

GERON CORP
Form 10-K
March 01, 2006

Forward-Looking Statements

This annual report on Form 10-K, including "Management's Discussion and Analysis of Financial Condition and Results of Operations" in Item 7, contains forward-looking statements that involve risks and uncertainties, as well as assumptions that, if they never materialize or prove incorrect, could cause the results of Geron Corporation ("Geron") to differ materially from those expressed or implied by such forward-looking statements. All statements other than statements of historical fact are statements that could be deemed forward-looking statements. The risks and uncertainties referred to above include, without limitation, risks inherent in the development and commercialization of Geron's potential products, dependence on collaborative partners, need for additional capital, need for regulatory approvals or clearances, the maintenance of Geron's intellectual property rights and other risks that are described herein and that are otherwise described from time to time in Geron's Securities and Exchange Commission reports including, but not limited to, the factors described in "Additional Factors That May Affect Future Results" set forth in Item 1 of this report. Geron assumes no obligation and does not intend to update these forward-looking statements.

PART I

ITEM 1. BUSINESS

Overview

Geron is a biopharmaceutical company focused on developing and commercializing three groups of products: (i) therapeutic products for oncology that target telomerase; (ii) pharmaceuticals that activate telomerase in tissues impacted by senescence, injury or degenerative disease; and (iii) cell-based therapies derived from our human embryonic stem cell platform for applications in multiple chronic diseases.

We were incorporated in 1990 under the laws of Delaware. Our principal executive offices are located at 230 Constitution Drive, Menlo Park, California 94025. Our telephone number is (650) 473-7700.

We make available free of charge on or through our Internet website our annual reports on Form 10-K, quarterly reports on Form 10-Q, current reports on Form 8-K and all amendments to those reports as soon as reasonably practicable after they are electronically filed with, or furnished to, the Securities and Exchange Commission. Our Internet website address is www.geron.com.

Major Technology Platforms

Telomeres and Telomerase: Role in Cellular Aging and Cancer

Cells are the building blocks for all tissues in the human body and cell division plays a critical role in the normal growth, maintenance and repair of human tissue. However, in the human body, most cell division is a limited process. Depending on the tissue type, cells generally divide only 60 to 100 times during the course of their normal lifespan.

We and our collaborators have shown that telomeres, located at the ends of chromosomes, are key genetic elements involved in the regulation of the cellular aging process. Our work has shown that each time a normal cell divides, telomeres shorten. Once telomeres reach a certain short length, cell division halts and the cell enters a state known as replicative senescence or aging. Thus, this shortening of the telomeres effectively serves as a molecular "clock" for cellular aging. We and others have shown that when the enzyme telomerase is introduced into normal cells, it can restore telomere length "reset the clock" thereby increasing the functional lifespan of the cells. Importantly, it does this without altering the cells' biology or causing them to become cancerous. Human telomerase, a complex enzyme, is composed of a ribonucleic acid (RNA) component, known as hTR, a protein

component, known as hTERT, and other accessory proteins. In 1994, we cloned the gene for hTR, and in 1997, in collaboration with Dr. Thomas Cech, we cloned the gene for hTERT.

Our work and that of others has shown that telomerase is not present in most normal cells and tissues, but that during cancer progression, telomerase is abnormally reactivated in all major cancer types. We have shown that while telomerase does not cause cancer (which is caused by mutations in oncogenes and tumor suppressor genes), the continued presence of telomerase enables cancer cells to maintain telomere length, providing them with indefinite replicative capacity. We and others have shown in various tumor models that inhibiting telomerase activity results in telomere shortening and causes aging or death of the cancer cell.

2

Although telomerase is expressed in nearly all cancer cells, it is not expressed in most normal cells. That gives telomerase the potential of being both a universal as well as a highly specific cancer target. This specificity means that drugs and biologics that attack cancer cells by targeting telomerase may leave other cells unaffected, and thus should have fewer side effects than conventional chemotherapeutic agents that typically attack both cancer and non-cancer cells.

We are developing anti-cancer therapies based on telomerase inhibitors, telomerase therapeutic vaccines and, through our licensee, telomerase-based oncolytic (cancer-killing) viruses. Through our licensees, we also intend to continue to develop and commercialize products using telomerase as a marker for cancer diagnosis, prognosis, patient monitoring and screening.

We are also developing drugs that activate telomerase to enhance cell repair/function in senescent tissues implicated in certain chronic diseases.

Human Embryonic Stem Cells: A Potential Source for the Manufacturing of Replacement Cells and Tissues

Stem cells generally are self-renewing primitive cells that can develop into functional, differentiated cells. Human embryonic stem cells (hESCs), which are derived from very early stage embryos called blastocysts, are unique because:

- they are pluripotent, which means they can develop into all cells and tissues in the body, and
- they self-renew indefinitely in the undifferentiated state.

The ability of hESCs to divide indefinitely in the undifferentiated state without losing pluripotency is a unique characteristic that distinguishes them from all other stem cells discovered to date in humans. We have demonstrated that hESCs express telomerase continuously, a characteristic of immortal cells. Other stem cells such as blood or gut stem cells express telomerase at very low levels or only periodically; they therefore age, limiting their use in research or therapeutic applications. hESCs can be expanded in culture indefinitely and hence can be banked for scaled product manufacture.

We intend to use human embryonic stem cell technology to:

- enable the development of transplantation therapies by providing standard starting material for the manufacture of cells and tissues;
- facilitate pharmaceutical research and development practices by providing cells for disease models and screening, and for assigning function to newly discovered genes; and
- accelerate research in human developmental biology by identifying the genes that control human growth and development.

Commercial Opportunities for Our Major Technology Platforms

Oncology

Cancer is a group of diseases characterized by the uncontrolled growth and spread of abnormal cells. The American Cancer Society estimated that approximately 1.4 million new cancer cases were to be diagnosed in 2005. Overall annual costs associated with cancer in 2005 were an estimated \$189.8 billion in the United States alone. Because telomerase is detectable in more than 30 human cancer types and in the great majority of cancer samples studied, we believe that telomerase-based drugs could overcome the limitations of current cancer therapies and potentially be broadly applicable and highly specific drug treatments for cancer.

We, our collaborators and our licensees are developing a range of anti-cancer therapies, including anti-cancer therapies based on telomerase inhibitors, telomerase therapeutic vaccines and telomerase-based oncolytic (cancer-killing) viruses, and diagnostics based on telomerase detection. We believe telomerase is an ideal target for cancer therapeutics and diagnostics because it appears to be universal (expressed in all major types of cancers studied to date), specific (not expressed in most normal cells), and critical (required for long-term survival of cancer cells). We believe that we have the dominant patent position in the field of telomerase. Whether it is achieved by us or by our collaborators and licensees, we believe that progress in the development of any of these telomerase-based cancer therapeutics will further validate the importance of telomerase as a cancer target and therefore benefit all of our telomerase cancer programs.

3

Telomerase Inhibition. Telomerase activation is necessary for most cancer cells to replicate indefinitely and thereby enable tumor growth and metastasis. One of our strategies for the development of anti-cancer therapies is to inhibit telomerase activity in cancer cells. Inhibiting telomerase activity should result in telomere shortening and therefore cause aging and death of cancer cells. Recent data show that telomerase can protect tumor cells from genomic instability and other forms of cellular stress, suggesting that inhibiting telomerase can cause a more rapid suppression of tumor growth than predicted by telomere loss alone. Because telomerase is expressed at very low levels, if at all, in most normal cells, the telomerase inhibition therapies described below are not expected to be toxic to normal cells.

We have designed and synthesized a special class of short-chain nucleic acid molecules, known as oligonucleotides, which target the template region, or active site, of telomerase. Our work has focused on two of these oligonucleotides, called GRN163 and GRN163L, and we have demonstrated that they have highly potent telomerase inhibitory activity at very low concentrations in biochemical assays, various cellular systems, and animal studies.

Our compounds GRN163 and GRN163L are direct enzyme inhibitors, not antisense compounds. They are smaller (lower molecular weight) than typical antisense compounds or other oligonucleotide drug candidates, and we expect them to be administered either locally or systemically. *In vitro* and *in vivo* studies indicate that the compounds do not inhibit other critical nucleic acid-modifying enzymes and do not appear to be toxic to normal cells at concentrations expected to inhibit telomerase in tumor cells. Both compounds use a special thiophosphoramidate chemical backbone, for which we acquired key patents in March 2002 from Lynx Therapeutics.

We and our collaborators have so far tested GRN163 *in vitro* on 14 different cancer cells and demonstrated significant inhibition of telomerase activity in all of them. Research by our collaborators has shown that these compounds inhibit the growth of malignant human glioblastoma (brain cancer) cells, prostate cancer cells, lymphoma, myeloma, hepatocellular carcinoma (liver cancer), melanoma, lung, ovarian and cervical cancer cells in animals.

Intratumoral administration of GRN163 in an animal model of human glioblastoma resulted in complete tumor eradication in five of seven treated rats without any toxicity and significantly extended their survival compared to untreated controls. Intravenous administration of GRN163 in a study of animals bearing disseminated human multiple myeloma substantially reduced tumor growth and resulted in a 50% increase in survival compared to controls. GRN163L is identical in structure to GRN163 except that it has a lipid attached to one end of the molecule, which increases potency and improves its pharmacokinetic and pharmacodynamic properties. The improved pharmacokinetic and pharmacodynamic characteristics of GRN163L suggest that it should be effective

in inhibiting telomerase in tumor cells when administered intermittently (e.g., once per week).

We completed a series of animal toxicology and preclinical efficacy studies of GRN163L in 2005, after which we prepared and submitted an Investigational New Drug (IND) application to the U.S. Food and Drug Administration (FDA) to begin human clinical trials of GRN163L in patients with chronic lymphocytic leukemia (CLL). We received FDA concurrence to begin human studies. Thus far, two clinical sites have been designated as patient enrollment centers for the study. We expect to engage additional trial sites in 2006 and also to initiate a second Phase 1-2 study for patients with solid tumor cancers in 2006.

Telomerase Therapeutic Vaccine. Our second approach to anti-cancer therapy is a telomerase therapeutic vaccine. The goal of therapeutic cancer vaccines is to "teach" the patient's own immune system to attack cancer cells while sparing other cells. This is done by exposing the immune system to a substance (antigen) that is specific to cancer cells, inducing an immune response to any cells that present that antigen. We believe that telomerase's characteristics make it an ideal antigen for cancer vaccines.

We are conducting human clinical trials to confirm and optimize the safety and efficacy of telomerase vaccine therapies. In collaboration with scientists at Duke University, we published studies, which demonstrate that cancer patients' immune cells can be activated with a telomerase vaccine in the laboratory to kill their own cancer cells. This technique was also effective in reducing tumors in animals. At Duke University Medical Center, a Phase 1-2 clinical trial in prostate cancer patients concluded in March 2005 and currently additional Phase 1-2 clinical trials are underway for patients with hematologic, prostate and renal cancers. The telomerase vaccine being tested at Duke University Medical Center generates cytotoxic T-cells that attack cancer cells expressing telomerase. The Duke Phase 1-2 clinical

4

trials use an *ex vivo* process. Dendritic cells (the most efficient antigen-presenting cells) are isolated from the patient's blood, pulsed with RNA for the telomerase protein component, and then returned to the patient's body where they instruct cytotoxic T-cells to kill tumor cells that express telomerase.

The first clinical trial at Duke University Medical Center was designed to enroll up to a total of 24 patients with metastatic prostate cancer, up to 12 of whom would receive three weekly vaccinations (low-dose group), and up to 12 of whom would receive six weekly vaccinations (high-dose group). Twenty patients (all 12 of the low-dose group and eight of the high-dose group) were enrolled and treated, and the results of this study were published in the *Journal of Immunology* in March 2005. None of the patients in either group has shown treatment-related adverse effects to date. All but one of the patients in the low-dose group showed a significant cellular immune response specific to telomerase. The eight patients in the high-dose group all showed very robust cellular immune responses to telomerase based on tests assessing the generation of telomerase-specific cytotoxic CD-8+ T-lymphocytes, as well as CD-4+ lymphocytes. The immune responses in the high-dose group were strong as well as specific: peak responses were 1-2% of circulating CD-8+ T-cells having anti-telomerase activity. Levels of circulating cancer cells were also analyzed. Ten subjects had elevated levels of circulating prostate cancer cells before vaccination. Nine of these ten had their levels reduced or cleared transiently after vaccination.

Serum PSA was measured before, during and multiple times after vaccination to calculate PSA doubling time as a surrogate marker for treatment response. No significant change in PSA doubling time was observed in the low-dose group. A highly significant increase in PSA doubling time was observed in the high-dose group, suggestive of a clinical response to vaccination.

We are currently supporting several small additional Phase 1-2 trials, for patients with prostate cancer, hematologic malignancies and renal carcinoma at Duke, in order to optimize the vaccination process. We are testing: (i) the pre-vaccination administration of an approved compound to potentially augment vaccine potency; (ii) the use of a second approved compound applied to the vaccine injection site to potentially enable the use of dendritic cells produced by an alternative manufacturing process and; (iii) the use of boost vaccinations to potentially enhance the durability of the anti-telomerase immune response. Additionally, we have brought the vaccine manufacturing process in-house for further optimization and transfer to a contract manufacturer. At the conclusion of these activities, we plan to file our IND with the FDA for clinical trials in one or more cancer types.

In 2004, we acquired rights from Argos Therapeutics, Inc. (formerly Merix) to commercialize the *ex vivo* dendritic cell processing technology used in the Duke clinical trial for telomerase and any other defined tumor-specific antigen. We own the rights to the telomerase antigen and its use in therapeutic vaccines.

In July 2005, we entered into a worldwide exclusive research, development and commercialization license agreement with Merck & Co., Inc. for cancer vaccines targeting telomerase by methods other than dendritic cell delivery. In exchange for the license to telomerase, we received from Merck an upfront payment and will receive payments upon achievement of certain regulatory and development milestones, as well as royalties on product sales. We also issued to Merck a warrant to purchase our common stock in connection with our next public equity offering, which Merck exercised in connection with the public offering that we closed in September 2005. In addition, Merck acquired an exclusive option to negotiate a separate agreement for our dendritic cell-based telomerase vaccine currently in Phase 1-2 trials at Duke. We received an option payment from Merck in consideration for the option.

Oncolytic Virus. A third telomerase-based anti-cancer therapeutic strategy utilizes viruses that have been manipulated or engineered to have oncolytic, or cancer-killing, properties, enabling them to selectively target and destroy cancer cells that express telomerase. We have cloned the promoter region of the telomerase gene and have shown that it can be used to switch on genes required for the virus to replicate within the cancer cell. Our data indicate that when tumor cells are infected with the virus, the virus multiplies or replicates within the cancer cells and causes the rupture and death of the tumor cells. When these same-engineered viruses infect normal somatic cells, there is no killing effect and the virus dissipates. This selective lytic effect on cancer has been demonstrated *in vitro* in seven different tumor types: prostate, liver, lung, pancreatic, colorectal, breast and ovarian cancers. These *in vitro* results have been extended to animal models of liver and prostate cancer with similar effects against the animals' tumors while sparing normal cells.

We initially granted a non-exclusive license to Genetic Therapy, Inc. (GTI), a subsidiary of Novartis AG, to use our telomerase promoter technology to develop an oncolytic virus product. Subsequently, GTI's oncolytic virus business and our license to GTI were acquired by Cell Genesys Inc., which also has its own oncolytic virus program and has continued the research and development of an oncolytic virus product.

Cancer Diagnostics. Telomerase is a broadly applicable and highly specific marker for cancer because it has been detected in more than 30 human cancer types and in the great majority of cancer samples studied. We believe that the detection of telomerase may have significant clinical utility for cancer diagnosis, prognosis, monitoring and screening. Current cancer diagnostics apply only to a single or limited number of cancer types because they rely on molecules expressed only by particular cancer types. However, telomerase-based diagnostics could potentially address a broad range of cancers.

We have developed several proprietary assays for the detection of telomerase which are based on its activity or the presence of its RNA or protein components. The first-generation assay is the Telomeric Repeat Amplification Protocol (TRAP) assay which can be used to detect telomerase activity in human tissue or cells, including clinical samples. The second-generation assays detect the presence of hTR and hTERT in human tissues and body fluids. We own issued patents for the detection of telomerase activity and the components of telomerase including patents for the TRAP assay and diagnostic methods based on telomerase detection. To date, our licensees have commercialized 13 research-use-only kits that incorporate our technology.

Through Roche Diagnostics, we are participating in the development of fluids-based telomerase detection tests for clinical *in vitro* diagnostics. The tests are based on telomerase detection assays that we have already commercialized for the research-use-only market. Clinical research data generated by Roche indicates that an assay for telomerase is a sensitive and specific test for detecting bladder cancer with potential utility in early detection screening and monitoring of patients for recurrence. Patients who have had bladder cancer now periodically undergo invasive cystoscopy to screen for recurrence.

Telomerase Activation

We are developing drug candidates to treat various degenerative diseases by the controlled activation of telomerase. Data published by us and others has indicated that cellular aging caused by shortening telomeres, which occurs in numerous tissues throughout the human body, causes or contributes to chronic degenerative diseases and conditions including anemia, HIV/AIDS, liver disease, macular degeneration (a chronic disease of the eyes often leading to vision loss), atherosclerosis (narrowing of arteries which reduces blood flow to internal organs) and impaired wound healing. Controlled activation of telomerase in normal cells can restore telomere length, improve functional capacity, and increase the proliferative lifespan of cells.

Skin. The skin is a major organ of the body which deteriorates with age impacting not only human physical health but also appearance and self-esteem. The thinning and increased wrinkling of older skin is symptomatic of impaired wound healing and results in increased frequency of chronic ulcers. Skin cancers are more prevalent than any other form of cancer and are believed to be caused in part by aging of skin cells.

We have studied the activation of telomerase in skin cells. Our scientists and other researchers have established that the loss of telomeric DNA accompanies the aging of skin cells in tissue culture and in the body. The restoration of telomerase activity in skin cells in culture dramatically extends the healthy lifespan of these cells. Animal models of telomere loss also correlate cellular aging with thinning of skin, graying of hair, chronic ulcerative lesions at areas of stress and reduced ability to repair wounds. Our approach to the therapeutic use of telomerase activation in skin has included both small molecule drug discovery and biological methods of restoring telomerase in various skin cells. We have demonstrated that telomerase activation by gene therapy significantly improves wound healing in a rabbit model of skin ulceration.

HIV/AIDS. Work by our collaborators has shown that telomere loss in cytotoxic T-lymphocytes, the blood cells responsible for killing HIV-infected cells, is accelerated in HIV/AIDS patients, and contributes to the loss of anti-HIV activity that occurs during disease progression. Our collaborators published data showing that telomerase activation in T-lymphocytes both increased their lifespan and significantly enhanced their anti-HIV activity.

6

These results were extended in a publication in the *Journal of Immunology* (November 2004) which showed that telomerase activation in bulk cultures of lymphocytes from HIV patients enhanced HIV-suppressing activity and improved the production of antiviral cytokines in response to HIV-specific stimulation. These results show that telomere shortening in HIV-specific lymphocytes plays a major role in the immune dysfunction seen in late stage HIV-1 disease and that telomerase activation, by enhancing the anti-HIV effects of CD8+ lymphocytes, is potentially a therapy for treating patients with HIV disease.

Our approach to the therapeutic use of telomerase activation in HIV/AIDS and other chronic diseases is based upon small molecule telomerase activators we have identified (TAT0001 and TAT0002). We are currently testing these telomerase activating drugs for enhancement of antiviral activity in lymphocytes from HIV patients. In March 2005, our collaborators presented data showing that our two small molecule telomerase activators, TAT0001 and TAT0002 (formerly GRN139951 and GRN140665), activated telomerase *in vitro* in cytotoxic T-cells taken from HIV/AIDS donors. Moreover, the compounds increased the proliferative capacity and secretion of gamma Interferon (a virus-fighting molecule) when these treated cells were exposed to HIV peptides.

In 2005, we formed a new joint venture company, TA Therapeutics, Ltd. (TAT), with the Biotechnology Research Corporation (BRC) of Hong Kong. TAT will conduct research and commercially develop products that utilize telomerase activator drugs to restore the regenerative and functional capacity of cells in various organ systems that have been impacted by senescence, injury or chronic disease. TAT is owned 50% by us and 50% by BRC, a company established by the Hong Kong University of Science and Technology, our research partner in the development of telomerase activator drugs.

Human Embryonic Stem Cell Therapies

We are developing cell-based therapeutics for several diseases based on differentiated cells derived from hESCs, including neural cells for spinal cord injury and Parkinson's disease, cardiomyocytes for heart disease, pancreatic islet β cells for diabetes, osteoblasts for osteoporosis, chondrocytes for osteoarthritis and

hematopoietic cells for blood diseases and to prevent immune rejection of the other cell types. We have developed proprietary methods to grow, maintain and scale up undifferentiated hESCs using feeder cell-free, chemically defined culture medium, before differentiating them into therapeutically relevant cells. We are now testing six different therapeutic cell types in animal models. In four of these cell types, we have preliminary results suggesting efficacy as evidenced by durable engraftment or functional improvements of the treated animals. After completion of these studies, we expect to begin one or more Phase 1 clinical trials, most likely including treatment for spinal cord injury. We own or have licenses to intellectual property covering core inventions and critical enabling technology in this field.

Oligodendrocytes for Spinal Cord Injury and Dopaminergic Neurons for Parkinson's Disease. The major neural cells of the central nervous system typically do not regenerate after injury. If a nerve cell is damaged due to disease or injury, there is no treatment at present to restore lost function. Millions of patients worldwide suffer from injury to the nervous system or disorders associated with its degeneration. Over one million Americans suffer from Parkinson's disease, a neurological disorder caused by the progressive degeneration of specific cells within the brain that control certain motor functions. In the case of spinal cord injuries, patients are often left partly or wholly paralyzed because nerve and supporting cells in the spinal cord have been damaged and cannot regenerate. Such patients are permanently disabled, often institutionalized and may require life support.

Embryonic stem cell-derived neural cells have been used by researchers to treat nervous system disorders in animal models. In earlier work, researchers showed that mouse embryonic stem cells could be stimulated to differentiate into neural cells which, when transplanted into mice with neurological disorders, helped to restore normal function. In the case of spinal cord injuries, neural cells derived from animal embryonic stem cells and injected into the spinal cord injury site produced significant recovery of the animal's ability to move and bear weight.

To apply those observations to humans, we have now derived both oligodendrocytes and dopaminergic neurons from hESCs in culture and have begun testing them in animal models to determine whether they can restore normal neural function. In our collaboration with researchers at the University of California, Irvine, we have shown proof-of-concept in spinal cord-injured rats which showed significant functional improvement after receiving transplants of hESC-derived oligodendrocyte progenitors. These data were published in May 2005 in the *Journal of Neuroscience*.

Cardiomyocytes for Heart Disease. Heart muscle cells (cardiomyocytes) do not regenerate during adult life. When heart muscle is damaged by injury or decreased blood flow, functional contracting heart muscle is replaced with nonfunctional scar tissue. Congestive heart failure, a common consequence of heart muscle or valve damage, affects approximately 5.0 million people in the United States. This year, it is estimated that about 1.2 million people will have a heart attack, which is the primary cause of heart muscle damage.

We can potentially treat heart disease by using cardiomyocytes derived from hESCs. Researchers have demonstrated proof-of-concept of our approach in mice. Mouse embryonic stem cells have been used to derive mouse cardiomyocytes. When injected into the hearts of recipient adult mice, the cardiomyocytes repopulated the heart tissue and stably integrated into the muscle tissue of the adult mouse heart. In human medicine, it is therefore possible that hESC-derived cardiomyocytes could be developed for cellular transplantation therapy in humans suffering from congestive heart failure and the damage caused by heart attacks. We have derived human cardiomyocytes from hESCs and observed their normal contractile function and response to cardiac drugs. We have transplanted these cells into animal models, and to date the cells appear to be engrafting and integrating with the myocardium in uninjured animals, as well as restoring cardiac function in animals with acutely or recently induced myocardial infarctions.

Islet Cells for Diabetes. It is estimated that there are as many as one million Americans suffering from Type 1 Diabetes (Insulin Dependent Diabetes Mellitus). Normally, certain cells in the pancreas, called the islet β cells, produce insulin which promotes the uptake of the sugar glucose by cells in the human body. Degeneration of pancreatic islet β cells results in a lack of insulin in the bloodstream which results in diabetes. Although diabetics can be treated with daily injections of insulin, these injections enable only intermittent glucose control. As a result, patients with diabetes suffer chronic degeneration of many organs, including the eye, kidney, nerves and blood vessels. In some cases, patients with diabetes have been treated with islet β cell transplantation. However,

poor availability of suitable sources for islet β cell transplantation and the complications of the required co-administration of immunosuppressive drugs make this approach impractical as a treatment for the growing numbers of individuals suffering from diabetes.

We have derived insulin-producing cells (i.e. similar to pancreatic islet β cells) from hESCs and are working to improve the yield of islet cells and characterize their secretion of insulin in response to glucose. We began transplanting the islets to animal models of diabetes and early results show prolonged survival of cells in the engrafted animals and the detection of human insulin in their blood.

Osteoblasts for Osteoporosis and Non-Union Bone Fractures. Osteoporosis, or loss of bone density, is a common condition associated with aging and hormonal changes in post-menopausal women. In addition to skeletal deformities, back pain and loss of height, the disease causes over 1.5 million fractures per year in the United States alone. These fractures often occur after minimal trauma and if severe, as in hip fracture, carry average mortality rates as high as 24% for patients aged 50 and over. Nearly one in five hip fracture patients ends up in a nursing home. Total health care costs for osteoporosis and its complications are estimated at \$18 billion per year in the United States.

The primary cause of the disease is metabolic bone loss (mediated by osteoclasts \square cells which resorb bone) that is incompletely compensated by new bone formation (mediated by osteoblasts \square cells which form new bone). Osteoblast activity declines over the human lifespan and fails to keep pace with the increasing activity of osteoclasts, resulting in progressive loss of bone density leading to fracture, pain and deformity.

We have made osteoblasts from hESCs and are now conducting preclinical tests in animals. If these preclinical tests are successful, we may test the cells in patients with non-union fractures (fractures of the long bones of the leg or arm that do not heal) or in patients with severe refractory osteoporosis.

Chondrocytes for Osteoarthritis. Osteoarthritis, or Degenerative Joint Disease, is an extremely common condition characterized by degradation of cartilage in joints, often accompanied by bone remodeling and bone overgrowth at the affected joints. The disease affects an estimated 21.0 million adults in the United States, mostly after age 45. The disease has many causes, but the end result is a structural degradation of joint cartilage and a failure of chondrocytes (cartilage-forming cells) to repair the degraded cartilage collagen matrix. We plan to derive chondrocytes from hESCs and, if *in vitro* and animal testing results are positive, we will test these cells in patients with osteoarthritis by injecting them directly into their affected joints.

Hematopoietic Cells for Hematologic Diseases and to Prevent Immune Rejection. The hematologic system (the circulating cells of blood) is one of the rare tissues of the human body that can replenish itself throughout life. The critical importance of the blood cells and the many diseases that can affect those cells have caused the emergence of an entire subspecialty in medicine: hematology \square the study of blood and its diseases.

One of the most complex and impactful areas of hematology is bone marrow transplantation, now used to treat patients with bone marrow failure, leukemia, lymphoma, myeloma and solid tumors such as breast cancer. The most common indications for the procedure are: (i) failure of bone marrow stem cells to produce a particular blood cell type(s), such as aplastic anemia (a deficiency of mature circulating blood cells), (ii) infiltration of bone marrow by tumor cells which displace the marrow and cause deficiencies of mature circulating blood cells, or (iii) side effects of chemotherapy or radiotherapy used for cancer treatment which is toxic to bone marrow stem cells. Although complex and expensive, the use of bone marrow transplantation is increasing worldwide. A major unresolved problem in the procedure is the lack of availability of suitably matched marrow donors, which severely limits the numbers of patients who can undergo the transplant.

We have derived hematopoietic stem cells from hESCs, and tests of these cells in animal models of bone marrow transplantation show engraftment of the cells. If these animal tests and other *in vitro* tests continue to be positive, hematopoietic stem cells produced from hESCs may find use not only in hematopoietic transplantation therapies, but also in procedures designed to prevent immune rejection of other hESC-derived transplanted cells. This approach could potentially eliminate the need for immunosuppressive drugs in patients who receive transplants of hESC-based therapeutic cells.

Products for Research and Development

Immortalized Cells for Research. Scientists study specific cells from targeted tissues in order to understand their biological function. For these studies, cells are usually isolated from tissue and maintained in culture. The progressive changes in biological activity, morphology and proliferation as a result of normal cell aging in tissue culture potentially limit the utility of these cells in serial experiments and long-term research. Because of these limitations, most research laboratories utilize transformed cell lines for their studies. Cells can be transformed by using viruses which ultimately cause the cells to grow indefinitely in culture. However, such immortalized cell lines have abnormal characteristics compared to non-transformed cells. For this reason, they are not good models of normal tissue in the human body.

Telomerase-immortalized cells may be ideal for use in biological research because these cells proliferate indefinitely and function in culture in the same manner as the normal, mortal cells from which they were derived. Moreover, telomerase-immortalized cells can function in the body to form normal tissue and their capacity to differentiate into mature tissue is maintained. The ability of these cells to maintain normal physical and biological characteristics while retaining proliferative capacity allows them to be a constant source of cells for repeat and long-term studies of the function of cells both in culture and in the body. Telomerase-immortalized cells can be used to study any of the normal biological pathways in cells and can be used to screen for factors which influence the appropriate function of those cells. Moreover, cells taken from diseased tissues which are then telomerase-immortalized in culture can be used to explore the mechanism of the disease process and to develop interventions to prevent or treat that disease.

We are making telomerase-immortalized cell lines commercially available to the research market and to companies for basic research and for use in drug discovery and biologics production applications. We have granted royalty-bearing licenses to the American Type Culture Collection and Cambrex BioSciences under which these organizations will produce and sell telomerase-immortalized cells for both academic research and commercial drug discovery.

hESC-Derived Hepatocytes for Drug Screening and Toxicology. Three of the major hurdles of pharmaceutical drug development are: (i) identifying compounds with activity in diseased tissue; (ii) understanding the metabolism and biodistribution of the compound; and (iii) determining the potential toxic side effects of the compound. Undesirable activity of a compound being evaluated as a drug candidate in any one of these areas can impact the development and commercialization of the drug. The earlier in development that a compound is found to have undesirable characteristics, the faster these characteristics can be potentially corrected. This potentially translates into reduced costs and time in drug development, and less harmful exposure to patients in clinical trials.

Many prospective new drugs fail in clinical trials because of toxicity to the liver or because of poor uptake, distribution or elimination of the active compound in the human body. Much of the efficacy and safety of a drug will depend on how that drug is metabolized into an active or inactive form, and on the toxic metabolites that might be generated in the process. Hepatocytes, the major cells of the liver, metabolize most compounds and thereby can be used to predict many pharmacological characteristics of a drug.

There are no completely effective systems available today to accurately predict the metabolism or toxicity of a compound in human livers. Rat and mouse metabolism models only approximate human metabolism. The development of several drugs has been terminated late in human clinical trials because rodent systems utilized early in the development process failed to predict that the drug would be toxic to humans. Human hepatocyte cell lines available today do not have the same attributes as their normal counterparts in the body and must be transformed in order to maintain their proliferative capacity in culture. Access to fresh primary human liver tissue for use in toxicity studies is very limited and substantial variability can be observed depending on the individual donor, the time and process of collection and the culture conditions for the experiments.

We are developing methods to derive standardized functional hepatocytes (liver cells) from hESCs to address the significant unmet need for a reliable predictor of the metabolism, biodistribution and toxicity of drug development candidates. If we are successful, these cells would provide a consistent source of normal human

liver cells that can reliably predict how a new drug will affect the livers of the people who take it. We believe that an unlimited supply of human hepatocytes, which retain normal drug-metabolizing enzyme activity, would address one of the largest bottlenecks in new drug research and accelerate the drug development process. In addition, the availability of hepatocytes from numerous individuals would allow a more thorough understanding of the effects of a drug candidate on a specific individual, promoting development of the field of pharmacogenomics - the study of how a compound's activity varies with an individual's genetic make-up. Our scientists have succeeded in demonstrating that hepatocyte-like cells derived from hESCs express normal markers of hepatocyte function, including Phase 1 and Phase 2 drug-metabolizing enzymes. We have been awarded a U.S. patent covering human hepatocytes derived from hESCs and a second U.S. patent covering the use of hESC-derived hepatocytes for drug screening. We have formed a three-way collaboration between us, the Roslin Institute in Edinburgh, Scotland, and CXR BioSciences in Dundee, Scotland, to develop and commercialize hESC-derived hepatocytes for drug screens.

Nuclear Transfer: Agriculture/Xenotransplantation/Biologics

Nuclear transfer is a method for producing animals whose nuclear genetic material is derived solely from a donor cell from an individual animal (clones). In this process, the nucleus containing the chromosomal DNA is removed from the animal egg cell and subsequently replaced with a nucleus from a donor somatic (non-reproductive) cell. Fusion between the resulting egg cell and the donor somatic nucleus results in a new cell which gains a complete set of chromosomes derived entirely from the donor nucleus. Mitochondrial DNA, providing some of the genes for energy production, resides outside the nucleus and is provided by the egg. After a brief culture period that enables the reconstituted egg cell to initiate embryonic development, the early embryo is implanted into the uterus of a female animal, where it can fully develop and result in the live birth of a cloned offspring animal. The offspring is essentially a genetic clone of (genetically identical to) the animal from which the donor nucleus was obtained.

In early 1997, Dr. Ian Wilmut and his colleagues at the Roslin Institute were the first to demonstrate, with the birth of Dolly the sheep, that the nucleus of an adult cell can be transferred to an enucleated egg to create cloned offspring. The birth of Dolly was significant because it demonstrated the ability of egg cell cytoplasm, the portion of the egg outside of the nucleus, to reprogram an adult somatic nucleus. Reprogramming enables the adult somatic cell nucleus to express all the genes required for the full embryonic development of the animal. In addition to sheep, the technique has been used to clone mice, rats, goats, cattle, rabbits, cats and pigs from donor cells and enucleated eggs from each respective animal species. In 1999, we acquired Roslin Bio-Med Ltd., a commercial subsidiary of the Roslin Institute, and an exclusive license to the use of nuclear transfer technology for the creation of cloned animals.

Agriculture. Our nuclear transfer technology can be used for applications in agriculture that could improve livestock by producing unlimited numbers of genetically identical animals with superior commercial qualities. Such applications can be extended to major agricultural sectors, such as beef, dairy, pork and poultry, to provide large numbers of animals with superior characteristics of disease resistance, longevity, growth rate or product quality.

10

Transgenic Animals. Our nuclear transfer technology can be applied to clone animals that have been genetically engineered to produce proteins for human therapeutic or industrial use. For example, herds which carry the genes to make human antibodies could be cloned, thereby allowing for the large-scale production of therapeutic antibodies or vaccines.

Xenotransplantation. Our nuclear transfer technology can be used for applications in xenotransplantation to create animals whose cells, tissues or organs could be used in human organ transplantation settings. This approach could be used either as a bridge to human organ transplantation or as a long-term therapy.

In previous years, we granted a number of licenses to our nuclear transfer technology to companies who are utilizing it for applications in agriculture and production of biologicals. In 2005, following successes in three patent interference proceedings, we formed a new joint venture company, stART Licensing, Inc. (stART), with Exeter Life Sciences Inc. stART is exclusively focused on managing and licensing intellectual property rights for animal cloning, including our nuclear transfer technology and rights conveyed to stART by Exeter Life Sciences.

We received an upfront license payment when stART was created and own 49.9% of stART. We will be entitled to a proportionate share of any revenues distributed by stART. We have retained all rights for use of the technology in human cells.

Patents and Proprietary Technology

A broad intellectual property portfolio of issued patents and pending patent applications supports our product development and out-licensing activities. We currently own or have licensed over 130 issued or allowed United States patents, 200 granted or accepted foreign patents and 440 patent applications that are pending around the world.

Our policy is to seek appropriate patent protection for inventions in our principal technology platforms □ telomerase, embryonic stem cells and nuclear transfer □ as well as ancillary technologies that support these platforms or otherwise provide a competitive advantage to us. We achieve this by filing patent applications for discoveries made by our scientists, as well as those that we make in conjunction with our scientific collaborators and strategic partners. Typically, although not always, we file patent applications in the United States and internationally through the Patent Cooperation Treaty. In addition, where appropriate we try to obtain licenses from other organizations to patent filings that may be useful in advancing our scientific and product development programs.

Our telomerase platform is the mainstay of our own oncology program and it serves as the basis for other product opportunities. Our patent portfolio includes over 100 issued or allowed United States patents, 150 granted or accepted foreign patents and over 150 patent applications pending worldwide relating to our telomerase product opportunities. The foundational patents include those covering the cloned genes that encode the RNA component (hTR) and the catalytic protein component (hTERT) of human telomerase. Related issued and pending patents cover cells that are immortalized by expression of recombinant hTERT, cancer diagnostics based on detecting the expression of telomerase in cancer cells, the use of hTERT as a cancer vaccine, the use of the hTERT promoter to power cancer-killing genes and viruses, and telomerase inhibitors for use as cancer therapeutics. We own issued patents that cover the sequences of GRN163 and GRN163L, as well as patents covering the chemistry that is used to build these oligonucleotides. We have a co-exclusive license to the dendritic cell-loading technology used in our telomerase cancer vaccine. Recently filed patent applications covering the telomerase-activating compounds TAT0001 and TAT0002 that we discovered in collaboration with our colleagues at the Hong Kong University of Science and Technology have been exclusively licensed to our joint venture company, TAT, for therapeutic applications.

Our human embryonic stem cell platform is protected by patents rights that we either own or have licensed. The patents that we have licensed include foundational hESC patents that arose from work that we funded at the University of Wisconsin-Madison. We have also filed patent applications to protect technologies developed by our scientists in our ongoing efforts to develop products based on hESCs. By way of example, these patent applications cover technologies that we believe will facilitate the commercial-scale production of hESCs, such as methods for growing the cells without the need for cell feeder layers. Patent applications that we own or have licensed also cover cell types that can be made from hESCs, including hepatocytes (liver cells), cardiomyocytes (heart muscle cells), neural cells (nerve cells, including dopaminergic neurons and oligodendrocytes), chondrocytes (cartilage cells), pancreatic islet cells, osteoblasts (bone cells) and hematopoietic cells (blood-forming cells). Currently our portfolio includes over 230 patent applications pending around the world covering various aspects of our stem cell

technology. Examples of granted stem cell patents that we own include U.S. Patents Nos. 6,458,589 and 6,506,574 relating to hESC-derived hepatocytes; 6,800,480 relating to the feeder-free growth of hESCs; and 6,833,269 covering methods of producing neural cells from hESCs.

Our third technology platform, nuclear transfer, is protected in part by the patent rights that we acquired in 1999 with the acquisition of Roslin Bio-Med, which we now operate as Geron Bio-Med. Five United States patents have now issued for this technology, and 38 foreign patents have been granted or accepted. In addition, we have more than 45 pending patent applications worldwide relating to nuclear transfer, arising both from the acquired patent rights and subsequent research that we funded at the Roslin Institute. As discussed above, these patent

rights are now a major asset of stART Licensing, Inc., the joint venture company that we created in 2005 for the purpose of managing and licensing intellectual property rights for animal cloning.

We endeavor to monitor worldwide patent filings by third parties that are relevant to our business. Based on this monitoring, we may determine that an action is appropriate to protect our business interests. Such actions may include the filing of oppositions against the grant of a patent in overseas jurisdictions, and the filing of a request for the declaration of an interference with a U.S. patent application or issued patent. Similarly, third parties may take similar actions against our patents. By way of example, in 2005 we were involved in interference proceedings that we had initiated at the U.S. Patent and Trademark Office involving patents and patent applications for nuclear transfer technology; judgments in those actions were entered in our favor, and the other party has appealed the judgments in U.S. District Court. We are currently also involved in patent opposition proceedings before the European Patent Office, the Australian Patent Office and the New Zealand Patent Office for patents relating to nuclear transfer, telomerase, and hESC-related technologies.

Government Regulation

Regulation by governmental authorities in the United States and other countries is a significant factor in the development, manufacture and marketing of our proposed products and in our ongoing research and product development activities. The nature and extent to which such regulation applies to us will vary depending on the nature of any products which may be developed by us. We anticipate that many, if not all, of our proposed products will require regulatory approval by governmental agencies prior to commercialization. In particular, human therapeutic products are subject to rigorous preclinical and clinical testing and other approval procedures of the FDA, and similar regulatory authorities in European and other countries. Various governmental statutes and regulations also govern or influence testing, manufacturing, safety, labeling, storage and recordkeeping related to such products and their marketing. The process of obtaining these approvals and the subsequent compliance with appropriate statutes and regulations require the expenditure of substantial time and money, and there can be no guarantee that approvals will be granted.

FDA Approval Process

Prior to commencement of clinical studies involving humans, preclinical testing of new pharmaceutical products is generally conducted on animals in the laboratory to evaluate the potential efficacy and safety of the product candidate. The results of these studies are submitted to the FDA as a part of an IND application, which must become effective before clinical testing in humans can begin. Typically, human clinical evaluation involves a time-consuming and costly three-phase process. In Phase 1, clinical trials are conducted with a small number of people to assess safety and to evaluate the pattern of drug distribution and metabolism within the body. In Phase 2, clinical trials are conducted with groups of patients afflicted with a specific disease in order to determine preliminary efficacy, optimal dosages and expanded evidence of safety. (In some cases, an initial trial is conducted in diseased patients to assess both preliminary efficacy and preliminary safety and patterns of drug metabolism and distribution, in which case it is referred to as a Phase 1-2 trial.) In Phase 3, large-scale, multi-center, comparative trials are conducted with patients afflicted with a target disease in order to provide enough data to demonstrate the efficacy and safety required by the FDA. The FDA closely monitors the progress of each of the three phases of clinical testing and may, at its discretion, re-evaluate, alter, suspend, or terminate the testing based upon the data which have been accumulated to that point and its assessment of the risk/benefit ratio to the patient. Monitoring of all aspects of the study to minimize risks is a continuing process. All adverse events must be reported to the FDA.

The results of the preclinical and clinical testing on a non-biologic drug and certain diagnostic drugs are submitted to the FDA in the form of a New Drug Application (NDA) for approval prior to commencement of commercial sales. In the case of vaccines or gene and cell therapies, the results of clinical trials are submitted as a Biologics License Application (BLA). In responding to a NDA or BLA, the FDA may grant marketing approval, request additional information or refuse to approve if the FDA determines that the application does not satisfy its regulatory approval criteria. There can be no assurance that approvals will be granted on a timely basis, if at all, for any of our proposed products.

European and Other Regulatory Approval

Whether or not FDA approval has been obtained, approval of a product by comparable regulatory authorities in Europe and other countries will likely be necessary prior to commencement of marketing the product in such countries. The regulatory authorities in each country may impose their own requirements and may refuse to grant an approval, or may require additional data before granting it, even though the relevant product has been approved by the FDA or another authority. As with the FDA, the regulatory authorities in the European Union (EU) and other developed countries have lengthy approval processes for pharmaceutical products. The process for gaining approval in particular countries varies, but generally follows a similar sequence to that described for FDA approval. In Europe, the European Committee for Proprietary Medicinal Products provides a mechanism for EU-member states to exchange information on all aspects of product licensing. The EU has established a European agency for the evaluation of medical products, with both a centralized community procedure and a decentralized procedure, the latter being based on the principle of licensing within one member country followed by mutual recognition by the other member countries.

Other Regulations

We are also subject to various United States federal, state, local and international laws, regulations and recommendations relating to safe working conditions, laboratory and manufacturing practices and the use and disposal of hazardous or potentially hazardous substances, including radioactive compounds and infectious disease agents, used in connection with our research work. We cannot accurately predict the extent of government regulation which might result from future legislation or administrative action.

Scientific Consultants

We have consulting agreements with a number of leading academic scientists and clinicians. These individuals serve as key consultants or as members of [clinical focus group panels] with respect to our product development programs and strategies. They are distinguished scientists and clinicians with expertise in numerous scientific fields, including embryonic stem cells, nuclear transfer and telomere and telomerase biology, as well as developmental biology, cellular biology and molecular biology.

We use consultants to provide us with expert advice and consultation on our scientific programs and strategies, as well as on the ethical aspects of our work. They also serve as important contacts for us throughout the broader scientific community.

We retain each consultant according to the terms of a consulting agreement. Under such agreements, we pay them a consulting fee and reimburse them for out-of-pocket expenses incurred in performing their services for us. In addition, some consultants hold options to purchase our common stock, subject to the vesting requirements contained in the consulting agreements. Our consultants are employed by institutions other than ours, and therefore may have commitments to, or consulting or advisory agreements with, other entities or academic institutions that may limit their availability to us.

Executive Officers of the Company

The following table sets forth certain information with respect to our executive officers:

Thomas B. Okarma, Ph.D., M.D., has served as our President, Chief Executive Officer and a member of our board of directors since July 1999. He is also a director of Geron Bio-Med Limited, a United Kingdom company and our wholly-owned subsidiary, TA Therapeutics, Ltd, a Hong Kong company and a joint venture between us and Biotechnology Research Corporation of Hong Kong. From May 1998 until July 1999, Dr. Okarma was the Vice President of Research and Development. From December 1997 until May 1998, Dr. Okarma was Vice President of Cell Therapies. Dr. Okarma currently serves on the Board of BIO and is Chairman of the Board of Overseers of Dartmouth Medical School. From 1985 until joining us, Dr. Okarma, the scientific founder of Applied Immune Sciences, Inc., served initially as Vice President of Research and Development of Applied Immune Sciences and then as chairman, chief executive officer and a director of Applied Immune Sciences, until 1995 when it was

acquired by Rhone-Poulenc Rorer. Dr. Okarma was a Senior Vice President at Rhone-Poulenc Rorer from the time of the acquisition of Applied Immune Sciences until December 1996. From 1980 to 1985, Dr. Okarma was a member of the faculty of the Department of Medicine at Stanford University School of Medicine. Dr. Okarma holds a A.B. from Dartmouth College and a M.D. and Ph.D. from Stanford University.

David L. Greenwood has served as our Chief Financial Officer, Treasurer and Secretary since August 1995 and our Executive Vice President since January 2004. He is also a director of Geron Bio-Med Limited, our joint ventures TA Therapeutics, Ltd. and stART Licensing, Inc., and Clone International and XenoTrans, Ltd., both Australian companies. From August 1999 until January 2004, Mr. Greenwood also served as our Senior Vice President of Corporate Development. From April 1997 until August 1999, Mr. Greenwood served as our Vice President of Corporate Development. He also serves on the Board of Regents for Pacific Lutheran University. From 1979 until joining us, Mr. Greenwood held various positions with J.P. Morgan & Co. Incorporated, an international banking firm. Mr. Greenwood holds a B.A. from Pacific Lutheran University and a M.B.A. from Harvard Business School.

David J. Earp, J.D., Ph.D., has served as our Senior Vice President of Business Development and Chief Patent Counsel since May 2004. He is also a director of TA Therapeutics, Ltd. and stART Licensing, Inc. From October 1999 until May 2004, Dr. Earp served as our Vice President of Intellectual Property. From 1992 until joining us in June 1999, Dr. Earp was with the intellectual property law firm of Klarquist Sparkman Campbell Leigh and Whinston, LLP where his practice focused on biotechnology patent law. Dr. Earp holds a B.Sc. in microbiology from the University of Leeds, England, a Ph.D. from the biochemistry department of The University of Cambridge, England, and conducted postdoctoral research at the University of California at Berkeley/U.S.D.A. Plant Gene Expression Center. He received his J.D. from the Northwestern School of Law of Lewis and Clark College in Portland, Oregon.

Jane S. Lebkowski, Ph.D., has served as our Senior Vice President of Regenerative Medicine since January 2004. From August 1999 until January 2004, Dr. Lebkowski served as our Vice President of Regenerative Medicine. From April 1998 until August 1999, Dr. Lebkowski served as our Senior Director, Cell and Gene Therapies. From 1986 until joining us in 1995, Dr. Lebkowski served as Vice President, Research and Development at Applied Immune Sciences. In 1995, Applied Immune Sciences was acquired by Rhone-Poulenc Rorer, at which time Dr. Lebkowski was appointed Vice President, Discovery & Product Development. Dr. Lebkowski received a B.S. in chemistry and biology from Syracuse University and received her Ph.D. from Princeton University.

14

Calvin B. Harley, Ph.D., has served as our Chief Scientific Officer since July 1996. From May 1994 until July 1996, Dr. Harley served as our Vice President of Research. From April 1993 until May 1994, Dr. Harley served as our Director, Cell Biology. From 1989 until joining us, Dr. Harley was an Associate Professor of Biochemistry at McMaster University, and from 1982 to 1989, was an Assistant Professor of Biochemistry at McMaster University. Dr. Harley was also an executive of the Canadian Association on Gerontology, Division of Biological Sciences from 1987 to 1991. Dr. Harley holds a B.S. from the University of Waterloo and a Ph.D. from McMaster University, and conducted postdoctoral work at the University of Sussex and the University of California at San Francisco.

Melissa A. Kelly Behrs has served as our Vice President of Oncology since January 2003. From April 2002 until January 2003, Ms. Behrs served as our Vice President of Corporate Development. From April 2001 until April 2002, Ms. Behrs served as our General Manager of Research and Development Technologies. Ms. Behrs joined us in November 1998 as Director of Corporate Development. From 1990 to 1998, Ms. Behrs worked at Genetics Institute, Inc., serving initially as Assistant Treasurer and then as Associate Director of Preclinical Operations where she was responsible for all business development, regulatory, and project management activities for the Preclinical Development function. Ms. Behrs received a B.S. in Accounting from Boston College and an M.B.A. in finance from Babson College.

Employees

As of December 31, 2005, we had 90 full-time employees of whom 33 hold Ph.D. degrees and 14 hold other advanced degrees. Of our total workforce, 65 employees were engaged in, or directly support, our research and

development activities and 25 employees were engaged in business development, finance and administration. We also retain outside consultants. None of our employees are covered by a collective bargaining agreement, nor have we experienced work stoppages. We consider relations with our employees to be good.

ADDITIONAL FACTORS THAT MAY AFFECT FUTURE RESULTS

Our business is subject to various risks, including those described below. You should carefully consider the following risk factors, together with all of the other information included in this Form 10-K. Any of these risks could materially adversely affect our business, operating results and financial condition.

Our business is at an early stage of development.

Our business is at an early stage of development, in that we do not yet have product candidates in late-stage clinical trials or on the market. One of our product candidates, a telomerase therapeutic cancer vaccine, is being studied in a Phase 1-2 clinical trial being conducted by an academic institution. We are just beginning clinical testing in a Phase 1-2 clinical trial of our lead anti-cancer compound, GRN163L, in patients with chronic lymphocytic leukemia. We have no other product candidates in clinical testing. Our ability to develop product candidates that progress to and through clinical trials is subject to our ability to, among other things:

- succeed in our research and development efforts;
- select therapeutic compounds or cell therapies for development;
- obtain required regulatory approvals;
- manufacture product candidates; and
- collaborate successfully with clinical trial sites, academic institutions, physician investigators, clinical research organizations and other third parties.

Potential lead drug compounds or other product candidates and technologies will require significant preclinical and clinical testing prior to regulatory approval in the United States and other countries. Our product candidates 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 commercial use. In addition, our product candidates may not prove to be more effective for treating disease or injury than current therapies. Accordingly, we may have to delay or abandon efforts to research, develop or obtain regulatory approval to market our product candidates. In addition, we will need to determine whether any of our potential products can be manufactured in commercial quantities at an acceptable cost. Our research and development efforts may not result in a product that can be approved by regulators or

marketed successfully. Because of the significant scientific, regulatory and commercial milestones that must be reached for any of our development programs to be successful, any program may be abandoned, even after we have expended significant resources on the program, such as our investments in telomerase technology and human embryonic stem cells, which could cause a sharp drop in our stock price.

The science and technology of telomere biology and telomerase, human embryonic stem cells and nuclear transfer are relatively new. There is no precedent for the successful commercialization of therapeutic product candidates based on our technologies. These development programs are therefore particularly risky. In addition, we, our licensees or our collaborators must undertake significant research and development activities to develop product candidates based on our technologies, which will require additional funding and may take years to accomplish, if ever.

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

We have incurred operating losses every year since our operations began in 1990. As of December 31, 2005, our accumulated deficit was approximately \$369.6 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 revenues from our licensing arrangements. We may be unsuccessful in entering into any new corporate collaboration or license agreement that results 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.

While we receive royalty revenue from licenses of diagnostic product candidates, telomerase-immortalized cell lines and other licensing activities, we do not currently expect to receive sufficient royalty revenues from these licenses to sustain our operations. Our ability to continue or expand our research activities and otherwise sustain our operations is dependent on our ability, alone or with others, to, among other things, manufacture and market therapeutic products.

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. Even if we do become profitable, we cannot assure you that we would be able to sustain or increase profitability on a quarterly or annual basis.

We will need additional capital to conduct our operations and develop our products, and our ability to obtain the necessary funding is uncertain.

We will require substantial capital resources in order to conduct our operations and develop our candidates, and we cannot assure you that our existing capital resources, proceeds from our recent public offering, interest income and equipment financing arrangements will be sufficient to fund our current and 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 in 2006 and beyond;
- the magnitude and scope of our research and development programs;
- the progress we make in our research and development programs and in preclinical development and clinical trials;
- our ability to establish, enforce and maintain strategic arrangements for research, development, clinical testing, manufacturing and marketing;
- the number and type of product candidates that we pursue;
- the time and costs involved in obtaining regulatory approvals; and
- the costs involved in preparing, filing, prosecuting, maintaining, defending and enforcing patent claims.

We do not have any committed sources of capital. 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. 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. Additional equity financings, if we obtain them, could result in

significant dilution to stockholders. Further, in the event that additional funds are obtained 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 or eliminate one or more of our programs, any of which could have a material adverse effect on our business.

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

We will need to receive regulatory approval for any product candidates before they may be marketed and distributed. Such approval will require, among other things, completing carefully controlled and well-designed clinical trials demonstrating the safety and efficacy of each product candidate. This process is lengthy, expensive and uncertain. We have no experience as a company in conducting large-scale, late stage clinical trials, and our experience with early-stage clinical trials with small numbers of patients is limited. Such trials would require either additional financial and management resources, or reliance on third-party clinical investigators, clinical research organizations (CROs) or consultants. Relying on third-party clinical investigators or CROs may force us to encounter delays that are outside of our control.

We also do not currently have marketing and distribution capabilities for our product candidates. Developing an internal sales and distribution capability would be an expensive and time-consuming process. We may enter into agreements with third parties that would be responsible for marketing and distribution. However, these third parties may not be capable of successfully selling any of our product candidates.

Because we or our collaborators must obtain regulatory approval to market our products in the United States and other countries, we cannot predict whether or when we will be permitted to commercialize our products.

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.

The regulatory process, particularly for biopharmaceutical product candidates like ours, is uncertain, can take many years and requires the expenditure of substantial resources. 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. Biological drugs and non-biological drugs are rigorously regulated. In particular, human pharmaceutical therapeutic product candidates are subject to rigorous preclinical and clinical testing and other requirements by the FDA in the United States and similar health authorities in other countries in order to demonstrate safety and efficacy. 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. We may never obtain regulatory approval to market our product candidates.

Data obtained from preclinical and clinical activities is susceptible to varying interpretations that could delay, limit or prevent regulatory agency approvals. In addition, delays or rejections may be encountered as a result of changes in 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. 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 or in collaboration with us. If we obtain regulatory agency approval for a new product, this approval may entail limitations on the indicated uses for which it can be marketed that could limit the potential commercial use of the product.

Furthermore, 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 sale by us or our collaborators of any commercially viable product will be subject to government regulation from several standpoints, 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 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 manufacture, distribution, sales and marketing; and
- criminal prosecution.

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

Entry into clinical trials with one or more product candidates may not result in any commercially viable products.

We may never generate revenues from product sales because of a variety of risks inherent in our business, including the following risks:

- clinical trials may not demonstrate the safety and efficacy of our product candidates;
- completion of clinical trials may be delayed, or costs of clinical trials may exceed anticipated amounts;
- we may not be able to obtain regulatory approval of our products, or may experience delays in obtaining such approvals;
- we may not be able to manufacture our product candidates economically on a commercial scale;
- we and any licensees of ours may not be able to successfully market our products;
- physicians may not prescribe our product candidates, or patients or third party payors may not accept such product candidates;
- others may have proprietary rights which prevent us from marketing our products; and

- competitors may sell similar, superior or lower-cost products.

With respect to our telomerase cancer vaccine product candidate, our clinical testing has been limited to early-stage testing for a small number of patients. The results of this testing may not be indicative of successful outcomes in later stage trials. We are just beginning clinical testing for our Phase 1-2 clinical trial of our telomerase inhibitor compound, GRN163L. This is the first clinical trial for this product and no results have been received. We have not commenced clinical testing for any other product candidate.

18

Restrictions on the use of human embryonic stem cells, political commentary and the ethical, legal and social implications of research involving human embryonic stem cells could prevent us from developing or gaining acceptance for commercially viable products based upon such stem cells and adversely affect the market price of our common stock.

Some of our most important programs involve the use of stem cells that are derived from human embryos. The use of human embryonic stem cells gives rise to ethical, legal and social issues regarding the appropriate use of these cells. Our research related to human embryonic stem cells may become the subject of adverse commentary or publicity, which could significantly harm the market price for our common stock.

Some political and religious groups have voiced opposition to our technology and practices. We use stem cells derived from human embryos that have been created for *in vitro* fertilization procedures but are no longer desired or suitable for that use and are donated with appropriate informed consent for research use. Many research institutions, including some of our scientific collaborators, have adopted policies regarding the ethical use of human embryonic tissue. These policies may have the effect of limiting the scope of research conducted using human embryonic stem cells, thereby impairing our ability to conduct research in this field.

In addition, the United States government and its agencies have until recently refused to fund research which involves the use of human embryonic tissue. President Bush announced on August 9, 2001 that he would permit federal funding of research on human embryonic stem cells using the limited number of embryonic stem cell lines that had already been created, but relatively few federal grants have been made so far. The President's Council on Bioethics will monitor stem cell research, and the guidelines and regulations it recommends may include restrictions on the scope of research using human embryonic or fetal tissue. Certain states are considering, or have in place, legislation relating to stem cell research, including California whose voters approved Proposition 71 to provide state funds for stem cell research in November 2004. It is not yet clear what, if any, effect such state actions may have on our ability to commercialize stem cell products. In the United Kingdom and other countries, the use of embryonic or fetal tissue in research (including the derivation of human embryonic stem cells) is regulated by the government, whether or not the research involves government funding.

Government-imposed restrictions with respect to use of embryos or human embryonic stem cells in research and development could have a material adverse effect on us, including:

- harming our ability to establish critical partnerships and collaborations;
- delaying or preventing progress in our research and development; and
- causing a decrease in the price of our stock.

Impairment of our intellectual property rights may adversely affect the value of our technologies and product candidates and limit our ability to pursue their development.

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. 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 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.

For example, the European Patent Convention prohibits the granting of European patents for inventions that concern "uses of human embryos for industrial or commercial purposes." The European Patent Office is presently interpreting this prohibition broadly, and is applying it to reject patent claims that pertain to human embryonic stem cells. However, this broad interpretation is being challenged through the European Patent Office appeals system. As a result, we do not yet know whether or to what extent we will be able to obtain European patent protection for our human embryonic stem cell technologies in Europe. 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 are unsuccessful in obtaining and enforcing patents, our business would be negatively impacted.

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.

Where several parties seek patent protection for the same technology, the U.S. 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. Moreover, parties that receive an adverse decision in an interference can lose important patent rights. Our pending patent applications, or our issued patents, may be drawn into interference proceedings which may delay or prevent the issuance of patents, or result in the loss of issued patent rights. If more groups become engaged in scientific research related to telomerase biology and/or embryonic stem cells, the number of patent filings by such groups and therefore the risk of our patents or applications being drawn into interferences may increase.

The interference process can also be used to challenge a patent that has been issued to another party. For example, we recently were party to two interferences declared by the U.S. Patent Office at our request. These interferences involved two of our pending applications relating to nuclear transfer technology and two issued patents, held by the University of Massachusetts (U. Mass) and licensed to Advanced Cell Technology, Inc. (ACT) of Worcester, Massachusetts. We requested these interferences in order to clarify our patent rights to this technology and to facilitate licensing to companies wishing to utilize this technology in animal cloning. The Board of Patent Appeals and Interferences issued final judgments in each of these cases, finding in both instances that all of the claims in the U. Mass patents in question were unpatentable, and upholding the patentability of Geron's pending claims. These judgments effectively invalidated the two U. Mass patents. Both judgments have been appealed by ACT in the U.S. District Court for the District of Columbia. We have also filed requests for interference with other U. Mass patents in the same field. As in any legal proceeding, the outcome of these interferences and the appeals is uncertain. In March 2002, an interference was declared involving one of our nuclear transfer patent applications and a patent application held by Infigen Inc. That interference was resolved in 2004 with a final judgment in our favor; that judgment was not appealed.

Outside of the United States, certain jurisdictions, such as Europe, New Zealand and Australia, permit oppositions to be filed against the granting of patents. 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 filed an opposition to a European patent granted to GemVax AS, a Norwegian company, relating to the use of telomerase peptides for the treatment and prophylaxis of cancer. GemVax was acquired in 2005 by Pharmexa, a Danish company. Pharmexa has announced plans to pursue a telomerase-targeted cancer vaccine. GemVax/Pharmexa has filed an opposition to a European patent granted to us relating to telomerase, which includes claims to the use of telomerase in cancer vaccines. We are involved in other patent oppositions in Europe, Australia and New Zealand, both as the opposing party and the party whose patent is being opposed. Successful challenges to our patents through opposition proceedings could result in a loss of patent rights in the relevant jurisdiction(s). If we are unsuccessful in the oppositions we bring against the patents of other parties, we may be subject to litigation, or otherwise prevented from commercializing potential products in the relevant jurisdiction, or may be required to obtain licenses to those patents or develop or obtain alternative technologies,

any of which could harm our business. As more groups become engaged in scientific research and product development in the areas of telomerase biology and/or embryonic stem cells, the risk of our patents being challenged through patent oppositions may increase.

Furthermore, if interferences, oppositions or other challenges to our patent rights 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 certain products, which could materially harm our business.

20

Patent litigation may also be necessary to enforce patents issued or licensed to us or to determine the scope and validity of our proprietary rights or the proprietary rights of others. We may not be successful in any patent litigation. Patent litigation can be extremely expensive and time-consuming, even if the outcome is favorable to us. An adverse outcome in a patent litigation, patent opposition, patent interference, or any other proceeding in a court or patent office could subject our business to significant liabilities to other parties, require disputed rights to be licensed from other parties or require us to cease using the disputed technology, any of which could severely harm our business.

If we fail to meet our obligations under license agreements, we may lose our rights to key technologies on which our business depends.

Our business depends on several critical technologies that are based in part on patents licensed from third parties. 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 our obligations under a license agreement, 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. During the period of any such litigation our ability to carry out the development and commercialization of potential products could be significantly and negatively affected. If our license rights were restricted or ultimately lost, our ability to continue our business based on the affected technology platform would be severely adversely affected.

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

Our business may bring us into conflict with our licensees, licensors, or others with whom we have contractual or other business relationships, or with our competitors or others whose interests differ from ours. 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. That litigation is likely to be expensive and may require a significant amount of management's time and attention, at the expense of other aspects of our business. 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.

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 potential products.

Our commercial success depends 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 potential products or may be required to obtain licenses to those patents or other proprietary rights or develop or obtain alternative technologies. We have obtained licenses from several universities and companies for technologies that we anticipate incorporating into our potential products, and are in negotiation for licenses to other technologies. We may not be able to obtain a license to patented technology on commercially favorable terms, or at all. If we do not obtain a necessary license, we may need to redesign our technologies or obtain rights to alternate technologies, the research and adoption of which could cause delays in

product development. In cases where we are unable to license necessary technologies, we could be prevented from developing certain potential products. Our failure to obtain alternative technologies or a license to any technology that we may require to research, develop or commercialize our product candidates would significantly and negatively affect our business.

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 assure you 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.

21

We depend on our collaborators and joint venture partners to help us develop and test our product candidates, and our ability to develop and commercialize potential products 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 corporate or joint venture partners, licensors, licensees and others. We are dependent upon the subsequent success of these other parties in performing their respective responsibilities and the continued cooperation of our partners. By way of examples: Cell Genesys is principally responsible for developing oncolytic virus therapeutics utilizing the telomerase promoter; Roche is responsible for developing cancer diagnostics using our telomerase technology; and Duke is responsible for conducting the current clinical trials of our dendritic cell-based telomerase vaccine. Our collaborators may not cooperate with us or perform their obligations under our agreements with them. We cannot control the amount and timing of our collaborators' resources that will be devoted to activities related to our collaborative agreements with them. Our collaborators may choose to pursue existing or alternative technologies in preference to those being developed in collaboration with us.

Under agreements with collaborators and joint venture partners, we may rely significantly on these parties to, among other activities:

- conduct research and development activities in conjunction with us;
- design and conduct advanced clinical trials in the event that we reach clinical trials;
- fund research and development activities with us;
- manage and license certain patent rights;
- pay us fees upon the achievement of milestones; and
- market with us any commercial products that result from our collaborations or joint ventures.

The development and commercialization of potential products will be delayed if collaborators or joint venture partners fail to conduct these activities in a timely manner or at all. For example, we recently terminated our collaboration with Dendreon Corporation because of its failure to meet diligence requirements in our agreement. In addition, our collaborators 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 the agreements, or if our collaborators breach or terminate their collaborative agreements with us, our business may be materially harmed.

Our reliance on the activities of our non-employee 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 at academic and other institutions, some of whom conduct research at our request, and other consultants with expertise in clinical development strategy or other matters. These consultants 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, 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 many academic and other research institutions throughout the world. These research facilities may have commitments to other commercial and non-commercial 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.

We also rely on other companies for certain process development, manufacturing or other technical scientific work, especially with respect to our telomerase inhibitor and telomerase vaccine programs. We have contracts with these companies that specify the work to be done and results to be achieved, but we do not have direct control over their personnel or operations.

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.

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 scientific staff. Competition for personnel is intense and we may be unable to retain our current personnel or attract or assimilate other highly qualified management and scientific personnel in the future. 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.

We also rely on consultants and advisors who assist us in formulating our research and development and clinical strategy. We face intense competition for qualified individuals from numerous pharmaceutical, biopharmaceutical and biotechnology companies, as well as academic and other research institutions. We may not be able to attract and retain these individuals on acceptable terms. Failure to do so could materially harm our business.

Potential restrictions or a ban on nuclear transfer could prevent us from benefiting financially from our research in this area.

Our nuclear transfer technology could theoretically be used to produce human embryos for the derivation of embryonic stem cells (sometimes referred to as "therapeutic cloning") or cloned humans (sometimes referred to as "reproductive cloning"). The U.S. Congress has recently considered legislation that would ban human therapeutic cloning as well as reproductive cloning. Such a bill was passed by the House of Representatives, although not by the Senate. The July 2002 report of the President's Council on Bioethics recommended a four-year moratorium on therapeutic cloning. If human therapeutic cloning is restricted or banned, we will not be able to benefit from the scientific knowledge that would be generated by research in that area. Further, if regulatory bodies were to restrict or ban the sale of food products from cloned animals, our financial participation in the businesses of our nuclear transfer licensees or the value of our ownership in our joint venture, stART Licensing, could be significantly harmed.

Our products are likely to be expensive to manufacture, and they may not be profitable if we are unable to significantly reduce the costs to manufacture them.

Our telomerase inhibitor compound, GRN163L, and our hESC-based products are likely to be significantly more expensive to manufacture than most other drugs currently on the market today. Oligonucleotides are relatively large molecules with complex chemistry, and the cost of manufacturing even a short oligonucleotide

like GRN163L is considerably greater than the cost of making most small-molecule drugs. Our present manufacturing processes are conducted at a relatively small scale and are at an early stage of development. We hope to substantially reduce manufacturing costs through process improvements, as well as through scale increases. If we are not able to do so, however, and, depending on the pricing of the potential product, the profit margin on the telomerase inhibitor may be significantly less than that of most drugs on the market today. Similarly, we currently make differentiated cells from hESCs on a laboratory scale, at a high cost per unit of measure. The cell-based therapies we are developing based on hESCs will probably require large quantities of cells. We continue to develop processes to scale up production of the cells in a cost-effective way. We may not be able to charge a high enough price for any cell therapy product we develop, even if it is safe and effective, to make a profit. If we are unable to realize significant profits from our potential product candidates, our business would be materially harmed.

Some of our competitors may develop technologies that are superior to or more cost-effective than ours, which may impact the commercial viability of our technologies and which may significantly 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 and human embryonic stem cell therapies, including the study of telomeres, telomerase, human embryonic stem cells, and nuclear transfer. In addition, other products and therapies that could compete directly 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. According to public data from the FDA and NIH, there are more than 200 approved anti-cancer products on the market in the United States, and several thousand in clinical development.

23

Many of the pharmaceutical companies developing and marketing these competing products (including GlaxoSmithKline, Bristol-Myers Squibb Company and Novartis AG, among others) have significantly greater financial resources and expertise than we do in:

- research and development;
- manufacturing;
- preclinical and clinical testing;
- obtaining regulatory approvals; and
- marketing.

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 we do. Most significantly, competitive products may render any product candidates that we develop obsolete, which would negatively impact our business and ability to sustain operations.

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 potential products is alleged to have injured subjects or patients. This risk exists for product candidates tested in human clinical trials as well as potential products that are sold commercially. 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 increasing