GERON CORP
Form 424B5
October 11, 2012

Use these links to rapidly review the document
TABLE OF CONTENTS

Table of Contents

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Registration No. 333-182537

PROSPECTUS

$50,000,000
Common Stock

We have entered into an at-the-market issuance sales agreement, or sales agreement, with MLV & Co. LLC, or MLV, relating to shares of our common stock offered by this prospectus. In accordance with the terms of the sales agreement, we may offer and sell shares of our common stock from time to time through MLV having an aggregate offering price of up to $50.0 million.

Our common stock is listed on The NASDAQ Global Select Market under the symbol "GERN." On October 5, 2012, the last reported sale price of our common stock on The NASDAQ Global Select Market was $1.41 per share.

Sales of our common stock, if any, under this prospectus may be made in sales deemed to be "at-the-market" equity offerings as defined in Rule 415 promulgated under the Securities Act of 1933, as amended, including sales made directly on or through The NASDAQ Global Select Market, the existing trading market for our common stock, sales made to or through a market maker other than on an exchange or otherwise, in negotiated transactions at market prices prevailing at the time of sale or at prices related to such prevailing market prices, and/or any other method permitted by law. MLV will act as a sales agent on a best efforts basis using commercially reasonable efforts consistent with its normal trading and sales practices, on mutually agreed terms between MLV and us. There is no arrangement for funds to be received in any escrow, trust or similar arrangement.

The compensation to MLV for sales of common stock sold pursuant to the sales agreement is an aggregate of up to 3.0% of the gross proceeds of the sales price per share. In connection with the sale of the common stock on our behalf, MLV will be deemed to be an "underwriter" within the meaning of the Securities Act of 1933, as amended, and the compensation of MLV will be deemed to be underwriting commissions or discounts. We have also agreed to provide indemnification and contribution to MLV with respect to certain liabilities, including liabilities under the Securities Act of 1933, as amended.

Investing in our common stock involves a high degree of risk. Please read the information contained under the heading "Risk Factors" beginning on page 4 of this prospectus, and under similar headings in the other documents that are filed after the date hereof and incorporated by reference into this prospectus.

Neither the Securities and Exchange Commission nor any state securities commission has approved or disapproved of these securities or determined if this prospectus is truthful or complete. Any representation to the contrary is a criminal offense.

The date of this prospectus is October 11, 2012.

Table of Contents

TABLE OF CONTENTS

Table of Contents

ABOUT THIS PROSPECTUS

This prospectus relates to the offering of our common stock. Before buying any of the common stock that we are offering, we urge you to carefully read this prospectus, together with the information incorporated by reference as described under the headings "Where You Can Find More Information" and "Incorporation of Certain Information by Reference" in this prospectus. These documents contain important information that you should consider when making your investment decision.

This prospectus describes the specific terms of the common stock we are offering and also adds to and updates information contained in the documents incorporated by reference into this prospectus. To the extent there is a conflict between the information contained in this prospectus, on the one hand, and the information contained in any document incorporated by reference into this prospectus that was filed with the Securities and Exchange Commission, or SEC, before the date of this prospectus, on the other hand, you should rely on the information in this prospectus. If any statement in one of these documents is inconsistent with a statement in another document having a later date for example, a document incorporated by reference into this prospectus the statement in the document having the later date modifies or supersedes the earlier statement.

You should rely only on the information contained in, or incorporated by reference into this prospectus and in any free writing prospectus that we may authorize for use in connection with this offering. We have not, and MLV has not, authorized any other person to provide you with different information. If anyone provides you with different or inconsistent information, you should not rely on it. We are not, and MLV is not, making an offer to sell or soliciting an offer to buy our securities in any jurisdiction in which an offer or solicitation is not authorized or in which the person making that offer or solicitation is not qualified to do so or to anyone to whom it is unlawful to make an offer or solicitation. You should assume that the information appearing in this prospectus, the documents incorporated by reference into this prospectus, and in any free writing prospectus that we may authorize for use in connection with this offering, is accurate only as of the date of those respective documents. Our business, financial condition, results of operations and prospects may have changed since those dates. You should read this prospectus, the documents incorporated by reference into this prospectus, and any free writing prospectus that we may authorize for use in connection with this offering, in their entirety before making an investment decision. You should also read and consider the information in the documents to which we have referred you in the sections of this prospectus entitled "Where You Can Find More Information" and "Incorporation of Certain Information by Reference."

Table of Contents

PROSPECTUS SUMMARY

This summary highlights certain information about us, this offering and selected information contained elsewhere in or incorporated by reference into this prospectus. This summary is not complete and does not contain all of the information that you should consider before deciding whether to invest in our common stock. For a more complete understanding of our company and this offering, we encourage you to read and consider carefully the more detailed information in this prospectus, including the information incorporated by reference into this prospectus and the information contained under the heading "Risk Factors" in this prospectus beginning on page 4 and in the documents incorporated by reference into this prospectus.

Geron Corporation Overview

Geron is a biopharmaceutical company developing first-in-class therapies for cancer. We have two lead product candidates in clinical development, GRN1005 and imetelstat. GRN1005 is a peptide-drug conjugate that is designed to transport a proven anti-cancer drug, paclitaxel, across the blood-brain barrier by targeting low-density lipoprotein receptor-related proteins (LRPs), specifically LRP-1. GRN1005 is being evaluated in two Phase 2 clinical trials: brain metastases arising from breast cancer and brain metastases arising from non-small cell lung cancer. Imetelstat is a telomerase inhibitor that is being evaluated in three ongoing Phase 2 clinical trials: advanced non-small cell lung cancer, essential thrombocythemia and multiple myeloma.

We are subject to risks common to companies in our industry and at our stage of development, including risks inherent in our research and development efforts, reliance upon our collaborative partners, enforcement of our patent and proprietary rights, need for future capital, potential competition and uncertainty of clinical trial results or regulatory approvals or clearances. In order for a product candidate to be commercialized based on our research, we and our collaborators must conduct preclinical tests and clinical trials, demonstrate the efficacy and safety of our product candidates, 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 revenues or royalties based on therapeutic products for a number of years, if at all.

Company Information

We were incorporated in 1990 under the laws of Delaware. Our principal executive offices are located at 149 Commonwealth Drive, Suite 2070, Menlo Park, California 94025 and our telephone number is (650) 473-7700. Our website address is www.geron.com. Information found on, or accessible through, our website is not a part of, and is not incorporated into, this prospectus, and you should not consider it part of this prospectus. Our website address is included in this document as an inactive textual reference only.

Unless the context indicates otherwise, as used in this prospectus, the terms "Geron," "Geron Corporation," "we," "us" and "our" refer to Geron Corporation, a Delaware corporation.

The Offering

Common stock offered by us	In accordance with the terms of the sales agreement, we may offer and sell shares of our common stock from time to time through MLV having an aggregate offering price of up to $50.0 million.
Manner of offering	"At-the-market" offering that may be made from time to time through MLV as our sales agent. See "Plan of Distribution" on page 31.

Table of Contents

Use of Proceeds

We intend to use the net proceeds from this offering, if any, for working capital and general corporate purposes, including research and development expenses and general and administrative expenses. See "Use of Proceeds" on page 26 of this prospectus.

Risk Factors

Investing in our common stock involves a high degree of risk. Please read the information contained under the heading "Risk Factors" beginning on page 4 of this prospectus, and under similar headings in the other documents that are filed after the date hereof and incorporated by reference into this prospectus.

NASDAQ Global Select Market Listing

Our common stock is listed on The NASDAQ Global Select Market under the symbol "GERN."

Table of Contents

RISK FACTORS

Investing in our common stock involves a high degree of risk. Before deciding whether to invest in our common stock, you should consider carefully the risks and uncertainties described below, as updated or superseded by the risks and uncertainties described under similar headings in the other documents that are filed after the date hereof and incorporated by reference into this prospectus, together with other information in this prospectus, the information and documents incorporated by reference and any free writing prospectus that we may authorize for use in connection with this offering. The risks described in these documents are not the only ones we face, but those that we consider to be material. There may be other unknown or unpredictable economic, business, competitive, regulatory or other factors that could have material adverse effects on our future results. Past financial performance may not be a reliable indicator of future performance, and historical trends should not be used to anticipate results or trends in future periods. If any of these risks actually occurs, our business, financial condition, results of operations or cash flow could be seriously harmed. This could cause the trading price of our common stock to decline, resulting in a loss of all or part of your investment. Please also read carefully the section below entitled "Forward-Looking Statements."

The following risks and uncertainties are presented as of the date of this prospectus and we expect that these risks and uncertainties will be updated or superseded from time to time by the risks and uncertainties described in our periodic and current reports filed with the SEC, which will be incorporated by reference into this prospectus. Please refer to these subsequent reports for additional information relating to the risks associated with investing in our common stock.

Risks Related to Our Business

Our business is at an early stage of development, and we must overcome numerous risks and uncertainties to become successful.

Our business is at an early stage of development, and we do not yet have product candidates in late-stage clinical trials or any products commercially available. Our ability to develop product candidates to and through commercial launch is subject to our ability to, among other things:

- achieve success in our ongoing Phase 2 clinical trials and potential future Phase 3 clinical trials;
- collaborate successfully with clinical trial sites, academic institutions, physician investigators, clinical research organizations and other third parties;
- manufacture product candidates at commercially reasonable costs;
- obtain required regulatory clearances and approvals;
- maintain and enforce adequate intellectual property protection for our product candidates; and
- obtain financing on commercially reasonable terms to fund our operations.

There are many reasons why we may need to delay or abandon efforts to research, develop or obtain regulatory approvals to market our product candidates, including as a result of a product candidate failing at any stage of the development process for any or all of the indications we are pursuing or if we otherwise determine for business or financial reasons to delay or discontinue development of that product candidate for any or all indications. For example, in September 2012 we announced that, as a result of an unplanned interim efficacy analysis, we were discontinuing our Phase 2 clinical trial of imetelstat in metastatic breast cancer, or MBC, because median progression-free survival in the imetelstat arm was shorter than in the comparator arm. We also announced in September 2012 that an unplanned interim efficacy analysis of our Phase 2 clinical trial of imetelstat in advanced non-small cell lung cancer, or NSCLC, suggested that the pre-specified success criteria were unlikely to be met, and, as a consequence, it is doubtful that we will advance imetelstat forward into

Table of Contents

Phase 3 clinical development for NSCLC. If we observe similar or other negative results in our other ongoing Phase 2 clinical trials evaluating imetelstat in essential thrombocythemia and multiple myeloma, we may be further delayed or prevented from advancing imetelstat into Phase 3 clinical development or we may otherwise determine to discontinue our development of imetelstat, which would severely harm our business and our prospects.

Our current product candidates require significant additional clinical testing prior to regulatory approval in the United States and other countries, and we do not expect that any of our current product candidates will be commercially available for a number of years, if ever. It may also be difficult to assess the success or failure of any of our clinical trials for many reasons, including but not limited to the subjectivity and changing landscape that accompanies the benefit-to-risk assessment in any given patient population, and because subpopulation data might not be available at the time we report top-line data or other results. Our product candidates also may prove to have undesirable and unintended side effects or other characteristics adversely affecting their safety, efficacy or cost-effectiveness that could prevent or limit their approval for marketing and successful commercial use, or that could delay or prevent the commencement and/or completion of clinical trials for our product candidates.

Our product candidates may not prove to be more effective for treating disease than current therapies. Competitors or other third parties may also have proprietary rights that prevent us from developing and marketing our product candidates, or our competitors may sell similar, superior or lower-cost products that make our product candidates unsuitable for marketing. Our product candidates also may not be able to be manufactured in commercial quantities at an acceptable cost. Any of the foregoing factors could delay or prevent us from developing, commercializing and marketing our product candidates, which would materially adversely affect our business.

Our research and development programs are subject to numerous risks and uncertainties.

The science and technology of telomere biology and telomerase, as well as receptor-targeting peptides that cross the blood-brain barrier (BBB), are relatively new. There is no precedent for the successful commercialization of therapeutic product candidates based on these technologies. In addition, we, our licensees, and our collaborators must undertake significant research and development activities to develop product candidates based on these technologies, which will require significant additional funding and may take years to accomplish, if ever.

Because of the significant scientific, regulatory and commercial milestones that must be reached for any of our research and development programs to be successful, any program, or any aspect of a program, may be delayed or abandoned, even after we have expended significant resources on it. Our decision to discontinue our Phase 2 clinical trial of imetelstat in MBC, despite the investment of significant resources on that trial, is an example of this. Any further delay or abandonment of our programs in telomerase technology or receptor-targeting peptide technology to cross the BBB would have a material adverse effect on and may result in the failure of our business.

In our Phase 1 clinical trials of imetelstat, we observed dose-limiting toxicities, including thrombocytopenia when the drug was used as a single agent, and neutropenia when the drug was used in combination with paclitaxel, as well as a low incidence of severe infusion reactions. We also did not observe single-agent efficacy with imetelstat in our Phase 1 program. Further, the information we have related to the ability of GRN1005 to penetrate brain tissue and its anti-tumor activity is preliminary and based on Phase 1 clinical trials conducted by Angiochem. In the Phase 1 trials of GRN1005, Grade 4 neutropenia was the primary dose-limiting toxicity observed. In addition, in our Phase 2 clinical trial of GRN1005 in brain metastases arising from breast cancer, we amended our trial protocol to reduce the starting dosage from 650 mg/m^2 to 550 mg/m^2 as a result of premature withdrawals from the study due to a high incidence of paclitaxel-related toxicities. We may in the future observe similar dose-limiting toxicities or other safety issues in our ongoing Phase 2 clinical trials of GRN1005 in brain

Table of Contents

metastases and of imetelstat in hematologic malignancies that could delay or prevent the commencement and/or completion of our ongoing or potential future clinical trials or that may require us to conduct additional, unforeseen trials or to abandon these programs entirely.

If we are not able to divest our stem cell assets for substantial financial value, or at all, the proceeds of the divestiture will be limited and our stock price may decline.

In November 2011, we announced that we will focus on our oncology programs and consequently, we discontinued development of and have sought to divest our stem cell programs. Our stem cell programs were at an early stage of development, and we give no assurance regarding the consideration we will receive, if any, for their disposition. In addition, recent events concerning our intellectual property estate related to our stem cell programs have decreased the potential value we could potentially receive for the divestiture of our stem cell programs. In the third quarter of 2012, we received decisions from the United States Patent and Trademark Office Board of Patent Appeals and Interferences, or BPAI, in two ongoing patent interference proceedings between us and ViaCyte, Inc., or ViaCyte. In each case, the BPAI awarded all involved claims to ViaCyte. We have appealed the decisions of the BPAI in both interferences in a litigation proceeding brought in the United States District Court for the Northern District of California, or the District Court, and ViaCyte has filed a counterclaim in the District Court, seeking affirmation of the rulings in the two interference proceedings and seeking costs and attorneys' fees in the District Court litigation and the two interference proceedings. At this time, we cannot predict the outcome of the appeals or the timing for resolution of the appeals to the District Court. The outcome of the District Court litigation could include judgments against us upholding or expanding the interference ruling, which could have an adverse effect on our ability to divest some or all of our stem cell programs and may reduce the value, if any, that we may receive for our stem cell assets in any divestiture transaction.

In addition, our ability to divest our stem cell assets depends on our ability to sell and assign several critical technologies that are based in part on patents licensed from third parties. These license agreements impose certain obligations on us, including obligations to diligently pursue development of stem cell products under the licensed patents. As a result of our discontinuation of further development of our stem cell programs in November 2011, our licensors could seek to limit or terminate our license rights, which could lead to costly and time-consuming litigation and, potentially, a loss of the licensed rights, which could impair our ability to divest or prevent us from divesting our stem cell assets or limit the value that we may receive for such assets. In addition, we must obtain consents from certain licensors of intellectual property related to our stem cell programs to enable us to sell and assign such intellectual property, and we can give no assurance regarding our ability to obtain such consents on commercially reasonable terms, or at all. As a result of these other factors, our ability to divest our stem cell assets may be further delayed and/or we may be unable to divest our stem cell assets for substantial financial value, or at all.

Some of our investors purchased shares of our common stock because they were interested in the opportunities presented by our human embryonic stem cell programs. Thus, certain stockholders may attribute substantial financial value to our stem cell assets, and that we will receive such value through the divestiture of our stem cell programs. However, we may not be able to receive the financial value that our stockholders may attribute to our stem cell assets, or any financial value at all, and, as a result, our stock price may decline.

Table of Contents

Risks Related to Clinical and Commercialization Activities

Our ability to complete ongoing clinical trials on a timely basis is subject to risks and uncertainties related to factors such as patient enrollment, drug supply and regulatory approval.

Completion of ongoing clinical trials of our product candidates may be delayed, or not occur, due to insufficient patient enrollment, which is a function of many factors, including the size and nature of the patient populations, the nature of the protocols, the proximity of patients to clinical sites, the availability of effective treatments for the relevant disease, and the eligibility criteria for the clinical trials.

Other clinical trial delays or terminations could be caused by matters such as:

- poor effectiveness of product candidates during clinical trials, such as that observed in our discontinued Phase 2 clinical trial of imetelstat in MBC and our Phase 2 clinical trial of imetelstat in NSCLC;
- unforeseen safety issues or side effects;
- disruptions due to drug supply or quality issues;
- not receiving timely regulatory clearances or approvals, including, for example, acceptance of new manufacturing specifications or procedures or clinical trial protocol amendments by regulatory authorities;
- not receiving timely institutional review board or ethics committee approval of clinical trial protocols or protocol amendments;
- unavailability of any study-related treatment (including comparator therapy);
- lack of adequate funding to continue the clinical trial, including the incurrence of unforeseen costs due to enrollment delays;
- unanticipated issues with key vendors of clinical services, such as contract research organizations; or
- governmental or regulatory delays and changes in regulatory requirements, policies and guidelines.

Our enrollment goals may not be met as we have projected, or at all. For example, enrollment in our Phase 2 trials of imetelstat in multiple myeloma and essential thrombocythemia, and in our Phase 2 trial of GRN1005 in brain metastases arising from NSCLC, has been slower than expected. In addition, our inability to retain patients who have initiated a clinical trial but may be prone to withdraw due to side effects from the therapy, lack of efficacy or personal issues, or who are lost to further follow-up, could result in clinical trial delays or our inability to complete clinical trials. Further, some of our clinical trials may be overseen by an internal safety monitoring committee, or ISMC, and an ISMC may determine to delay or suspend one or more of these trials due to safety or futility findings based on events occurring during a clinical trial. Delays in timely completion of clinical testing of our product candidates could increase research and development costs and could prevent or would delay us from obtaining regulatory approval for our product candidates, both of which would likely have a material adverse effect on our business.

Table of Contents

Delays in the initiation of or our inability to initiate later-stage clinical trials of our current product candidates could result in increased costs to us and would delay our ability to generate or prevent us from generating revenues.

The commencement of later-stage clinical trials can be delayed or abandoned for a variety of reasons, including as a result of failures or delays in:

- demonstrating sufficient safety and efficacy in Phase 2 clinical trials to obtain regulatory clearance to commence a Phase 3 clinical trial;
- obtaining sufficient funding;
- manufacturing sufficient quantities of drug;
- producing drugs that meet the quality standards of the United States Food and Drug Administration (FDA) and other regulatory agencies;
- ensuring our ability to manufacture drugs at acceptable costs for later-stage clinical trials and commercialization;
- obtaining clearance or approval of a proposed trial design or manufacturing specifications from the FDA and other regulatory authorities;
- reaching agreement on acceptable terms with our collaborators on all aspects of the clinical trial, including the contract research organizations and the trial sites; and
- obtaining institutional review board or ethics committee approval to conduct a clinical trial at a prospective site.

For example, in September 2012, we announced that it is doubtful that we will advance imetelstat forward into Phase 3 clinical development for NSCLC, and that we were discontinuing our Phase 2 clinical trial of imetelstat in MBC.

We may not be able to manufacture our product candidates at costs or scales necessary to conduct our clinical programs or potential future commercialization activities.

Our product candidates are likely to be more expensive to manufacture than most other treatments currently available today or that may be available in the future. The commercial cost of manufacturing imetelstat and GRN1005 will need to be significantly lower than our current costs in order for these product candidates to become commercially successful products. 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. Our present imetelstat manufacturing processes are conducted at a relatively modest scale appropriate for our ongoing Phase 2 clinical trials. Similarly, our GRN1005 manufacturing processes are currently conducted at a relatively small scale, and there is also limited history of manufacturing of GRN1005. Accordingly, we may not be able to achieve sufficient scale increases or cost reductions necessary for successful commercial production of imetelstat or GRN1005. Additionally, given the complexities of our manufacturing processes, the resulting costs that we incur to conduct our clinical trials may be higher than would be anticipated for other comparable treatments, requiring us to expend relatively larger amounts of cash to complete our clinical trials, which would negatively impact our financial condition and could increase our need for additional capital.

Manufacturing our product candidates is subject to process and technical challenges and regulatory risks.

We face numerous risks and uncertainties with regard to manufacturing imetelstat and GRN1005. Regulatory requirements for product quality of oligonucleotide products are less well-defined than for small-molecule drugs, and there is no guarantee that we will achieve sufficient product quality

8

Table of Contents

standards required for Phase 3 clinical trials or for commercial approval and manufacturing of imetelstat. Similarly, our GRN1005 manufacturing process, including the consistency and quality of batches made, as well as the final drug product formulation or reconstitution procedure, while appropriate for Phase 2 clinical trials, may need to be improved for Phase 3 clinical trials and commercial approval. Changes in our manufacturing processes or formulations for imetelstat or GRN1005 made during later stages of clinical development, including during Phase 3 trials, may result in regulatory delays, the need for further clinical trials, or rejection of a marketing application by regulatory authorities, which would result in a material adverse effect on our business.

We do not have experience as a company in conducting large-scale, late-stage clinical trials, or in those areas required for the successful commercialization of our product candidates.

We have no experience as a company in conducting large-scale, late-stage clinical trials. We cannot be certain that any large-scale, late-stage planned clinical trials will begin or be completed on time, if at all. Large-scale, late-stage clinical trials will require additional financial and management resources and reliance on third-party clinical investigators, clinical research organizations and consultants. Relying on third-party clinical investigators or clinical research organizations may cause delays that are outside of our control. Any such delays could have a material adverse effect on our business.

We also do not have commercialization capabilities for our product candidates, and we will need to establish sales, marketing and distribution capabilities or establish and maintain agreements with third parties to market and sell our product candidates. Developing internal sales, marketing and distribution capabilities is an expensive and time-consuming process. We may not be able to 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, these third parties may not successfully market or distribute any of our product candidates, which may materially harm our business.

Obtaining regulatory approvals to market our product candidates in the United States and other countries is a costly and lengthy process, and we cannot predict whether or when we will be permitted to commercialize our product candidates.

Federal, state and local governments in the United States and governments in other countries have significant regulations in place that govern many of our activities and may prevent us from creating commercially viable products from our discoveries, from successfully conducting our development efforts or from commercializing our product candidates. The regulatory process, particularly for biopharmaceutical product candidates like ours, is uncertain, can take many years and requires the expenditure of substantial resources.

Our product candidates will require extensive preclinical and clinical testing prior to submission of any regulatory application seeking approval to commence commercial sales. In particular, human pharmaceutical therapeutic product candidates are subject to rigorous requirements of the FDA in the United States and similar health and regulatory authorities in other countries in order to demonstrate safety and efficacy. Data obtained from preclinical and clinical activities are susceptible to varying interpretations that could delay, limit or prevent regulatory agency approvals. For example, safety and efficacy data from any of our ongoing Phase 2 clinical trials, even if favorable, may not provide sufficient rationale for us to proceed to, or otherwise enable us to obtain regulatory clearance for, a Phase 3 clinical trial. In addition, delays or rejections may be encountered as a result of changes in regulatory environment or regulatory agency policy during the period of product development and/or the period of review of any application for regulatory agency approval for a product candidate. We do not expect to receive regulatory approvals for our product candidates for a number of years, if at all.

Any product candidate that we, or our collaborators, develop must receive all relevant regulatory agency approvals before it may be marketed in the United States or other countries. Obtaining

Table of Contents

regulatory approval is a lengthy, expensive and uncertain process. Because certain of our product candidates involve the application of new technologies or are based upon a new therapeutic approach, they may be subject to substantial additional review by various government regulatory authorities, and, as a result, the process of obtaining regulatory approvals for them may proceed more slowly than for product candidates based upon more conventional technologies.

Delays in obtaining regulatory agency approvals could:

- significantly harm the marketing of any products that we or our collaborators develop;
- impose costly procedures upon our activities or the activities of our collaborators;
- diminish any competitive advantages that we or our collaborators may attain; or
- adversely affect our ability to receive royalties and generate revenues and profits.

Even if we commit the necessary time and resources, the required regulatory agency approvals may not be obtained for any product candidates developed by us or in collaboration with us. If we obtain regulatory agency approval for a new product, this approval may entail limitations on the indicated uses or other aspects of the product label for which it can be marketed that could limit the potential commercial use of the product. The occurrence of any of these events could materially adversely affect our business.

Failure to achieve continued compliance with government regulation over approved products could delay or halt commercialization of our products.

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 withdrawal of the product from the market. The future sale by us or our collaborators of any commercially viable product 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 revenues from product sales will be materially and negatively 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;

injunction against the manufacture, distribution and sales and marketing of products; and

criminal prosecution.

The imposition of any of these penalties or other commercial limitations could significantly impair our business, financial condition and results of operations.

Table of Contents

Risks Related to Our Financial Position and Need for Additional Financing

We have a history of losses and anticipate continued future losses, and our continued losses could impair our ability to sustain operations.

We have incurred operating losses every year since our operations began in 1990. As of June 30, 2012, our accumulated deficit was approximately $822.6 million. 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. We expect to incur additional operating losses and, as our development efforts and clinical testing activities continue, our operating losses may increase in size.

Substantially all of our revenues to date have been research support payments under collaboration agreements and milestones, royalties and other revenues from our licensing arrangements. We may be unsuccessful in entering into any new corporate collaboration or license agreements that result in revenues. We do not expect that the revenues generated from these arrangements will be sufficient alone to continue or expand our research or development activities and otherwise sustain our operations.

We also expect to experience negative cash flow for the foreseeable future as we fund our operating losses and capital expenditures. This will result in decreases in our working capital, total assets and stockholders' equity, which may not be offset by future financings. We will need to generate significant revenues to achieve profitability. We may not be able to generate these revenues, and we may never achieve profitability. Our failure to achieve profitability could negatively impact the market price of our common stock and our ability to sustain operations. Even if we do become profitable, we may not be able to sustain or increase profitability on a quarterly or annual basis.

We will continue to need substantial additional capital following this offering to conduct our operations and develop our product candidates, and our ability to obtain the necessary funding is uncertain.

We will continue to require substantial capital resources following this offering in order to conduct our operations and develop our product candidates, and we cannot assure you that our existing capital resources, interest income and equipment financing arrangement will be sufficient to fund future planned operations. The timing and degree of any future capital requirements will depend on many factors, including:

- the accuracy of the assumptions underlying our estimates for our capital needs for the remainder of 2012 and beyond;
- changes in our clinical development plans for our product candidates, imetelstat and GRN1005;
- our ability to meaningfully reduce manufacturing costs of current product candidates;
- the magnitude and scope of our research and development programs, including the number and type of product candidates we intend to pursue;
- the progress we make in our research and development programs, preclinical development and clinical trials;
- our ability to establish, enforce and maintain strategic arrangements for research, development, clinical testing, manufacturing and marketing;
- the timing of a potential divestiture of our stem cell program assets and the consideration, if any, we may receive as a result of such divestiture;
- the time and costs involved in obtaining regulatory clearances and approvals; and

Table of Contents

the costs involved in preparing, filing, prosecuting, maintaining, defending and enforcing patent claims.

In addition, changes in our business may occur that would consume available capital resources sooner than we expect. Additional financing through strategic collaborations, public or private equity financings, capital lease transactions or other financing sources may not be available on acceptable terms, or at all. In addition, 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 particular, since the latter half of 2008, the global economy has been impacted by the sequential effects of an ongoing global financial crisis. This global financial crisis, including the European sovereign debt crisis, has resulted in greatly increased market uncertainty and instability in both U.S. and international capital and credit markets, which may make it more difficult to raise equity and debt financing when we need it. In addition, our ability to raise additional funds may be severely impaired if any of our product candidates fails to show adequate safety or efficacy in our ongoing or potential future clinical trials.

Further, in the event that we obtain additional funds through arrangements with collaborative partners, these arrangements may require us to relinquish rights to some of our technologies, product candidates or proposed products that we would otherwise seek to develop and commercialize ourselves.

If sufficient capital is not available, we may be required to delay, reduce the scope of, suspend or eliminate one or more of our programs, any of which could have a material adverse effect on our business.

Risks Related to This Offering, Our Common Stock and Financial Reporting

Historically, our stock price has been extremely volatile and your investment in our common stock could decline in value.

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, legislative and regulatory measures and the activities of various interest groups or organizations. Since the latter half of 2008, broad distress in the financial markets and the economy has resulted in greatly increased market uncertainty and instability in both U.S. and international capital and credit markets. These conditions, combined with the European sovereign debt crisis, declining business and consumer confidence and high unemployment have recently contributed to substantial market volatility. In addition to other risk factors described in this section, this 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.

Historically, our stock price has been extremely volatile. Between January 1, 2002 and September 30, 2012, our stock has traded as high as $16.80 per share and as low as $1.21 per share. Between January 1, 2009 and September 30, 2012, the price has ranged between a high of $9.24 per share and a low of $1.21 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:

announcements regarding our clinical trial results or delays in our clinical trials;

announcements regarding our plans to discontinue certain programs and trials;

the demand in the market for our common stock;

the experimental nature of our product candidates;

Table of Contents

fluctuations in our operating results;

our declining cash balance as a result of operating losses;

market conditions relating to the biopharmaceutical and pharmaceutical industries;

announcements of technological innovations, new commercial products, or clinical progress or lack thereof by us, our collaborative partners or our competitors;

announcements concerning regulatory developments, developments with respect to proprietary rights and our collaborations;

comments by securities analysts;

general market conditions;

the issuance of common stock to partners, vendors or to investors to raise additional capital; and

the occurrence of any of those risks and uncertainties discussed in this prospectus under the caption "Risk Factors".

If we fail to meet continued listing standards of NASDAQ, 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 listed on NASDAQ. 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 bid price of $1.00 per share of our common stock. If the closing bid price of our common stock were to fall 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 failed 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. 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.

We may be subject to litigation that will be costly to defend or pursue and uncertain in its outcome.

Securities-related class action litigation has often been brought against companies, including many biotechnology companies, which experience volatility in the market price of their securities. This risk is especially relevant for us because biotechnology and biopharmaceutical companies often experience significant stock price volatility in connection with their product development programs. For example, after we announced in September 2012 the discontinuation of our Phase 2 clinical trial of imetelstat in MBC and that it is unlikely that we will advance imetelstat forward into Phase 3 clinical development for NSCLC, our stock price declined significantly. If the results of our ongoing Phase 2 trials of imetelstat or GRN1005 are not deemed to be successful, or if we are unable to successfully resolve issues concerning the intellectual property estate related to our stem cell assets as discussed elsewhere in these risk factors and to complete a divestiture of our stem cell assets for what stockholders believe to be adequate consideration, our stock price would likely decline, and may result in litigation. Securities-related litigation may be filed in the future and a decision adverse to our interests in any such lawsuit could result in the payment of substantial damages by us, and could have a material adverse effect on our cash flow, results of operations and financial position.

Table of Contents

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. 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. Monitoring, initiating and defending against legal actions are time-consuming for our management, are likely to be expensive and may detract from our ability to fully focus our internal resources on our business activities. The outcome of litigation is always uncertain, and in some cases could include judgments against us that require us to pay damages, enjoin us from certain activities, or otherwise 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 your investment in our common stock.

The sale of a substantial number of shares may adversely affect the market price of our common stock.

The sale of a substantial number of shares of our common stock in the public market, or the perception that such sales could occur, could significantly and negatively affect the market price of our common stock. As of September 30, 2012, we had 300,000,000 shares of common stock authorized for issuance and 130,755,585 shares of common stock outstanding. In addition, as of September 30, 2012, we had reserved approximately 32,857,052 shares of common stock for future issuance pursuant to our option and equity incentive plans and outstanding warrants. Issuing additional shares could negatively affect the market price of our common stock and the return on your investment.

Future sales of our common stock, including pursuant to our sales agreement with MLV, or the registration for sale of such common stock, or the issuance of common stock to satisfy our current or future cash payment obligations or to acquire technology, property, or other businesses, could cause immediate dilution and adversely affect the market price of our common stock. In addition, in July 2012 we filed a universal shelf registration statement of which this prospectus is a part to sell any combination of common stock, preferred stock, debt securities and warrants in one or more offerings. The cumulative value allowed to be sold by us of all securities under this universal shelf registration statement is $200 million. 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, potential milestone payments and outstanding warrants also may adversely affect the terms upon which we are able to obtain additional capital through the sale of equity securities. In addition, we may sell shares or other securities in any other offering at a price per share that is less than the price per share paid by investors in this offering, and investors purchasing shares or other securities in the future could have rights superior to investors who purchase our common stock in this offering. The price per share at which we sell additional shares of our common stock, or securities convertible or exchangeable into common stock, in future transactions may be higher or lower than the price per share paid by investors in this offering.

Management will have broad discretion as to the use of the proceeds from this offering, and may not use the proceeds effectively.

Because we have not designated the amount of net proceeds from this offering to be used for any particular purpose, our management will have broad discretion as to the application of the net proceeds from this offering and could use them for purposes other than those contemplated at the time of the offering. Our management may use the net proceeds for corporate purposes that may not improve our financial condition or market value.

You may experience immediate and substantial dilution.

The offering price per share in this offering may exceed the net tangible book value per share of our common stock outstanding prior to this offering. Assuming that an aggregate of 29,069,767 shares

Table of Contents

of our common stock are sold during the term of the sales agreement with MLV at a price of $1.72 per share, the last reported sale price of our common stock on The NASDAQ Global Select Market on October 1, 2012, for aggregate gross proceeds of $50,000,000, after deducting commissions and estimated aggregate offering expenses payable by us, you will experience immediate dilution of $0.70 per share, representing the difference between our as adjusted net tangible book value per share as of June 30, 2012 after giving effect to this offering and the assumed offering price. The exercise of outstanding stock options and warrants may result in further dilution of your investment. See the section entitled "Dilution" below for a more detailed illustration of the dilution you would incur if you participate in this offering.

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 we issue preferred stock in the future 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, including investors who purchase our common stock in this offering, 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 severance agreements with several employees and a change of control severance plan which could require an acquiror to pay a higher price. Either collectively or individually, these provisions may prevent investors who purchase our common stock in this offering 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.

Table of Contents

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 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 annually provide an opinion 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 in the future material weaknesses or significant deficiencies will not exist or otherwise be discovered. If material weaknesses or other significant deficiencies occur, these weaknesses or deficiencies could result in misstatements of our results of operations, restatements of our consolidated 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 Our Relationships with Third Parties

We depend on other parties to help us develop and test our product candidates, and our ability to develop and commercialize product candidates may be impaired or delayed if collaborations are unsuccessful.

Our strategy for the development, clinical testing and commercialization of our product candidates requires that we enter into collaborations with clinical research organizations, vendors, corporate partners, licensors, licensees or others. We are dependent upon the ability of these parties to perform their responsibilities reliably. By way of example, we have contracted with two clinical research organizations that are primarily responsible for the execution of clinical site related activities for our ongoing imetelstat and GRN1005 Phase 2 clinical trials, including clinical trial site monitoring activities. In addition, we have contracted with single vendors for each of our clinical programs to develop and maintain the clinical databases for each respective program, and a single vendor maintains our safety database for both programs.

Accordingly, if the performance of these services is not of the highest quality, or does not achieve necessary regulatory compliance standards, or if such organization or vendor stops or delays its performance for any reason, it would impair and delay our ability to report data from our clinical trials and make the necessary representations to regulatory authorities, if at all. In addition, our collaborators, corporate partners, licensors or licensees could terminate their agreements with us, and we may not receive any development or milestone payments. If we do not achieve milestones set forth in agreements with collaborators, or if our collaborators, corporate partners, licensors or licensees breach or terminate their agreements with us, our business may be materially harmed.

Table of Contents

Our ability to manufacture our product candidates is risky and uncertain because we must rely on third parties for manufacturing. There may be shortages of key materials, and we may have only one source of manufacture or supply.

We rely on other companies for certain process development, supply of starting materials, manufacturing or other technical and scientific work with respect to our imetelstat and GRN1005 product candidates, but we do not have direct control over their personnel or operations. If these companies do not perform the work which they were assigned or do not complete the work within the expected timelines, or if they choose to exit the business, our ability to develop or manufacture our product candidates could be significantly harmed. For example, we may need to change one or more of our suppliers due to these or other reasons and the change could lead to delays in drug supply. In addition, we have not established long-term supply agreements for imetelstat or GRN1005.

In addition, our manufacturers 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 trials and commercial production. Our manufacturers 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 to us.

There are other risks and uncertainties that we face with respect to manufacturing. For example, we do not have a secondary source for the supply of GRN1005 bulk drug substance (unformulated peptide-paclitaxel conjugate). In addition, we currently have an agreement with only a single contractor for distribution of imetelstat and GRN1005 final drug product to clinical sites in North America. As another example, certain commonly used reagents and solvents can experience market shortages and, if these shortages occur, they may adversely impact our ability to manufacture our product candidates.

Our failure to meet our obligations under license agreements could result in us losing rights to key technologies on which our business depends or which are required to enable the divestiture of our stem cell assets.

Our business, and our ability to divest our stem cell assets, depends on several critical technologies that are based in part on patents licensed from third parties, including the exclusive worldwide license rights we obtained from Angiochem in December 2010 and, with respect to our stem cell programs, the license rights that we received from certain licensors. Those third-party license agreements impose obligations on us, such as payment obligations and obligations to diligently pursue development of commercial products under the licensed patents. If a licensor believes that we have failed to meet these or other obligations under a license agreement, including, in the case of our stem cell assets, as a result of our discontinuation of further development of our stem cell programs, the licensor could seek to limit or terminate our license rights, which could lead to costly and time-consuming litigation and, potentially, a loss of the licensed rights, any of which could adversely affect our business or could impair our ability to divest or prevent us from divesting our stem cell assets. During the period of any such litigation our ability to carry out the development and commercialization of product candidates could be significantly and negatively affected, and our ability to divest our stem cell assets could be impaired or prevented. If our license rights were restricted or ultimately lost, particularly those rights licensed from Angiochem, our ability to continue our business based on the affected technology would be severely adversely affected.

Our reliance on the activities of our consultants, research institutions, and scientific contractors, whose activities are not wholly within our control, may lead to delays in development of our product candidates.

We rely extensively upon and have relationships with scientific consultants and contractors at academic and other institutions. Some of our scientific consultants and contractors conduct research at our request, and others assist us in formulating our research and development and clinical strategy or

Table of Contents

other matters. These consultants and contractors are not our employees and may have commitments to, or consulting or advisory contracts with, other entities that may limit their availability to us. We have limited control over the activities of these consultants and contractors and, except as otherwise required by our collaboration and consulting agreements, can expect only limited amounts of their time to be dedicated to our activities.

In addition, we have formed research collaborations with academic and other research institutions throughout the world. These research facilities may have commitments to other commercial and noncommercial entities. We have limited control over the operations of these laboratories and can expect only limited amounts of their time to be dedicated to our research goals.

If any of these third parties are unable or refuse to contribute to projects on which we need their help, our ability to generate advances in our technologies and develop our product candidates could be significantly harmed.

Risks Related to Protecting Our Intellectual Property

Our success will depend on our ability to protect our technologies and our product candidates through patents and other intellectual property rights and to operate without infringing the rights of others. If we or our licensors are unsuccessful in either of these regards, the value of our technologies and product candidates will be adversely affected and we may be unable to continue our development work.

Protection of our proprietary technology is critically important to our business. Our success will depend in part on our ability to obtain and enforce our patents and maintain trade secrets, both in the United States and in other countries. By way of example, we do not yet have issued patents for GRN1005 in Europe or Japan, or for imetelstat in Europe after 2020. Further, our patents may be challenged, invalidated or circumvented, and our patent rights may not provide proprietary protection or competitive advantages to us. In the event that we or our licensors are unsuccessful in obtaining and enforcing patents, we may not be able to further develop or commercialize our product candidates and our business would be negatively impacted. By way of example, we depend in part on the ability of Angiochem to obtain, maintain and enforce patent rights for the proprietary peptide-drug conjugate technology that we have licensed.

Publication of discoveries in scientific or patent literature tends to lag behind actual discoveries by at least several months and sometimes several years. Therefore, the persons or entities that we or our licensors 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 our future success.

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 technology, or enforce issued patents, is uncertain.

If we infringe the patents of others, we may be blocked from continuing development work or be required to obtain licenses on terms that may impact the value of our product candidates.

Challenges to our patent rights can result in costly and time-consuming legal proceedings that may prevent or limit development of our product candidates.

Our patents may be challenged through administrative or judicial proceedings. Such proceedings are typically lengthy and complex, and an adverse decision can result in the loss of important patent rights. For example, where more than one party seeks U.S. patent protection for the same technology,

Table of Contents

the U.S. Patent and Trademark Office, or 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, may be drawn into interference proceedings or be challenged through post-grant review procedures, which may delay or prevent the issuance of patents, or result in the loss of issued patent rights.

Certain jurisdictions, such as Europe, New Zealand and Australia, permit oppositions to be filed against granted patents or patents proposed to be granted. Because our intent is to commercialize products internationally, securing both proprietary protection and freedom to operate outside of the United States is important to our business. We are involved in both opposing the grant of patents to others through such opposition proceedings and in defending our patent applications against oppositions filed by others. For example, we have been involved in several patent oppositions before the European Patent Office, or EPO, with a series of companies (GemVax, Pharmexa and KAEL-GemVax) developing GV1001, a cancer vaccine that employs a short telomerase peptide to induce an immune response against telomerase. The rights to GV1001 passed from GemVax, a Norwegian company, to Pharmexa, a Danish company, as a result of a 2005 acquisition. In late 2008, Pharmexa reported that it sold its telomerase vaccine program to a Korean company, KAEL Co. Ltd., and the continuing company now operates under the name KAEL-GemVax. Various clinical trials of GV1001 are underway, including a Phase 3 combination study in pancreatic cancer. Pharmexa originally obtained a European patent with broad claims to the use of telomerase vaccines for the treatment of cancer, and we opposed that patent in 2004. In 2005, the Opposition Division, or OD, of the EPO revoked the claims originally granted to Pharmexa, but permitted Pharmexa to add new, narrower claims limited to five specific small peptide fragments of telomerase. The decision was appealed to the Technical Board of Appeals, or TBA. In August 2007, the TBA ruled, consistent with the decision of the OD, that Pharmexa was not entitled to the originally granted broad claims but was only entitled to the narrow claims limited to the five small peptides. KAEL-GemVax was granted a further related European patent covering its telomerase peptide vaccine against which we have filed an opposition. That opposition is ongoing and we cannot predict its outcome.

In parallel, Pharmexa opposed a European patent held by us, the claims of which cover many facets of human telomerase, including the use of telomerase peptides in cancer vaccines. In June 2006, the OD of the EPO revoked three of the granted claims in our patent, specifically the three claims covering telomerase peptide cancer vaccines. The remaining 47 claims were upheld, and that decision was affirmed by the TBA. We have now been awarded a second European patent with claims to telomerase peptides, and this patent has also been opposed by KAEL-GemVax. We believe that GV1001 is covered by our telomerase patents and our goal in these proceedings is to maintain strong patent protection that will enable us to enter into a licensing arrangement with KAEL-GemVax that could result in commercial benefit for Geron if GV1001 is successfully commercialized; however, we may not be able to maintain that protection or enter into such a licensing arrangement on commercially reasonable terms, if at all. We cannot predict the outcome of this opposition or any subsequent appeal of the decision in the opposition.

European opposition and appeal proceedings can take several years to reach final decision. The oppositions discussed above reflect the complexity of the patent landscape in which we operate, and illustrate the risks and uncertainties. We are also currently involved in other patent opposition proceedings in Europe and Australia.

Under the America Invents Act, or the AIA, interference proceedings will be eliminated for patent applications filed on or after March 2013, to be 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. U.S. Patents owned or licensed by us

Table of Contents

may therefore be subject to post-grant review procedures, as well as other forms of review and reexamination. A decision in such proceedings adverse to our interests could result in the loss of valuable patent rights and negatively impact our business.

As more groups become engaged in scientific research and product development in the areas of telomerase biology and peptide-drug conjugates for delivery of therapeutics across the BBB, the risk of our patents or patents that we have in-licensed being challenged through patent interferences, derivation proceedings, oppositions, reexaminations, litigation or other means will likely increase. Challenges to our patents through these procedures can be extremely expensive and time-consuming, even if the outcome is favorable to us. An adverse outcome in a patent dispute could severely harm our business by:

causing us to lose patent rights in the relevant jurisdiction(s);

subjecting us to litigation, or otherwise preventing us from commercializing product candidates 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.

By way of example, an anonymous party challenged the issuance of a European patent to Angiochem that is relevant to GRN1005. Although this European patent has now issued, the issuance could be opposed. We and/or Angiochem could also experience oppositions related to future European patents relevant to our product candidates. If such challenges to our patent rights covering our product candidates are not resolved promptly in our favor, our existing business relationships may be jeopardized and we could be delayed or prevented from entering into new collaborations or from commercializing product candidates, which could materially harm our business.

We may be subject to infringement claims that are costly to defend, and which may limit our ability to use disputed technologies and prevent us from pursuing research and development or commercialization of product candidates, or that could prevent or otherwise adversely affect our ability to divest our stem cell assets.

Our commercial success, and our ability to divest our stem cell assets, depend significantly on our ability to operate without infringing patents and the proprietary rights of others. Our technologies may infringe the patents or proprietary rights of others. In addition, we may become aware of discoveries and technology controlled by third parties that are advantageous to our programs. In the event our technologies infringe the rights of others or we require the use of discoveries and technology controlled by third parties, we may be prevented from pursuing research, development or commercialization of product candidates, may be required to obtain licenses to those patents or other proprietary rights or develop or obtain alternative technologies, or may be prevented from divesting or adversely affected in our ability to divest our stem cell assets. We have obtained licenses from several universities and companies for technologies that we anticipate incorporating into our product candidates, and we initiate negotiation for licenses to other technologies as the need or opportunity arises. We may not be able to obtain a license to patented technology on commercially favorable terms, or at all, or our licenses may be terminated on certain grounds, including as a result of our failure to comply with our obligations thereunder. If we do not obtain a necessary license or if such a license is terminated, we may need to redesign our technologies or obtain rights to alternate technologies, the research and adoption of which could cause delays in our product development efforts or impede our ability to divest our stem cell assets. In cases where we are unable to license necessary technologies, we could be subject to litigation and prevented from developing certain product candidates, or prevented from divesting or adversely affected in our ability to divest our stem cell assets. Our failure to obtain alternative technologies or a license to any technology that we may require to research, develop or

Table of Contents

commercialize our product candidates would significantly and negatively affect our business. By way of example, we are aware of at least one entity that is seeking to obtain patent claims that may, if granted, be argued to read on imetelstat. While such claims have not been issued, and may not be valid if they do issue, we expect that as our product candidates continue to progress in development, we will see more efforts by others to obtain patents that are positioned to cover our product candidates.

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.

Our ability to divest our stem cell programs, and the value that we receive from any such arrangements depends at least in part on the strength of our stem cell-related intellectual property.

We developed an extensive portfolio of Geron-owned patent filings covering our prior development of human embryonic stem cell technologies, as well as patents that we licensed from other parties. This intellectual property is a substantial component of the stem cell assets that we have sought to divest. Our ability to divest our stem cell programs, and the value that we receive, if any, will depend in part on the strength, scope and term of the patents in our stem cell patent portfolio, as well as our ability to maintain our license rights to the patents that we licensed from third parties. Our licenses may be terminated if we are unable to comply with our obligations under them for any reason, including due to our discontinuation of further development of our stem cell programs. Legal developments and proceedings that may impact the value of our stem cell patent portfolio include:

European court ruling: In 2011, the European Court of Justice (ECJ) rendered a decision in a case known as Brüstle v. Greenpeace that is widely viewed to have effectively abolished the ability to enforce patents on human embryonic stem cell technologies in member states of the European Union (EU). This decision may reduce the value, if any, that we may receive for our stem cell assets in any divestiture transaction.

Patent interferences: Two of our patent applications covering the production of endoderm from human embryonic stem cells (part of the process for making pancreatic islet cells) are involved in interferences with a patent held by ViaCyte. A decision was handed down by the BPAI in the first interference in July 2012, awarding all claims to ViaCyte. In August 2012, the BPAI ruled that its decision in the first interference was binding in the second interference because the involved claims of the patent application in the second interference were patentably indistinct from the claims of the patent in the first interference, and awarded all involved claims to ViaCyte. In September 2012, we appealed the decision of the BPAI in both interferences in a litigation proceeding brought before the District Court, and in September 2012, ViaCyte filed a counterclaim in the District Court, seeking affirmation of the rulings in the two interference proceedings and seeking costs and attorneys' fees in the District Court litigation and the two interference proceedings. At this time, we cannot predict the outcome of the appeals or the timing for resolution of the appeals to the District Court. The outcome of the District Court litigation could include judgments against us upholding or expanding the interference ruling, which could further delay or otherwise have an adverse effect on our ability to divest some or all of our stem cell programs and may reduce the value, if any, that we may receive for our stem cell assets in any divestiture transaction.

Table of Contents

Reexaminations: In July 2006, requests were filed on behalf of the Foundation for Taxpayer and Consumer Rights (now renamed as Consumer Watchdog) for reexamination of three issued U.S. patents owned by the Wisconsin Alumni Research Foundation (WARF). These three patents (U.S. Patent Nos. 5,843,780, 6,200,806 and 7,029,913) are licensed to us pursuant to a January 2002 license agreement which conveys exclusive rights to us under the WARF patents for the development and commercialization of therapeutics based on neural cells, cardiomyocytes and pancreatic islet cells, derived from human embryonic stem cells, as well as non-exclusive rights for other product opportunities. After initially rejecting the patent claims, the Patent Office issued decisions in all three cases upholding the patentability of the claims as amended. The decisions to uphold the 5,843,780 and 6,200,806 patents are final and not subject to further appeal. Consumer Watchdog appealed the decision on the 7,029,913 patent and, in April 2010, the BPAI reversed the earlier decision of the Patent Office on the 7,029,913 patent and remanded the case back to the Patent Office for further prosecution. In November 2011, the Patent Office again upheld the patentability of the claims and the case is currently under further review by the BPAI. The case could be subject to further appeal.

Risks Related to Competitive Factors

The loss of key personnel could slow our ability to conduct research and develop product candidates.

Our future success depends to a significant extent on the skills, experience and efforts of our executive officers and key members of our clinical and scientific staff. We face intense competition for qualified individuals from numerous pharmaceutical, biopharmaceutical and biotechnology companies, as well as academic and other research institutions. We may be unable to retain our current personnel or attract or assimilate other highly qualified management and scientific personnel in the future on acceptable terms. The loss of any or all of these individuals could harm our business and might significantly delay or prevent the achievement of research, development or business objectives.

Some of our competitors may develop technologies that are superior to or more cost-effective than ours, which may significantly impact the commercial viability of our technologies and damage our ability to sustain operations.

The pharmaceutical and biotechnology industries are intensely competitive. Other pharmaceutical and biotechnology companies and research organizations currently engage in or have in the past engaged in efforts related to the biological mechanisms that are the focus of our programs in oncology therapies, including the study of telomeres, telomerase and receptor-targeting peptides crossing the BBB. In addition, other products and therapies that could directly compete with the product candidates that we are seeking to develop and market currently exist or are being developed by pharmaceutical and biopharmaceutical companies and by academic and other research organizations.

Many companies are developing alternative therapies to treat cancer and, in this regard, are competitors of ours. There are more than 200 approved anti-cancer products on the market in the United States, and several thousand in clinical development. Many of the pharmaceutical companies developing and marketing these competing products (e.g., GlaxoSmithKline, Bristol-Myers Squibb Company and Novartis AG) have significantly greater financial resources and expertise than we do in:

research and development;

manufacturing;

preclinical and clinical testing;

obtaining regulatory approvals; and

marketing, sales and distribution.

Table of Contents

Smaller companies may also prove to be significant competitors, particularly through collaborative arrangements with large and established companies. 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 ours. These companies and institutions compete with us in recruiting and retaining qualified scientific and management personnel as well as in acquiring technologies complementary to our programs.

In addition to the above factors, we expect to face competition in the following areas:

- product efficacy and safety;
- the timing and scope of regulatory consents;
- availability of resources;
- reimbursement coverage;
- price; and
- patent position, including potentially dominant patent positions of others.

As a result of the foregoing, our competitors may develop more effective or more affordable products, or achieve earlier patent protection or product commercialization than us. Most significantly, competitive products may render any product candidates that we develop obsolete, which would negatively impact our business and ability to sustain operations.

To be successful, our product candidates must be accepted by the health care community, which can be very slow to adopt or unreceptive to new technologies and products.

Our product candidates and those developed by our collaborators, if approved for marketing, may not achieve market acceptance since hospitals, physicians, patients or the medical community in general may decide not to accept and utilize these products. The product candidates that we are attempting to develop will compete with a number of conventional drugs and therapies manufactured and marketed by major pharmaceutical companies. The degree of market acceptance of any of our product candidates will depend on a number of factors, including:

- our establishment and demonstration to the medical community of the clinical efficacy and safety of our product candidates;
- our ability to create products that are superior to alternatives currently on the market;
- our ability to establish in the medical community the potential advantage of our treatments over alternative treatment methods; and
- reimbursement policies of government and third-party payers.

If the health care community does not accept our product candidates for any of the foregoing reasons, or for any other reason, our business would be materially harmed.

If we fail to obtain acceptable prices or adequate reimbursement for our product candidates, the use of our product candidates could be severely limited.

Our ability to successfully commercialize our product candidates will depend significantly on our ability to obtain acceptable prices and the availability of reimbursement to the patient from third-party payers. In March 2010, the Patient Protection and Affordability Care Act, as amended by the Health Care and Education Affordability Reconciliation Act (collectively, the PPACA) became law. In June 2012, the United States Supreme Court upheld the constitutionality of key provisions of the PPACA.

Table of Contents

The PPACA contains numerous initiatives that impact the pharmaceutical industry. These include, among other things:

- increasing existing price rebates in federally funded health care programs;
- expanding rebates, or other pharmaceutical company discounts, into new programs;
- imposing a new non-deductible excise tax on sales of certain prescription pharmaceutical products by prescription drug manufacturers and importers;
- reducing incentives for employer-sponsored health care;
- creating an independent commission to propose changes to Medicare with a particular focus on the cost of biopharmaceuticals in Medicare Part D;
- providing a government-run public option with biopharmaceutical price-setting capabilities;
- allowing the Secretary of Health and Human Services to negotiate drug prices within Medicare Part D directly with pharmaceutical manufacturers;
- reducing the number of years of data exclusivity for innovative biological products potentially leading to earlier biosimilar competition; and
- increasing oversight by the FDA of pharmaceutical research and development processes and commercialization tactics.

While the PPACA may increase the number of patients who have insurance coverage for our product candidates, its cost containment measures could also adversely affect reimbursement for any of our product candidates. Cost control initiatives could decrease the price that we receive for any product candidate we may develop in the future. If our product candidates are not considered cost-effective or if we fail to generate adequate third-party reimbursement for the users of our product candidates, then we may be unable to maintain price levels sufficient to realize an appropriate return on our investment for product candidates currently in development, which could have an adverse impact on our business.

Risks Related to Environmental and Product Liability

Our activities involve hazardous materials, and improper handling of these materials by our employees, contractors, or agents could expose us to significant legal and financial penalties.

Our research and development activities involve the controlled use of hazardous materials, chemicals and various radioactive compounds. As a consequence, we, our contractors and agents are subject to numerous environmental and safety laws and regulations, including those governing laboratory procedures, exposure to blood-borne pathogens and the handling of biohazardous materials. As an example, one of the components of GRN1005, paclitaxel, is considered a cytotoxic agent, which makes the manufacturing of GRN1005 subject to additional regulations, and limits the number of manufacturing facilities in which GRN1005 can be made. We have entered into a short-term extension of our lease for the premises located at 230 Constitution Drive, and in connection with our planned exit from the premises in the fourth quarter of 2012, we are required to comply with certain federal, state and county environmental laws and regulations, including those applicable to the handling of cytotoxic materials. Our inability to comply with these laws and regulations so could subject us to considerable additional cost or liability that would have a material adverse effect on our financial condition. We, our contractors or agents may be required to incur significant costs to comply with current or future environmental laws and regulations and may be adversely affected by the cost of compliance with these laws and regulations.

24

Table of Contents

Although we believe that our safety procedures for using, handling, storing and disposing of hazardous materials comply with the standards prescribed by state and federal regulations, the risk of accidental contamination or injury from these materials cannot be eliminated. In the event of such an accident, state or federal authorities could curtail our use of these materials and we, our contractors or agents could be liable for any civil damages that result, the cost of which could be substantial. Further, any failure by us to control the use, disposal, removal or storage, or to adequately restrict the discharge, or assist in the clean up, of hazardous chemicals or hazardous, infectious or toxic substances could subject us to significant liabilities, including joint and several liability under certain statutes. Any such liability could exceed our resources and could have a material adverse effect on our business, financial condition and results of operations. Additionally, an accident could damage our research and manufacturing facilities and operations.

Additional federal, state and local laws and regulations affecting us may be adopted in the future. We, our contractors and agents may incur substantial costs to comply with these laws and regulations and substantial fines or penalties if we violate any of these laws or regulations, which would adversely affect our business.

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.

Our business exposes us to potential product liability risks that are inherent in the testing, manufacturing and marketing of human therapeutic and diagnostic products. We may become subject to product liability claims if the use of our product candidates is alleged to have injured subjects or patients. This risk exists for our product candidates currently being tested in human clinical trials as well as product candidates that are sold commercially in the future. We currently have limited clinical trial liability insurance and we may not be able to maintain this type of insurance for any of our clinical trials. In addition, product liability insurance is becoming increasingly expensive. Being unable to obtain or maintain product liability insurance in the future on acceptable terms or with adequate coverage against potential liabilities could have a material adverse effect on our business.

FORWARD-LOOKING STATEMENTS

This prospectus, the documents we have filed with the SEC that are incorporated by reference and any free writing prospectuses that we may authorize for use in connection with this offering contain "forward-looking statements" within the meaning of Section 27A of the Securities Act of 1933, as amended, or the Securities Act, and Section 21E of the Securities Exchange Act of 1934, as amended, or the Exchange Act. These statements relate to future events or to our future operating or financial performance and involve known and unknown risks, uncertainties and other factors which may cause our actual results, performance or achievements to be materially different from any future results, performances or achievements expressed or implied by the forward-looking statements. Forward-looking statements may include, but are not limited to, statements about:

- future research and development activities, including the scope, timing, initiation and completion of clinical trials, and status of product development;
- the size and timing of expenditures and whether there are unanticipated expenditures;
- our requirements for additional capital;
- plans for regulatory filings;
- the timing of regulatory submissions and the timing, scope and anticipated outcome of related regulatory actions;

Table of Contents

our current and potential future collaborators' ability to market, commercialize and achieve market acceptance for our product candidates or products that we may develop;

our ability to maintain our collaborative arrangements, including licenses, and to establish and maintain potential new collaborative arrangements for the development and commercialization of our current or future product candidates;

our ability to protect our intellectual property and operate our business without infringing upon the intellectual property rights of others;

the implementation of our corporate strategy;

the timing and amounts of any royalty or milestone payments to Angiochem pursuant to our exclusive license agreement with Angiochem;

our ability to divest our stem cell assets;

our estimates regarding the sufficiency of our cash resources and our use of the net proceeds from this offering; and

our future financial performance.

In some cases, you can identify forward-looking statements by terms such as "may," "will," "should," "could," "would," "expects," "plans," "anticipates," "believes," "estimates," "projects," "predicts," "potential" and similar expressions intended to identify forward-looking statements. These statements reflect our current views with respect to future events, are based on assumptions and are subject to risks and uncertainties. Given these uncertainties, you should not place undue reliance on these forward-looking statements. We discuss many of these risks and uncertainties in greater detail under the heading "Risk Factors" beginning on page 4 of this prospectus, as may be updated or superseded by the risks and uncertainties described under similar headings in the other documents that are filed after the date hereof and incorporated by reference into this prospectus. Also, these forward-looking statements represent our estimates and assumptions only as of the date of the document containing the applicable statement. Unless required by law, we undertake no obligation to update or revise any forward-looking statements to reflect new information or future events or developments. Thus, you should not assume that our silence over time means that actual events are bearing out as expressed or implied in such forward-looking statements. You should read this prospectus together with the documents we have filed with the SEC that are incorporated by reference and any free writing prospectus that we may authorize for use in connection with this offering completely and with the understanding that our actual future results may be materially different from what we expect. We qualify all of the forward-looking statements in the foregoing documents by these cautionary statements.

USE OF PROCEEDS

We currently intend to use the net proceeds from this offering, if any, for working capital and general corporate purposes, including research and development expenses and general and administrative expenses.

The amounts and timing of our use of the net proceeds from this offering, if any, will depend on a number of factors, such as the timing and progress of our research and development efforts, the timing and progress of any partnering and collaboration efforts and technological advances. As of the date of this prospectus, we cannot specify with certainty all of the particular uses for the net proceeds to us from this offering. Accordingly, our management will have broad discretion in the timing and application of these proceeds. Pending application of the net proceeds as described above, we intend to temporarily invest the proceeds in short-term, interest-bearing instruments.

Table of Contents

SELECTED CONSOLIDATED FINANCIAL DATA

On January 1, 2012, we adopted new guidance regarding comprehensive income, which was applied retrospectively, that provides companies with the option to present the total of comprehensive income, components of net income, and the components of other comprehensive income either in a single continuous statement of comprehensive income or in two separate but consecutive statements in annual financial statements. The objective of the standard is to increase the prominence of items reported in other comprehensive income and to facilitate convergence of accounting principles generally accepted in the United States and International Financial Reporting Standards. The standard eliminates the option to present components of other comprehensive income as part of the statement of changes in stockholders' equity. The amendments in this guidance do not change the items that must be reported in other comprehensive income or when an item of other comprehensive income must be reclassified in net income. We adopted the two-statement approach for annual financial statements in the first quarter of 2012.

The table below presents selected historical consolidated statements of comprehensive loss data. We have derived our consolidated statements of comprehensive loss data for the years ended December 31, 2009, 2010 and 2011 from our audited consolidated financial statements included in our Annual Report on Form 10-K for the year ended December 31, 2011 and incorporated by reference in this prospectus. The following selected financial information revises historical information to illustrate the presentation required by the new guidance regarding comprehensive income for each of the periods presented.

	Year Ended December 31,		
Consolidated statements of comprehensive loss data:			
(Unaudited, in thousands)	**2009**	**2010**	**2011**
Net loss	$ (70,184)	$ (111,377)	$ (96,853)
Other comprehensive income (loss):			
Net unrealized gain (loss) on available for sale securities	(445)	306	6
Foreign currency translation adjustments	(1)	4	(1)
Other comprehensive income (loss)	(446)	310	5
Comprehensive loss	$ (70,630)	$ (111,067)	$ (96,848)

DILUTION

If you invest in this offering, your ownership interest will be diluted to the extent of the difference between the public offering price per share and the as adjusted net tangible book value per share after giving effect to this offering. We calculate net tangible book value per share by dividing the net tangible book value, which is tangible assets less total liabilities, by the number of outstanding shares of our common stock. Dilution represents the difference between the portion of the amount per share paid by purchasers of shares in this offering and the as adjusted net tangible book value per share of our common stock immediately after giving effect to this offering. Our net tangible book value as of June 30, 2012 was approximately $114.2 million, or $0.87 per share.

After giving effect to the sale of our common stock during the term of the sales agreement with MLV in the aggregate amount of $50,000,000 at an assumed offering price of $1.72 per share, the last reported sale price of our common stock on The NASDAQ Global Select Market on October 1, 2012, and after deducting commissions and estimated aggregate offering expenses payable by us, our net tangible book value as of June 30, 2012 would have been $162.8 million, or $1.02 per share of common stock. This represents an immediate increase in the net tangible book value of $0.15 per share to our

Table of Contents

existing stockholders and an immediate dilution in net tangible book value of $0.70 per share to new investors. The following table illustrates this per share dilution:

Assumed public offering price per share		$ 1.72
Net tangible book value per share as of June 30, 2012	$ 0.87	
Increase in net tangible book value per share attributable to this offering	$ 0.15	
As adjusted net tangible book value per share as of June 30, 2012, after giving effect to this offering		$ 1.02
Dilution per share to new investors purchasing shares in this offering		$ 0.70

The table above assumes for illustrative purposes that an aggregate of 29,069,767 shares of our common stock are sold during the term of the sales agreement with MLV at a price of $1.72 per share, the last reported sale price of our common stock on The NASDAQ Global Select Market on October 1, 2012, for aggregate gross proceeds of $50,000,000. The shares subject to the sales agreement with MLV are being sold from time to time at various prices. An increase of $0.50 per share in the price at which the shares are sold from the assumed offering price of $1.72 per share shown in the table above, assuming all of our common stock in the aggregate amount of $50,000,000 during the term of the sales agreement with MLV is sold at that price, would increase our adjusted net tangible book value per share after the offering to $1.06 per share and would increase the dilution in net tangible book value per share to new investors in this offering to $1.16 per share, after deducting commissions and estimated aggregate offering expenses payable by us. A decrease of $0.50 per share in the price at which the shares are sold from the assumed offering price of $1.72 per share shown in the table above, assuming all of our common stock in the aggregate amount of $50,000,000 during the term of the sales agreement with MLV is sold at that price, would decrease our adjusted net tangible book value per share after the offering to $0.95 per share and would decrease the dilution in net tangible book value per share to new investors in this offering to $0.27 per share, after deducting commissions and estimated aggregate offering expenses payable by us. This information is supplied for illustrative purposes only.

The above discussion and table are based on 131,315,880 shares of our common stock issued and outstanding as of June 30, 2012 and exclude the following, all as of June 30, 2012:

- 18,849,158 shares of common stock issuable upon the exercise of outstanding stock options with a weighted-average exercise price of $4.08 per share;
- 1,744,275 shares of common stock issuable upon the exercise of outstanding warrants with a weighted-average exercise price of $4.14 per share; and
- up to an aggregate of 11,803,324 shares of common stock reserved for future issuance under our 2011 Incentive Award Plan, 2006 Directors' Stock Option Plan, and 1996 Employee Stock Purchase Plan.

The number of shares of our common stock outstanding in the computations above includes 4,082,630 unvested shares of common stock issued as restricted stock awards and outstanding as of June 30, 2012.

To the extent that options or warrants outstanding as of June 30, 2012 have been or are exercised, or other shares are issued, investors purchasing shares in this offering could experience further dilution. In addition, we may choose to raise 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 additional capital is raised through the sale of equity or convertible debt securities, the issuance of these securities could result in further dilution to our stockholders.

Table of Contents

DESCRIPTION OF CAPITAL STOCK

General

As of the date of this prospectus, our restated certificate of incorporation, as amended, or the Restated Certificate, authorizes us to issue 300,000,000 shares of common stock, par value $0.001 per share, and 3,000,000 shares of preferred stock, par value $0.001 per share. As of September 30, 2012, 130,755,585 shares of common stock were outstanding and no shares of preferred stock were outstanding.

The following summary description of our capital stock is based on the provisions of our Restated Certificate, our amended and restated bylaws, or the Bylaws, and applicable provisions of the Delaware General Corporation Law. This information may not be complete in all respects and is qualified entirely by reference to the applicable provisions of our Restated Certificate, our Bylaws and the Delaware General Corporation Law. For information on how to obtain copies of our Restated Certificate and Bylaws, which are exhibits to the registration statement of which this prospectus is a part, see "Where You Can Find More Information."

Common Stock

The holders of common stock are entitled to one vote for each share held of record on all matters submitted to a vote of the stockholders. Subject to preferences that may be applicable to any outstanding shares of the preferred stock, the holders of common stock are entitled to receive ratably such dividends as may be declared by the board of directors out of legally available funds. Upon our liquidation, dissolution or winding up, holders of our common stock are entitled to share ratably in all assets remaining after payment of liabilities and the liquidation preferences of any outstanding shares of preferred stock. Holders of common stock have no preemptive rights and no right to convert their common stock into any other securities. There are no redemption provisions applicable to the common stock. All outstanding shares of common stock are, and all shares of common stock to be outstanding upon the closing of this offering will be, fully paid and nonassessable.

Additional shares of authorized common stock may be issued, as authorized by our board of directors from time to time, without stockholder approval, except as may be required by applicable stock exchange requirements.

Preferred Stock

Pursuant to our Restated Certificate, our board of directors has the authority, without further action by our stockholders, to issue up to 3,000,000 shares of preferred stock in one or more series and to fix the designations, powers, preferences, privileges and relative participating, optional or special rights and the qualifications, limitations or restrictions thereof, including dividend rights, conversion rights, voting rights, terms of redemption and liquidation preferences, any or all of which may be greater than the rights of the common stock. The board of directors, without stockholder approval, can issue preferred stock with voting, conversion or other rights that could adversely affect the voting power and other rights of the holders of common stock. Preferred stock could thus be issued quickly with terms calculated to delay or prevent a change in control of our company or make removal of management more difficult. Additionally, the issuance of preferred stock may have the effect of decreasing the market price of the common stock and may adversely affect the voting power of holders of common stock and reduce the likelihood that common stockholders will receive dividend payments and payments upon liquidation.

Table of Contents

Anti-takeover Effects of Provisions of Charter Documents and Delaware Law

Charter Documents. Our Restated Certificate and Bylaws contain provisions that could discourage potential takeover attempts and make it more difficult for stockholders to change management, which could adversely affect the market place of our common stock.

Our Restated Certificate limits the personal liability for monetary damages for breach of fiduciary duty of our directors to Geron and our stockholders to the fullest extent permitted by the Delaware General Corporation Law. The inclusion of this provision in our Restated Certificate may reduce the likelihood of derivative litigation against directors and may discourage or deter stockholders or management from bringing a lawsuit against directors for breach of their fiduciary duty.

Our Restated Certificate provides that all stockholder action must be effected at a meeting of stockholders and not by a consent in writing. In addition, our Bylaws provide that special meetings of stockholders may only be called by the board of directors pursuant to a resolution adopted by a majority of the total number of authorized directors, the chairman of the board of directors, the chief executive officer or president (in the absence of a chief executive officer), or at the request in writing of stockholders owning a majority of the amount of our entire capital stock issued and outstanding and entitled to vote. Finally, our Bylaws establish procedures, including advance notice procedures, with regard to the nomination of candidates for election as directors and stockholder proposals.

Our Bylaws provides for the board of directors to be divided into three classes of directors, with each class as nearly equal in number as possible, serving staggered three-year terms. As a result, approximately one-third of the board of directors will be elected each year. The classified board provision could have the effect of discouraging a third party from making a tender offer or attempting to obtain control of us. In addition, the classified board provision could delay stockholders who do not agree with the policies of the board of directors from removing a majority of the board of directors for two years.

Delaware Law. We are subject to Section 203 of the Delaware General Corporation Law. Section 203 generally prohibits a public Delaware corporation such as us from engaging in a "business combination" with an "interested stockholder" for a period of three years following the time that the stockholder became an interested stockholder, unless:

prior to the time the stockholder became an interested stockholder, the board of directors of the corporation approved either the business combination or the transaction which resulted in the stockholder becoming an interested stockholder;

upon consummation of the transaction which resulted in the stockholder becoming an interested stockholder, the interested stockholder owned at least 85% of the voting stock of the corporation outstanding at the time the transaction commenced, excluding for purposes of determining the number of shares outstanding (a) shares owned by persons who are directors and also officers and (b) employee stock plans in which employee participants do not have the right to determine confidentially whether shares held subject to the plan will be tendered in a tender or exchange offer; or

at or subsequent to the time the stockholder became an interested stockholder, the business combination is approved by the board and authorized at an annual or special meeting of stockholders, and not by written consent, by the affirmative vote of at least $66^{2}/_{3}\%$ of the outstanding voting stock which is not owned by the interested stockholder.

Section 203 defines a business combination to include:

any merger or consolidation involving the corporation and the interested stockholder;

Table of Contents

any sale, lease, exchange, mortgage, pledge, transfer or other disposition (in one transaction or a series of transactions) involving the interested stockholder of 10% or more of the assets of the corporation (or its majority-owned subsidiary);

subject to exceptions, any transaction that results in the issuance or transfer by the corporation of any stock of the corporation to the interested stockholder;

subject to exceptions, any transaction involving the corporation that has the effect, directly or indirectly, of increasing the proportionate share of the stock or any class or series of the corporation beneficially owned by the interested stockholder; and

the receipt by the interested stockholder of the benefit, directly or indirectly (except proportionately as a stockholder of such corporation), of any loans, advances, guarantees, pledges or other financial benefits, other than certain benefits set forth in Section 203, provided by or through the corporation.

In general, Section 203 defines an interested stockholder as any entity or person beneficially owning 15% or more of the outstanding voting stock of the corporation and any entity or person that is an affiliate or associate of such entity or person.

Although Section 203 permits us to elect not to be governed by its provisions, we have not made this election. As a result of the application of Section 203, potential acquirers of Geron may be discouraged from attempting to effect an acquisition transaction with us, thereby possibly depriving holders of our securities of certain opportunities to sell or otherwise dispose of such securities at above-market prices pursuant to such transactions.

Transfer Agent and Registrar

The transfer agent and registrar for the common stock is Computershare Trust Company, N.A.

Listing on The NASDAQ Global Select Market

Our common stock is listed on The NASDAQ Global Select Market under the symbol "GERN."

PLAN OF DISTRIBUTION

We have entered into an At-the-Market Issuance Sales Agreement, or sales agreement, with MLV & Co. LLC, or MLV, under which we may issue and sell shares of our common stock having aggregate sales proceeds of up to $50.0 million from time to time through MLV acting as agent. MLV may sell the common stock by any method that is deemed to be an "at-the-market" equity offering as defined in Rule 415 promulgated under the Securities Act, including sales made directly on or through The NASDAQ Global Select Market or any other existing trading market for the common stock in the United States or to or through a market maker. MLV may also sell the common stock in privately negotiated transactions, subject to our prior approval.

Each time we wish to issue and sell common stock under the sales agreement, we will notify MLV of the number of shares to be issued, the dates on which such sales are anticipated to be made and any minimum price below which sales may not be made. Once we have so instructed MLV, unless MLV declines to accept the terms of such notice, MLV has agreed to use its commercially reasonable efforts consistent with its normal trading and sales practices to sell such shares up to the amount specified on such terms. The obligations of MLV under the sales agreement to sell our common stock are subject to a number of conditions that we must meet.

The settlement between us and MLV is generally anticipated to occur on the third trading day following the date on which the sale was made. Sales of our common stock as contemplated in this prospectus will be settled through the facilities of The Depository Trust Company or by such other

Table of Contents

means as we and MLV may agree upon. There is no arrangement for funds to be received in an escrow, trust or similar arrangement.

We will pay MLV a commission equal to an aggregate of up to 3.0% of the gross proceeds we receive from the sales of our common stock. We also agreed to reimburse MLV for legal expenses incurred by it up to $20,000 in the aggregate. Because there is no minimum offering amount required as a condition to close this offering, the actual total public offering amount, commissions and proceeds to us, if any, are not determinable at this time. In connection with the sale of the common stock on our behalf, MLV will be deemed to be an "underwriter" within the meaning of the Securities Act of 1933, as amended, and the compensation of MLV will be deemed to be underwriting commissions or discounts. We have agreed to provide indemnification and contribution to MLV with respect to certain civil liabilities, including liabilities under the Securities Act. We estimate that the total expenses for the offering, excluding compensation payable to MLV under the terms of the sales agreement, will be approximately $200,000.

The offering of our common stock pursuant to the sales agreement will terminate upon the earlier of (i) the sale of all of our common stock provided for in this prospectus, or (ii) termination of the sales agreement as permitted therein. MLV may terminate the sales agreement at any time in certain circumstances, including the occurrence of a material adverse change with respect to us that, in MLV's sole judgment, makes it impracticable or inadvisable to market the shares, if there has occurred any material adverse change in the U.S. financial markets or international financial markets, which in MLV's sole judgment makes it impracticable to market the shares, if trading in the shares has been suspended or limited by the Securities Exchange Commission or The NASDAQ Global Select Market, or the Exchange, or if trading generally has been suspended or limited by the Exchange, if any suspension of trading of any shares of Geron on any exchange or over-the-counter market shall have occurred and be continuing, if there is a major disruption of securities settlements or clearance services in the U.S. which shall be continuing, or if a banking moratorium has been declared in the U.S. Federal or New York authorities. We and MLV may each terminate the sales agreement at any time upon ten days prior notice.

This summary of the material provisions of the sales agreement does not purport to be a complete statement of its terms and conditions. A copy of the sales agreement is filed with the SEC and is incorporated by reference into the registration statement of which this prospectus is a part. See "Where You Can Find More Information" below.

To the extent required by Regulation M under the Exchange Act, MLV will not engage in any market making activities involving our common stock while the offering is ongoing under this prospectus.

LEGAL MATTERS

Cooley LLP, Palo Alto, California, has passed upon the validity of the common stock offered by this prospectus. LeClairRyan, A Professional Corporation, New York, New York, is counsel for MLV in connection with this offering.

EXPERTS

The consolidated financial statements of Geron Corporation appearing in Geron's Annual Report on Form 10-K for the year ended December 31, 2011, and the effectiveness of internal control over financial reporting as of December 31, 2011 have been audited by Ernst & Young LLP, independent registered public accounting firm, as set forth in their reports thereon, included therein, and incorporated herein by reference. Such consolidated financial statements are incorporated herein by reference in reliance upon such reports given on the authority of such firm as experts in accounting and auditing.

Table of Contents

WHERE YOU CAN FIND MORE INFORMATION

This prospectus is part of the registration statement on Form S-3 we filed with the SEC under the Securities Act and does not contain all the information set forth in the registration statement. Whenever a reference is made in this prospectus to any of our contracts, agreements or other documents, the reference may not be complete and you should refer to the exhibits that are a part of the registration statement or the exhibits to the reports or other documents incorporated by reference into this prospectus for a copy of such contract, agreement or other document. Because we are subject to the information and reporting requirements of the Exchange Act, we file annual, quarterly and current reports, proxy statements and other information with the SEC. Our SEC filings are available to the public over the Internet at the SEC's website at http://www.sec.gov. You may also read and copy any document we file at the SEC's Public Reference Room at 100 F Street, N.E., Washington, D.C. 20549. Please call the SEC at 1-800-SEC-0330 for further information on the operation of the Public Reference Room.

INCORPORATION OF CERTAIN INFORMATION BY REFERENCE

The SEC allows us to "incorporate by reference" information from other documents that we file with it, which means that we can disclose important information to you by referring you to those documents. The information incorporated by reference is considered to be part of this prospectus. Information in this prospectus supersedes information incorporated by reference that we filed with the SEC prior to the date of this prospectus, while information that we file later with the SEC will automatically update and supersede the information in this prospectus. We incorporate by reference into this prospectus and the registration statement of which this prospectus is a part the information or documents listed below that we have filed with the SEC (Commission File No. 000-20859):

Geron's Annual Report on Form 10-K for the year ended December 31, 2011, filed with the SEC on March 7, 2012, as amended by our Annual Report on Form 10-K/A, Amendment No. 1, for the year ended December 31, 2011, filed with the SEC on March 27, 2012;

Geron's Quarterly Reports on Form 10-Q for the quarterly period ended March 31, 2012, filed with the SEC on May 7, 2012, and for the quarterly period ended June 30, 2012, filed with the SEC on August 3, 2012;

Geron's Current Reports on Form 8-K filed with the SEC on January 5, 2012 (other than the information furnished under Item 7.01 and the related exhibit), February 1, 2012, March 16, 2012, April 4, 2012, May 1, 2012, May 18, 2012, June 8, 2012, July 18, 2012, July 31, 2012 (other than the information furnished under Item 2.02 and the related exhibit), August 17, 2012, September 10, 2012, September 17, 2012 (other than the information furnished under Item 7.01 and the related exhibit), September 28, 2012 and October 9, 2012;

the information specifically incorporated by reference into Geron's 2011 Annual Report on Form 10-K referred to above from Geron's revised definitive proxy statement relating to Geron's 2012 annual meeting of stockholders, filed with the SEC on April 24, 2012; and

the description of Geron's common stock set forth in Geron's registration statement on Form 8-A, filed with the SEC on June 13, 1996.

We also incorporate by reference any future filings (other than current reports furnished under Item 2.02 or Item 7.01 of Form 8-K and exhibits filed on such form that are related to such items unless such Form 8-K expressly provides to the contrary) made with the SEC pursuant to Sections 13(a), 13(c), 14 or 15(d) of the Exchange Act, including those made after the date of the initial filing of the registration statement of which this prospectus is a part and prior to effectiveness of such registration statement, until the termination of the offering of the common stock covered by this prospectus and will become a part of this prospectus from the date that such documents are filed with

Table of Contents

the SEC. Information in such future filings updates and supplements the information provided in this prospectus. Any statements in any such future filings will automatically be deemed to modify and supersede any information in any document we previously filed with the SEC that is incorporated or deemed to be incorporated herein by reference to the extent that statements in the later filed document modify or replace such earlier statements.

We will furnish without charge to you, on written or oral request, a copy of any or all of the documents incorporated by reference, including exhibits to these documents. You should direct any requests for documents to Graham K. Cooper, Chief Financial Officer, Geron Corporation, 149 Commonwealth Drive, Suite 2070, Menlo Park, California 94025, telephone: (650) 473-7700.