpredictable and could be significant. If we are unable to resolve an infringement claim successfully, we could be subject to an injunction that would prevent us from potentially commercializing imetelstat and could also require us to pay substantial damages. In addition to infringement claims, in the future we may also be subject to other claims relating to intellectual property, such as claims that we have misappropriated the trade secrets of third parties. Provided that we are successful in continuing the development of imetelstat, we expect to see more efforts by others to obtain patents that are positioned to cover imetelstat. Our success therefore depends significantly on our ability to operate without infringing patents and the proprietary rights of others.

We may become aware of discoveries and technologies controlled by third parties that are advantageous or necessary to further develop or manufacture imetelstat. Under such circumstances, we may initiate negotiations for licenses to other technologies as the need or opportunity arises. We may not be able to obtain a license to a technology required to pursue the research, development, manufacture or commercialization of imetelstat on commercially favorable terms, or at all, or such licenses may be terminated on certain grounds, including as a result of our failure to comply with the obligations under such licenses. If we do not obtain a necessary license or if such a license is terminated, we may need to redesign such technologies or obtain rights to alternative technologies, which may not be possible, and even if possible, could cause further delays in the development efforts for imetelstat and could increase the development and/or production costs of imetelstat. In cases where we are unable to license necessary technologies, we could be subject to litigation and prevented from pursuing research, development, manufacturing or commercialization of imetelstat, which would materially and adversely impact our business. Failure by us to obtain rights to alternative technologies or a license to any technology that may be required to pursue research, development, manufacturing or commercialization of imetelstat would further delay current and potential future clinical trials of imetelstat and any applications for regulatory approval, impair our ability to sell imetelstat, if approved, and therefore result in decreased sales of imetelstat for us. Occurrence of any of these events would materially and adversely affect our business, and might cause us to cease operations.

We may become involved in disputes with past or future collaborator(s) over intellectual property inventorship, ownership or use, and publications by us, or by investigators, scientific consultants, research collaborators or others. Such disputes could impair our ability to obtain patent protection or protect our proprietary information, which, in either case, could have a significant impact on our business.

Inventions discovered under research, material transfer or other collaboration agreements may become jointly owned by us and the other party to such agreements in some cases, and may be the exclusive property of either party in other cases. Under some circumstances, it may be difficult to determine who invents and owns a particular invention, or whether it is jointly owned, and disputes can arise regarding inventorship, ownership and use of those inventions. These disputes could be costly and time-consuming, and an unfavorable outcome could have a significant adverse effect on our business if we were not able to protect our license rights to these inventions. In addition, clinical trial investigators, scientific consultants and research collaborators generally have contractual rights to publish data and other proprietary information, subject to review by the trial sponsor. Publications by us, or by investigators, scientific consultants, previous employees, research collaborators or others, either with permission or in contravention of the terms of their agreements with us or without past or future collaborators, may impair our ability to obtain patent protection or protect proprietary information which would have a material adverse effect on our business, and might cause us to cease operations.

Much of the information and know-how that is critical to our business is not patentable, and we may not be able to prevent others from obtaining this information and establishing competitive enterprises.

We sometimes rely on trade secrets to protect our proprietary technology, especially in circumstances in which we believe patent protection is not appropriate or available. We attempt to protect our proprietary technology in part by confidentiality agreements with our employees, consultants, collaborators and contractors. We cannot provide assurance that these agreements will not be breached, that we would have adequate remedies for any breach, or that our trade secrets will not otherwise become known or be independently discovered by competitors, any of which would harm our business significantly.

In May 2016, the Defend Trade Secrets Act of 2016, or the DTSA, was enacted, providing a federal cause of action for misappropriation of trade secrets. Under the DTSA, an employer may not collect enhanced damages or attorney fees from an employee or contractor in a trade secret dispute brought under the DTSA, unless certain advanced provisions are observed. We cannot provide assurance that our existing agreements with employees and contractors contain notice provisions that would enable us to seek enhanced damages or attorneys' fees in the event of any dispute for misappropriation of trade secrets brought under the DTSA.

Significant disruptions of information technology systems, including cloud-based systems, or breaches of data security could adversely affect our business.

Our business is increasingly dependent on critical, complex and interdependent information technology systems, including cloud-based systems, to support business processes as well as internal and external communications. Our computer and information technology systems, and those of our collaborators, service providers and contractors, are potentially vulnerable to breakdown, malicious intrusion, malware, computer viruses, natural disasters, terrorism, war, and telecommunication and electrical failures that may result in damage to or the impairment of key business processes, or the loss or corruption of confidential information, including intellectual property, proprietary business information and personal information. Such disruptions and breaches of security could have a material adverse effect on our business, financial condition and results of operations. The costs to us to mitigate network security problems, bugs, viruses, worms, malicious software programs and security vulnerabilities could be significant, and while we have implemented security measures to protect our data security and information technology systems, our efforts to address these problems may not be successful, and these problems could result in unexpected interruptions, delays, cessation of service and other harm to our business and our competitive position. In addition, we rely on our collaborators, service providers, including our CROs, and contractors to establish and maintain appropriate information technology systems and data security protections. However, except for contractual duties and obligations, we have limited ability to control their actions related to such matters. If such an event were to occur and cause interruptions in our operations, it could result in a material disruption of our imetelstat development program. For example, the loss of clinical trials data from completed, ongoing or planned clinical trials

could result in delays in potential regulatory approval efforts and significantly increase our costs to recover or reproduce the data.

In addition, our computer and information technology systems, as well as those of our collaborators, service providers and contractors, are potentially vulnerable to data security breaches, whether by employees, contractors, consultants, malware, phishing attacks, or other cyber-attacks, that may expose confidential information, intellectual property, proprietary business information or personal information to unauthorized persons. If a data security breach affects our systems or those of third parties upon which we rely, corrupts our data or results in the unauthorized disclosure or release of personally identifiable information by our collaborators, service providers, contractors or us, our reputation could be materially damaged, and we could be subject to significant fines, increased costs or loss of revenue. In addition, such a breach may require notification to governmental agencies, supervisory bodies, credit reporting agencies, the media or individuals pursuant to various federal, state and foreign data protection, privacy and security laws, regulations and guidelines, if applicable. These may include state breach notification laws, and the EU General Data Protection Regulation (EU) 2016/679, or GDPR. Accordingly, a data security breach or privacy violation that leads to unauthorized access to, disclosure or modification of personal information (including protected health information), that prevents access to personal information or materially compromises the privacy, security, or confidentiality of the personal information, could result in fines, increased costs or loss of revenue as a result of:

- harm to our reputation;
- fines or penalties imposed on us by regulatory authorities;
- additional compliance obligations or enforcement measures under federal, state or foreign laws;
- remediation and corrective action we undertake as required by law or as otherwise necessary;
- litigation and potential civil or criminal liability; and
- requirements to verify the accuracy of affected data.

If we are unable to prevent such data security breaches or privacy violations or implement satisfactory remedial measures, our operations could be disrupted, and we may suffer loss of reputation, financial loss and other regulatory penalties because of lost or misappropriated information, including sensitive patient data. In addition, these breaches and other inappropriate access can be difficult to detect, and any delay in identifying them may lead to increased harm of the type described above. Moreover, the prevalent use of mobile devices that access confidential information increases the risk of data security breaches, which could lead to the loss of confidential information, trade secrets or other intellectual property. While we have implemented security measures to protect our computer and information technology systems, because the techniques used to obtain unauthorized access, disable or degrade service, or sabotage systems, change frequently, become more sophisticated, and often are not recognized until launched against a target, we or our collaborators, service providers or contractors may be unable to anticipate these techniques or to implement adequate preventative measures. In addition, failure to maintain effective internal accounting controls related to data security breaches and cybersecurity in general could impact our ability to produce timely and accurate financial statements and could subject us to regulatory scrutiny.

Changes in and failures to comply with U.S. and foreign privacy and data protection laws, regulations and standards may adversely affect our business, operations and financial performance.

We are subject to or affected by numerous federal, state and foreign laws and regulations, as well as regulatory guidance, governing the collection, use, disclosure, retention, and security of personal data, such as information that we collect about patients and healthcare providers in connection with clinical trials in the United States and abroad. Although we became Privacy Shield certified by the U.S. Department of Commerce's International Trade Administration in April 2019, there is a risk that our Privacy Shield certification could be revoked or held by a court of competent jurisdiction to be an invalid basis for the transfer of personal data outside of the European Economic Area. The global data protection landscape is rapidly evolving, and implementation standards and enforcement practices are likely to remain uncertain for the foreseeable future. This evolution may create uncertainty in our business, affect our or our collaborators', service providers' and contractors' ability to operate in certain jurisdictions or to collect, store, transfer use and share personal information, necessitate the

acceptance of more onerous obligations in our contracts, result in liability or impose additional costs on us. The cost of compliance with these laws, regulations and standards is high and is likely to increase in the future. Any failure or perceived failure by us or our collaborators, service providers and contractors to comply with federal, state or foreign laws or regulation, our internal policies and procedures or our contracts governing processing of personal information could result in negative publicity, diversion of management time and effort and proceedings against us by governmental entities or others. In many jurisdictions, enforcement actions and consequences for noncompliance are rising.

In the United States, California adopted the California Consumer Privacy Act, or CCPA, which became effective in January 2020. The CCPA establishes a privacy framework for covered businesses, including an expansive definition of personal information and data privacy rights for California residents. The CCPA includes a framework with potentially severe statutory damages and private rights of action. The CCPA requires covered companies to provide new disclosures to California consumers (as that word is broadly defined in the CCPA), provide such consumers new ways to opt-out of certain sales of personal information, and allow for a new cause of action for data breaches. It remains unclear how the CCPA will be interpreted, but as currently written, it may impact our business activities and exemplifies the vulnerability of our business to not only cyber threats but also the evolving regulatory environment related to personal data. As we expand our operations, the CCPA may increase our compliance costs and potential liability. Some observers have noted that the CCPA could mark the beginning of a trend toward more stringent privacy legislation in the United States. Other states are beginning to pass similar laws.

Compliance with these and any other applicable privacy and data security laws and regulations is a rigorous and time-intensive process, and we may be required to put in place additional mechanisms to ensure compliance with the new data protection rules. If we fail to comply with any such laws or regulations, we may face significant fines and penalties that could adversely affect our business, financial condition and results of operations. Furthermore, the laws are not consistent, and compliance in the event of a widespread data breach is costly.

Our operations abroad may also be subject to increased scrutiny or attention from data protection authorities. Many countries in these regions have established or are in the process of establishing privacy and data security legal frameworks with which we, our collaborators, service providers, including our CROs, and contractors must comply. For example, the EU has adopted the GDPR, which went into effect in May 2018 and introduces strict requirements for processing the personal information of EU subjects, including clinical trial data. The GDPR has and will continue to increase compliance burdens on us, including by mandating potentially burdensome documentation requirements and granting certain rights to individuals to control how we collect, use, disclose, retain and process information about them. The processing of sensitive personal data, such as physical health condition, may impose heightened compliance burdens under the GDPR and is a topic of active interest among foreign regulators. In addition, the GDPR provides for more robust regulatory enforcement and fines of up to €20 million or 4% of the annual global revenue of the noncompliant company, whichever is greater. As we expand into other foreign countries and jurisdictions, we may be subject to additional laws and regulations that may affect how we conduct business.

RISKS RELATED TO OUR COMMON STOCK AND FINANCIAL REPORTING

Historically, our stock price has been extremely volatile.

Historically, our stock price has been extremely volatile. Between January 1, 2010 and December 31, 2019, our stock has traded as high as $7.79 per share and as low as $0.91 per share. Between January 1, 2017 and December 31, 2019, the price has ranged between a high of $6.99 per share and a low of $0.95 per share. The significant market price fluctuations of our common stock have been due to and may in the future be influenced by a variety of factors, including:

- termination of the Collaboration Agreement by Janssen in September 2018;
- announcements regarding the research and development of imetelstat, or results of, further delays in, discontinuation of, or further modifications or refinements to any clinical trials of imetelstat, including the Phase 3 portion of IMerge, for any reason, or our inability, for any reason, to successfully continue the development of imetelstat;

- obtaining the substantial additional capital, on commercially reasonable terms, necessary to advance the development of imetelstat, including completing the Phase 3 portion of IMerge and commencing, conducting and completing potential Phase 3 clinical trials in MF or potential proof-of-concept studies in other hematologic myeloid malignancies;
- preliminary, interim or final clinical trial data reported with respect to current or potential future clinical trials of imetelstat, and investor perceptions thereof;
- not receiving timely regulatory clearances or approvals in any jurisdiction, whether within or outside of the United States, including, if we do not obtain regulatory clearance to commence, modify, conduct or continue clinical trials of imetelstat in MF, MDS or any additional hematologic myeloid malignancies in a timely manner or at all;
- announcements regarding the safety of imetelstat and partial or full clinical holds placed on the imetelstat INDs by the FDA or other regulatory authorities, or other regulatory developments related to imetelstat;
- the experimental nature of imetelstat;
- the terms and timing of any future collaboration agreements for the development and potential commercialization of imetelstat in countries outside of the United States that we may establish;
- the demand in the market for our common stock;
- announcements of technological innovations, new commercial products, or clinical progress or lack thereof by us, potential future collaborative partners or our competitors;
- fluctuations in our operating results;
- increased or continuing operating losses as a result of our sole financial responsibility for the development and potential future commercialization of imetelstat or otherwise;
- general domestic and international market conditions or market conditions relating to the biopharmaceutical and pharmaceutical industries;
- announcements concerning imetelstat proprietary rights;
- comments by securities analysts or other third parties, including blogs, articles and other media;
- large stockholders exiting their position in our common stock or an increase in the short interest in our common stock;
- announcements of or developments concerning pending and potential future litigation;
- the issuance of common stock to partners, vendors or investors to raise additional capital; and
- the occurrence of any other risks and uncertainties discussed under the heading “Risk Factors.”

Stock prices and trading volumes for many biopharmaceutical companies fluctuate widely for a number of reasons, including factors which may be unrelated to their businesses or results of operations, such as media coverage, statements made on message boards and social media forums, legislative and regulatory measures and the activities of various interest groups or organizations. In addition to the risk factors described in this section, overall market volatility, as well as general domestic or international economic, market and political conditions, could materially and adversely affect the market price of our common stock and the return on your investment.

In addition, as further discussed in the Risk Factor above entitled *“We and certain of our officers have been named as defendants in putative securities class action lawsuits. These lawsuits, and potential similar or related lawsuits, could result in substantial damages, divert management’s time and attention from our business, and have a material adverse effect on our results of operations. These lawsuits, and any other lawsuits to which we are subject, will be costly to defend or pursue and are uncertain in their outcome”,* we and two of our officers have been named as defendants in three putative class action lawsuits. Such lawsuits have often been instituted against companies, including us, whose securities have experienced periods of volatility in market price. The pending lawsuits and any lawsuits brought against us in the future could result in substantial costs, which would hurt our financial condition

and results of operations and divert management's attention and resources, which could result in delays of the Phase 3 portion of IMerge and/or could preclude or delay potential future clinical trials, such as potential Phase 3 clinical trials in MF or potential proof-of-concept studies in other hematologic myeloid malignancies, or could preclude or delay commercialization efforts.

We may fail to continue to meet the listing standards of Nasdaq, and as a result our common stock may be delisted, which could have a material adverse effect on the liquidity of our common stock.

Our common stock is currently traded on the Nasdaq Global Select Market. The Nasdaq Stock Market LLC has requirements that a company must meet in order to remain listed on Nasdaq. In particular, Nasdaq rules require us to maintain a minimum closing bid price of $1.00 per share of our common stock. The closing bid price of our common stock has fluctuated below $1.00 per share in 2018, and while the price has fluctuated above $1.00 per share as well in that time period, in 2020 the closing bid price has been below $1.00 per share. If the closing bid price of our common stock were to remain below $1.00 per share for 30 consecutive trading days, or we do not meet other listing requirements, we would fail to be in compliance with Nasdaq's listing standards. There can be no assurance that we will continue to meet the minimum bid price requirement, or any other requirement in the future. If we fail to meet the minimum bid price requirement, The Nasdaq Stock Market LLC may initiate the delisting process with a notification letter. If we were to receive such a notification, we would be afforded a grace period of 180 calendar days to regain compliance with the minimum bid price requirement. In order to regain compliance, shares of our common stock would need to maintain a minimum closing bid price of at least $1.00 per share for a minimum of 10 consecutive trading days. In addition, we may be unable to meet other applicable Nasdaq listing requirements, including maintaining minimum levels of stockholders' equity or market values of our common stock, in which case our common stock could be delisted. If our common stock were to be delisted, the liquidity of our common stock would be adversely affected, and the market price of our common stock could decrease.

The sale of a substantial number of shares may adversely affect the market price of our common stock.

As of December 31, 2019, we had 450,000,000 shares of common stock authorized for issuance and 199,814,581 shares of common stock outstanding. In addition, we had reserved 45,395,620 shares of our common stock for future issuance pursuant to our option and equity incentive plans and outstanding warrant as of December 31, 2019. In addition, under the universal shelf registration statement filed by us in May 2018 and declared effective by the SEC in July 2018, we may sell any combination of common stock, preferred stock, debt securities and warrants in one or more offerings, up to a cumulative value of $250 million.

Future sales of our common stock or the perception that such sales could occur, or the issuance of common stock to fund our operations and imetelstat development, including pursuant to our 2018 Sales Agreement with B. Riley FBR, could cause immediate dilution and adversely affect the market price of our common stock. The sale or issuance of our securities, as well as the existence of outstanding options and shares of common stock reserved for issuance under our option and equity incentive plans and outstanding warrant, also may adversely affect the terms upon which we are able to obtain additional capital through the sale of equity securities, which could negatively affect the market price of our common stock and the return on your investment.

Our undesignated preferred stock may inhibit potential acquisition bids; this may adversely affect the market price of our common stock and the voting rights of holders of our common stock.

Our certificate of incorporation provides our board of directors with the authority to issue up to 3,000,000 shares of undesignated preferred stock and to determine or alter the rights, preferences, privileges and restrictions granted to or imported upon these shares without further vote or action by our stockholders. The issuance of shares of preferred stock may delay or prevent a change in control transaction without further action by our stockholders. As a result, the market price of our common stock may be adversely affected.

In addition, if in the future, we issue preferred stock that has preference over our common stock with respect to the payment of dividends or upon our liquidation, dissolution or winding up, or if we issue preferred stock with voting rights that dilute the voting power of our common stock, the rights of holders of our common stock or the market price of our common stock could be adversely affected.

Provisions in our charter, bylaws and Delaware law may inhibit potential acquisition bids for us, which may prevent holders of our common stock from benefiting from what they believe may be the positive aspects of acquisitions and takeovers.

Provisions of our charter documents and bylaws may make it substantially more difficult for a third-party to acquire control of us and may prevent changes in our management, including provisions that:

- prevent stockholders from taking actions by written consent;
- divide the board of directors into separate classes with terms of office that are structured to prevent all of the directors from being elected in any one year; and
- set forth procedures for nominating directors and submitting proposals for consideration at stockholders' meetings.

Provisions of Delaware law may also inhibit potential acquisition bids for us or prevent us from engaging in business combinations. In addition, we have individual severance agreements with our executive officers and a company-wide severance plan, either of which could require a potential acquirer to pay a higher price. Either collectively or individually, these provisions may prevent holders of our common stock from benefiting from what they may believe are the positive aspects of acquisitions and takeovers, including the potential realization of a higher rate of return on their investment from these types of transactions.

Our amended and restated bylaws provide that the Court of Chancery of the State of Delaware will be the sole and exclusive forum for certain types of actions and proceedings that may be initiated by our stockholders, which could limit our stockholders' ability to obtain a favorable judicial forum for disputes with us or our directors, officers, or employees.

Our amended and restated bylaws provide that, unless we consent 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 derivative action or proceeding brought on our behalf,
- any action asserting a claim of breach of a fiduciary duty owed by any of our directors, officers or other employees to us or to our stockholders;
- any action asserting a claim arising pursuant to any provision of the General Corporation Law of the State of Delaware, our certificate of incorporation, or our bylaws, or
- any action asserting a claim governed by the internal affairs doctrine.

While the exclusive forum provisions in our bylaws do not apply to lawsuits brought to enforce a duty or liability created by the Exchange Act or the Securities Act of 1933, as amended, or any claim for which the federal courts have exclusive jurisdiction, these provisions may nonetheless limit a stockholder's ability to bring a claim in a judicial forum that it finds favorable for disputes with us or our current or former directors, officers, or other employees, which may discourage such lawsuits against us and our current or former directors, officers, and other employees. Alternatively, if a court were to find the exclusive forum provisions contained in our bylaws to be inapplicable or unenforceable in an action, we may incur additional costs associated with resolving such action in other jurisdictions, which could have a material and adverse impact on our business and our financial condition.

We do not intend to pay cash dividends on our common stock in the foreseeable future.

We do not anticipate paying cash dividends on our common stock in the foreseeable future. Any payment of cash dividends will depend upon our financial condition, results of operations, capital requirements and other factors and will be at the discretion of our board of directors.

Failure to achieve and maintain effective internal controls in accordance with Section 404 of the Sarbanes-Oxley Act of 2002 could have a material adverse effect on our business and stock price.

Section 404 of the Sarbanes-Oxley Act of 2002, or Section 404, requires that we establish and maintain an adequate internal control structure and procedures for financial reporting. Our annual reports on Form 10-K must contain an annual assessment by management of the effectiveness of our internal control over financial reporting and must include disclosure of any material weaknesses in internal control over financial reporting that we have identified. In addition, our independent registered public accounting firm must provide an opinion annually on the effectiveness of our internal control over financial reporting.

The requirements of Section 404 are ongoing and also apply to future years. We expect that our internal control over financial reporting will continue to evolve as our business develops. Although we are committed to continue to improve our internal control processes and we will continue to diligently and vigorously review our internal control over financial reporting in order to ensure compliance with Section 404 requirements, any control system, regardless of how well designed, operated and evaluated, can provide only reasonable, not absolute, assurance that its objectives will be met. Therefore, we cannot be certain that material weaknesses or significant deficiencies will not exist or otherwise be discovered in the future. If material weaknesses or other significant deficiencies occur, such weaknesses or deficiencies could result in misstatements of our results of operations, restatements of our financial statements, a decline in our stock price, or other material adverse effects on our business, reputation, results of operations, financial condition or liquidity.

RISKS RELATED TO COMPETITIVE FACTORS

Competitors may develop products, product candidates or technologies that are superior to or more cost-effective than ours, which may significantly impact the development and commercial viability of imetelstat, which would severely and adversely affect our financial results, business and business prospects, and the future of imetelstat, and might cause us to cease operations.

The pharmaceutical and biotechnology industries are characterized by intense and dynamic competition with rapidly advancing technologies and a strong emphasis on proprietary products. While we believe our proprietary oligonucleotide chemistry; experience with the biological mechanisms related to imetelstat, telomeres and telomerase; clinical data to date indicating potential disease-modifying activity with imetelstat treatment; and knowledge and expertise around the development of potential treatments for hematologic myeloid malignancies provide us with competitive advantages, we face competition from many different sources, including major pharmaceutical, specialty pharmaceutical and biotechnology companies, academic institutions and governmental agencies and public and private research institutions. Imetelstat will compete, if approved, with other products and therapies that currently exist, are being developed or will in the future be developed, some of which we may not currently be aware.

If approved for commercial sale for the treatment of lower risk MDS, imetelstat would compete against a number of currently existing therapies, including ESAs and other hematopoietic growth factors that are indicated for anemia; immunomodulators, such as Revlimid (lenalidomide) by Celgene Corporation, a Bristol-Myers Squibb Corporation, or Celgene; hypomethylating agents, such as Vidaza (azacitidine) by Celgene or other manufacturers of generic azacitidine, and Dacogen (decitabine) by Otsuka America Pharmaceutical, Inc. and other manufacturers in the United States and Janssen in the EU.

Other therapies currently in Phase 3 development in lower risk MDS, some of which may obtain regulatory approval earlier than imetelstat include, Reblozyl (luspatercept), a TGF-beta inhibitor, by Acceleron Pharma, Inc., or Acceleron, in collaboration with Celgene, whose new drug application (NDA) has been submitted to the FDA for potential approval; oral versions of azacitidine by Celgene; roxadustat, a hypoxia-inducible factor prolyl hydroxylase inhibitor, by FibroGen, Inc.; and APR-246, an activator of p53 protein, by Aprea Therapeutics, Inc.

If approved for commercial sale for the treatment of MF, imetelstat would compete against currently approved JAK inhibitors, Jakafi (ruxolitinib) by Incyte Corporation and Inrebic (fedratinib) by Celgene. Other treatment modalities for MF include hydroxyurea for the management of splenomegaly, leukocytosis, thrombocytosis and constitutional symptoms; splenectomy and splenic irradiation for the management of splenomegaly and co-existing

cytopenias, or low blood cell counts; chemotherapy and pegylated interferon. Drugs for the treatment of MF-associated anemia include ESAs, androgens, danazol, corticosteroids, thalidomide and lenalidomide.

Other therapies currently in Phase 3 development in Intermediate-2 or High-Risk myelofibrosis, some of which may obtain regulatory approval earlier than imetelstat include pacritinib, a JAK inhibitor, by CTI Biopharma, and momelotinib, a JAK inhibitor, by Sierra Oncology. Non-JAK inhibitor approaches for MF currently under investigation that could compete with imetelstat in the future include CPI-0610, a BET inhibitor, by Constellation Pharmaceuticals, Inc.; luspatercept, a TGF-beta inhibitor, by Acceleron, in collaboration with Celgene; PRM-151, an anti-fibrosis antibody, by Promedior, Inc.; navitoclax , a BCLXL, BCL-2 and BCLW inhibitor, by AbbVie; LCL 161, an inhibitor of apoptosis protein (IAP), by Novartis; and KRT-232, an inhibitor of MDM2, by Kartos Therapeutics, Inc.

Smaller companies may also prove to be significant competitors, particularly through collaborative arrangements with large and established companies. We anticipate increased competition in the future as new companies explore treatments for hematologic myeloid malignancies, which may significantly impact the commercial viability of imetelstat. Academic institutions, government agencies and other public and private research organizations may also conduct research, seek patent protection and establish collaborative arrangements for research, clinical development and marketing of products similar to imetelstat. These companies and institutions compete with us in recruiting and retaining qualified development and management personnel as well as in acquiring technologies complementary to the imetelstat program.

Many of our competitors, either alone or with their strategic partners, could have substantially greater financial, technical and human resources than we do and significantly greater experience in obtaining FDA and other regulatory approvals of treatments and commercializing those treatments. We believe that the commercial success of imetelstat is subject to a number of factors, including,

- product efficacy and safety;
- method of product administration;
- cost of manufacturing;
- the timing and scope of regulatory consents;
- status of coverage and level of reimbursement;
- level of generic competition
- price; and
- patent position, including potentially dominant patent positions of others.

As a result of the foregoing, competitors may develop more commercially desirable or affordable products than imetelstat, or achieve earlier patent protection or product commercialization than we may be able to achieve with imetelstat. Competitors have developed, or are in the process of developing, technologies that are, or in the future may be, competitive to imetelstat. Some of these products may have an entirely different approach or means of accomplishing therapeutic effects similar or superior to those that may be demonstrated by imetelstat. Competitors may develop products that are safer, more effective, or less costly than imetelstat, or more convenient to administer to patients and, therefore, present a serious competitive threat to imetelstat. In addition, competitors may price their products below what we may determine to be an acceptable price for imetelstat, may receive better third-party payor coverage and/or reimbursement, or may be more cost-effective than imetelstat. Such competitive products or activities by competitors may render imetelstat obsolete, which may cause us to cease any further development or future commercialization of imetelstat, which would severely and adversely affect our financial results, business and business prospects, and the future of imetelstat, and might cause us to cease operations.

To be commercially successful, imetelstat must be accepted by the health care community, which can be very slow to adopt or unreceptive to new technologies and products.

If approved for marketing, imetelstat may not achieve market acceptance since hospitals, physicians, patients or the medical community in general may decide not to accept and utilize imetelstat. If approved for commercial sale, imetelstat will compete with a number of conventional and widely accepted drugs and therapies manufactured and marketed by major pharmaceutical companies. The degree of market acceptance of imetelstat will depend on a number of factors, including:

- the clinical indications for which imetelstat is approved;
- the country and/or regions within which imetelstat is approved;
- the establishment and demonstration to the medical community of the clinical efficacy and safety of imetelstat;
- the ability to demonstrate that imetelstat is superior to alternatives on the market at the time;
- the ability to establish in the medical community the potential advantages of imetelstat over alternative treatment methods, including with respect to efficacy, safety, cost or route of administration;
- the label and promotional claims allowed by the FDA or other regulatory authorities for imetelstat, if any;
- the timing of market introduction of imetelstat as well as competitive products;
- the effectiveness of sales, marketing and distribution support for imetelstat;
- the pricing of imetelstat;
- the availability of coverage and adequate reimbursement by government and third-party payors; and
- the willingness of patients to pay out-of-pocket in the absence of coverage by third-party payors, including governmental authorities.

The established use of conventional products competitive with imetelstat may limit or preclude the potential for imetelstat to receive market acceptance upon any commercialization. We may be unable to demonstrate any pharmacoeconomic advantage for imetelstat compared to established or standard-of-care therapies, or newly developed therapies, for hematologic myeloid malignancies. Third-party payors may decide that any potential improvement that imetelstat may provide to clinical outcomes in hematologic myeloid malignancies is not adequate to justify the costs of treatment with imetelstat. If the health care community does not accept imetelstat for any of the foregoing reasons, or for any other reason, our ability to further develop or potentially commercialize imetelstat may be negatively impacted or precluded altogether, which would seriously and adversely affect our business and business prospects, and might cause us to cease operations.

If acceptable prices or adequate reimbursement for imetelstat is not obtained, the use of imetelstat could be severely limited.

The ability to successfully commercialize imetelstat, if approved, will depend significantly on obtaining acceptable prices and the availability of coverage and adequate reimbursement to the patient from third-party payors. Government payors, such as the Medicare and Medicaid programs, and other third-party payors, such as private health insurers and health maintenance organizations, determine which medications they will cover and the reimbursement levels. Assuming we obtain coverage for imetelstat by a third-party payor, the resulting reimbursement payment rates may not be adequate or may require co-payments that patients find unacceptably high. If imetelstat is approved for commercial sale, patients are unlikely to use it unless coverage is provided, and reimbursement is adequate to cover all or a significant portion of its cost. Therefore, coverage and adequate reimbursement will be critical to new product acceptance.

Government authorities and other third-party payors are developing increasingly sophisticated methods of controlling healthcare costs, such as by limiting coverage and the amount of reimbursement for particular medications. Increasingly, third-party payors are requiring that drug companies provide them with predetermined discounts from list prices as a condition of coverage, are using restrictive formularies and preferred drug lists to

leverage greater discounts in competitive classes, and are challenging the prices charged for medical products. Further, no uniform policy requirement for coverage and reimbursement for drug products exists among third-party payors in the United States. Therefore, coverage and reimbursement for drug products can differ significantly from payor to payor. As a result, the coverage determination process is often a time-consuming and costly process that will require us to provide scientific and clinical support for the use of imetelstat to each payor separately, with no assurance that coverage and adequate reimbursement will be applied consistently or obtained in the first instance.

We cannot be sure that coverage and reimbursement will be available for imetelstat, if approved for commercial sale, and, if reimbursement is available, what the level of reimbursement will be. There may also be significant delays in obtaining coverage and reimbursement for newly approved drugs, and coverage may be more limited than the purposes for which the drug is approved by the FDA or comparable foreign regulatory authorities. Coverage and reimbursement may impact the demand for, or the price of, any product candidate for which marketing approval is obtained. If coverage and reimbursement are not available or reimbursement is available only to limited levels, we may not successfully commercialize imetelstat, even if marketing approval is obtained, which would negatively impact our business and business prospects.

The adoption of health policy changes and health care reform in the United States may adversely affect our business and financial results.

In the United States and some foreign jurisdictions, there have been a number of legislative and regulatory changes and proposed changes regarding the healthcare system that could impact our business. Also, there has been increasing legislative and enforcement interest in the United States with respect to drug pricing, including specialty drug pricing practices, in light of the rising cost of prescription drugs and biologics. Specifically, there have been several recent U.S. Congressional inquiries and federal and state legislative activity designed to, among other things, bring more transparency to drug pricing, review the relationship between pricing and manufacturer patient programs, reduce the price of drugs under Medicare, and reform government program reimbursement methodologies for. While a number of reform measures may require additional authorization to become effective, Congress and the Trump Administration have each indicated that they will continue to seek new legislative and/or administrative measures to control drug costs. If future legislation were to impose direct governmental price controls and access restrictions, it could have a significant adverse impact on our business and financial results. Managed care organizations, as well as Medicaid and other government agencies, continue to seek price discounts. At the state level, legislatures have increasingly passed legislation and implemented regulations designed to control pharmaceutical and biologic product pricing, including price or patient reimbursement constraints, discounts, restrictions on certain product access and marketing cost disclosure and transparency measures, and, in some cases, to encourage importation from other countries and bulk purchasing. Due to the volatility in the current economic and market dynamics, we are unable to predict the impact of any unforeseen or unknown legislative, regulatory, payor or policy actions, which may include cost containment and healthcare reform measures. Such policy actions could have a material adverse impact on future worldwide sales of imetelstat, if approved. For a discussion of health reform activity, see Item 1 “Business—Government Regulation—Reimbursement and Healthcare Reform.”

Cost control initiatives also could decrease the price that we may receive for imetelstat in the future. If imetelstat is not considered cost-effective or adequate third-party reimbursement for the users of imetelstat cannot be obtained, then we may be unable to maintain price levels sufficient to realize an appropriate return on our investment in imetelstat. Any of these events would severely and adversely affect our financial results, business and business prospects, and might cause us to cease operations.

If we fail to comply with federal, state and foreign healthcare laws, including fraud and abuse, transparency, and health information privacy and security laws, we could face substantial penalties and our business, results of operations, financial condition and prospects could be adversely affected.

Our business operations and current and future arrangements with investigators, healthcare professionals, consultants, third-party payors and customers, may expose us to broadly applicable fraud and abuse and other healthcare laws and regulations, including federal and state fraud and abuse laws, including anti-kickback and false claims laws; data privacy and security laws; and transparency laws related to payments and/or other transfers of value made to physicians, other healthcare professionals and teaching hospitals. These laws may constrain the business or financial arrangements and relationships through which we conduct our operations, including how we

research, market, sell and distribute any product of ours for which marketing approval is obtained. For details regarding the restrictions under applicable federal and state healthcare laws and regulations that may affect our ability to operate see Item 1 "Business—Government Regulation— Fraud and Abuse, Data Privacy and Security, and Transparency Laws and Regulations." Additionally, efforts to ensure that our current and future business arrangements will comply with applicable healthcare, privacy and data security laws and regulations will involve substantial costs. For example, the GDPR, which became effective on May 25, 2018, imposes several requirements relating to the consent of the individuals to whom the personal data relates, the information provided to the individuals, the security and confidentiality of the personal data, data breach notification and the use of third-party processors in connection with the processing of personal data. The GDPR also imposes strict rules on the transfer of personal data out of the EU, provides an enforcement authority and authorizes the imposition of large penalties for noncompliance, including the potential for fines of up to €20 million or 4% of the annual global revenues of the noncompliant company, whichever is greater. The GDPR has increased our responsibility and potential liability in relation to personal data that we process or control compared to prior EU law, including in clinical trials, and we may be required to put in place additional mechanisms to ensure compliance with the GDPR, which could divert management's attention and increase our cost of doing business. Likewise, we expect that there will continue to be new proposed laws, regulations and industry standards relating to privacy and data protection in the United States, the EU and other jurisdictions, such as the California Consumer Privacy Act of 2018, which has been characterized as the first "GDPR-like" privacy statute enacted in the United States because it mirrors a number of the key provisions in the GDPR, became effective on January 1, 2020, and we cannot determine the impact such laws, regulations and standards will have on our business. In any event, it is possible that governmental authorities will conclude that our business practices do not comply with current or future statutes, regulations, agency guidance or case law involving applicable healthcare or privacy laws, including the GDPR, in light of the lack of applicable precedent and regulations.

Federal and state enforcement bodies have recently increased their scrutiny of interactions between healthcare companies and healthcare providers, which has led to a number of investigations, prosecutions, convictions and settlements in the healthcare industry. If our operations are found to be in violation of any of these or any other healthcare and privacy-related regulatory laws that may apply to us, we may be subject to significant penalties, including the imposition of significant civil, criminal and administrative penalties, damages, monetary fines, disgorgement, imprisonment, possible exclusion from participation in Medicare, Medicaid and other federal healthcare programs, reputational harm, diminished profits and future earnings, additional reporting requirements and oversight if we become subject to a corporate integrity agreement or similar agreement to resolve allegations of non-compliance with these laws, and curtailment of our operations, any of which could adversely affect our ability to operate our business and our results of operations. Defending against any such actions can be costly, time-consuming and may require significant financial and personnel resources. Therefore, even if we are successful in defending against any such actions that may be brought against us, our business may be impaired.

ITEM 1B. UNRESOLVED STAFF COMMENTS

None.

ITEM 2. PROPERTIES

We have an operating lease for our office space at 149 Commonwealth Drive, Menlo Park, California, or the Menlo Park Lease, that was due to expire in January 2020. In September 2019, we amended this lease agreement to extend the lease term by two months to the end of March 2020.

In April 2019, we entered into an operating lease agreement for office space located at 3 Sylvan Way, Parsippany, New Jersey, or the New Jersey Lease. The initial term of the New Jersey Lease is 11 years with an option to extend for an additional five years and a one-time option to terminate the New Jersey Lease without cause as of the 103rd month anniversary of the commencement date of the lease. The New Jersey Lease commenced on October 1, 2019, upon our control of the office space on that date.

In October 2019, we entered into an operating lease agreement for office space located at 919 East Hillsdale Boulevard, Foster City, California, or the Foster City Lease. The initial term of the Foster City Lease is 87 months with an option to extend for an additional five years. We have not yet occupied the space as it is being renovated for

our use. The Foster City Lease term commences upon the earlier of the date of completion of the construction work or the date upon which we occupy and use the space for its intended purpose. The purpose of the Foster City Lease is to replace our current leased premises at 149 Commonwealth Drive, Menlo Park, California. We expect to occupy the space by mid-March 2020.

ITEM 3. LEGAL PROCEEDINGS

On January 23 and February 14, 2020 , putative securities class action lawsuits were commenced in the United States District Court for the Northern District of California, naming as defendants us and one of our officers. On March 5, 2020, a third putative securities class action lawsuit was commenced in the United Stated District Court for the District of New Jersey, naming as defendants us and two of our officers. All three lawsuits allege violations of the Securities Exchange Act of 1934 in connection with allegedly false and misleading statements made by us related to IMbark during the period from March 19, 2018 to September 26, 2018. The plaintiffs allege, among other things, that we failed to disclose facts related to the alleged failure by IMbark to meet the two primary endpoints of the trial, spleen response rate and Total Symptom Score, and that our stock price dropped when such information was disclosed. The plaintiffs seek damages and interest, and an award of reasonable costs, including attorneys' fees. It is possible that additional suits will be filed, or allegations made by stockholders, with respect to these same or other matters and also naming us and/or our officers and directors as defendants. We believe that we have meritorious defenses and intend to vigorously defend against the pending lawsuits.

The pending lawsuits and any other related lawsuits are subject to inherent uncertainties, and the actual defense and disposition costs will depend upon many unknown factors. The outcome of the pending lawsuits and any other related lawsuits is necessarily uncertain. We could be forced to expend significant resources in the defense of the pending lawsuits and any additional lawsuits, and we may not prevail. In addition, we may incur substantial legal fees and costs in connection with such lawsuits. We currently are not able to estimate the possible cost to us from these matters, as the pending lawsuits are currently at an early stage, and we cannot be certain how long it may take to resolve the pending lawsuits or the possible amount of any damages that we may be required to pay. Such amounts could be material to our financial statements if we do not prevail in the defense of the pending lawsuits and any other related lawsuits, or even if we do prevail.

ITEM 4. MINE SAFETY DISCLOSURES

Not applicable.

PART II

ITEM 5. MARKET FOR THE REGISTRANT'S COMMON EQUITY, RELATED STOCKHOLDER MATTERS AND ISSUER PURCHASES OF EQUITY SECURITIES

Market Information

Our common stock is quoted on the Nasdaq Global Select Market under the symbol GERN. As of March 2, 2020, there were approximately 520 stockholders of record of our common stock. This number does not include "street name" or beneficial holders, whose shares are held of record by banks, brokers and other financial institutions.

Dividend Policy

We have never paid cash dividends on our capital stock and do not anticipate paying cash dividends in the foreseeable future, but intend to retain our capital resources for reinvestment in our business. Any future determination to pay cash dividends will be at the discretion of the board of directors and will be dependent upon our financial condition, results of operations, capital requirements and other factors our board of directors deems relevant.

Recent Sales of Unregistered Securities

During the year ended December 31, 2019, there were no unregistered sales of equity securities by us.

ITEM 6. SELECTED FINANCIAL DATA

We are a smaller reporting company as defined by Rule 12b-2 of the Securities Exchange Act of 1934, as amended, or the Exchange Act, and are not required to provide the information specified under this item.

ITEM 7. MANAGEMENT'S DISCUSSION AND ANALYSIS OF FINANCIAL CONDITION AND RESULTS OF OPERATIONS

The following discussion should be read in conjunction with the section entitled "Business" in Part I, Item 1 and the audited financial statements and notes thereto included in Part II, Item 8 of this annual report on Form 10-K. The information provided should be reviewed in the context of the sections entitled "Risks Related to the Development of Imetelstat", "Risks Related to Transition of the Imetelstat Program to Geron" and "Risks Related to Regulatory Compliance Matter and Commercialization of Imetelstat" in Part I, Item 1A entitled "Risk Factors" and elsewhere in this annual report on Form 10-K.

Business Overview

We are a late-stage clinical biopharmaceutical company that is focused on the development and potential commercialization of imetelstat, an innovative therapeutic for hematologic myeloid malignancies. We have global rights to imetelstat, a first-in-class telomerase inhibitor, which was discovered and developed at Geron. We believe targeting telomerase has the potential to inhibit the uncontrolled proliferation of malignant progenitor cells in hematologic myeloid malignancies to reduce dysfunctional blood cell production and enable recovery of normal blood cell production. Data reported from our Phase 2/3 clinical trial in lower risk myelodysplastic syndromes, or MDS, indicate imetelstat may induce meaningful and durable transfusion independence and increases in hemoglobin levels, suggesting potential recovery of normal blood cells occurring in the bone marrow, or hematopoiesis. In addition, data reported from our Phase 2 clinical trial in relapsed/refractory myelofibrosis, or MF, suggest imetelstat potentially improves overall survival, or OS, in MF. We believe these data, taken together, suggest potential disease-modifying activity from imetelstat treatment.

Imetelstat has been granted both Orphan Drug and Fast Track designations by the United States Food and Drug Administration, or FDA, for the treatment of patients with Low or Intermediate-1 risk MDS, or lower risk MDS, and for the treatment of patients with Intermediate-2 or High-risk MF relapsed after or refractory to janus kinase inhibitor treatment, or relapsed/refractory MF.

Myelodysplastic Syndromes (MDS)

We are currently conducting IMerge, our Phase 2/3 clinical trial in lower risk MDS. The ongoing Phase 3 portion of IMerge is a randomized and placebo-controlled trial that, based on discussions with United States, or U.S., and European regulatory authorities, we expect will support, if successful, the registration of imetelstat in lower risk MDS. Many key aspects from the Phase 2 portion of IMerge remained the same for the Phase 3 portion, including the primary and secondary endpoints, the dose and schedule of imetelstat administration, and patient eligibility criteria. We expect the Phase 3 trial to be conducted at multiple medical centers globally, including North America, Europe, Middle East and Asia. As of the end of February 2020, approximately 63% of the planned sites were opened for enrollment. The Phase 3 portion of IMerge opened to new patient enrollment in August 2019 and the first patient was dosed in October 2019. We plan to complete patient enrollment in the Phase 3 portion of IMerge by the end of 2020 and expect top-line results by mid-year 2022.

The Phase 2 portion of IMerge is closed to enrollment, and patients remaining in the treatment phase continue to receive imetelstat treatment. We expect more mature data, including treatment and follow-up, from the patients remaining in the Phase 2 portion of IMerge to be available in 2020 and expect to present such data at a future medical conference in 2020.

Myelofibrosis (MF)

In the fourth quarter of 2019, we conducted an End of Phase 2 meeting with the FDA to discuss the results of IMbark, our Phase 2 clinical trial in relapsed/refractory MF. Based on feedback from the meeting, we plan to submit Phase 3 trial design proposals in MF to the FDA, and, in the second quarter of 2020, to have further discussions with the FDA regarding a potential regulatory approval path, if any, for imetelstat in MF. Subsequent to these additional discussions, and after considering the timing and resources required, as well as other clinical development opportunities for imetelstat, we plan to make a decision regarding potential late-stage development of imetelstat in MF by mid-year 2020.

In February 2020, we closed IMbark, our Phase 2 clinical trial in relapsed/refractory MF, since we believe we have obtained sufficient data from the trial to support potential late-stage development in MF. As of the end of February 2020, no further follow-up of remaining patients is being conducted.

Other Indications

In 2020, we plan to expand the imetelstat program through the commencement of a potential proof-of-concept study in Intermediate-2 or High-risk, or higher risk, MDS and acute myeloid leukemia and expect to commence such a study by the end of the fourth quarter of 2020.

Recent Data from IMerge (Ongoing Phase 2/3 Trial in Lower Risk MDS)

In June 2019, we reported updated results from the Phase 2 portion of IMerge in which 42% of patients experienced red blood cell transfusion independence for at least 8 consecutive weeks, or an 8-week RBC-TI rate. Importantly, this 8-week RBC-TI rate was observed in patients with red blood cell transfusion burdens of greater than or equal to four units per eight weeks prior to starting treatment with imetelstat. Higher transfusion burdens are considered an indicator of a more difficult to treat patient population. Patients enrolled in the Phase 2 portion of IMerge had a baseline median red blood cell transfusion burden of eight units per eight weeks with a range of four to 14 units. Our results compare favorably to currently used treatments in a similar patient population. Hypomethylating agents, or HMAs, and lenalidomide have been used to improve anemia, but with limited success, such as reported 8-week RBC-TI rates of 17% for azacitidine, an HMA, and 27% for lenalidomide. In addition, 29% of patients in the Phase 2 portion of IMerge experienced a durable response, as reflected by achieving a 24-week RBC-TI, and 75% of patients who achieved an 8-week RBC-TI reported a hemoglobin rise of ≥3.0 g/dL compared to baseline during the transfusion-free interval. We believe these data indicate potential recovery of normal hematopoiesis and suggest potential disease-modifying activity of imetelstat treatment for these patients.

Recent Data from IMbark (Closed Phase 2 Trial in Relapsed/Refractory MF)

Also in June 2019, an analysis was presented of the OS in relapsed/refractory MF patients treated with imetelstat 9.4 mg/kg in IMbark, compared to OS calculated from real world data, or RWD, collected at the Moffitt Cancer Center for patients who had discontinued treatment with ruxolitinib, a janus kinase, or JAK, inhibitor, and who were subsequently treated with best available therapy, or BAT. To make a comparison between the IMbark data and RWD, a cohort from the real-world dataset was identified that closely matched the IMbark patients, using guidelines for inclusion and exclusion criteria as defined in the IMbark clinical protocol, such as platelet count and spleen size. Calculations from two propensity score analysis approaches resulted in a median OS of 30.7 months for the imetelstat-treated patients from IMbark, which is more than double the median OS of 12.0 months using RWD for patients treated with BAT. These analyses also indicated a 65-67% lower risk of death for the imetelstat-treated patients vs. BAT-treated patients. We believe these analyses suggest favorable OS for imetelstat-treated relapsed/refractory MF patients, compared to BAT in closely-matched patients from RWD.

In February 2020, we closed IMbark since we believe we have obtained sufficient data from the trial to support potential late-stage development of imetelstat in MF. As of the end of February 2020, no further follow-up of remaining patients is being conducted.

Transition of Imetelstat Program to Geron

As of the end of September 2019, the transition of the imetelstat program to us from our former collaboration partner, Janssen Biotech, Inc., or Janssen, was completed. For a further discussion of the former Collaboration Agreement with Janssen, see Note 4 on License Agreements in Notes to Financial Statements of this Form 10-K. Information about the transition of the imetelstat program from Janssen to us should be reviewed in the context of the section entitled "Risks Related to Transition of the Imetelstat Program to Geron" included in Part I, Item 1A, "Risk Factors" of this Form 10-K.

Financial Overview

We had approximately $159.2 million in cash, cash equivalents, restricted cash and current and noncurrent marketable securities as of December 31, 2019. We will require substantial additional capital in order to further advance the imetelstat program, including conducting the research and development and clinical and regulatory activities necessary to bring imetelstat to market, such as completing the Phase 3 portion of IMerge and potential clinical trials in other indications, and establishing sales and marketing capabilities to commercialize imetelstat in the United States, if regulatory approval is granted. If approved for marketing by regulatory authorities, we plan to seek potential commercialization partners for territories outside of the United States. While we reported a small profit for the year ended December 31, 2015 due to our recognition of revenue in connection with the upfront payment from Janssen under the Collaboration Agreement, until 2015 we had never been profitable, and have not reported any profit since. We have incurred significant net losses since our inception in 1990, resulting principally from costs incurred in connection with our research and development activities and from general and administrative costs associated with our operations. As of December 31, 2019, we had an accumulated deficit of $1.1 billion. Since our inception, we primarily have financed our operations through the sale of equity securities, interest income on our marketable securities and payments we received under our collaborative and licensing arrangements.

Substantially all of our revenues to date have been payments under collaborative agreements, and milestones, royalties and other revenues from our licensing arrangements. We currently have no source of product revenue. The significance of future losses, future revenues and any potential future profitability will depend primarily on the clinical and commercial success of imetelstat. In any event, imetelstat will require significant additional clinical testing prior to possible regulatory approval in the United States and other countries. In addition, as a result of the termination of the Collaboration Agreement, we expect research and development expenses, general and administrative expenses, and losses to substantially increase in future periods as we continue to advance the imetelstat development program. We do not expect imetelstat to be commercially available for many years, if at all.

Critical Accounting Policies and Estimates

Our financial statements have been prepared in accordance with accounting principles generally accepted in the United States of America. The preparation of these financial statements requires management to make estimates and assumptions that affect the reported amounts of assets, liabilities, revenues and expenses. Note 1 of Notes to Financial Statements describes the significant accounting policies used in the preparation of our financial statements. Certain of these significant accounting policies are considered to be critical accounting policies, as defined below.

A critical accounting policy is defined as one that is both material to the presentation of our financial statements and requires management to make difficult, subjective or complex judgments that could have a material effect on our financial condition and results of operations. Specifically, critical accounting estimates have the following attributes: (i) we are required to make assumptions about matters that are highly uncertain at the time of the estimate; and (ii) different estimates we could reasonably have used, or changes in the estimate that are reasonably likely to occur, would have a material effect on our financial condition or results of operations.

Estimates and assumptions about future events and their effects cannot be determined with certainty. We base our estimates on historical experience and on various other assumptions believed to be applicable and reasonable under the circumstances. These estimates may change as new events occur, as additional information is obtained and as our operating environment changes. These changes historically have been minor and have been included in the financial statements as soon as they became known. Based on a critical assessment of our accounting policies and the underlying judgments and uncertainties affecting the application of those policies, management believes that our

financial statements are stated fairly in accordance with accounting principles generally accepted in the United States, and meaningfully present our financial condition and results of operations.

We believe the following critical accounting policies reflect our more significant estimates and assumptions used in the preparation of our financial statements:

Fair Value of Financial Instruments

We categorize financial instruments recorded at fair value on our balance sheets based upon the level of judgment associated with inputs used to measure their fair value. The categories are as follows:

Level 1—Inputs are unadjusted, quoted prices in active markets for identical assets or liabilities at the measurement date. An active market for the asset or liability is a market in which transactions for the asset or liability occur with sufficient frequency and volume to provide pricing information on an ongoing basis.

Level 2—Inputs (other than quoted market prices included in Level 1) are either directly or indirectly observable for the asset or liability through correlation with market data at the measurement date and for the duration of the instrument's anticipated life.

Level 3—Inputs reflect management's best estimate of what market participants would use in pricing the asset or liability at the measurement date. Consideration is given to the risk inherent in the valuation technique and the risk inherent in the inputs to the model.

A financial instrument's categorization within the valuation hierarchy is based upon the lowest level of input that is significant to the fair value measurement. Following is a description of the valuation methodologies used for financial instruments measured at fair value on our balance sheets, including the category for such financial instruments.

Financial instruments classified as Level 1 include money market funds and certificates of deposit, representing approximately 4% of our total financial instruments classified as assets measured at fair value as of December 31, 2019. Financial instruments classified as Level 2 include commercial paper, U.S. government-sponsored enterprise securities, corporate notes and equity investments, representing approximately 96% of our total financial instruments classified as assets measured at fair value as of December 31, 2019. The price for each security at the measurement date is derived from various sources. Periodically, we assess the reasonableness of these sourced prices by comparing them to the prices provided by our portfolio managers from broker quotes as well as reviewing the pricing methodologies used by our portfolio managers. Historically, we have not experienced significant deviation between the sourced prices and our portfolio managers' prices.

For a further discussion regarding fair value measurements, see Note 2 on Fair Value Measurements in Notes to Financial Statements of this annual report on Form 10-K.

Leases

On January 1, 2019, we adopted the provisions of Accounting Standards Codification 2016-02, *Leases* (*Topic 842*), or ASU 2016-02, using the modified retrospective transition method as discussed in the subsection entitled, "New Accounting Pronouncements – Recently Adopted", in Note 1 of Notes to Financial Statements of this Form 10-K. Financial results for the reporting periods beginning after January 1, 2019 are presented under Topic 842, while prior period amounts have not been adjusted and continue to be reported in accordance with our historical accounting under Accounting Standards Codification Topic 840, *Leases*, or Topic 840.

At the inception of an arrangement, we determine whether the arrangement is or contains a lease based on the unique facts and circumstances present. Operating leases are included in operating lease, right-of-use assets and lease liabilities in our balance sheets. Right-of-use assets represent our right to use an underlying asset for the lease term and lease liabilities represent our obligation to make lease payments arising from the lease. Operating lease liabilities and their corresponding right-of-use assets are recorded based on the present value of remaining lease payments over the expected lease term. The present value of remaining lease payments within the 12 months following the balance sheet date are classified as current lease liabilities. The present value of lease payments not

within the 12 months following the balance sheet date are classified as noncurrent lease liabilities. The interest rate implicit in lease contracts to calculate the present value is typically not readily determinable. As such, significant management judgment is required to estimate the incremental borrowing rate, which is the rate incurred to borrow on a collateralized basis over a similar term an amount equal to the lease payments in a similar economic environment as of the lease commencement date. If the basis for the incremental borrowing rate estimate were to change, then the present value of remaining lease payments could differ significantly which would affect the value recognized for the right-of-use assets and corresponding lease liabilities on our balance sheet. See Note 7 on Operating Leases for further discussion of our operating lease obligations.

Revenue Recognition

Beginning January 1, 2018, we recognize revenue in accordance with the provisions of Accounting Standards Codification Topic 606, *Revenue from Contracts with Customers*, or Topic 606. In determining the appropriate amount and timing of revenue to be recognized under Topic 606, we perform the following five steps: (i) identify the contract(s) with our customer; (ii) identify the promised goods or services in the agreement and determine whether they are performance obligations, including whether they are distinct in the context of the agreement; (iii) measure the transaction price, including the constraint on variable consideration; (iv) allocate the transaction price to the performance obligations based on stand-alone selling prices; and (v) recognize revenue when (or as) we satisfy each performance obligation. Significant management judgment is required to determine the level of effort required and the period over which completion of the performance obligations is expected under an agreement. If reasonable estimates regarding when performance obligations are either complete or substantially complete cannot be made, then revenue recognition is deferred until a reasonable estimate can be made. Revenue is then recognized over the remaining estimated period of performance using the cumulative catch-up method. Amounts expected to be recognized as revenue within the 12 months following the balance sheet date are classified as current deferred revenue. Amounts not expected to be recognized as revenue within the 12 months following the balance sheet date are classified as noncurrent deferred revenue.

We allocate the total transaction price to each performance obligation based on the estimated relative stand-alone selling prices of the promised goods or services underlying each performance obligation. Estimated selling prices for license rights are calculated using an income approach model and include the following key assumptions, judgments and estimates: the development timeline, revenue forecast, commercialization expenses, discount rate and probabilities of technical and regulatory success.

Our revenues historically have consisted of collaboration revenue and license fees and royalties. Collaboration revenue primarily represented amounts earned under the Collaboration Agreement with Janssen for the imetelstat program. Effective September 28, 2018, the Collaboration Agreement with Janssen was terminated. As a result, we will not receive any milestone payments or royalties from Janssen for the development or commercialization of imetelstat. License fees and royalty revenue primarily represents amounts earned under agreements that out-license our technology to various oncology, diagnostics, research tools and biologics production companies. Economic terms in these agreements may include non-refundable upfront license payments in cash or equity securities, annual license maintenance fees, cost sharing arrangements, milestone payments, royalties on future sales of products, or any combination of these items. Non-refundable upfront fees, annual license maintenance fees and funding of research and development activities are considered fixed, while milestone payments and royalties are identified as variable consideration.

Licenses of Intellectual Property. If we determine the license to intellectual property is distinct from the other performance obligations identified in the agreement and the licensee can use and benefit from the license, we recognize revenue from non-refundable upfront fees allocated to the license upon the completion of the transfer of the license to the licensee. For such licenses, we recognize revenue from annual license maintenance fees upon the start of the new license period. For licenses that are bundled with other performance obligations, we assess the nature of the combined performance obligation to determine whether the combined performance obligation is satisfied over time or at a point in time and, if over time, the appropriate method of measuring progress for purposes of recognizing revenue from non-refundable upfront fees or annual license maintenance fees. At each reporting period, we reassess the progress and, if necessary, adjust the measure of performance and related revenue recognition.

Milestone Payments. At the inception of each agreement that includes milestone payments, we evaluate whether the milestones are considered probable of being achieved and estimate the amount to be included in the transaction price using the most likely amount method. If it is probable that a significant revenue reversal would not occur, the value of the associated milestone is included in the transaction price. For milestones that we do not deem to be probable of being achieved, the associated milestone payments are fully constrained and the value of the milestone is excluded from the transaction price with no revenue being recognized. Milestone payments that are not within our control, such as regulatory-related accomplishments, are not considered probable of being achieved until those accomplishments have been communicated by the relevant regulatory authority. Once the assessment of probability of achievement becomes probable, we recognize revenue for the milestone payment. At each reporting period, we assess the probability of achievement of each milestone under our current agreements.

Royalties. For agreements with sales-based royalties, including milestone payments based on the level of sales, where the license is deemed to be the predominant item to which the royalties relate, we recognize revenue at the later of: (a) when the related sales occur, or (b) when the performance obligation, to which some or all of the royalty has been allocated, has been satisfied (or partially satisfied). At each reporting period, we estimate the sales incurred by each licensee based on historical experience and accrue the associated royalty amount.

Cost Sharing Arrangements. Research and development and other expenses being shared by both parties under an agreement are recorded as earned or owed based on the performance obligations by both parties under the respective agreement. For arrangements in which we and our collaboration partner in the agreement are exposed to significant risks and rewards that depend on the commercial success of the activity, we recognize payments between the parties on a net basis and record such amounts as a reduction or addition to research and development expense. For arrangements in which we have agreed to perform certain research and development services for our collaboration partner and are not exposed to significant risks and rewards that depend on the commercial success of the activity, we recognize the respective cost reimbursements as revenue under the collaborative agreement over time in a manner proportionate to the costs we incurred to perform the services using the input method.

Revenue recognition for licenses and collaboration agreements requires significant judgment. Our assessments and estimates are based on contractual terms, historical experience and general industry practice. Revisions in these values or estimations have the effect of increasing or decreasing license fee or collaboration revenue in the period of revision. As of December 31, 2019, we have not made any revisions to revenue recognition estimates.

Clinical Trial Accruals

Our current imetelstat clinical trials are being supported by third-party contract research organizations, or CROs, and other vendors. We accrue expenses for clinical trial activities performed by CROs based upon the estimated amount of work completed on each trial. For clinical trial expenses, the significant factors used in estimating accruals include the number of patients enrolled, the number of active clinical sites, and the duration for which the patients have been enrolled in the trial. We monitor patient enrollment levels and related activities to the extent possible through internal reviews, review of contractual terms and correspondence with CROs. We base our estimates on the best information available at the time. For the clinical development activities being conducted by Janssen under the former Collaboration Agreement, we monitored patient enrollment levels and related activities to the extent possible through discussions with Janssen personnel and based our estimates of clinical trial costs on the best information available at the time. However, additional information may become available to us which will allow us to make a more accurate estimate in future periods. In that event, we may be required to record adjustments to research and development expenses in future periods when the actual level of activity becomes more certain.

Valuation of Stock-Based Compensation

We measure and recognize compensation expense for all share-based payment awards to our employees and directors, including service-based and performance-based stock options, restricted stock awards and employee stock purchases related to our Employee Stock Purchase Plan, or ESPP, based on estimated grant-date fair values for these instruments. The grant-date fair value of share-based payment awards is amortized over the vesting period of the awards using a straight-line method and reduced for estimated forfeitures. For performance-based stock options with vesting conditioned on the achievement of certain strategic milestones, stock-based compensation expense is recognized over the period from the date the performance condition is determined to be probable of occurring

through the date the applicable condition is expected to be met and is reduced for estimated forfeitures, as applicable. If the performance condition is not considered probable of being achieved, no stock-based compensation expense is recognized until such time as the performance condition is considered probable of being met, if at all. If that assessment of the probability of the performance condition being met changes, the impact of the change in estimate would be recognized in the period of the change. We use the Black Scholes option-pricing model to estimate the grant-date fair value of our service-based and performance-based stock options and employee stock purchases. The grant-date fair value for service-based restricted stock awards is determined using the fair value of our common stock on the date of grant.

Option-pricing model assumptions, such as expected volatility, expected term and risk-free interest rate, impact the fair value estimate. Expected volatilities are based on historical volatilities of our stock since traded options on our common stock do not correspond to option terms and trading volume of options is limited. The expected term of options represents the period of time that options granted are expected to be outstanding. In deriving this assumption, we review actual historical exercise and post-vesting cancellation data and the remaining outstanding options not yet exercised or cancelled. For performance-based stock options, we also assess the projected timing of potential achievement of the milestones. The expected term of employees' purchase rights under our ESPP is equal to the purchase period. The risk-free interest rate is based on the U.S. Zero Coupon Treasury Strip Yields for the expected term in effect on the date of grant. Forfeiture rates are estimated based on historical data and are adjusted, if necessary, over the requisite service period based on the extent to which actual forfeitures differ, or are expected to differ, from their estimate.

We evaluate the assumptions used in estimating grant-date fair values of our share-based payment awards by reviewing current trends in comparison to historical data on an annual basis. We have not revised the methods by which we derive assumptions in order to estimate grant-date fair values of our share-based payment awards. If factors change and we employ different assumptions in future periods, the stock-based compensation expense that we record for share-based payment awards to employees and directors may differ significantly from what we have recorded in the current period.

For our non-employee stock-based awards, the measurement date on which the fair value of the stock-based award is calculated is equal to the earlier of: (i) the date at which a commitment for performance by the counterparty to earn the equity instrument is reached or (ii) the date at which the counterparty's performance is complete.

Results of Operations

Our results of operations have fluctuated from period to period and may continue to fluctuate in the future. Results of operations for any period may be unrelated to results of operations for any other period. Thus, historical results should not be viewed as indicative of future operating results. For example, in 2015 we reported net income for the first time due to recognition of revenue in connection with the upfront payment from Janssen under the Collaboration Agreement. Effective September 28, 2018, the Collaboration Agreement with Janssen was terminated. As a result, we will not receive any milestone payments or royalties from Janssen for the development or commercialization of imetelstat. In addition, we expect to incur increasing operating losses in the future as we continue clinical development activities for imetelstat on our own to enable potential commercialization of imetelstat in the United States and other countries. We are subject to risks common to companies in our industry and at our stage of development, including, but not limited to, risks inherent in research and development efforts, including the development, manufacture, regulatory approval for and commercialization of, imetelstat, uncertainty of non-clinical and clinical trial results or regulatory approvals or clearances, the future development of imetelstat by us, including any future efficacy or safety results that may cause the benefit-risk profile of imetelstat to become unacceptable, our need for future capital, enforcement of our patent and proprietary rights, reliance upon our consultants, licensees, investigators and other third parties, and potential competition. In order for imetelstat to be commercialized, we must conduct non-clinical tests and clinical trials to demonstrate the safety and efficacy of imetelstat, obtain regulatory approvals or clearances and enter into manufacturing, distribution and marketing arrangements, as well as obtain market acceptance. We do not expect to receive revenue based on sales of imetelstat for many years, if at all.

Revenues

We have entered into several license or collaboration agreements with companies involved with oncology, diagnostics, research tools and biologics production, whereby we have granted certain rights to our non-imetelstat

related technologies. In connection with these agreements, we are eligible to receive license fees, option fees, milestone payments and royalties on future sales of products, or any combination thereof. As discussed above, we adopted Topic 606 using the modified retrospective transition method on January 1, 2018. As a result, prior period amounts have not been adjusted and continue to be reported in accordance with our historical accounting under Topic 605 and therefore, there is a lack of comparability to the prior periods presented. However, we do not expect the application of Topic 606 to have a material impact on our financial results on an ongoing basis in comparison to the results that would have been realized if we had continued to apply Topic 605.

We recognized license fee revenues of $96,000, $641,000 and $667,000 in 2019, 2018 and 2017, respectively, related to our various agreements. The decrease in license fee revenues in 2019 and 2018 primarily reflects a reduction in the number of active license agreements in 2019 and 2018 for research licenses related to our human telomerase reverse transcriptase, or hTERT, technology, due to the patent expirations on such technology. We expect the final payment under our one remaining patent license related to our telomerase technology to be made in the first quarter of 2020.

We recognized royalty revenues of $364,000, $425,000 and $398,000 in 2019, 2018 and 2017, respectively, on product sales of telomerase detection and telomere measurement kits to the research-use-only market and cell-based research products from our divested stem cell programs. The decrease in royalty revenues in 2019 compared to 2018 primarily reflects expiration of licenses which eliminated the obligation to pay royalties on product sales. The increase in royalty revenues in 2018 compared to 2017 primarily reflects a change in the method that revenue is being recognized for royalties upon the adoption of Topic 606 as of January 1, 2018. Under Topic 606, we estimate sales-based royalties earned on product sales by our licensees in each reporting period and accrue the associated royalty amount. In prior periods, revenue from royalties was being recognized when payments were received from our licensees.

In 2019, our revenues primarily were comprised of royalties on product sales of cell-based research products from our divested stem cell programs, license fees and royalties under research licenses related to our hTERT technology and license fees under a license agreement related to our specialized oligonucleotide backbone chemistry. Three customers accounted for approximately 79% of our 2019 revenue. Two customers accounted for approximately 59% and 39% of our 2018 and 2017 revenues, respectively.

Future license fee and royalty revenues are dependent on additional agreements being signed, if any, current agreements being maintained and the underlying patent rights for the licenses remaining active. We expect license fee and royalty revenues under our license agreements related to our hTERT technology to cease in 2020 due to the patent expirations on such technology. In addition, due to the termination of the Collaboration Agreement effective September 28, 2018, we will not receive any milestone payments or royalties from Janssen for the development or commercialization of imetelstat. Current revenues may not be predictive of future revenues.

Research and Development Expenses

During the years ended December 31, 2019, 2018 and 2017, imetelstat was the sole research and development program we supported. For the imetelstat research and development program, we incur direct external, personnel related and other research and development costs. For the year ended December 31, 2019, direct external expenses included costs for our contract research organizations, or CROs, consultants and other clinical-related vendors and 100% of the clinical development costs incurred by Janssen for operational support of the imetelstat program during the transition period. For the years ended December 31, 2018 and 2017, direct external expenses primarily consisted of our proportionate share of research and development costs incurred by Janssen under the Collaboration Agreement. Personnel related expenses primarily consist of salaries and wages, stock-based compensation, payroll taxes and benefits for Geron employees involved with ongoing research and development efforts. Other research and development expenses primarily consist of research-related overhead associated with allocated expenses for rent and maintenance of facilities and other supplies.

Research and development expenses were $52.1 million, $13.4 million and $11.0 million for the years ended December 31, 2019, 2018 and 2017, respectively. The increase in research and development expenses in 2019 compared to 2018 primarily reflects higher direct external costs for clinical development activities. Such costs included: a) fees to our CROs, consultants and other clinical-related vendors for imetelstat program transition; b)

start-up expenses for the Phase 3 portion of IMerge; c) 100% reimbursement to Janssen for operational support of the imetelstat program during the transition period and d) purchase of inventories of drug product, drug substance and raw materials from Janssen. In addition, personnel related expenses have increased in 2019 compared to 2018 as a result of additional development headcount being hired in 2019. The increase in research and development expenses in 2018 compared to 2017 primarily reflects higher direct external costs for our share of clinical development expenses under the former collaboration with Janssen where our share of such costs increased from 50% to 100% as of the termination date of the Collaboration Agreement, higher direct external costs for contract research services and consulting expenses and increased personnel related expenses.

Research and development expenses for the years ended December 31, 2019, 2018 and 2017 were as follows:

	Year Ended December 31,		
(In thousands)	**2019**	**2018**	**2017**
Direct external research and development expenses:			
Clinical program: Imetelstat	$ 39,263	$ 10,353	$ 8,437
Personnel related expenses	10,126	2,429	2,063
All other research and development expenses	2,683	650	533
Total	$ 52,072	$ 13,432	$ 11,033

Since cost sharing between Janssen and us for imetelstat clinical development ceased on September 28, 2018, the effective date of termination of the Collaboration Agreement, we expect research and development expenses to increase substantially in future periods as we continue to undertake sole financial responsibility for the imetelstat development program, including all ongoing or potential future clinical trials, engage third parties and other service providers to conduct clinical trials of imetelstat, and hire additional senior personnel to oversee the program. Under the terms of the Collaboration Agreement, Janssen was required to provide operational support for the imetelstat program through September 2019 during transition of the program to us, including continuing to support ongoing imetelstat clinical trials. We reimbursed Janssen for 100% of the costs for such operational support. However, costs associated with transition activities, such as transfer of the sponsorship of ongoing imetelstat clinical trials, moving databases and related systems and transmitting regulatory files, were incurred separately by each company, unless otherwise specified in the Collaboration Agreement. As of the end of September 2019, the transition of the imetelstat program to us from Janssen was completed according to the terms of the Collaboration Agreement.

At this time, we cannot provide reliable estimates of how much time or investment will be necessary to advance imetelstat toward commercialization. For a more complete discussion of the risks and uncertainties associated with the development of imetelstat, see the sub-sections entitled “Risks Related to the Development of Imetelstat” and “Risks Related to Regulatory Compliance Matters and Commercialization of Imetelstat” in Part I, Item 1A entitled “Risk Factors” and elsewhere in this annual report on Form 10-K.

General and Administrative Expenses

General and administrative expenses were $20.9 million, $18.7 million and $19.3 million for the years ended December 31, 2019, 2018 and 2017, respectively. The increase in general and administrative expenses in 2019 compared to 2018 primarily reflects higher corporate and patent legal costs and additional general and administrative personnel to support operational activities. The decrease in general and administrative expenses in 2018 compared to 2017 primarily reflects the net result of reduced personnel related expenses, including lower stock-based compensation expense, partially offset by higher consulting expenses and patent legal expenses. We expect general and administrative expenses to increase in the future as the imetelstat program matures and potential pre-commercialization preparatory activities begin.

Interest and Other Income

Interest and other income was $4.2 million, $3.3 million and $1.4 million for the years ended December 31, 2019, 2018 and 2017, respectively. The increase in interest and other income in 2019 and 2018 primarily reflects higher yields on our marketable securities portfolio and the increase in the size of our marketable securities portfolio resulting from the receipt of net cash proceeds from issuances of common stock pursuant to our At Market Issuance Sales

Agreement, or the 2015 Sales Agreement, with MLV & Co. LLC, or MLV, and our At Market Issuance Sales Agreement, or the 2018 Sales Agreement, with B. Riley FBR, Inc., or B. Riley FBR. Interest earned in future periods will depend on the size of our marketable securities portfolio and prevailing interest rates.

Gain on Settlement

In July 2018, we and the other former shareholders of ViaGen, Inc., or ViaGen, filed an arbitration claim against Trans Ova Genetics, L.C., or Trans Ova, for alleged violations under a Share Purchase Agreement, or SPA, including failure to make payments under certain conditions. In December 2018, we and the other former shareholders of ViaGen agreed to settle the dispute for a one-time payment of $3.7 million, of which we received $1.5 million, which represents our 40% share of the settlement amount. With this settlement, Trans Ova has been released from any further obligations under the SPA, including any future payments. No comparable amounts were recognized in 2019 or 2017.

Change in Fair Value of Equity Investment

With the adoption of ASU 2016-01 on January 1, 2018, we remeasure the fair value of our equity investment in Sienna Cancer Diagnostics Limited, or Sienna, at each reporting date and any resulting change in fair value based on observable price changes is included in our statements of operations. The overall decrease in the fair value of our equity investment in Sienna resulting from observable price changes in Sienna's stock was $195,000 and $541,000 for the years ended December 31, 2019 and 2018, respectively. No comparable amount was incurred in 2017. The fair value of our equity investment in Sienna fluctuates based on changes in Sienna's stock price and is therefore subject to volatility that could adversely affect our future operating results.

Other Expense

Other expense was $69,000, $154,000 and $77,000 for the years ended December 31, 2019, 2018 and 2017, respectively. Other expense reflects the net effect of foreign currency translation on our equity investment in Sienna and bank charges related to our cash operating accounts and marketable securities portfolio. Other expense for the years ended December 31, 2019 and 2018 included losses of $1,000 and $63,000, respectively, related to foreign currency translation for our equity investment in Sienna. No comparable amount was incurred in 2017. The fair value of our equity investment in Sienna fluctuates based on changes in the exchange rate between the U.S. dollar and Australian dollar and is therefore subject to volatility that could adversely affect our future operating results.

Liquidity and Capital Resources

As of December 31, 2019, we had cash, restricted cash, cash equivalents and marketable securities of $159.2 million, compared to $182.1 million at December 31, 2018. The net decrease in cash, restricted cash, cash equivalents, and current and noncurrent marketable securities in 2019 was the net result of cash being used for operations, partially offset by net proceeds of $19.3 million from sales of our common stock under the 2018 Sales Agreement in 2019. We estimate that our existing capital resources and future interest income will be sufficient to fund our current level of operations through at least the next 12 months. However, we expect to experience negative cash flow for the foreseeable future as a result of the termination of the Collaboration Agreement with Janssen and as we continue development of the imetelstat program on our own.

We have an investment policy to invest our cash in liquid, investment grade securities, such as interest-bearing money market funds, certificates of deposit, municipal securities, U.S. government and agency securities, corporate notes and commercial paper. Our investment portfolio does not contain securities with exposure to sub-prime mortgages, collateralized debt obligations, asset-backed securities or auction rate securities and, to date, we have not recognized any other-than-temporary impairment charges on our marketable securities or any significant changes in aggregate fair value that would impact our cash resources or liquidity. To date, we have not experienced lack of access to our invested cash and cash equivalents; however, access to our invested cash and cash equivalents may be impacted by adverse conditions in the financial and credit markets.

In August 2015, we entered into the 2015 Sales Agreement with MLV, under which we could elect to issue and sell shares of our common stock having an aggregate offering price of up to $50 million. Pursuant to the 2015 Sales Agreement, common stock was sold at market prices prevailing at the time of sale through MLV as our sales agent. We paid MLV an aggregate commission rate equal to up to 3.0% of the gross proceeds of the sales price per share for common stock sold through MLV under the 2015 Sales Agreement. In 2018, we sold an aggregate of 13,195,106 shares of our common stock under the 2015 Sales Agreement, resulting in net cash proceeds to us of approximately $47.7 million after deducting sales commissions and offering expenses payable by us. Under the 2015 Sales Agreement, we sold a cumulative total of 13,809,336 shares of our common stock resulting in net cash proceeds to us of approximately $48.7 million after deducting sales commissions and offering expenses payable by us. No further shares of common stock may be sold under the 2015 Sales Agreement.

In May 2018, we entered into the 2018 Sales Agreement with B. Riley FBR, pursuant to which we may elect to issue and sell shares of our common stock having an aggregate offering price of up to $100 million in such quantities and on such minimum price terms as we set from time to time through B. Riley FBR as our sales agent. Pursuant to the 2018 Sales Agreement, B. Riley FBR sells our common stock at market prices prevailing at the time of sale for which B. Riley FBR receives an aggregate commission rate equal to up to 3.0% of the gross proceeds. We sold an aggregate of 13,214,867 and 10,083,079 shares of our common stock under the 2018 Sales Agreement in 2019 and 2018, respectively, resulting in net cash proceeds to us of approximately $19.3 million and $38.4 million, respectively, after deducting sales commissions and offering expenses payable by us. In January 2020, we sold an aggregate of 530,228 shares of our common stock under the 2018 Sales Agreement resulting in net cash proceeds to us of approximately $748,000, after deducting sales commissions and offering expenses payable by us. As of March 1, 2020, approximately $40.0 million of our common stock remained available for issuance under the 2018 Sales Agreement. The 2018 Sales Agreement will expire upon the earlier of the remaining common stock being sold or May 2021.

We will require substantial additional capital in order to further advance the imetelstat program, including conducting the research and development, clinical, regulatory and potential commercialization activities necessary to bring imetelstat to market. In this regard, our ability to complete the Phase 3 portion of IMerge and to commence, conduct and complete potential future clinical trials of imetelstat, such as potential Phase 3 clinical trials in MF or potential additional proof-of-concept studies in other hematologic myeloid malignancies, is dependent on our ability to raise substantial additional capital. In addition, our ability to commercialize imetelstat in the United States, if regulatory approval is granted, depends on us being able to establish sales and marketing capabilities. Because the outcome of any clinical activities and/or regulatory approval process is highly uncertain, we cannot reasonably estimate whether any development activities we may undertake will succeed, and we may never recoup our investment in any imetelstat development, which would adversely affect our financial condition and our business and business prospects, and might cause us to cease operations. Our future capital requirements are difficult to forecast and will depend on many factors, including:

- the accuracy of the assumptions underlying our estimates for our capital needs;
- the progress, timing, magnitude, scope and costs of clinical development, manufacturing and potential commercialization of imetelstat, including the number of indications being pursued, subject to clearances and approvals by the FDA and other regulatory authorities;
- the scope, progress, duration, results and costs of current and potential future clinical trials, including the Phase 3 portion of IMerge, potential Phase 3 clinical trials in MF and potential proof-of-concept studies in other hematologic myeloid malignancies, as well as non-clinical studies and assessments, of imetelstat;
- the costs, timing and outcomes of regulatory reviews or other regulatory actions related to imetelstat, such as submitting Phase 3 trial design proposals in MF and conducting further discussions with the FDA regarding a potential regulatory approval path in MF, as well as obtaining regulatory clearances and approvals in the United States and in other countries;
- the costs of preparing, filing and prosecuting patent applications and maintaining, enforcing and defending intellectual property-related claims;
- the costs of manufacturing imetelstat, including our ability to achieve any meaningful reduction in manufacturing costs;

- the costs of multiple third-party vendors and service providers, including our CROs and CMOs, to pursue the development, manufacturing and potential commercialization of imetelstat;
- our ability to establish, enforce and maintain collaborative or other strategic arrangements for research, development, clinical testing and manufacturing of imetelstat and potential future commercialization and marketing;
- our ability to successfully market and sell imetelstat, if imetelstat receives future regulatory approval or clearance, in the United States and other countries;
- our need to successfully recruit and retain additional key personnel to support the development and potential future commercialization of imetelstat;
- the costs and timing necessary to build a U.S. sales force to market and sell imetelstat, should it receive regulatory clearance;
- the sales price for imetelstat;
- the availability of coverage and adequate third-party reimbursement for imetelstat;
- expenses associated with the pending putative securities class action lawsuits and potential additional related lawsuits, as well as any other litigation;
- the extent and scope of our general and administrative expenses, including expenses associated with pending and potential future litigation; and
- the costs of maintaining and operating facilities in California and New Jersey, including higher expenses for travel, telecommunications and administrative oversight.

As a result of the termination of the Collaboration Agreement effective September 28, 2018, we are responsible for funding all clinical development, manufacturing, intellectual property maintenance and potential commercial activities for the imetelstat program. In order to further advance the imetelstat program, including completing the Phase 3 portion of IMerge and commencing, conducting and completing potential future clinical trials in other indications, such as potential Phase 3 clinical trials in MF or potential proof-of-concept studies in other hematologic myeloid malignancies, we will need to raise substantial additional capital or establish additional collaborative arrangements with third-party collaborative partners, which may not be possible. In addition, as a result of the termination of the Collaboration Agreement, we will not receive any milestone payments or royalties from Janssen for the development or sale of imetelstat, including any clinical development milestones. If we are unable to raise additional capital or establish alternative collaborative arrangements with third-party collaborative partners for imetelstat, the development of imetelstat may be further delayed, altered or abandoned, which might cause us to cease operations. Additional financing through public or private equity financings, including pursuant to our 2018 Sales Agreement with B. Riley FBR, capital lease transactions or other financing sources may not be available on acceptable terms, or at all. We may raise equity capital at a stock price or on other terms that could result in substantial dilution of ownership for our stockholders. The receptivity of the public and private equity markets to proposed financings is substantially affected by the general economic, market and political climate and by other factors which are unpredictable and over which we have no control. In this regard, volatility and instability in the global financial markets and political climate could adversely affect our ability to raise additional funds through financings and the terms upon which we may raise those funds.

In addition, we may seek additional capital due to market conditions or strategic considerations even if we believe we have sufficient funds for our current or future operating plans. To the extent that we raise additional capital through the sale of equity or convertible debt securities, the ownership interests of our stockholders may be diluted, and the terms may include liquidation or other preferences that materially and adversely affect the rights of our stockholders. 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. If we raise additional funds through alliance, collaborative or licensing arrangements with third parties, we may have to relinquish valuable rights to imetelstat or our technologies or grant licenses on terms that are not favorable to us.

We cannot assure you that our existing capital resources, future interest income, and potential future sales of our common stock, including under our 2018 Sales Agreement with B. Riley FBR, will be sufficient to fund our operating plans. In any event, we will need substantial additional funds to meet operational needs and capital requirements to advance the imetelstat program in clinical development and potential commercialization, and our need for additional funds may arise sooner than planned. If adequate funds are not available on a timely basis, if at all, we may be unable to pursue further development, including completing the Phase 3 portion of IMerge, and commencing, conducting and completing potential Phase 3 clinical trials in MF, or potential proof-of-concept studies in other hematologic myeloid malignancies, or to pursue potential commercialization of imetelstat, which would severely harm our business and we might cease operations.

Cash Flows from Operating Activities

Net cash used in operations was $43.8 million, $21.0 million and $20.6 million in 2019, 2018 and 2017, respectively. The increase in net cash used in operations for in 2019 compared to 2018 primarily reflects higher payments for research and development expenses in connection with the transition of the imetelstat program from Janssen to us, start-up activities for the Phase 3 portion of IMerge, purchase of inventories of drug product, drug substance and raw materials from Janssen and increases in development headcount. The increase in net cash used in operations in 2018 compared to 2017 primarily reflects the net result of higher costs associated with business development activities, partially offset by lower payments to Janssen in 2018 under the cost sharing arrangement for imetelstat clinical development.

Cash Flows from Investing Activities

Net cash provided by investing activities in 2019 and 2017 was $27.4 million and $23.0 million, respectively. Net cash used in investing activities in 2018 was $77.7 million. Net cash provided by investing activities in 2019 and 2017 primarily reflects a higher rate of maturities than purchases of marketable securities. Net cash used in investing activities in 2018 primarily reflects a higher rate of purchases than maturities of marketable securities resulting from the investment of net cash proceeds from the sales of our common stock pursuant to the 2015 Sales Agreement with MLV and the 2018 Sales Agreement with B. Riley FBR.

For the three years ended December 31, 2019, we purchased approximately $429,000 in property and equipment, none of which was financed through equipment financing arrangements.

Cash Flows from Financing Activities

Net cash provided by financing activities in 2019, 2018 and 2017 was $19.5 million, $93.0 million and $1.1 million, respectively. Financing activities in 2019 and 2018 primarily reflect the receipt of net cash proceeds from the sales of our common stock under the 2015 Sales Agreement with MLV and the 2018 Sales Agreement with B. Riley FBR and cash proceeds from the issuance of common stock under our employee equity plans.

Significant Cash and Contractual Obligations

As of December 31, 2019, our contractual obligations for the next five years and thereafter were as follows:

	Payments Due by Period				
Contractual Obligations [1]	Total	Less Than 1 Year	1-3 Years	4 - 5 Years	After 5 Years
			(In thousands)		
Equipment lease	$ 26	$ 17	$ 9	$ —	$ —
Operating leases[2]	8,275	713	1,851	1,949	3,762
License fees[3]	200	25	50	50	75
Total contractual cash obligations	$ 8,501	$ 755	$ 1,910	$ 1,999	$ 3,837

(1) This table does not include payments under our severance plan if there were a change in control of Geron or severance payments to employees in the event of an involuntary termination. In addition, this table does not include any royalty obligations under our license agreements as the timing and likelihood of such payments are not known.

(2) In September 2019, we amended the lease agreement for our office space at 149 Commonwealth Drive, Menlo Park, California to extend the lease term by two months to the end of March 2020. In April 2019, we entered into an operating lease agreement for office space located at 3 Sylvan Way, Parsippany, New Jersey, or the New Jersey Lease. The initial term of the New Jersey Lease is 11 years with an option to extend for an additional five years and a one-time option to terminate the New Jersey Lease without cause as of the 103rd month anniversary of October 1, 2019, the commencement date of the lease. In October 2019, we entered into an operating lease agreement for office space located at 919 East Hillsdale Boulevard, Foster City, California, or the Foster City Lease. The initial term of the Foster City Lease is 87 months with an option to extend for an additional five years. We expect to occupy the office space underlying the Foster City Lease by mid-March 2020, upon which the Foster City Lease will commence. Operating lease obligations in the table above do not assume the exercise by us of any option to extend a lease or any right of termination.

(3) License fees are comprised of minimum annual license payments under our existing license agreements with universities and companies for the right to use intellectual property related to technologies that we have in-licensed.

Off-Balance Sheet Arrangements

We have not engaged in any off-balance sheet arrangements, including the use of structured finance, special purpose entities or variable interest entities.

ITEM 7A. QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK

We are a smaller reporting company as defined by Rule 12b-2 of the Securities Exchange Act of 1934, as amended, or the Exchange Act, and are not required to provide the information specified under this item.

ITEM 8. FINANCIAL STATEMENTS AND SUPPLEMENTARY DATA

The following financial statements and the related notes thereto, of Geron Corporation and the Report of Independent Registered Public Accounting Firm, Ernst & Young LLP, are filed as a part of this annual report on Form 10-K.

REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

To the Stockholders and the Board of Directors of Geron Corporation

Opinion on the Financial Statements

We have audited the accompanying balance sheets of Geron Corporation (the Company) as of December 31, 2019 and 2018, the related statements of operations, comprehensive loss, stockholders' equity and cash flows for each of the three years in the period ended December 31, 2019, and the related notes (collectively referred to as the "financial statements"). In our opinion, the financial statements present fairly, in all material respects, the financial position of the Company at December 31, 2019 and 2018, and the results of its operations and its cash flows for each of the three years in the period ended December 31, 2019, in conformity with U.S. generally accepted accounting principles.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) (PCAOB), the Company's internal control over financial reporting as of December 31, 2019, based on criteria established in *Internal Control-Integrated Framework* issued by the Committee of Sponsoring Organizations of the Treadway Commission (2013 framework), and our report dated March 12, 2020 expressed an unqualified opinion thereon.

Adoption of ASU No. 2016-01

As discussed in Note 1 to the financial statements, the Company changed its method of accounting for certain equity investments due to the adoption of ASU No. 2016-01, Recognition and Measurement of Financial Assets and Financial Liabilities, and the amendment in ASU 2018-03 effective January 1, 2018.

Basis for Opinion

These financial statements are the responsibility of the Company's management. Our responsibility is to express an opinion on the Company's financial statements based on our audits. We are a public accounting firm registered with the PCAOB and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audits in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement, whether due to error or fraud. Our audits included performing procedures to assess the risks of material misstatement of the financial statements, whether due to error or fraud, and performing procedures that respond to those risks. Such procedures included examining, on a test basis, evidence regarding the amounts and disclosures in the financial statements. Our audits also included evaluating the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of the financial statements. We believe that our audits provide a reasonable basis for our opinion.

/s/ Ernst & Young LLP

We have served as the Company's auditor since 1992.
Redwood City, California
March 12, 2020

GERON CORPORATION

BALANCE SHEETS

	December 31, 2019	December 31, 2018
	(In thousands, except share and per share data)	
ASSETS		
Current assets:		
Cash and cash equivalents	$ 13,644	$ 10,575
Restricted cash	270	269
Marketable securities	125,681	152,714
Interest and other receivables	802	1,168
Prepaid and other current assets	1,211	1,332
Total current assets	141,608	166,058
Noncurrent marketable securities	19,651	18,582
Property and equipment, net	408	59
Operating leases, right-of-use assets	2,497	—
Deposits and other assets	1,353	585
	$ 165,517	$ 185,284
LIABILITIES AND STOCKHOLDERS' EQUITY		
Current liabilities:		
Accounts payable	$ 1,181	$ 982
Accrued compensation and benefits	4,830	2,642
Amount due to Janssen Biotech, Inc.	14,269	2,610
Operating lease liabilities	354	—
Accrued liabilities	7,528	1,317
Total current liabilities	28,162	7,551
Noncurrent operating lease liabilities	2,200	—
Commitments and contingencies		
Stockholders' equity:		
Preferred stock, $0.001 par value; 3,000,000 shares authorized; no shares issued and outstanding at December 31, 2019 and 2018	—	—
Common stock, $0.001 par value; 450,000,000 shares authorized; 199,814,581 and 186,392,682 shares issued and outstanding at December 31, 2019 and 2018, respectively	200	186
Additional paid-in capital	1,214,835	1,189,194
Accumulated deficit	(1,080,012)	(1,011,464)
Accumulated other comprehensive gain (loss)	132	(183)
Total stockholders' equity	135,155	177,733
	$ 165,517	$ 185,284

See accompanying notes.

GERON CORPORATION

STATEMENTS OF OPERATIONS

	Year Ended December 31,		
	2019	2018	2017
	(In thousands, except share and per share data)		
Revenues:			
License fees and royalties	$ 460	$ 1,066	$ 1,065
Operating expenses:			
Research and development	52,072	13,432	11,033
General and administrative	20,893	18,707	19,287
Total operating expenses	72,965	32,139	30,320
Loss from operations	(72,505)	(31,073)	(29,255)
Interest and other income	4,221	3,291	1,416
Gain on settlement	—	1,460	—
Change in fair value of equity investment	(195)	(541)	—
Other expense	(69)	(154)	(77)
Net loss	$ (68,548)	$ (27,017)	$ (27,916)
Basic and diluted net loss per share	$ (0.36)	$ (0.15)	$ (0.18)
Shares used in computing basic and diluted net loss per share	190,160,311	176,504,996	159,224,986

See accompanying notes.

GERON CORPORATION

STATEMENTS OF COMPREHENSIVE LOSS

	Year Ended December 31,		
	2019	2018	2017
		(In thousands)	
Net loss	$ (68,548)	$ (27,017)	$ (27,916)
Net unrealized gain (loss) on marketable securities	315	24	(154)
Comprehensive loss	$ (68,233)	$ (26,993)	$ (28,070)

See accompanying notes.

GERON CORPORATION

STATEMENTS OF STOCKHOLDERS' EQUITY

	Common Stock		Additional Paid-In	Accumulated	Accumulated Other Comprehensive	Total Stockholders'
	Shares	Amount	Capital	Deficit	Gain (Loss)	Equity
	(In thousands, except share data)					
Balances at December 31, 2016	159,158,636	$ 159	$1,080,198	$ (957,924)	$ (53)	$ 122,380
Net loss	—	—	—	(27,916)	—	(27,916)
Other comprehensive loss	—	—	—	—	(154)	(154)
Issuance of common stock in connection with at market offering, net of issuance costs of $114	614,230	1	1,059	—	—	1,060
Stock-based compensation related to issuance of common stock and options in exchange for services	72,066	—	200	—	—	200
Issuances of common stock under equity plans	32,307	—	51	—	—	51
Stock-based compensation for equity-based awards to employees and directors	—	—	8,144	—	—	8,144
401(k) contribution	—	—	32	—	—	32
Balances at December 31, 2017	159,877,239	160	1,089,684	(985,840)	(207)	103,797
Cumulative effect of accounting principle change	—	—	—	1,393	—	1,393
Net loss	—	—	—	(27,017)	—	(27,017)
Other comprehensive income	—	—	—	—	24	24
Issuance of common stock in connection with at market offering, net of issuance costs of $2,282	23,278,185	23	85,994	—	—	86,017
Stock-based compensation related to issuance of common stock and options in exchange for services	73,980	—	191	—	—	191
Issuances of common stock under equity plans	3,163,278	3	6,948	—	—	6,951
Stock-based compensation for equity-based awards to employees and directors	—	—	6,368	—	—	6,368
401(k) contribution	—	—	9	—	—	9
Balances at December 31, 2018	186,392,682	186	1,189,194	(1,011,464)	(183)	177,733
Net loss	—	—	—	(68,548)	—	(68,548)
Other comprehensive income	—	—	—	—	315	315
Issuance of common stock in connection with at market offering, net of issuance costs of $481	13,214,867	14	19,281	—	—	19,295
Stock-based compensation related to issuance of common stock and options in exchange for services	29,150	—	68	—	—	68
Issuances of common stock under equity plans	177,882	—	204	—	—	204
Stock-based compensation for equity-based awards to employees and directors	—	—	6,079	—	—	6,079
401(k) contribution	—	—	9	—	—	9
Balances at December 31, 2019	199,814,581	$ 200	$1,214,835	$ (1,080,012)	$ 132	$ 135,155

See accompanying notes.

GERON CORPORATION

STATEMENTS OF CASH FLOWS

	Year Ended December 31,		
	2019	2018	2017
		(In thousands)	
Cash flows from operating activities:			
Net loss	$ (68,548)	$ (27,017)	$ (27,916)
Adjustments to reconcile net loss to net cash used in operating activities:			
Depreciation and amortization	64	59	76
Loss on retirement/sales of property and equipment	—	—	5
Accretion and amortization on investments, net	(1,534)	(978)	273
Change in fair value of equity investment, including foreign currency translation	196	604	—
Stock-based compensation for services by non-employees	68	191	200
Stock-based compensation for employees and directors	6,079	6,368	8,144
Amortization related to 401(k) contributions	9	9	32
Amortization of right-of use-assets	712	—	—
Changes in assets and liabilities:			
Interest and other receivables	366	(528)	39
Prepaid assets	121	(752)	(56)
Deposit and other assets	(964)	—	—
Accounts payable	199	479	278
Accrued compensation and benefits	2,188	(743)	542
Amount due to Janssen Biotech, Inc.	11,659	908	(1,665)
Accrued liabilities	6,211	391	(508)
Operating lease liabilities	(655)	—	—
Net cash used in operating activities	(43,829)	(21,009)	(20,556)
Cash flows from investing activities:			
Purchases of property and equipment	(413)	(16)	—
Purchases of marketable securities	(153,467)	(188,365)	(100,006)
Proceeds from maturities of marketable securities	181,280	110,663	122,976
Net cash provided by (used in) investing activities	27,400	(77,718)	22,970
Cash flows from financing activities:			
Proceeds from issuances of common stock under equity plans	204	6,951	51
Proceeds from issuances of common stock from financings	19,295	86,017	1,060
Net cash provided by financing activities	19,499	92,968	1,111
Net increase (decrease) in cash, cash equivalents and restricted cash	3,070	(5,759)	3,525
Cash, cash equivalents and restricted cash at the beginning of the period	10,844	16,603	13,078
Cash, cash equivalents and restricted cash at the end of the period	$ 13,914	$ 10,844	$ 16,603

See accompanying notes.

GERON CORPORATION

NOTES TO FINANCIAL STATEMENTS

1. ORGANIZATION AND SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES

Organization

Geron Corporation, or we or Geron, was incorporated in the State of Delaware on November 28, 1990. We are a late-stage clinical biopharmaceutical company that is focused on the development and potential commercialization of imetelstat, an innovative therapeutic for hematologic myeloid malignancies. We have global rights to imetelstat, a first-in-class telomerase inhibitor, which was discovered and developed at Geron. Principal activities to date have included obtaining financing, securing operating facilities and conducting research and development. In November 2014, we entered into an exclusive collaboration and license agreement, or the Collaboration Agreement, with Janssen Biotech, Inc., or Janssen, to develop and commercialize imetelstat worldwide for all indications in oncology, including hematologic myeloid malignancies, and all other human therapeutic uses. Janssen terminated the Collaboration Agreement effective September 28, 2018. Upon the effective date of termination, we regained the global rights to the imetelstat program. Under the termination provisions of the Collaboration Agreement, Janssen provided certain operational support for the imetelstat program during transition of the program to us. As of September 30, 2019, the transition of the imetelstat program to us from Janssen has been completed. See Note 4 on License Agreements for additional information on the former Collaboration Agreement with Janssen.

Prior Period Reclassifications

With the adoption of Accounting Standards Update, or ASU, No. 2016-18, Statement of Cash Flows (Topic 230) Restricted Cash, or ASU No. 2016-18, beginning January 1, 2018, the 2017 presentation of cash and cash equivalents in the statements of cash flows has been updated to conform with current period presentation.

Net Loss Per Share

Basic net income (loss) per share is calculated by dividing net income (loss) by the weighted-average number of shares of common stock outstanding during the periods presented, without consideration for potential common shares. Diluted net income per share would be calculated by adjusting the weighted-average number of shares of common stock outstanding for the dilutive effect of potential common shares outstanding for the periods presented, as determined using the treasury-stock method. Potential dilutive securities consist of outstanding stock options and a warrant to purchase our common stock. Diluted net loss per share excludes potential dilutive securities outstanding for all periods presented as their effect would be anti-dilutive. Accordingly, basic and diluted net loss per share is the same for all periods presented in the accompanying statements of operations. Since we incurred a net loss for 2019, 2018 and 2017, the diluted net loss per share calculation excludes potential dilutive securities of 38,151,906, 27,823,845 and 22,946,422, respectively, related to outstanding stock options and warrants as their effect would have been anti-dilutive.

Use of Estimates

The accompanying financial statements have been prepared in accordance with U.S. generally accepted accounting principles, or GAAP. The preparation of financial statements in conformity with GAAP requires us to make estimates and assumptions that affect the reported amounts of assets and liabilities and disclosure of contingent assets and liabilities as of the date of the financial statements and the reported amounts of revenues and expenses during the reporting period. On an ongoing basis, we evaluate our estimates, including those related to accrued liabilities, revenue recognition, fair value of marketable securities and equity investments, operating leases, right-of-use assets, lease liabilities, income taxes, and stock-based compensation. We base our estimates on historical experience and on various other market specific and relevant assumptions that we believe to be reasonable under the circumstances. Actual results could differ from those estimates.

Fair Value of Financial Instruments

Cash Equivalents and Marketable Securities

We consider all highly liquid investments with an original maturity of three months or less to be cash equivalents. We are subject to credit risk related to our cash equivalents and marketable securities. Our marketable debt securities include U.S. government-sponsored enterprise securities, commercial paper and corporate notes.

We classify our marketable debt securities as available-for-sale. We record available-for-sale debt securities at fair value with unrealized gains and losses reported in accumulated other comprehensive income (loss) in stockholders' equity. Realized gains and losses are included in interest and other income and are derived using the specific identification method for determining the cost of securities sold and have been insignificant to date. Dividend and interest income are recognized when earned and included in interest and other income in our statements of operations. We recognize a charge when the declines in the fair values below the amortized cost bases of our available-for-sale securities are judged to be other-than-temporary. We consider various factors in determining whether to recognize an other-than-temporary charge, including whether we intend to sell the security or whether it is more likely than not that we would be required to sell the security before recovery of the amortized cost basis. Declines in market value judged as other-than-temporary result in a charge to interest and other income. We have not recorded any other-than-temporary impairment charges on our available-for-sale securities for the years ended December 31, 2019, 2018 and 2017. See Note 2 on Fair Value Measurements.

Equity Investments

With the adoption of ASU No. 2016-01, *Financial Instruments - Overall: Recognition and Measurement of Financial Assets and Financial Liabilities*, or ASU 2016-01, beginning January 1, 2018, we measure the fair value of our investment in equity securities at each reporting period. Changes in fair value resulting from observable price changes are included in change in fair value of equity investment and changes in fair value resulting from foreign currency translation are included in other expense in our statements of operations.

Leases

At the inception of an arrangement, we determine whether the arrangement is or contains a lease based on the unique facts and circumstances present. Operating leases are included in operating leases, right-of-use assets and lease liabilities in our balance sheets. Right-of-use assets represent our right to use an underlying asset for the lease term and lease liabilities represent our obligation to make lease payments arising from the lease. Operating lease liabilities and their corresponding right-of-use assets are recorded based on the present value of remaining lease payments over the expected lease term. The present value of remaining lease payments within the 12 months following the balance sheet date are classified as current lease liabilities. The present value of lease payments not within the 12 months following the balance sheet date are classified as noncurrent lease liabilities. The interest rate implicit in lease contracts is typically not readily determinable. As such, to calculate the net present value of lease payments, we apply our incremental borrowing rate, which is the rate incurred to borrow on a collateralized basis over a similar term an amount equal to the lease payments in a similar economic environment as of the lease commencement date. We may adjust the right-of-use assets for certain adjustments, such as initial direct costs paid or incentives received. In addition, we include any options to extend or terminate the lease in the expected lease term when it is reasonably certain that we will exercise any such option. Lease expense is recognized on a straight-line basis over the expected lease term.

For lease agreements entered into after January 1, 2019 that include lease and non-lease components, such components are generally accounted for separately. We have also elected not to recognize on our balance sheets leases with terms of one year or less. See "New Accounting Pronouncements – Recently Adopted" in this Note 1 for additional information on the adoption of the new accounting standard for leases.

Revenue Recognition

Beginning January 1, 2018, we recognize revenue in accordance with the provisions of Accounting Standards Codification Topic 606, *Revenue from Contracts with Customers*, or Topic 606. In determining the appropriate amount and timing of revenue to be recognized under this guidance, we perform the following five steps: (i) identify

the contract(s) with our customer; (ii) identify the promised goods or services in the agreement and determine whether they are performance obligations, including whether they are distinct in the context of the agreement; (iii) measure the transaction price, including the constraint on variable consideration; (iv) allocate the transaction price to the performance obligations based on stand-alone selling prices; and (v) recognize revenue when (or as) we satisfy each performance obligation.

A performance obligation is a promise in an agreement to transfer a distinct good or service to the customer and is the unit of account in Topic 606. Significant management judgment is required to determine the level of effort required and the period over which completion of the performance obligations is expected under an agreement. If reasonable estimates regarding when performance obligations are either complete or substantially complete cannot be made, then revenue recognition is deferred until a reasonable estimate can be made. Revenue is then recognized over the remaining estimated period of performance using the cumulative catch-up method.

We allocate the total transaction price to each performance obligation based on the estimated relative stand-alone selling prices of the promised goods or services underlying each performance obligation. Estimated selling prices for license rights are calculated using an income approach model and include the following key assumptions, judgments and estimates: the development timeline, revenue forecast, commercialization expenses, discount rate and probabilities of technical and regulatory success.

Following is a description of the principal activities from which we generate revenue. License fees and royalty revenue primarily represent amounts earned under agreements that out-license our technology to various companies.

License and/or Collaboration Agreements

We have entered into several license agreements with various oncology, diagnostics, research tools and biologics production companies. Economic terms in these agreements may include non-refundable upfront license payments in cash or equity securities, annual license maintenance fees, cost sharing arrangements, milestone payments, royalties on future sales of products, or any combination of these items. Non-refundable upfront fees, annual license maintenance fees and funding of research and development activities are considered fixed consideration, while milestone payments and royalties are identified as variable consideration.

Licenses of Intellectual Property. If we determine the license to intellectual property is distinct from the other performance obligations identified in the agreement and the licensee can use and benefit from the license, we recognize revenue from non-refundable upfront fees allocated to the license upon the completion of the transfer of the license to the licensee. For such licenses, we recognize revenue from annual license maintenance fees upon the start of the new license period. For licenses that are bundled with other performance obligations, we assess the nature of the combined performance obligation to determine whether the combined performance obligation is satisfied over time or at a point in time and, if over time, the appropriate method of measuring progress for purposes of recognizing revenue from non-refundable upfront fees or annual license maintenance fees. At each reporting date, we reassess the progress and, if necessary, adjust the measure of performance and related revenue recognition.

Milestone Payments. At the inception of each agreement that includes milestone payments, we evaluate whether the milestones are considered probable of being achieved and estimate the amount to be included in the transaction price using the most likely amount method. If it is probable that a significant revenue reversal would not occur, the value of the associated milestone is included in the transaction price. For milestones that we do not deem to be probable of being achieved, the associated milestone payments are fully constrained and the value of the milestone is excluded from the transaction price with no revenue being recognized. For example, milestone payments that are not within our control, such as regulatory-related accomplishments, are not considered probable of being achieved until those accomplishments have been communicated by the relevant regulatory authority. Once the assessment of probability of achievement becomes probable, we recognize revenue for the milestone payment. At each reporting date, we assess the probability of achievement of each milestone under our current agreements.

Royalties. For agreements with sales-based royalties, including milestone payments based on the level of sales, where the license is deemed to be the predominant item to which the royalties relate, we recognize revenue at the later of (a) when the related sales occur, or (b) when the performance obligation, to which some or all of the royalty has been allocated, has been satisfied (or partially satisfied). At each reporting period, we estimate the sales

incurred by each licensee during the reporting period based on historical experience and accrue the associated royalty amount.

Cost Sharing Arrangements. Research and development and other expenses being shared by both parties under an agreement are recorded as earned or owed based on the performance obligations by both parties under the respective agreement. For arrangements in which we and our collaboration partner in the agreement are exposed to significant risks and rewards that depend on the commercial success of the activity, we recognize payments between the parties on a net basis and record such amounts as a reduction or addition to research and development expense. For arrangements in which we have agreed to perform certain research and development services for our collaboration partner and are not exposed to significant risks and rewards that depend on the commercial success of the activity, we recognize the respective cost reimbursements as revenue under the collaboration agreement over time in a manner proportionate to the costs we incurred to perform the services using the input method.

Restricted Cash

Restricted cash consists of funds maintained in a separate certificate of deposit account for credit card purchases.

Research and Development Expenses

Research and development expenses consist of expenses incurred in identifying, developing and testing product candidates resulting from our independent efforts as well as efforts associated with collaboration agreements. These expenses include, but are not limited to, in-process research and development acquired in an asset acquisition and deemed to have no alternative future use, payroll and personnel expense, lab supplies, non-clinical studies, clinical trials, including support for investigator-sponsored clinical trials, raw materials to manufacture clinical trial drugs, manufacturing costs for research and clinical trial materials, sponsored research at other labs, consulting, costs to maintain technology licenses, our proportionate share of research and development costs under cost sharing arrangements with collaborative partners and research-related overhead. Research and development costs are expensed as incurred, including costs incurred under our collaboration and/or license agreements.

On November 13, 2014, we entered into a Collaboration Agreement with Janssen pursuant to which we granted Janssen the exclusive rights to develop and commercialize imetelstat worldwide for all indications in oncology, including hematologic myeloid malignancies, and all other human therapeutic uses. Janssen terminated the Collaboration Agreement effective September 28, 2018. Under the termination provisions of the Collaboration Agreement, during transition of the program to us, Janssen was required to provide certain operational support for the imetelstat program through September 28, 2019. Operational support from Janssen included clinical development activities, such as continuing monitoring and treatment of patients in ongoing imetelstat clinical trials. We reimbursed Janssen 100% for the costs of such operational support. As of September 30, 2019, the transition of the imetelstat program to us from Janssen has been completed. Transition-related costs, such as transfer of the sponsorship of ongoing imetelstat clinical trials, moving databases and related systems and transmitting regulatory files, were incurred separately by each company, unless otherwise specified in the Collaboration Agreement.

Our current imetelstat clinical trials are being supported by third-party contract research organizations, or CROs, and other vendors. We accrue expenses for clinical trial activities performed by CROs based upon the estimated amount of work completed on each trial. For clinical trial expenses and related expenses associated with the conduct of clinical trials, the significant factors used in estimating accruals include the number of patients enrolled, the number of active clinical sites, and the duration for which the patients have been enrolled in the trial. We monitor patient enrollment levels and related activities to the extent possible through internal reviews, review of contractual terms and correspondence with CROs. We base our estimates on the best information available at the time. For the clinical development activities being conducted by Janssen under the former Collaboration Agreement, we monitored patient enrollment levels and related activities to the extent possible through discussions with Janssen personnel and based our estimates of clinical trial costs on the best information available at the time. However, additional information may become available to us which will allow us to make a more accurate estimate in future periods. In that event, we may be required to record adjustments to research and development expenses in future periods when the actual level of activity becomes more certain.

Depreciation and Amortization

We record property and equipment at cost and calculate depreciation using the straight-line method over the estimated useful lives of the assets, generally four years. Leasehold improvements are amortized over the shorter of the estimated useful life or remaining term of the lease.

Stock-Based Compensation

We maintain various stock incentive plans under which stock options and restricted stock awards are granted to employees, directors and consultants. We also have an employee stock purchase plan for all eligible employees. We recognize stock-based compensation expense based on the grant-date fair values of service-based instruments on a straight-line basis over the requisite service period, which is generally the vesting period. For performance-based stock options with vesting based on the achievement of certain strategic milestones, stock-based compensation expense is recognized over the period from the date the performance condition is determined to be probable of occurring through the date the applicable condition is expected to be met and is reduced for estimated forfeitures, as applicable. If the performance condition is not considered probable of being achieved, no stock-based compensation expense is recognized until such time as the performance condition is considered probable of being met, if at all. If that assessment of the probability of the performance condition being met changes, the impact of the change in estimate would be recognized in the period of the change. The determination of grant-date fair values for our service-based and performance-based stock options and employee stock purchases using the Black Scholes option-pricing model is affected by our stock price as well as assumptions regarding a number of complex and subjective variables. The grant-date fair value for service-based restricted stock awards is determined using the fair value of our common stock on the date of grant.

For our non-employee stock-based awards, the measurement date on which the fair value of the stock-based award is calculated is equal to the earlier of: (i) the date at which a commitment for performance by the counterparty to earn the equity instrument is reached or (ii) the date at which the counterparty's performance is complete. We recognize stock-based compensation expense for the fair value of the vested portion of non-employee stock-based awards in our statements of operations. For additional information, see Note 8 on Stockholders' Equity.

Accumulated Other Comprehensive Loss

Accumulated other comprehensive loss includes certain changes in stockholders' equity which are excluded from net income (loss). Accumulated other comprehensive loss on our balance sheets as of December 31, 2019 and 2018 is solely comprised of net unrealized gains and losses on marketable securities.

Income Taxes

We maintain deferred tax assets and liabilities that reflect the net tax effects of temporary differences between the carrying amounts of assets and liabilities for financial reporting purposes and the amounts used for income tax purposes and are subject to tests of recoverability. Our deferred tax assets include net operating loss carryforwards, research credits and capitalized research and development. Deferred tax assets and liabilities are measured using enacted tax rates expected to apply to taxable income in the years in which those temporary differences are expected to be recovered or settled. Our net deferred tax asset has been fully offset by a valuation allowance because of our history of losses. Any potential accrued interest and penalties related to unrecognized tax benefits would be recorded as income tax expense.

Concentrations of Customers and Suppliers

The majority of our revenues was earned in the United States. Three customers accounted for approximately 79% of our 2019 revenues. Two customers accounted for approximately 59% and 39% of our 2018 and 2017 revenues, respectively.

Segment Information

Our executive management team represents our chief decision maker. We view our operations as a single segment, the development of therapeutic products for oncology. As a result, the financial information disclosed herein materially represents all of the financial information related to our principal operating segment.

Recent Accounting Pronouncements

New Accounting Pronouncements – Recently Adopted

In February 2016, the Financial Accounting Standards Board, or FASB, issued ASU 2016-02, *Leases (Topic 842)*, or ASU 2016-02. ASU 2016-02 requires an entity to recognize a right-of-use asset and lease liability for all lease arrangements with terms of more than 12 months, measured at the present value of the lease payments. Recognition, measurement and presentation of expenses will depend on classification as a finance or operating lease. In July 2018, the FASB issued ASU 2018-11, *Leases (Topic 842): Targeted Improvements*, or ASU 2018-11. In issuing ASU 2018-11, the FASB decided to provide another transition method in addition to the existing transition method by allowing entities to initially apply the new leases standard at the adoption date and recognize a cumulative-effect adjustment to the opening balance of retained earnings in the period of adoption.

We adopted Topic 842 on January 1, 2019 using the modified retrospective approach as allowed under ASU 2018-11, and we elected to utilize the available practical expedients. Financial results for the reporting periods beginning after January 1, 2019 are presented under Topic 842, while prior period amounts have not been adjusted and continue to be reported in accordance with our historical accounting under Accounting Standards Codification Topic 840, *Leases*, or Topic 840.

In connection with the adoption of Topic 842 as of January 1, 2019, we recorded an operating lease, right-of-use asset and a corresponding operating lease liability of approximately $736,000 for the net present value of remaining lease payments of our current operating lease for our office space in Menlo Park. The adoption of Topic 842 did not have a material impact on our condensed statements of operations. See Note 7 on Operating Leases for further discussion of our operating lease obligations.

As of January 1, 2019, we also adopted ASU 2018-07 which simplifies the accounting for share-based payments to nonemployees by aligning it with the accounting for share-based payments to employees, with certain exceptions. The new guidance applies to nonemployee awards issued in exchange for goods or services used or consumed in an entity’s own operations. Since all of our share-based awards to nonemployees were fully vested before the adoption of ASU 2018-07, no cumulative-effect adjustment was recognized to the opening balance of retained earnings on January 1, 2019. The adoption of ASU 2018-07 did not have a material impact on our financial statements.

New Accounting Pronouncements – Issued But Not Yet Adopted

In June 2016, the FASB issued ASU 2016-13, *Measurement of Credit Losses on Financial Instruments*, or ASU 2016-13. The main objective of ASU 2016-13 is to provide financial statement users with more decision-useful information about an entity's expected credit losses on financial instruments and other commitments to extend credit at each reporting date. To achieve this objective, the amendments in this update replace the incurred loss impairment methodology currently used today with a methodology that reflects expected credit losses and requires consideration of a broader range of reasonable and supportable information to develop credit loss estimates. Subsequent to issuing ASU 2016-13, the FASB issued ASU 2018-19, *Codification Improvements to Topic 326, Financial Instruments – Credit Losses*, or ASU 2018-19, for the purpose of clarifying certain aspects of ASU 2016-13. In May 2019, the FASB issued ASU 2019-05, *Financial Instruments – Credit Losses (Topic 326): Targeted Transition Relief*, or ASU 2019-05, to provide entities with more flexibility in applying the fair value option on adoption of the credit impairment standard. In November 2019, the FASB issued ASU 2019-11, *Codification Improvements to Topic 326, Financial Instruments – Credit Losses*, which expands the scope of the practical expedient that allows entities to exclude the accrued interest component of amortized cost from various disclosure. Entities that elect to apply the practical expedient must disclose the total amount of accrued interest that they exclude from their disclosures of amortized cost. ASU 2018-19, ASU 2019-05 and ASU 2019-11 have the same effective date and transition requirements as ASU 2016-13. ASU 2016-13 will be effective for fiscal years beginning after December 15, 2022, using a modified retrospective approach, for smaller reporting companies. Early adoption is permitted. We plan to adopt ASU 2016-13 and related updates as of January 1, 2023. We do not expect the adoption of this standard to have a material impact on our financial statements.

In August 2018, the FASB issued ASU 2018-13, *Disclosure Framework — Changes to the Disclosure Requirements for Fair Value Measurement,* or ASU 2018-13, which modifies the disclosure requirements on fair value measurements. The new standard is effective for fiscal years beginning after December 15, 2019, and early adoption is permitted. We plan to adopt ASU 2018-13 as of January 1, 2020. We do not expect the adoption of this standard to have a material impact on our financial statements.

In November 2018, the FASB issued ASU 2018-18, *Collaborative Arrangements (Topic 808): Clarifying the Interaction Between Topic 808 and Topic 606*, or ASU 2018-18. The amended guidance precludes presenting consideration from a transaction in a collaborative arrangement as revenue from contracts with customers if the counterparty is not a customer for that transaction. The new guidance is effective for fiscal years beginning after December 15, 2019, and interim periods within those fiscal years. Early adoption is permitted. We plan to adopt ASU 2018-18 as of January 1, 2020. We do not expect the adoption of ASU 2018-18 to have a material impact on our financial statements.

2. FAIR VALUE MEASUREMENTS

Cash Equivalents and Marketable Securities

Cash equivalents, restricted cash and marketable securities by security type at December 31, 2019 were as follows:

(In thousands)	Amortized Cost	Gross Unrealized Gains	Gross Unrealized Losses	Estimated Fair Value
Included in cash and cash equivalents:				
Money market funds	$ 6,671	$ —	$ —	$ 6,671
Commercial paper	3,990	—	—	3,990
	$ 10,661	$ —	$ —	$ 10,661
Restricted cash:				
Certificate of deposit	$ 270	$ —	$ —	$ 270
Marketable securities:				
Government-sponsored enterprise securities (due in less than one year)	$ 6,506	$ 6	$ —	$ 6,512
Government-sponsored enterprise securities (due in one to two years)	6,999	1	—	7,000
Commercial paper (due in less than one year)	40,110	33	(3)	40,140
Corporate notes (due in less than one year)	78,926	116	(13)	79,029
Corporate notes (due in one to two years)	12,659	1	(9)	12,651
	$ 145,200	$ 157	$ (25)	$ 145,332

Cash equivalents, restricted cash and marketable securities by security type at December 31, 2018 were as follows:

(In thousands)	Amortized Cost	Gross Unrealized Gains	Gross Unrealized Losses	Estimated Fair Value
Included in cash and cash equivalents:				
Money market funds	$ 7,003	$ —	$ —	$ 7,003
Restricted cash:				
Certificate of deposit	$ 269	$ —	$ —	$ 269
Marketable securities:				
Commercial paper (due in less than one year)	$ 57,594	$ 22	$ (29)	$ 57,587
Corporate notes (due in less than one year)	95,238	7	(118)	95,127
Corporate notes (due in one to two years)	18,647	—	(65)	18,582
	$ 171,479	$ 29	$ (212)	$ 171,296

Cash equivalents and marketable securities with unrealized losses that have been in a continuous unrealized loss position for less than 12 months and 12 months or longer at December 31, 2019 and 2018 were as follows:

	Less Than 12 Months		12 Months or Greater		Total	
(In thousands)	Estimated Fair Value	Gross Unrealized Losses	Estimated Fair Value	Gross Unrealized Losses	Estimated Fair Value	Gross Unrealized Losses
As of December 31, 2019:						
Commercial paper (due in less than one year)	$ 8,571	$ (3)	$ —	$ —	$ 8,571	$ (3)
Corporate notes (due in less than one year)	26,082	(13)	—	—	26,082	(13)
Corporate notes (due in one to two years)	11,624	(9)	—	—	11,624	(9)
	$ 46,277	$ (25)	$ —	$ —	$ 46,277	$ (25)
As of December 31, 2018:						
Commercial paper (due in less than one year)	$ 22,628	$ (29)	$ —	$ —	$ 22,628	$ (29)
Corporate notes (due in less than one year)	66,557	(82)	14,221	(36)	80,778	(118)
Corporate notes (due in one to two years)	18,582	(65)	—	—	18,582	(65)
	$ 107,767	$ (176)	$ 14,221	$ (36)	$ 121,988	$ (212)

The gross unrealized losses related to commercial paper and corporate notes as of December 31, 2019 and 2018 were due to changes in interest rates. We determined that the gross unrealized losses on our cash equivalents and marketable securities as of December 31, 2019 and 2018 were temporary in nature. We review our investments quarterly to identify and evaluate whether any investments have indications of possible impairment. Factors considered in determining whether a loss is temporary include the length of time and extent to which the fair value has been less than the cost basis and whether we intend to sell the security or whether it is more likely than not that we would be required to sell the security before recovery of the amortized cost basis. We currently do not intend to sell these securities before recovery of their amortized cost bases.

Fair Value on a Recurring Basis

We categorize financial instruments recorded at fair value on our balance sheets based upon the level of judgment associated with inputs used to measure their fair value. The categories are as follows:

Level 1 — Inputs are unadjusted, quoted prices in active markets for identical assets or liabilities at the measurement date. An active market for the asset or liability is a market in which transactions for the asset or liability occur with sufficient frequency and volume to provide pricing information on an ongoing basis.

Level 2 — Inputs (other than quoted market prices included in Level 1) are either directly or indirectly observable for the asset or liability through correlation with market data at the measurement date and for the duration of the instrument's anticipated life.

Level 3 — Inputs reflect management's best estimate of what market participants would use in pricing the asset or liability at the measurement date. Consideration is given to the risk inherent in the valuation technique and the risk inherent in the inputs to the model.

A financial instrument's categorization within the valuation hierarchy is based upon the lowest level of input that is significant to the fair value measurement. Below is a description of the valuation methodologies used for financial instruments measured at fair value on our balance sheets, including the category for such financial instruments.

Money market funds are categorized as Level 1 within the fair value hierarchy as their fair values are based on quoted prices available in active markets. U.S. government-sponsored enterprise securities, commercial paper, corporate notes and equity investments are categorized as Level 2 within the fair value hierarchy as their fair values

are estimated by using pricing models, quoted prices of securities with similar characteristics or discounted cash flows.

The following table presents information about our financial instruments that are measured at fair value on a recurring basis as of December 31, 2019 and 2018 and indicates the fair value category assigned.

	Fair Value Measurements at Reporting Date Using			
(In thousands)	Quoted Prices in Active Markets for Identical Assets Level 1	Significant Other Observable Inputs Level 2	Significant Unobservable Inputs Level 3	Total
As of December 31, 2019:				
Money market funds[1]	$ 6,671	$ —	$ —	$ 6,671
Government-sponsored enterprise securities[2][3]	—	13,512	—	13,512
Commercial paper[1][2]	—	44,130	—	44,130
Corporate notes[2][3]	—	91,680	—	91,680
Equity investment[4]	—	389	—	389
Total	$ 6,671	$ 149,711	$ —	$ 156,382
As of December 31, 2018:				
Money market funds[1]	$ 7,003	$ —	$ —	$ 7,003
Commercial paper[2]	—	57,587	—	57,587
Corporate notes[2][3]	—	113,709	—	113,709
Equity investment[4]	—	585	—	585
Total	$ 7,003	$ 171,881	$ —	$ 178,884

(1) Included in cash and cash equivalents on our balance sheets.

(2) Included in current portion of marketable securities on our balance sheets.

(3) Included in noncurrent portion of marketable securities on our balance sheets.

(4) Included in deposits and other assets on our balance sheets. See “Equity Investment” in this Note 2 for further discussion of this equity investment.

Equity Investment

In December 2007, we received 13,842,625 ordinary shares in Sienna in connection with a license we granted to them for our human telomerase reverse transcriptase, or hTERT, technology for use in human diagnostics. Upon receipt, the shares were recorded at a zero cost basis under the cost method of accounting. On August 3, 2017, Sienna became a publicly traded company on the Australian Securities Exchange Limited, or ASX, under the ticker symbol SDX. In connection with Sienna’s initial public offering under Australian securities regulations, we signed a 24-month trading restriction from the effective date of Sienna’s listing on the ASX. Due to this trading restriction, under the cost method of accounting, we maintained a zero cost basis for our shares in Sienna as of December 31, 2017. With the adoption of ASU 2016-01 and ASU 2018-03 on January 1, 2018, our equity investment in Sienna must be reported at fair value at each reporting date and any resulting change in fair value is recognized in our statements of operations. As of December 31, 2019, the fair value of our shares in Sienna was $389,000. For the years ended December 31, 2019 and 2018, we recognized a decrease in fair value of equity investment of $195,000 and $541,000, respectively, related to observable price changes. For the years ended December 31, 2019 and 2018, we also recognized losses of $1,000 and $63,000, respectively, related to foreign currency translation, which are included in other expense in our statements of operations.

Credit Risk

We currently place our cash, restricted cash, cash equivalents and marketable securities with four financial institutions in the United States. Generally, these deposits may be redeemed upon demand and therefore, bear minimal risk. Deposits with banks may exceed the amount of insurance provided on such deposits. Financial instruments that potentially subject us to concentrations of credit risk consist primarily of cash equivalents and

marketable securities. Cash equivalents and marketable securities currently consist of money market funds, U.S. government-sponsored enterprise securities, commercial paper and corporate notes. Our investment policy, approved by the audit committee of our board of directors, limits the amount we may invest in any one type of investment issuer, thereby reducing credit risk concentrations.

3. PROPERTY AND EQUIPMENT

Property and equipment, stated at cost, is comprised of the following:

	December 31,	
(In thousands)	2019	2018
Furniture and computer equipment	$ 1,065	$ 727
Leasehold improvements	186	111
	1,251	838
Less accumulated depreciation and amortization	(843)	(779)
	$ 408	$ 59

4. LICENSE AGREEMENTS

Former Collaboration Agreement with Janssen Biotech, Inc.

On November 13, 2014, we and Janssen entered into the Collaboration Agreement under which we granted to Janssen exclusive worldwide rights to develop and commercialize imetelstat for all human therapeutic uses, including hematologic myeloid malignancies. Under the Collaboration Agreement, Janssen initiated two clinical trials of imetelstat: IMbark and IMerge. Under the terms of the Collaboration Agreement, prior to its termination, development costs for IMbark and IMerge were shared between us and Janssen on a 50/50 basis, including costs related to patents licensed to Janssen.

Janssen terminated the Collaboration Agreement effective September 28, 2018. Upon the effective date of termination, we regained the global rights to the imetelstat program and are continuing development of imetelstat on our own. As a result of the termination of the Collaboration Agreement, we will not receive any milestone payments or royalties from Janssen for the development or commercialization of imetelstat, including any clinical development or sales milestones, and Janssen has no obligations to us or any third parties, such as clinical sites or vendors, to fund any potential future imetelstat clinical trials. Since September 28, 2018, our responsibility for imetelstat development costs incurred by Janssen, including continuing support of ongoing clinical trials of imetelstat, increased from 50% to 100%.

On June 14, 2019, we entered into a Clinical Supply Agreement, or Supply Agreement, with Janssen to purchase certain inventories of drug product, drug substance and raw materials for imetelstat manufacturing. Under the Supply Agreement, we will pay Janssen approximately $7,500,000 for drug product upon shipment of the product to our specified drug distribution centers, which was received in full as of December 31, 2019. We also agreed to pay up to approximately $6,700,000 for drug substance and raw materials upon testing to confirm that such materials meet our specifications and delivery by Janssen, and such testing was complete in accordance with our specifications as of December 31, 2019. We expect to pay Janssen for amounts due under the Supply Agreement in the first quarter of 2020 and such amounts have been accrued as of December 31, 2019. All of the amounts under the Clinical Supply Agreement were recorded as research and development expenses in 2019 as the inventories of drug product, drug substance and raw materials are expected to be used for current and potential future clinical trials and have no alternative future use.

As of December 31, 2019, the amount due to Janssen of $14,269,000 on our balance sheet primarily represents the amount owed to Janssen under the Supply Agreement and for remaining operational support of the imetelstat program for the three months ended December 31, 2019.

Janssen Pharmaceuticals, Inc. License Agreement

On September 15, 2016, we entered into the License Agreement with Janssen Pharmaceuticals whereby we granted to Janssen Pharmaceuticals an exclusive worldwide license, or the Exclusive License, under our proprietary patents for the research, development and commercialization of products based on specialized oligonucleotide backbone chemistry and novel amidates for ribonucleic acid interference, or RNAi, for the prevention, treatment and/or diagnosis of any and all human disorders, excluding cancers originating from the blood or bone marrow, and products whose predominant or primary mechanism of action is telomerase inhibition. The License Agreement will remain in effect until the expiration of the last-to-expire patent, unless terminated earlier. Janssen Pharmaceuticals may also terminate the License Agreement at will upon prior written notice to us. In the event of an early termination of the License Agreement, all licenses to Janssen Pharmaceuticals would terminate.

In addition to the Exclusive License, we granted to Janssen Pharmaceuticals a non-exclusive worldwide license, or the Non-Exclusive License, under our patents covering the synthesis of monomers, which are the building blocks of oligonucleotides, and certain know-how necessary for the research, development and commercialization of products under the Exclusive License. We remain responsible for prosecuting the patent rights under the Exclusive License, with reasonable input provided by Janssen Pharmaceuticals, and the costs for such prosecution will be shared between us and Janssen Pharmaceuticals on a 50/50 basis. Under the terms of the License Agreement, we received $5,000,000 from Janssen Pharmaceuticals as a non-refundable upfront payment which we recognized fully as license fee revenue upon the completion of the transfer of the license rights to Janssen Pharmaceuticals since that was the only performance obligation for us. We are also eligible to receive additional potential payments of up to an aggregate maximum total of $75,000,000 for the achievement of certain development and regulatory milestones and tiered royalties in the low single digit percentage range on worldwide net sales of each licensed product commercialized under the License Agreement in any countries where there are valid claims under the patent rights licensed to Janssen Pharmaceuticals.

5. ACCRUED LIABILITIES

Accrued liabilities consisted of the following:

	December 31,	
(In thousands)	2019	2018
CRO and clinical trial costs	$ 5,263	$ 529
Manufacturing activities	1,740	—
Professional legal and accounting fees	318	327
Other	207	461
	$ 7,528	$ 1,317

6. COMMITMENTS AND CONTINGENCIES

Purported Securities Lawsuits

On January 23 and February 14, 2020, putative securities class action lawsuits were commenced in the United States District Court for the Northern District of California, naming as defendants us and one of our officers. On March 5, 2020, a third putative securities class action lawsuit was commenced in the United Stated District Court for the District of New Jersey, naming as defendants us and two of our officers. All three lawsuits allege violations of the Securities Exchange Act of 1934 in connection with allegedly false and misleading statements made by us related to IMbark during the period from March 19, 2018 to September 26, 2018. The plaintiffs allege, among other things, that we failed to disclose facts related to the alleged failure by IMbark to meet the two primary endpoints of the trial, spleen response rate and Total Symptom Score, and that our stock price dropped when such information was disclosed. The plaintiffs seek damages and interest, and an award of reasonable costs, including attorneys' fees. It is possible that additional suits will be filed, or allegations made by stockholders, with respect to these same or other matters and also naming us and/or our officers and directors as defendants. We believe that we have meritorious defenses and intend to vigorously defend against the pending lawsuits.

The pending lawsuits and any other related lawsuits are subject to inherent uncertainties, and the actual defense and disposition costs will depend upon many unknown factors. The outcome of the pending lawsuits and any other related lawsuits is necessarily uncertain. We could be forced to expend significant resources in the defense against the pending lawsuits and any other related lawsuits, and we may not prevail. In addition, we may incur substantial legal fees and costs in connection with such lawsuits. We currently are not able to estimate the possible cost to us from these matters, as the pending lawsuits are currently at an early stage, and we cannot be certain how long it may take to resolve the pending lawsuits or the possible amount of any damages that we may be required to pay. Such amounts could be material to our financial statements if we do not prevail in the defense against the pending lawsuits and any other related lawsuits, or even if we do prevail. We have not established any reserve for any potential liability relating to the pending lawsuits and any other related lawsuits. It is possible that we could, in the future, incur judgments or enter into settlements of claims for monetary damages.

Indemnifications to Officers and Directors

Our corporate bylaws require that we indemnify our directors, as well as those who act as directors and officers of other entities at our request, against expenses, judgments, fines, settlements and other amounts actually and reasonably incurred in connection with any proceedings arising out of their services to Geron. In addition, we have entered into separate indemnification agreements with each of our directors and officers which provide for indemnification of these directors and officers under similar circumstances and under additional circumstances. The indemnification obligations are more fully described in our bylaws and the indemnification agreements. We purchase standard insurance to cover claims or a portion of the claims made against our directors and officers. Since a maximum obligation is not explicitly stated in our bylaws or in our indemnification agreements and will depend on the facts and circumstances that arise out of any future claims, the overall maximum amount of the obligations cannot be reasonably estimated.

Severance Plan

We have an Amended and Restated Severance Plan, or Severance Plan, that applies to all employees that are not subject to performance improvement plans, and provides for, among other benefits: (i) a severance payment upon a Change of Control Triggering Event and Separation from Service and (ii) a severance payment for each non-executive employee upon a Non-Change of Control Triggering Event and Separation from Service. As defined in the Severance Plan, a Change of Control Triggering Event and Separation from Service requires a "double trigger" where: (i) an employee is terminated by us without cause in connection with a change of control or within 12 months following a change of control provided, however, that if an employee is terminated by us in connection with a change of control but immediately accepts employment with our successor or acquirer, the employee will not be eligible for the benefits outlined in the Severance Plan, (ii) an employee resigns because in connection with a change of control, the offered terms of employment (new or continuing) by us or our successor or acquirer within 30 days after the change of control results in a material change in the terms of employment, or (iii) after accepting (or continuing) employment with us after a change of control, an employee resigns within 12 months following a change of control due to a material change in the terms of employment. Under the Severance Plan, a Non-Change of Control Triggering Event and Separation from Service is defined as an event where a non-executive employee is terminated by us without cause. Severance payments range from two to 18 months of base salary, depending on the employee's position with us, payable in a lump sum payment. The Severance Plan also provides that the provisions of employment agreements entered into between us and executive or non-executive employees supersede the provisions of the Severance Plan. As of December 31, 2019, all our executive officers have employment agreements with provisions that may provide greater severance benefits than those in the Severance Plan.

Gain on Settlement

From November 2010 to September 2012, we owned 40% of ViaGen, Inc., or ViaGen, a company with in-house breeding services and expertise in advanced reproductive technologies for animal cloning. In September 2012, we and the other shareholders of ViaGen executed a Share Purchase Agreement, or SPA, and sold our equity interests to Trans Ova Genetics, L.C., or Trans Ova. Under the SPA, we and the other ViaGen shareholders would receive potential payments aggregating up to $6,000,000 upon Trans Ova reaching certain commercial milestones. We and the other ViaGen shareholders were also eligible to receive potential proceeds upon the sale by Trans Ova of a non-marketable equity investment originally held by ViaGen. Payments under the SPA would be shared

amongst the ViaGen shareholders according to their original equity interests in ViaGen prior to the sale to Trans Ova.

In July 2018, we and the other former shareholders of ViaGen filed an arbitration claim against Trans Ova for alleged violations under the SPA, including failure to make payments under certain conditions. In December 2018, we and the other former shareholders of ViaGen agreed to settle the dispute for a one-time payment of $3,650,000, of which we received $1,460,000, which represents our 40% share of the settlement amount. With this settlement, Trans Ova has been released from any further obligations under the SPA, including any future payments.

7. OPERATING LEASES

As described in the subsection entitled, "New Accounting Pronouncements – Recently Adopted", in Note 1 of Notes to Financial Statements of this Form 10-K, we adopted Topic 842 as of January 1, 2019. Prior period amounts have not been adjusted and continue to be reported in accordance with historical accounting under Topic 840.

Menlo Park Office Space Lease

We have an operating lease for our office space at 149 Commonwealth Drive, Menlo Park, California, or the Menlo Park Lease, that was due to expire in January 2020. On September 10, 2019, we amended this lease agreement to extend the lease term by two months to the end of March 2020. The amendment to the Menlo Park Lease is treated as a modification of the existing lease agreement, and the right-of-use asset and corresponding operating lease liability have been remeasured based on the present value of remaining lease payments over the remaining extended lease term, using the discount rate applicable as of the adoption date. Since the operating lease is a net lease, as the non-lease components (i.e., common area maintenance) are paid separately from rent based on actual costs incurred, such non-lease components were not included in the right-of-use asset and liability and are reflected as an expense in the period incurred.

New Jersey Office Space Lease

In April 2019, we entered into an operating lease agreement for office space located at 3 Sylvan Way, Parsippany, New Jersey, or the New Jersey Lease. The initial term of the New Jersey Lease is 11 years with an option to extend for an additional five years and a one-time option to terminate the New Jersey Lease without cause as of the 103rd month anniversary of the commencement date of the lease. The New Jersey Lease commenced on October 1, 2019, upon our control of the office space on that date. Based on the initial term of the New Jersey Lease of 11 years, the right-of-use asset and corresponding operating lease liability was approximately $2,356,000, which represented the present value of lease payments over the initial lease term, using an incremental borrowing rate of 8% based on information available as of October 1, 2019. Under the New Jersey Lease, we are also obligated to pay certain variable expenses separately from the base rent, including electricity and common area maintenance. Such costs will be expensed in the period they are incurred.

As of December 31, 2019, the remaining lease terms for the Menlo Park Lease and New Jersey Lease ranged from 3 months to approximately 10.8 years. The discount rates used to determine the lease liabilities for the Menlo Park Lease and the New Jersey Lease ranged from 5% to 8%.

The components of lease costs included in operating expenses for the Menlo Park Lease and the New Jersey Lease on our statements of operations were as follows:

	Year Ended December 31,		
(In thousands)	2019	2018	2017
Operating lease costs	$ 783	$ 678	$ 661
Variable lease costs (1)	17	31	35
Total lease costs	$ 800	$ 709	$ 696

(1) Variable lease costs represent non-lease components, such as common area maintenance charges.

Foster City Office Space Lease

In October 2019, we entered into an operating lease agreement for office space located at 919 East Hillsdale Boulevard, Foster City, California, or the Foster City Lease. The initial term of the Foster City Lease is 87 months with an option to extend for an additional five years. We have not yet occupied the space as it is being renovated for our use. The Foster City Lease term commences upon the earlier of the date of completion of the construction work or the date upon which we occupy and use the space for its intended purpose. The purpose of the Foster City Lease is to replace our current leased premises at 149 Commonwealth Drive, Menlo Park, California (see above).

Since we do not yet have control of the office space located in Foster City, as defined by Topic 842, during the construction period and do not expect to gain control of the space until on or near the construction completion date, we will not record a right-of-use asset and corresponding lease liability until we occupy the space, which we expect to occur by mid-March 2020, upon which the Foster City Lease will commence. Upon the commencement of the Foster City Lease, the aggregate minimum future lease payments for the initial lease term is approximately $4,400,000, net of a three-month rent abatement period, and subject to scheduled annual increases. Under the Foster City Lease, we are also obligated to pay certain variable expenses separately from the base rent, including taxes and common area maintenance. Such costs will be expensed in the period they are incurred. We have not recognized a right-of-use asset or aggregate lease liability as of December 31, 2019 for the Foster City Lease as the underlying assets were unavailable for use by the Company at any time in the period ended December 31, 2019.

The undiscounted future non-cancellable lease payments under the Menlo Park Lease, the New Jersey Lease and the Foster City Lease as of December 31, 2019 were as follows (in thousands):

2020	$ 713
2021	913
2022	938
2023	962
2024	987
Thereafter	3,762
Total lease payments	8,275
Less: undiscounted lease payments related to Foster City Lease	(4,427)
Less: imputed interest	(1,294)
Total	$ 2,554

8. STOCKHOLDERS' EQUITY

Sales Agreements

On August 28, 2015, we entered into an At Market Issuance Sales Agreement, or the 2015 Sales Agreement, with MLV & Co. LLC, or MLV, under which we could elect to issue and sell shares of our common stock having an aggregate offering price of up to $50,000,000. Pursuant to the 2015 Sales Agreement, common stock was sold at market prices prevailing at the time of sale through MLV as our sales agent. We paid MLV an aggregate commission rate equal to up to 3.0% of the gross proceeds of the sales price per share for common stock sold through MLV under the 2015 Sales Agreement. In December 2017, we sold an aggregate of 614,230 shares of our common stock pursuant to the 2015 Sales Agreement, resulting in net cash proceeds to us of approximately $1,060,000 after deducting sales commissions and offering expenses payable by us. In 2018, we completed the sale of the remaining common stock subject to the 2015 Sales Agreement and issued an aggregate of 13,195,106 shares of our common stock, resulting in net cash proceeds to us of approximately $47,651,000 after deducting sales commissions and offering expenses payable by us. No further shares of common stock may be sold under the 2015 Sales Agreement.

On May 18, 2018, we entered into an At Market Issuance Sales Agreement, or the 2018 Sales Agreement, with B. Riley FBR, Inc., or B. Riley FBR, pursuant to which we may elect to issue and sell shares of our common stock having an aggregate offering price of up to $100,000,000 in such quantities and on such minimum price terms as we set from time to time through B. Riley FBR as our sales agent. We pay B. Riley FBR an aggregate

commission rate equal to up to 3.0% of the gross proceeds of the sales price per share for common stock sold through B. Riley FBR under the 2018 Sales Agreement. In 2019 and 2018, we sold an aggregate of 13,214,867 and 10,083,079 shares of our common stock pursuant to the 2018 Sales Agreement, respectively, resulting in net cash proceeds to us of approximately $19,295,000 and $ 38,366,000, respectively, after deducting sales commissions and offering expenses payable by us. The 2018 Sales Agreement will expire upon the earlier of: (a) the sale of all common stock subject to the 2018 Sales Agreement and (b) May 18, 2021.

Warrant

In connection with each disbursement under a previous loan agreement with the California Institute for Regenerative Medicine, or CIRM, we were obligated to issue to CIRM a warrant to purchase Geron common stock. Such warrants and the underlying common stock were unregistered. We have no further obligations to issue any additional warrants to CIRM. As of December 31, 2019, a warrant to purchase 537,893 shares of our common stock remained outstanding. The warrant was issued to CIRM in August 2011 at an exercise price of $3.98 per share and expires in August 2021.

Equity Plans

2002 Equity Incentive Plan

The 2002 Equity Incentive Plan, or 2002 Plan, expired in May 2012. Upon the adoption of the 2011 Incentive Award Plan in May 2011 (see below), no further grants of options or stock purchase rights were made from the 2002 Plan. Options granted under the 2002 Plan expire no later than ten years from the date of grant. Option exercise prices were equal to 100% of the fair market value of the underlying common stock on the date of grant. Service-based stock options under the 2002 Plan generally vested over a period of four years from the date of the option grant. Other stock awards (restricted stock awards and restricted stock units) had variable vesting schedules which were determined by our board of directors on the date of grant. All outstanding awards granted under the 2002 Plan remain subject to the terms of the 2002 Plan and the individual award agreements thereunder.

2011 Incentive Award Plan

In May 2011, our stockholders approved the adoption of the 2011 Incentive Award Plan, or 2011 Plan. The 2011 Plan provided for grants of either incentive stock options or nonstatutory stock options and stock purchase rights to employees (including officers and employee directors) and consultants (including non-employee directors). Upon the adoption of the 2018 Equity Incentive Plan in May 2018 (see below), no further grants of options or stock purchase rights were made from the 2011 Plan. Options granted under the 2011 Plan expire no later than ten years from the date of grant. Option exercise prices were equal to the fair market value of the underlying common stock on the date of grant.

Service-based stock options under the 2011 Plan generally vested over a period of four years from the date of the option grant. Other stock awards (restricted stock awards and restricted stock units) had variable vesting schedules which were determined by our board of directors on the date of grant. All outstanding awards granted under the 2011 Plan remain subject to the terms of the 2011 Plan and the individual award agreements thereunder.

2018 Equity Incentive Plan

On May 15, 2018, our stockholders approved the adoption of the 2018 Equity Incentive Plan, or 2018 Plan, as the successor to the 2011 Plan. The 2018 Plan provides for the grant of incentive stock options, nonstatutory stock options, stock appreciation rights, restricted stock awards, restricted stock unit awards, other stock awards, and performance awards that may be settled in cash, stock, or other property. Eligible participants under the 2018 Plan include our employees, consultants and directors. The number of shares reserved for issuance under the 2018 Plan (subject to adjustment for certain changes in capitalization) is equal to the sum of (i) the unallocated shares of common stock remaining available for grant under the 2011 Plan as of May 15, 2018, (ii) 10,000,000 newly reserved shares of common stock and (iii) the number of shares subject to awards granted under the 2002 Plan, and the 2011 Plan as such shares become available from time to time, referred to as the Prior Plans' Returning Shares. Such Prior Plans' Returning Shares become available for issuance under the 2018 Plan if outstanding stock awards

granted under the 2002 Plan and the 2011 Plan, after May 15, 2018, expire or terminate for any reason prior to exercise or settlement or are forfeited, cancelled or otherwise returned to us because of the failure to meet a contingency or condition required for the vesting of such shares, or, subject to certain exceptions, are reacquired or withheld (or not issued) by us to satisfy a tax withholding obligation in connection with a stock award.

Options granted under the 2018 Plan expire no later than ten years from the date of grant. Option exercise prices shall be equal to the fair market value of the underlying common stock on the date of grant. If, at the time we grant an option, the optionee directly or by attribution owns stock possessing more than 10% of the total combined voting power of all classes of our stock, the option exercise price shall be at least 110% of the fair market value of the underlying common stock and shall not be exercisable more than five years after the date of grant.

We grant service-based and performance-based stock options to employees under the 2018 Plan. Service-based options generally vest over a period of four years from the date of the option grant. Performance-based options vest upon the achievement of specified milestones. Other stock awards (restricted stock awards and restricted stock units) have variable vesting schedules as determined by our board of directors on the date of grant.

Under certain circumstances, options may be exercised prior to vesting, subject to our right to repurchase the shares underlying such option at the exercise price paid per share. Our repurchase rights would generally terminate on a vesting schedule identical to the vesting schedule of the exercised option. During 2019, we have not repurchased any shares under the 2018 Plan. As of December 31, 2019, we have no shares outstanding subject to repurchase under the 2018 Plan.

As of December 31, 2019, our Non-Employee Director Compensation Policy adopted by our board of directors in March 2014 and amended by our board of directors in February 2015, May 2015, February 2016, January 2018, May 2018, October 2018 and January 2019 provides for the automatic grant to non-employee directors of the following types of equity awards under the 2018 Plan:

First Director Option. Each person who becomes a non-employee director, whether by election by our stockholders or by appointment by our board of directors to fill a vacancy, will automatically be granted an option to purchase 120,000 shares of common stock, or First Director Option, on the date such person first becomes a non-employee director. The First Director Option vests annually over three years upon each anniversary date of appointment to our board of directors.

Subsequent Director Option. Each non-employee director (other than any director receiving a First Director Option on the date of the annual meeting) will automatically be granted a subsequent option to purchase 70,000 shares of common stock, a Subsequent Director Option, on the date of the annual meeting of stockholders in each year during such director's service on our board of directors. The Subsequent Director Option vests in full on the earlier of: (i) the date of the next annual meeting of our stockholders or (ii) the first anniversary of the date of grant.

2006 Directors' Stock Option Plan

The 2006 Directors' Stock Option Plan, or 2006 Directors Plan, was terminated by our board of directors and replaced by the 2011 Plan in March 2014. No further grants of options were made from the 2006 Directors Plan upon the 2006 Directors Plan's termination. All outstanding awards granted under the 2006 Directors Plan remain subject to the terms of the 2006 Directors Plan and the individual award agreements thereunder.

The options granted to non-employee directors under the 2006 Directors Plan were nonstatutory stock options, and they expire no later than ten years from the date of grant. The option exercise price was equal to the fair market value of the underlying common stock on the date of grant. The First Director Option granted to non-employee directors under the 2006 Directors Plan vested annually over three years upon each anniversary date of appointment to the board of directors. The Subsequent Director Option granted to non-employee directors on the date of the annual meeting of stockholders in each year during such director's service on our board of directors under the 2006 Directors Plan vested one year from the date of grant.

2018 Inducement Award Plan

In December 2018, our board of directors approved the adoption of the 2018 Inducement Award Plan, or the Inducement Plan, pursuant to which we reserved 3,000,000 shares of Geron common stock (subject to customary adjustments in the event of a change in capital structure) to be used exclusively for grants of inducement awards to individuals who were not previously Geron employees or directors, other than following a bona fide period of non-employment. In January 2019, our Compensation Committee approved an amendment to increase the reserve of shares of our common stock under the 2018 Inducement Award Plan from 3,000,000 to 8,000,000 shares of common stock and in February 2020, our Compensation Committee approved another amendment to increase the reserve from 8,000,000 to 9,300,000 shares of common stock. The Inducement Plan provides for the grant of nonstatutory stock options, stock appreciation rights, restricted stock awards, restricted stock units and other stock awards, and all awards under the Inducement Plan are intended to meet the standards under Rule 5635(c)(4) of the Nasdaq Listing Rules. The terms and conditions of the Inducement Plan and the inducement awards to be granted thereunder are substantially similar to the 2018 Plan.

Directors' Market Value Stock Purchase Plan

In October 2018, our board of directors adopted a Directors' Market Value Stock Purchase Plan, or the Directors Market Plan. A total of 1,000,000 shares of Geron common stock has been reserved for the Directors Market Plan. Under the Directors Market Plan, non-employee directors may purchase shares of Geron common stock at the prevailing market price on the purchase date with cash compensation payable to them for their services as a board member. As stated in Geron's Non-Employee Director Compensation Policy, each non-employee director receives annual cash compensation, payable quarterly in arrears, for their services on the board and various committees of the board. As provided in the Non-Employee Director Compensation Policy, a non-employee director may elect to receive fully vested shares of common stock in lieu of cash and such shares shall be issuable from the Directors Market Plan.

Prior to the adoption of the Directors Market Plan, we issued fully vested restricted stock awards to those non-employee directors who elected to receive common stock in lieu of cash for their services on the board and various committees. In 2019, we issued 29,150 shares of common stock from the Directors Market Plan. In 2018, we issued 73,980 shares of common stock from the 2018 Plan. In 2017, we issued 72,066 shares of common stock from the 2011 Plan. The weighted average grant date fair value of restricted stock granted during the years ended December 31, 2019, 2018 and 2017 was $1.50, $1.91 and $2.20 per share, respectively. The total fair value of restricted stock that vested during 2019, 2018 and 2017 was $44,000, $141,000 and $159,000, respectively.

Aggregate option and award activity for the 2002 Plan, 2011 Plan, 2018 Plan, 2006 Directors Plan, Inducement Plan and Directors Market Plan is as follows:

		Outstanding Options			
	Shares Available For Grant	Number of Shares	Weighted Average Exercise Price Per Share	Weighted Average Remaining Contractual Life (In years)	Aggregate Intrinsic Value (In thousands)
Balance at December 31, 2018	11,964,399	27,285,952	$ 2.72		
Additional shares authorized	5,000,000	—	$ —		
Options granted	(11,735,600)	11,735,600 (1)	$ 1.32		
Awards granted	(29,150)	—	$ —		
Options exercised	—	(137,333)	$ 1.19		
Options cancelled/forfeited/ expired	1,207,706	(1,270,206)	$ 3.50		
Balance at December 31, 2019	6,407,355 (2)	37,614,013 (3)	$ 2.26	6.83	$ 1,800
Options exercisable at December 31, 2019		19,915,713	$ 2.86	4.95	$ 359
Options fully vested and expected to vest at December 31, 2019		36,293,713	$ 2.29	6.75	$ 1,698

(1) Includes 1,000,000 performance-based stock options granted in 2019 that have not achieved certain strategic milestones.

(2) In February 2020, our Compensation Committee approved an amendment to increase the reserve for the 2018 Inducement Plan from 8,000,000 to 9,300,000 shares of common stock.

(3) Includes 1,000,000 and 4,500,000 performance-based stock options granted in 2019 and 2018, respectively, that have not achieved certain strategic milestones.

The aggregate intrinsic value in the preceding table represents the total intrinsic value, based on Geron's closing stock price of $1.36 per share as of December 31, 2019, which would have been received by the option holders had all the option holders exercised their options as of that date.

We have not granted any options with an exercise price below or greater than the fair market value of our common stock on the date of grant in 2019, 2018 or 2017. As of December 31, 2019, 2018 and 2017, there were 19,915,713, 16,464,746 and 17,249,032 exercisable options outstanding at weighted average exercise prices per share of $2.86, $3.13 and $3.03, respectively.

The total pretax intrinsic value of stock options exercised during 2019, 2018 and 2017 was $80,000, $8,812,000 and $15,000, respectively. Cash received from the exercise of options in 2019, 2018 and 2017 totaled approximately $163,000, $6,929,000 and $18,000, respectively.

Information about stock options outstanding as of December 31, 2019 is as follows:

	Options Outstanding		
Exercise Price Range	Number of Shares	Weighted Average Exercise Price Per Share	Weighted Average Remaining Contractual Life (In years)
$1.03 - $1.48	9,578,200	$ 1.19	8.26
$1.50 - $1.74	10,928,400	$ 1.67	7.17
$1.77 - $2.54	9,732,417	$ 2.27	6.86
$2.63 - $5.29	7,374,996	$ 4.54	4.43
$1.03 - $5.29	37,614,013 (1)	$ 2.26	6.83

(1) Includes 1,000,000 and 4,500,000 performance-based stock options granted in 2019 and 2018, respectively, that have not achieved certain strategic milestones.

Employee Stock Purchase Plan

In March 2014, our board of directors adopted the 2014 Employee Stock Purchase Plan, or 2014 Purchase Plan. The 2014 Purchase Plan was approved by our stockholders in May 2014. The 2014 Purchase Plan replaced the 1996 Employee Stock Purchase Plan, or 1996 Purchase Plan, which was terminated effective as of the date the 2014 Purchase Plan was approved by our stockholders. Under the 2014 Purchase Plan, we are authorized to sell to eligible employees up to an aggregate of 1,000,000 shares of Geron common stock. As of December 31, 2019, an aggregate of 163,641 shares of our common stock have been issued under the 2014 Purchase Plan since its adoption.

The 2014 Purchase Plan is comprised of a series of offering periods, each with a maximum duration (not to exceed 12 months) with new offering periods commencing on January 1st and July 1st of each year. The date an employee enters the offering period will be designated as the entry date for purposes of that offering period. An employee may participate only in one offering period at a time. Each offering period consists of two consecutive purchase periods of six months' duration, with the last day of such period designated a purchase date.

Under the terms of the 2014 Purchase Plan, employees can choose to have up to 10% of their annual salary withheld to purchase our common stock. An employee may not make additional payments into such account or increase the withholding percentage during the offering period.

The purchase price per share at which common stock is purchased by the employee on each purchase date within the offering period is equal to 85% of the lower of (i) the fair market value per share of Geron common stock on the employee's entry date into that offering period or (ii) the fair market value per share of Geron common stock on the purchase date. If the fair market value per share of Geron common stock on the purchase date is less than the fair market value at the beginning of the offering period, a new 12 month offering period will automatically begin on the first business day following the purchase date with a new fair market value.

Stock-Based Compensation for Employees and Directors

We measure and recognize compensation expense for all share-based payment awards made to employees and directors, including employee stock options, restricted stock awards and employee stock purchases, based on grant-date fair values for these instruments. We use the Black Scholes option-pricing model to estimate the grant-date fair value of our service-based and performance-based stock options and employee stock purchases. The fair value for service-based restricted stock awards is determined using the fair value of our common stock on the date of grant.

As stock-based compensation expense recognized in the statements of operations for the years ended December 31, 2019, 2018 and 2017 is based on awards ultimately expected to vest, it has been reduced for estimated forfeitures, but at a minimum, reflects the grant-date fair value of those awards that actually vested in the period. Forfeitures have been estimated at the time of grant based on historical data and revised, if necessary, in subsequent periods if actual forfeitures differ from those estimates. With the adoption of Accounting Standards Update No. 2016-09, *Improvements to Employee Share Based Payment Accounting*, or ASU 2016-09, in the first quarter of 2017, we elected to continue to estimate forfeitures expected to occur to determine the amount of stock-based compensation expense to be recognized in each period. The adoption of ASU 2016-09 did not impact our accounting for or presentation of excess tax benefits recognized on stock-based compensation expense on our financial statements since our net deferred tax assets are fully offset by a valuation allowance due to our history of operating losses. In addition, presentation requirements for cash flows related to employee taxes paid for withheld shares had no impact to all periods presented.

In 2019 and 2018, our board of directors awarded performance-based stock options to certain employees. These performance-based stock options are included in the outstanding options table above. Performance-based options vest only upon achievement of discrete strategic milestones. Stock-based compensation expense for performance-based options is recognized over the period from the date the performance condition is determined to be probable of occurring through the date the applicable condition is expected to be met and is reduced for estimated forfeitures, as applicable. If the performance condition is not considered probable of being achieved, no stock-based

compensation expense is recognized until such time as the performance condition is considered probable of being met, if ever.

We recognize stock-based compensation expense for service-based stock options on a straight-line basis over the requisite service period, which is generally the vesting period. We have not recognized any stock-based compensation expense for performance-based stock options in our statements of operations for the years ended December 31, 2019 and 2018, as the achievement of the specified strategic milestones was not considered probable during that time. The following table summarizes the stock-based compensation expense related to service-based stock options, restricted stock awards and employee stock purchases for the years ended December 31, 2019, 2018 and 2017 which was allocated as follows:

	Year Ended December 31,		
(In thousands)	2019	2018	2017
Research and development	$ 1,640	$ 949	$ 988
General and administrative	4,439	5,419	7,156
Stock-based compensation expense included in operating expenses	$ 6,079	$ 6,368	$ 8,144

The fair value of stock options granted in 2019, 2018 and 2017 has been estimated at the date of grant using the Black Scholes option-pricing model with the following assumptions:

	Year Ended December 31,		
	2019	2018	2017
Dividend yield	0%	0%	0%
Expected volatility range	0.792 to 0.980	0.821 to 0.990	0.884 to 0.892
Risk-free interest rate range	1.50% to 2.56%	2.55% to 3.11%	1.98% to 1.99%
Expected term range	5.25 - 6.44 yrs	5.25 - 6.62 yrs	5.5 yrs

The fair value of employee stock purchases in 2019, 2018 and 2017 has been estimated using the Black Scholes option-pricing model with the following assumptions:

	Year Ended December 31,		
	2019	2018	2017
Dividend yield	0%	0%	0%
Expected volatility range	0.646 to 1.653	0.437 to 0.475	0.577 to 0.641
Risk-free interest rate range	1.94% to 2.63%	1.53% to 1.76%	0.45% to 0.89%
Expected term range	6 - 12 mos	6 - 12 mos	6 - 12 mos

Dividend yield is based on historical cash dividend payments and Geron has paid no cash dividends to date. The expected volatility range is based on historical volatilities of our stock since traded options on Geron common stock do not correspond to option terms and the trading volume of options is limited. The risk-free interest rate range is based on the U.S. Zero Coupon Treasury Strip Yields for the expected term in effect on the date of grant for an award. The expected term of options is derived from actual historical exercise and post-vesting cancellation data and represents the period of time that options granted are expected to be outstanding. The expected term of employees' purchase rights is equal to the purchase period.

Based on the Black Scholes option-pricing model, the weighted average estimated fair value of stock options granted during the years ended December 31, 2019, 2018 and 2017 was $0.94, $1.52 and $1.58 per share, respectively. The weighted average estimated fair value of employees' purchase rights for the years ended December 31, 2019, 2018 and 2017 was $0.66, $0.56 and $0.75 per share, respectively. As of December 31, 2019, total compensation cost related to unvested share-based payment awards not yet recognized, net of estimated forfeitures and assuming no probability of achievement for outstanding performance-based stock options, was $11,928,000, which is expected to be recognized over the next 32 months on a weighted-average basis.

401(k) Plan Matching Contributions

We sponsor a defined-contribution savings plan under Section 401(k) of the Internal Revenue Code covering all full-time U.S. employees, or the Geron 401K Plan. Participating employees may contribute up to the annual Internal Revenue Service contribution limit. The Geron 401K Plan also permits us to provide discretionary matching and profit sharing contributions.

Stock-Based Compensation to Service Providers

We grant stock options and restricted stock awards to consultants from time to time in exchange for services performed for us. In general, the stock options and restricted stock awards vest over the contractual period of the consulting arrangement. The fair value of stock options and restricted stock awards held by consultants is recorded as operating expenses over the vesting term of the respective equity awards. With the adoption of Accounting Standards Update 2018-07, *Improvements to Nonemployee Share-Based Payment Accounting*, or ASU 2018-07, in the first quarter of 2019, the measurement date of stock options granted to consultants was fixed at the grant date. We recorded stock-based compensation expense of $24,000, $50,000 and $41,000 for the vested portion of the fair value of stock options and restricted stock awards held by consultants in 2019, 2018 and 2017, respectively.

Common Stock Reserved for Future Issuance

Common stock reserved for future issuance as of December 31, 2019 is as follows:

Outstanding stock options	37,614,013
Options and awards available for grant	6,407,355
Employee stock purchase plan	836,359
Warrant outstanding	537,893
Total	45,395,620

9. INCOME TAXES

Deferred income taxes reflect the net tax effects of temporary differences between the carrying amounts of assets and liabilities for financial reporting purposes and the amounts used for income tax purposes. Significant components of our deferred tax assets are as follows:

	December 31,	
	2019	2018
	(In thousands)	
Net operating loss carryforwards	$ 204,600	$ 192,100
Research credits	38,400	35,500
Capitalized research and development	5,900	2,500
Stock-based compensation	7,700	6,400
Operating lease liabilities	700	—
Other	1,200	600
Total deferred tax assets	258,500	237,100
Less: valuation allowance	(257,900)	(237,100)
Net deferred tax assets	600	—
Operating leases, right-of-use assets	(600)	—
Total deferred tax liabilities	(600)	—
Total net deferred tax assets	$ —	$ —

We record net deferred tax assets to the extent we believe these assets will more likely than not be realized. In making such determination, we consider all available positive and negative evidence, including scheduled reversals of deferred tax liabilities, projected future taxable income, tax planning strategies and recent financial performance. Forming a conclusion that a valuation allowance is not required is difficult when there is negative evidence such as cumulative losses in recent years. Because of our history of losses, the net deferred tax assets have been fully offset by a valuation allowance. The valuation allowance increased by $20,800,000 and $4,300,000 for the years ended December 31, 2019 and 2018, respectively, and decreased by $89,400,000 during the year ended December 31, 2017. No income tax benefit was realized from stock options exercised in 2019 because our net deferred tax assets have been fully offset by a valuation allowance.

As of December 31, 2019, we had domestic federal net operating loss carryforwards of approximately $859,200,000. Of this, $769,500,000 will expire at various dates beginning in 2020 through 2037 and the remaining will carryforward indefinitely under the new tax laws, but is subject to an 80% taxable income limitation. As of December 31, 2019, we had state net operating loss carryforwards of approximately $346,500,000 expiring at various dates beginning in 2028 through 2039, if not utilized. We also had federal research and development tax credit carryforwards of approximately $39,400,000 expiring at various dates beginning in 2020 through 2039, if not utilized. Our state research and development tax credit carryforwards of approximately $19,600,000 carry forward indefinitely.

Due to the change of ownership provisions of the Tax Reform Act of 1986, utilization of a portion of our domestic net operating loss and tax credit carryforwards may be limited in future periods. Further, a portion of the carryforwards may expire before being applied to reduce future income tax liabilities.

On December 22, 2017, the Tax Cuts and Jobs Act of 2017, or 2017 Tax Act, was signed into law. Among other things, the 2017 Tax Act permanently lowers the corporate federal income tax rate to 21% from the previous maximum rate of 35%, effective for tax years including or commencing January 1, 2018. In accordance with GAAP, we remeasured the carrying value of our deferred tax assets as of December 31, 2017 using the new enacted corporate federal income tax rate of 21%. This remeasurement reduced our aggregate net deferred tax assets and correspondingly reduced the valuation allowance by approximately $102,300,000 in 2017. The remeasurement did not impact our financial statements.

In accordance with Staff Accounting Bulletin 118, as of December 31, 2017, we made a reasonable estimate of the effects of the 2017 Tax Act on our existing deferred tax assets. Our preliminary estimate and the remeasurement of our deferred tax assets was subject to further analysis related to certain matters, such as developing interpretations of the provisions of the 2017 Tax Act, changes to certain estimates and the filing of our tax returns. U.S. Treasury regulations, administrative interpretations or court decisions interpreting the 2017 Tax Act may require further adjustments and changes in our estimates. In the fourth quarter of 2018, we completed our analysis to determine the effect of the 2017 Tax Act. No material adjustments were noted from the completion of the analysis as of December 31, 2018.

We adopted the provision of the standard for accounting for uncertainties in income taxes on January 1, 2007. Upon adoption, we recognized no material adjustment in the liability for unrecognized tax benefits. At December 31, 2019, we had approximately $17,700,000 of unrecognized tax benefits, none of which would currently affect our effective tax rate if recognized due to our net deferred tax assets being fully offset by a valuation allowance.

A reconciliation of the beginning and ending amounts of unrecognized tax benefits is as follows (in thousands):

Balance as of December 31, 2018	$ 16,400
Decrease related to prior year tax positions	(40)
Increase related to current year tax positions	1,340
Balance as of December 31, 2019	$ 17,700

If applicable, we would classify interest and penalties related to uncertain tax positions in income tax expense. Through December 31, 2019, there has been no interest expense or penalties related to unrecognized tax benefits.

We do not currently expect any significant changes to unrecognized tax benefits during the fiscal year ended December 31, 2020. In certain cases, our uncertain tax positions are related to tax years that remain subject to examination by the relevant tax authorities. Tax years for which we have carryforward net operating loss and credit attributes remain subject to examination by federal and most state tax authorities.

10. STATEMENTS OF CASH FLOWS DATA

	Year Ended December 31,		
	2019	2018	2017
	(In thousands)		
Supplemental investing activities:			
Net unrealized gain (loss) on marketable securities	$ 315	$ 24	$ (154)
Operating lease assets obtained in exchange for operating lease liabilities	2,473	—	—

We have not made any cash payments for taxes or interest for the years ended December 31, 2019, 2018 and 2017.

11. SELECTED QUARTERLY FINANCIAL INFORMATION (UNAUDITED)

	First Quarter	Second Quarter	Third Quarter	Fourth Quarter
	(In thousands, except per share amounts)			
Year Ended December 31, 2019:				
Revenues	$ 57	$ 101	$ 131	$ 171
Operating expenses	11,358	15,325	16,103	30,179
Net loss	(10,059)	(14,239)	(15,180)	(29,070)
Basic and diluted net loss per share	$ (0.05)	$ (0.08)	$ (0.08)	$ (0.15)
Year Ended December 31, 2018:				
Revenues	$ 318	$ 208	$ 165	$ 375
Operating expenses	7,755	7,450	6,970	9,964
Net loss	(7,186)	(6,934)	(5,597)	(7,300)
Basic and diluted net loss per share	$ (0.04)	$ (0.04)	$ (0.03)	$ (0.04)

Basic and diluted net loss per share are computed independently for each of the quarters presented. Therefore, the sum of the quarters may not be equal to the full year net loss per share amounts.

12. SUBSEQUENT EVENT

At Market Issuance Sales Agreement

In January 2020, we sold an aggregate of 530,228 shares of our common stock pursuant to the 2018 Sales Agreement, resulting in net cash proceeds to us of approximately $748,000 after deducting sales commissions and estimated offering expenses payable by us. For further discussion of the 2018 Sales Agreement, see Note 8 on Stockholders' Equity.

ITEM 9. CHANGES IN AND DISAGREEMENTS WITH ACCOUNTANTS ON ACCOUNTING AND FINANCIAL DISCLOSURE

None.

ITEM 9A. CONTROLS AND PROCEDURES

(I) Evaluation of Disclosure Controls and Procedures

We have carried out an evaluation under the supervision and with the participation of management, including our Chief Executive Officer and our Chief Financial Officer, of our disclosure controls and procedures (as defined in Rule 13a-15(e) of the Securities Exchange Act of 1934, as amended) as of the end of the period covered by this annual report on Form 10-K. Based on that evaluation, our Chief Executive Officer and our Chief Financial Officer concluded that our disclosure controls and procedures were effective at the reasonable assurance level as of December 31, 2019.

In designing and evaluating disclosure controls and procedures, our management recognizes that any system of controls, however well designed and operated, can provide only reasonable assurance, and not absolute assurance, that the desired control objectives of the system are met. In addition, the design of any control system is based in part upon certain assumptions about the likelihood of future events. Because of these and other inherent limitations of control systems, there can be no assurance that any design will succeed in achieving its stated goals in all future circumstances. Accordingly, our disclosure controls and procedures are designed to provide reasonable, not absolute, assurance that the objectives of our disclosure control system are met and, as set forth above, our Chief Executive Officer and our Chief Financial Officer have concluded, based on their evaluation as of the end of the period covered by this annual report on Form 10-K, that our disclosure controls and procedures were effective to provide reasonable assurance that the objectives of our disclosure control system were met.

(II) Changes in Internal Control over Financial Reporting

There were no changes in our internal control over financial reporting during the quarter ended December 31, 2019 that have materially affected, or are reasonably likely to materially affect, our internal control over financial reporting.

(III) Management's Report on Internal Control over Financial Reporting

Internal control over financial reporting refers to the process designed by, or under the supervision of, our Chief Executive Officer and Chief Financial Officer, and effected by our board of directors, management and other personnel, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles, and includes those policies and procedures that:

(1) Pertain to the maintenance of records that in reasonable detail accurately and fairly reflect the transactions and dispositions of our assets;

(2) Provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with generally accepted accounting principles, and that our receipts and expenditures are being made only in accordance with authorizations of our management and directors; and

(3) Provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use or disposition of our assets that could have a material effect on the financial statements.

Management is responsible for establishing and maintaining an adequate internal control over financial reporting for us. Internal control over financial reporting cannot provide absolute assurance of achieving financial reporting objectives because of its inherent limitations. Internal control over financial reporting is a process that involves human diligence and compliance and is subject to lapses in judgment and breakdowns resulting from human failures. Internal control over financial reporting also can be circumvented by collusion or improper management override. Because of such limitations, there is a risk that material misstatements may not be prevented or detected on a timely basis by internal control over financial reporting. However, these inherent limitations are known features of the financial reporting process. Therefore, it is possible to design into the process safeguards to reduce, though not eliminate, this risk.

Under the supervision and with the participation of our management, including our Chief Executive Officer and our Chief Financial Officer, we conducted an evaluation of the effectiveness of our internal control over financial reporting based on the framework set forth in "Internal Control—Integrated Framework" issued by the Committee of Sponsoring Organizations of the Treadway Commission (2013 framework). Based on our evaluation under the framework set forth in "Internal Control—Integrated Framework," our management concluded that our internal control over financial reporting was effective as of December 31, 2019. The effectiveness of our internal control over financial reporting as of December 31, 2019 has been audited by Ernst & Young LLP, an independent registered public accounting firm, as stated in their report which is included herein.

(IV) Report of Independent Registered Public Accounting Firm

To the Stockholders and the Board of Directors of Geron Corporation

Opinion on Internal Control over Financial Reporting

We have audited Geron Corporation's internal control over financial reporting as of December 31, 2019, based on criteria established in *Internal Control-Integrated Framework* issued by the Committee of Sponsoring Organizations of the Treadway Commission (2013 framework) (the COSO criteria). In our opinion, Geron Corporation (the Company) maintained, in all material respects, effective internal control over financial reporting as of December 31, 2019, based on the COSO criteria.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) (PCAOB), the balance sheets of the Company as of December 31, 2019 and 2018, the related statements of operations, comprehensive loss, stockholders' equity and cash flows for each of the three years in the period ended December 31, 2019, and the related notes and our report dated March 12, 2020 expressed an unqualified opinion thereon.

Basis for Opinion

The Company's management is responsible for maintaining effective internal control over financial reporting and for its assessment of the effectiveness of internal control over financial reporting included in the accompanying Management's Report on Internal Control over Financial Reporting. Our responsibility is to express an opinion on the Company's internal control over financial reporting based on our audit. We are a public accounting firm registered with the PCAOB and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audit in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether effective internal control over financial reporting was maintained in all material respects.

Our audit included obtaining an understanding of internal control over financial reporting, assessing the risk that a material weakness exists, testing and evaluating the design and operating effectiveness of internal control based on the assessed risk, and performing such other procedures as we considered necessary in the circumstances. We believe that our audit provides a reasonable basis for our opinion.

Definition and Limitations of Internal Control Over Financial Reporting

A company's internal control over financial reporting is a process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles. A company's internal control over financial reporting includes those policies and procedures that (1) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the company; (2) provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with generally accepted accounting principles, and that receipts and expenditures of the company are being made only in accordance with authorizations of management and directors of the company; and (3) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use, or disposition of the company's assets that could have a material effect on the financial statements.

Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

/s/ Ernst & Young LLP

Redwood City, California
March 12, 2020

ITEM 9B. OTHER INFORMATION

None.

PART III

Certain information required by Part III is omitted from this annual report on Form 10-K because we will file with the U.S. Securities and Exchange Commission a definitive proxy statement pursuant to Regulation 14A in connection with the solicitation of proxies for Geron's Annual Meeting of Stockholders expected to be held in June 2020, or the Proxy Statement, not later than 120 days after the end of the fiscal year covered by this annual report on Form 10-K, and certain information included therein is incorporated herein by reference.

ITEM 10. DIRECTORS, EXECUTIVE OFFICERS AND CORPORATE GOVERNANCE

Identification of Directors and Nominees for Director

The information required by this item concerning our directors and nominees for director is incorporated by reference from the section captioned "Proposal 1: Election of Directors" contained in our Proxy Statement.

Identification of Executive Officers

The information required by this item concerning our executive officers is set forth in Part I, Item 1 of this annual report on Form 10-K.

Code of Ethics

We have adopted a Code of Conduct with which every person who works for Geron, including our board of directors, is expected to comply. The Code of Conduct is publicly available on our website under the Investor Relations section at www.geron.com. This website address is intended to be an inactive, textual reference only; none of the material on this website is part of this annual report on Form 10-K. If any substantive amendments are made to the Code of Conduct or any waiver granted, including any implicit waiver, from a provision of the Code to our Chief Executive Officer, Chief Financial Officer or Corporate Controller, we will disclose the nature of such amendment or waiver on that website or in a report on Form 8-K.

Copies of the Code of Conduct will be furnished without charge to any person who submits a written request directed to the attention of our Corporate Secretary, at our offices located at 149 Commonwealth Drive, Suite 2070, Menlo Park, California, 94025.

Certain Corporate Governance Matters

The information required by this item concerning our audit committee, audit committee financial expert and procedures by which stockholders may recommend nominees to our board of directors, may be found under the sections captioned "Board Leadership and Governance" and "Other Matters" contained in the Proxy Statement.

ITEM 11. EXECUTIVE COMPENSATION

The information required by this item is incorporated by reference from the sections captioned "Compensation Discussion and Analysis," "Compensation Committee Report," "Executive Compensation Tables and Related Narrative Disclosure," "Compensation of Directors" and "Compensation Committee Interlocks and Insider Participation" contained in the Proxy Statement.

ITEM 12. SECURITY OWNERSHIP OF CERTAIN BENEFICIAL OWNERS AND MANAGEMENT AND RELATED STOCKHOLDER MATTERS

The information required by this item is incorporated by reference from the sections captioned "Equity Compensation Plan Information" and "Security Ownership of Certain Beneficial Owners and Management" contained in the Proxy Statement.

ITEM 13. CERTAIN RELATIONSHIPS AND RELATED TRANSACTIONS, AND DIRECTOR INDEPENDENCE

The information required by this item is incorporated by reference from the sections captioned "Proposal 1: Election of Directors" and "Certain Transactions" contained in the Proxy Statement.

ITEM 14. PRINCIPAL ACCOUNTING FEES AND SERVICES

The information required by this item is incorporated by reference from the section captioned "Principal Accountant Fees and Services" contained in the Proxy Statement.

PART IV

ITEM 15. EXHIBITS, FINANCIAL STATEMENT SCHEDULES

(a) (1) Financial Statements

Included in Part II, Item 8 of this Report:

(2) Financial Statement Schedules

Financial statement schedules are omitted because they are not required or the information is disclosed in the financial statements listed in Item 15(a)(1) above.

(3) Exhibits

		Incorporation by Reference			
Exhibit Number	**Description**	**Exhibit Number**	**Filing**	**Filing Date**	**File No.**
2.1	Asset Contribution Agreement by and among Geron Corporation, BioTime, Inc. and Asterias Biotherapeutics, Inc. (formerly known as BioTime Acquisition Corporation)	2.1	8-K	January 8, 2013	000-20859
3.1	Restated Certificate of Incorporation	3.3	8-K	May 18, 2012	000-20859
3.2	Certificate of Amendment of the Restated Certificate of Incorporation	3.1	8-K	May 18, 2012	000-20859
3.3	Certificate of Amendment of the Restated Certificate of Incorporation	3.1	8-K	June 7, 2019	000-20859
3.4	Amended and Restated Bylaws of Registrant	3.1	8-K	March 19, 2010	000-20859
3.5	Amendment to Amended and Restated Bylaws of Registrant	3.4	8-K	November 22, 2017	000-20859
4.1	Description of Capital Stock				
4.2	Form of Common Stock Certificate	4.1	10-K	March 15, 2013	000-20859
4.3	Form of 2011 Warrant	Attachment to 10.1	10-Q	November 3, 2011	000-20859
10.1	Form of Indemnification Agreement	10.1	10-K	March 7, 2012	000-20859
10.2	Amended and Restated 2002 Equity Incentive Plan*	4.1	S-8	June 4, 2010	333-167349
10.3	Form of Stock Option Agreement under 2002 Equity Incentive Plan*	10.6	10-K	March 15, 2013	000-20859
10.4	Amended and Restated 2006 Directors' Stock Option Plan*	10.5	10-Q	November 7, 2013	000-20859
10.5	2011 Incentive Award Plan*	10.1	8-K	May 16, 2011	000-20859
10.6	Form of Stock Option Agreement under 2011 Incentive Award Plan*	10.11	10-K	March 15, 2013	000-20859
10.7	Form of Restricted Stock Award Agreement under 2011 Incentive Award Plan*	10.12	10-K	March 15, 2013	000-20859
10.8	Form of Non-Employee Director Stock Option Agreement under 2011 Incentive Award Plan*	10.2	10-Q	May 7, 2015	000-20859
10.9	2018 Equity Incentive Plan*	10.2	8-K	May 18, 2018	000-20859
10.10	Form of Employee Stock Option Agreement under 2018 Equity Incentive Plan*	10.3	8-K	May 18, 2018	000-20859
10.11	Form of Employee Stock Option Agreement under 2018 Equity Incentive Plan, as amended*	10.11	10-K	March 7, 2019	000-20859
10.12	Form of Non-Employee Director Stock Option Agreement under 2018 Equity Incentive Plan*	10.4	8-K	May 18, 2018	000-20859
10.13	Form of Non-Employee Director Stock Option Agreement under 2018 Equity Incentive Plan, as amended*	10.13	10-K	March 7, 2019	000-20859
10.14	Form of Performance-Vesting Stock Option Agreement under 2018 Equity Incentive Plan*	10.14	10-K	March 7, 2019	000-20859
10.15	Form of Performance-Vesting Stock Option Agreement under 2018 Equity Incentive Plan, as amended*	10.15	10-K	March 7, 2019	000-20859
10.16	2018 Inducement Award Plan*	10.1	8-K	December 14, 2018	000-20859
10.17	2018 Inducement Award Plan, as amended January 29, 2019*	10.17	10-K	March 7, 2019	000-20859

		Incorporation by Reference			
Exhibit Number	Description	Exhibit Number	Filing	Filing Date	File No.
10.18	2018 Inducement Award Plan, as amended February 11, 2020*				
10.19	Form of Stock Option Agreement under 2018 Inducement Award Plan*	10.2	8-K	December 14, 2018	000-20859
10.20	Form of Stock Option Agreement under 2018 Inducement Award Plan, as amended*	10.19	10-K	March 7, 2019	000-20859
10.21	Form of Performance-Vesting Stock Option Agreement under 2018 Inducement Award Plan*	10.20	10-K	March 7, 2019	000-20859
10.22	2014 Employee Stock Purchase Plan*	10.1	8-K	May 23, 2014	000-20859
10.23	Non-Employee Director Compensation Policy, as amended January 30, 2019*	10.26	10-K	March 7, 2019	000-20859
10.24	Non-Employee Director Compensation Policy, as amended February 12, 2020*				
10.25	Directors' Market Value Stock Purchase Plan, effective October 1, 2018*	10.1	10-Q	November 1, 2018	000-20859
10.26	Amended and Restated Severance Plan, effective as of January 30, 2019*	10.28	10-K	March 7, 2019	000-20859
10.27	Amended and Restated Employment agreement between the Registrant and John A. Scarlett, M.D., effective as of January 31, 2019*	10.29	10-K	March 7, 2019	000-20859
10.28	Amended and Restated Employment agreement between the Registrant and Stephen N. Rosenfield, effective as of January 31, 2019*	10.30	10-K	March 7, 2019	000-20859
10.29	Amended and Restated Employment agreement between the Registrant and Andrew J. Grethlein, effective as of January 31, 2019*	10.31	10-K	March 7, 2019	000-20859
10.30	Amended and Restated Employment agreement between the Registrant and Olivia K. Bloom, effective as of January 31, 2019*	10.32	10-K	March 7, 2019	000-20859
10.31	Amended and Restated Employment agreement between the Registrant and Melissa A. Kelly Behrs, effective as of January 31, 2019*	10.33	10-K	March 7, 2019	000-20859
10.32	Employment Agreement between the Registrant and Aleksandra K. Rizo, effective as of January 15, 2019*	10.34	10-K	March 7, 2019	000-20859
10.33	Employment Agreement between the Registrant and Anil Kapur, effective as of December 2, 2019*				
10.34†	California Institute for Regenerative Medicine Notice of Loan Award	10.1	10-Q	November 3, 2011	000-20859
10.35	Sixth Amendment to Office Lease Agreement by and between the Registrant and Exponent Realty, LLC, effective as of September 21, 2017	10.1	8-K	September 22, 2017	000-20859
10.36	Seventh Amendment to Lease Agreement by and between Registrant and Exponent Realty, LLC, effective as of September 10, 2019	10.1	10-Q	November 6, 2019	000-20859
10.37	Office Lease Agreement by and between Registrant and 3 Sylvan Realty LLC, effective as of April 30, 2019	10.18	10-Q	May 2, 2019	000-20859
10.38	Office Lease Agreement by and between Registrant and Hudson Metro Center LLC, effective as of October 9, 2019	10.1	8-K	October 15, 2019	000-20859

		Incorporation by Reference			
Exhibit Number	Description	Exhibit Number	Filing	Filing Date	File No.
10.39	At Market Issuance Sales Agreement, dated May 18, 2018, by and between Registrant and B. Riley FBR, Inc.	10.1	8-K	May 18, 2018	000-20859
23.1	Consent of Independent Registered Public Accounting Firm				
24.1	Power of Attorney (see signature page)				
31.1	Certification of Chief Executive Officer pursuant to Form of Rule 13a-14(a), as Adopted Pursuant to Section 302(a) of the Sarbanes-Oxley Act of 2002, dated March 12, 2020				
31.2	Certification of Chief Financial Officer pursuant to Form of Rule 13a-14(a), as Adopted Pursuant to Section 302(a) of the Sarbanes-Oxley Act of 2002, dated March 12, 2020				
32.1	Certification of Chief Executive Officer pursuant to 18 U.S.C. Section 1350, as Adopted Pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, dated March 12, 2020**				
32.2	Certification of Chief Financial Officer pursuant to 18 U.S.C. Section 1350, as Adopted Pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, dated March 12, 2020**				
101	The following materials from the Registrant's annual report on Form 10-K for the year ended December 31, 2019, formatted in Extensible Business Reporting Language (XBRL) include: (i) Balance Sheets as of December 31, 2019 and 2018, (ii) Statements of Operations, Comprehensive Loss, Stockholders' Equity and Cash Flows for each of the three years in the period ended December 31, 2019, and (iii) Notes to Financial Statements				

† Confidential treatment has been granted for certain portions of this exhibit. Omitted information has been filed separately with the Securities and Exchange Commission.

* Management contract or compensation plan or arrangement.

** The certifications attached as Exhibits 32.1 and 32.2 that accompany this annual report on Form 10-K, are not deemed filed with the Securities and Exchange Commission and are not to be incorporated by reference into any filing of the Company under the Securities Act of 1933, as amended, or the Securities Exchange Act of 1934, as amended (whether made before or after the date of this Form 10-K), irrespective of any general incorporation language contained in such filing.

ITEM 16. FORM 10-K SUMMARY

None.

SIGNATURES

Pursuant to the requirements of Section 13 or 15(d) of the Securities Exchange Act of 1934, the Registrant has duly caused this report to be signed on its behalf by the undersigned, thereunto duly authorized.

GERON CORPORATION

Date: March 12, 2020

By: /s/ OLIVIA BLOOM
OLIVIA K. BLOOM
Executive Vice President, Finance, Chief Financial Officer and Treasurer

POWER OF ATTORNEY

KNOW BY ALL PERSONS BY THESE PRESENTS, that each person whose signature appears below constitutes and appoints, jointly and severally, John A. Scarlett, M.D., and Olivia K. Bloom, and each one of them, attorneys-in-fact for the undersigned, each with the power of substitution, for the undersigned in any and all capacities, to sign any and all amendments to this annual report on Form 10-K, and to file the same, with exhibits thereto and other documents in connection therewith, with the Securities and Exchange Commission, hereby ratifying and confirming all that each of said attorneys-in-fact, or his or her substitutes, may do or cause to be done by virtue hereof.

IN WITNESS WHEREOF, each of the undersigned has executed this Power of Attorney as of the date indicated opposite his/her name.

Pursuant to the requirements of the Securities Exchange Act of 1934, this report has been signed below by the following persons on behalf of the Registrant and in the capacities and on the dates indicated.

Signature	Title	Date
/s/ JOHN A. SCARLETT JOHN A. SCARLETT	President, Chief Executive Officer and Chairman of the Board (Principal Executive Officer)	March 12, 2020
/s/ OLIVIA BLOOM OLIVIA K. BLOOM	Executive Vice President, Finance, Chief Financial Officer and Treasurer (Principal Financial and Accounting Officer)	March 12, 2020
/s/ DAWN C. BIR DAWN C. BIR	Director	March 12, 2020
/s/ KARIN EASTHAM KARIN EASTHAM	Director	March 12, 2020
/s/ V. BRYAN LAWLIS V. BRYAN LAWLIS	Director	March 12, 2020
/s/ SUSAN MOLINEAUX SUSAN M. MOLINEAUX	Director	March 12, 2020
/s/ ELIZABETH G. O'FARRELL ELIZABETH G. O'FARRELL	Director	March 12, 2020
/s/ ROBERT J. SPIEGEL ROBERT J. SPIEGEL	Director	March 12, 2020

EXHIBIT 23.1

CONSENT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

We consent to the incorporation by reference in the following Registration Statements:

1) Registration Statement (Form S-3, No. 333-225184) and in the related prospectuses and prospectus supplements,
2) Registration Statement (Form S-8 No. 333-230171) pertaining to the 2018 Inducement Award Plan,
3) Registration Statement (Form S-8 No. 333-228147) pertaining to the Directors' Market Value Stock Purchase Plan,
4) Registration Statement (Form S-8 No. 333-225190) pertaining to the 2018 Equity Incentive Plan,
5) Registration Statement (Form S-8, No. 333-196677) pertaining to the 2014 Employee Stock Purchase Plan,
6) Registration Statement (Form S-8, No. 333-174350) pertaining to the 2011 Incentive Award Plan, the 2002 Equity Incentive Plan, the 1996 Directors' Stock Option Plan and the 1992 Stock Option Plan,
7) Registration Statements (Forms S-8, No. 333-167349, No. 333-161035, No. 333-152725 and No. 333-145042) pertaining to the 2002 Equity Incentive Plan, and
8) Registration Statement (Form S-8, No. 333-136330) pertaining to the 2002 Equity Incentive Plan and the 2006 Directors' Stock Option Plan;

of our reports dated March 12, 2020, with respect to the financial statements of Geron Corporation and the effectiveness of internal control over financial reporting of Geron Corporation included in this Annual Report (Form 10-K) for the year ended December 31, 2019.

/s/ Ernst & Young LLP

Redwood City, California
March 12, 2020

EXHIBIT 31.1

CERTIFICATION PURSUANT TO
FORM OF RULE 13A-14(A)
AS ADOPTED PURSUANT TO
SECTION 302(A) OF THE SARBANES-OXLEY ACT OF 2002

I, John A. Scarlett, M.D., certify that:

1. I have reviewed this annual report on Form 10-K of Geron Corporation;

2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;

3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;

4. The registrant's other certifying officer(s) and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:

   (a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;

   (b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;

   (c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and

   (d) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and

5. The registrant's other certifying officer(s) and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):

   (a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and

   (b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: March 12, 2020

/s/ JOHN A. SCARLETT
JOHN A. SCARLETT, M.D.
President, Chief Executive Officer and Chairman of the Board

EXHIBIT 31.2

CERTIFICATION PURSUANT TO
FORM OF RULE 13A-14(A)
AS ADOPTED PURSUANT TO
SECTION 302(A) OF THE SARBANES-OXLEY ACT OF 2002

I, Olivia K. Bloom, certify that:

1. I have reviewed this annual report on Form 10-K of Geron Corporation;

2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;

3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;

4. The registrant's other certifying officer(s) and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:

   (a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;

   (b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;

   (c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and

   (d) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and

5. The registrant's other certifying officer(s) and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):

   (a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and

   (b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: March 12, 2020

/s/ OLIVIA K. BLOOM
OLIVIA K. BLOOM
Executive Vice President, Finance,
Chief Financial Officer and Treasurer

EXHIBIT 32.1

CERTIFICATION PURSUANT TO
18 U.S.C. SECTION 1350,
AS ADOPTED PURSUANT TO
SECTION 906 OF THE SARBANES-OXLEY ACT OF 2002

Pursuant to 18 U.S.C. Section 1350, as created by Section 906 of the Sarbanes-Oxley Act of 2002, the undersigned officer of Geron Corporation (the "Company") hereby certifies, to such officer's knowledge, that:

(i) the accompanying annual report on Form 10-K of the Company for the year ended December 31, 2019 (the "Report") fully complies with the requirements of Section 13(a) or Section 15(d), as applicable, of the Securities Exchange Act of 1934, as amended; and

(ii) the information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

Dated: March 12, 2020

/s/ JOHN A. SCARLETT
JOHN A. SCARLETT, M.D.
President, Chief Executive Officer and Chairman of the Board

This certification accompanies the Form 10-K to which it relates, is not deemed filed with the Securities and Exchange Commission and is not to be incorporated by reference into any filing of the Company under the Securities Act of 1933, as amended, or the Securities Exchange Act of 1934, as amended (whether made before or after the date of the Form 10-K), irrespective of any general incorporation language contained in such filing.

EXHIBIT 32.2

CERTIFICATION PURSUANT TO
18 U.S.C. SECTION 1350,
AS ADOPTED PURSUANT TO
SECTION 906 OF THE SARBANES-OXLEY ACT OF 2002

Pursuant to 18 U.S.C. Section 1350, as created by Section 906 of the Sarbanes-Oxley Act of 2002, the undersigned officer of Geron Corporation (the "Company") hereby certifies, to such officer's knowledge, that:

(i) the accompanying annual report on Form 10-K of the Company for the year ended December 31, 2019 (the "Report") fully complies with the requirements of Section 13(a) or Section 15(d), as applicable, of the Securities Exchange Act of 1934, as amended; and

(ii) the information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

Dated: March 12, 2020

/s/ OLIVIA K. BLOOM
OLIVIA K. BLOOM
Executive Vice President, Finance,
Chief Financial Officer and Treasurer

This certification accompanies the Form 10-K to which it relates, is not deemed filed with the Securities and Exchange Commission and is not to be incorporated by reference into any filing of the Company under the Securities Act of 1933, as amended, or the Securities Exchange Act of 1934, as amended (whether made before or after the date of the Form 10-K), irrespective of any general incorporation language contained in such filing.

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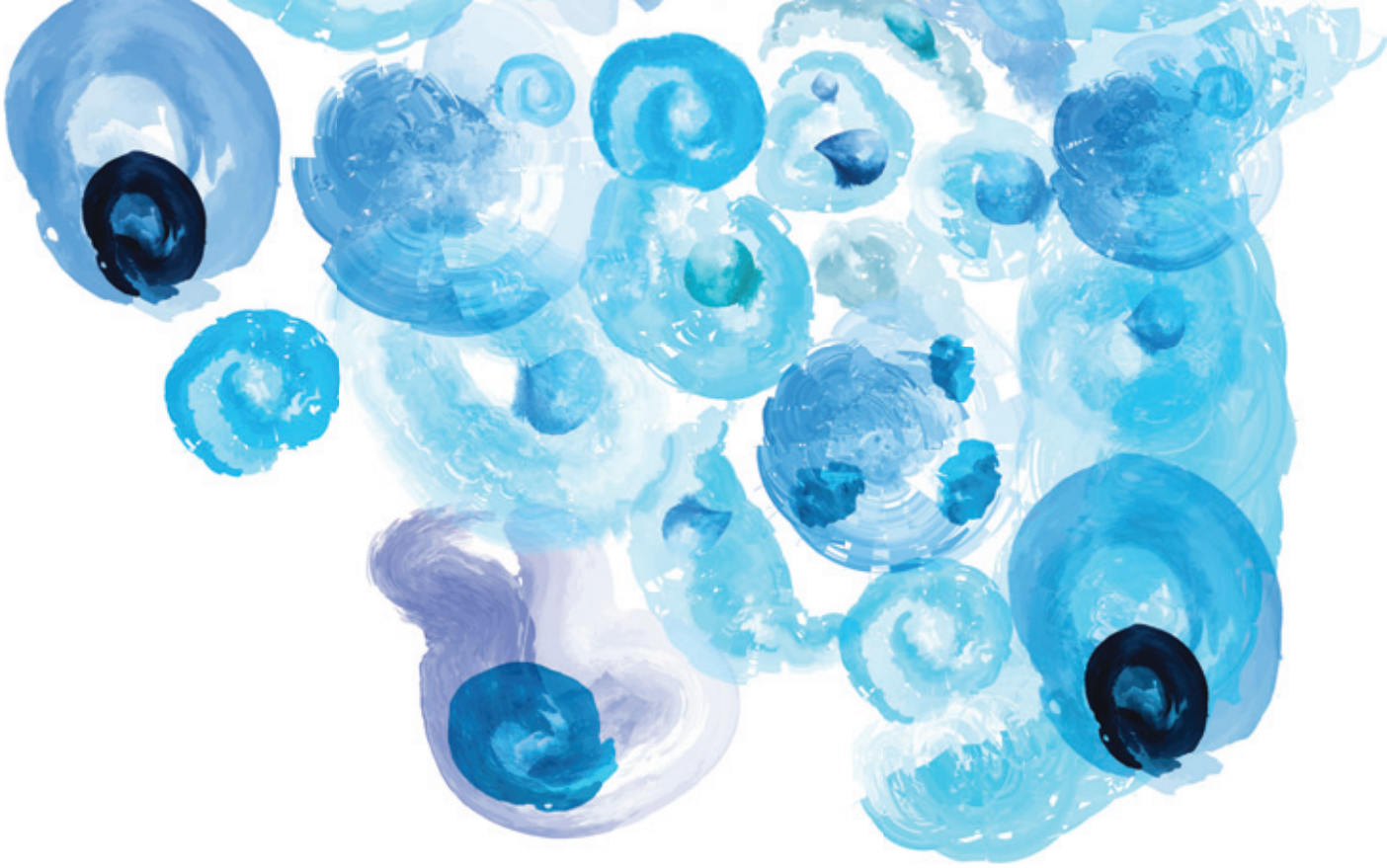

Use of Forward-Looking Statements

Except for the historical information contained herein, the letter to stockholders contains forward-looking statements made pursuant to the "safe harbor" provisions of the Private Securities Litigation Reform Act of 1995. Investors are cautioned that such statements, include, without limitation, those regarding: (i) that Geron plans to meet with the FDA in the second quarter of 2020 to discuss a potential regulatory approval path in MF and subsequently provide a decision by mid-year 2020 regarding any potential late-stage development of imetelstat in MF; (ii) that Geron hopes the FDA meeting plays out positively; (iii) that in 2020 Geron expects to present at medical conferences: (a) more mature data from the Phase 2 IMerge clinical trial, including durability of transfusion independence and (b) new analyses of Phase 2 IMbark data showing correlation of the median overall survival with other clinical endpoints in the trial; (iv) that imetelstat may offer modification of patients' underlying disease, and as a result, meaningful clinical benefit for patients; (v) that other countries will have similar successful outcomes to South Korea in quickly overcoming the deleterious effect COVID-19 has on clinical trial enrollment and progress; (vi) that the Company believes that the Phase 2 IMerge efficacy data looks extremely promising; (vii) that Geron believes in its strategy and imetelstat development plan; (viii) that once the COVID-19 pandemic requires lower demands on healthcare systems, doctors will encourage patients to feel safe entering clinical sites; (ix) that once the COVID-19 crisis diminishes, the Company will hopefully be able to very quickly ramp up site initiations and patient enrollment to the rate achieved just prior to COVID-19; and (x) other statements that are not historical facts, constitute forward-looking statements. These statements involve risks and uncertainties that can cause actual results to differ materially from those in such forward-looking statements. These risks and uncertainties, include, without limitation, risks and uncertainties related to: (i) whether the Company overcomes all the clinical, safety, efficacy, technical, scientific, intellectual property, manufacturing and regulatory challenges to enable complete enrollment of IMerge after COVID-19 abates; (ii) whether regulatory authorities permit the further development of imetelstat on a timely basis, or at all, without any clinical holds; (iii) whether imetelstat is demonstrated to be safe and efficacious in clinical trials; (iv) whether any future efficacy or safety results may cause the benefit-risk profile of imetelstat to become unacceptable; (v) the Company may decide not to pursue late-stage development of imetelstat in MF; (vi) whether any medical conferences agree to permit the Company to present the new imetelstat MDS and/or MF data; (vii) whether imetelstat actually demonstrates modification of disease in patients; (viii) that Geron may not be able to meet with the FDA in the second quarter of 2020, or at all, and Geron's decision whether or not to pursue late-stage development of imetelstat in MF may be delayed beyond mid-2020; (ix) even after the COVID-19 crisis abates, because of the harm it caused to healthcare systems, IMerge may never regain the rate of site initiations and enrollment it had before COVID-19; and (x) whether imetelstat has adequate patent protection and freedom to operate. Additional information on the above risks and uncertainties and additional risks, uncertainties and factors that could cause actual results to differ materially from those in the forward-looking statements are contained in Geron's periodic reports filed with the Securities and Exchange Commission under the heading "Risk Factors," including Geron's annual report on Form 10-K for the year ended December 31, 2019. Undue reliance should not be placed on forward-looking statements, which speak only as of the date they are made, and the facts and assumptions underlying the forward-looking statements may change. Except as required by law, Geron disclaims any obligation to update these forward-looking statements to reflect future information, events or circumstances.

CORPORATE INFORMATION

Board of Directors

John A. Scarlett, M.D.
Chairman of the Board

Dawn C. Bir

Karin Eastham
Lead Independent Director

V. Bryan Lawlis, Ph.D.

Susan M. Molineaux, Ph.D.

Elizabeth G. O'Farrell

Robert J. Spiegel, M.D., FACP

Officers

John A. Scarlett, M.D.
Chairman of the Board, President and Chief Executive Officer

Olivia K. Bloom
Executive Vice President, Finance, Chief Financial Officer and Treasurer

Melissa A. Kelly Behrs
Executive Vice President, Chief Business Officer

Andrew J. Grethlein, Ph.D.
Executive Vice President, Chief Operating Officer

Anil Kapur
Executive Vice President, Corporate Strategy and Chief Commercial Officer

Aleksandra Rizo, M.D., Ph.D.
Executive Vice President, Chief Medical Officer

Stephen N. Rosenfield, J.D.
Executive Vice President, Chief Legal Officer and Corporate Secretary

Investor Relations

Suzanne Messere
investor@geron.com - email

CG Capital
(877) 889-1972 - tel

Transfer Agent & Registrar

Computershare Investor Services
P.O. Box 505005
Louisville, KY 40233-5005
(800) 962-4284 - tel

Independent Auditors

Ernst & Young LLP
275 Shoreline Drive
Suite 600
Redwood City, CA 94065

Legal Counsel

Cooley LLP
3175 Hanover Street
Palo Alto, CA 94304

Stock Listing

Geron Corporation
common stock trades on the Nasdaq Global Select Market under the ticker symbol GERN

geron

Geron Corporation
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Foster City, CA 94404
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