GERON CORP
Form 424B5
October 11, 2012

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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.

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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."

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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.

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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."

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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

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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

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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.

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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.

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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

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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

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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.

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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

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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;

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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.

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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

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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.

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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.

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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

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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,

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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

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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

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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