ADVANCED CELL TECHNOLOGY, INC.
Form POS AM
December 10, 2010

AS FILED WITH THE SECURITIES AND EXCHANGE COMMISSION ON DECEMBER 10, 2010
REGISTRATION NO. 333-162435

UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
Washington, D.C. 20549
POST EFFECTIVE AMENDMENT No. 1

FORM S-1

REGISTRATION STATEMENT UNDER THE SECURITIES ACT OF 1933

ADVANCED CELL TECHNOLOGY, INC.
(Exact name of registrant as specified in its charter)

Delaware	2834	87-0656515
(State or jurisdiction of incorporation or organization)	(Primary Standard Industrial Classification Code Number)	(I.R.S. Employer Identification No.)

381 Plantation Street
Worcester, MA 01605
(510) 748-4900
(Address and telephone number of principal executive offices)

William M. Caldwell, IV
381 Plantation Street
Worcester, MA 01605
(510) 748-4900

(Name, address and telephone number of agent for service)

Copies to:

Thomas A. Rose, Esq.
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61 Broadway, 32 nd Floor
New York, New York 10006
(212) 930-9700
(212) 930-9725 (fax)

Approximate date of commencement of proposed sale to the public: From time to time after the effective date of this registration statement.

If any of the securities being registered on this Form are to be offered on a delayed or continuous basis pursuant to Rule 415 under the Securities Act of 1933 check the following box. x

If this Form is filed to register additional securities for an offering pursuant to Rule 462(b) under the Securities Act, please check the following box and list the Securities Act registration statement number of the earlier effective registration statement for the same offering. o

(COVER CONTINUES ON FOLLOWING PAGE)

If this Form is a post-effective amendment filed pursuant to Rule 462(c) under the Securities Act, check the following box and list the Securities Act registration statement number of the earlier effective registration statement for the same offering. o

If this Form is a post-effective amendment filed pursuant to Rule 462(d) under the Securities Act, check the following box and list the Securities Act registration statement number of the earlier effective registration statement for the same offering. o

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, or a smaller reporting company. See the definitions of “large accelerated filer,” “accelerated filer” and “smaller reporting company” in Rule 12b-2 of the Exchange Act. (Check one):

oLarge accelerated filer
xAccelerated filer
oNon-accelerated filer
oSmaller reporting company

*Note Regarding Registration Fees:

All fees for the registration of the shares registered on this Post Effective Amendment No. 1 were paid upon the initial filing of the previously filed registration statement covering such shares. No additional shares are registered and accordingly, no additional fees are payable.

The registrant hereby amends this Registration Statement on such date or dates as may be necessary to delay its effective date until the registrant shall file a further amendment which specifically states that this Registration Statement shall thereafter become effective in accordance with Section 8(a) of the Securities Act of 1933 or until this Registration Statement shall become effective on such date as the Commission, acting pursuant to said Section 8(a), may determine.

The information in this prospectus is not complete and may be changed. We may not sell these securities until the registration statement filed with the Securities and Exchange Commission is effective. This prospectus is not an offer to sell these securities and is not soliciting an offer to buy these securities in any state where the offer or sale is not permitted.

PRELIMINARY PROSPECTUS, SUBJECT TO COMPLETION, DATED DECEMBER 10, 2010

ADVANCED CELL TECHNOLOGY, INC.
165,947,548 Shares of Common Stock

This prospectus relates to the public offering of up to 165,947,548 shares of common stock, par value $.001 per share, of Advanced Cell Technology, Inc. (“Common Stock”), by the selling stockholders.

The selling stockholders may sell Common Stock from time to time in the principal market on which the stock is traded at the prevailing market price or in negotiated transactions.

We will not receive any of the proceeds from the sale of Common Stock by the selling stockholders. We will pay the expenses of registering these shares.

Investment in the Common Stock involves a high degree of risk. You should consider carefully the risk factors beginning on page 8 of this prospectus before purchasing any of the shares offered by this prospectus.

Our common stock is quoted on the Over-the-Counter Bulletin Board and trades under the symbol "ACTC". The last reported sale price of our common stock on the Over-the-Counter Bulletin Board on December 8, 2010, was approximately $.15 per share.

We may amend or supplement this prospectus from time to time by filing amendments or supplements as required. You should read the entire prospectus and any amendments or supplements carefully before you make your investment decision.

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

The date of this prospectus is_____, 2010.

ADVANCED CELL TECHNOLOGY, INC.

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You may only rely on the information contained in this prospectus or that we have referred you to. We have not authorized anyone to provide you with different information. This prospectus does not constitute an offer to sell or a solicitation of an offer to buy any securities other than the common stock offered by this prospectus. This prospectus does not constitute an offer to sell or a solicitation of an offer to buy any common stock in any circumstances in which such offer or solicitation is unlawful. Neither the delivery of this prospectus nor any sale made in connection with this prospectus shall, under any circumstances, create any implication that there has been no change in our affairs since the date of this prospectus or that the information contained by reference to this prospectus is correct as of any time after its date.

EXPLANATORY NOTE

This registration statement is filed by the registrant as a post-effective amendment on Form S-1 to update the Registration Statement on Form S-1 previously filed by the registrant with the Securities and Exchange Commission on October 13, 2009 and declared effective by the Securities and Exchange Commission on October 23, 2009. The registrant is not seeking to register any additional shares pursuant to this Registration Statement.

Prospectus Summary

This summary highlights information contained elsewhere in this prospectus. You should read the entire prospectus carefully, including, the section entitled "Risk Factors" before deciding to invest in our common stock.

About Us

Advanced Cell Technology, Inc., a Delaware corporation (the “Company”, “we”, “us” or “our”) is a biotechnology company focused on developing and commercializing human embryonic and adult stem cell technology in the emerging field of regenerative medicine.

We were incorporated in Nevada under the name Two Moon Kachinas Corp. on May 18, 2000. On December 30, 2004, we filed an amendment to our articles of incorporation to change our corporate name to A.C.T. Holdings, Inc. On January 31, 2005, we completed the acquisition of Advanced Cell Technology, Inc., a Delaware corporation (prior to the Reincorporation (as defined below), “ACT”), pursuant to the terms of an Agreement and Plan of Merger dated January 3, 2005. As a result of the transaction, we terminated our kachina doll business and succeeded to the business operations and research efforts of ACT in the field of biotechnology. On June 17, 2005, we filed an amendment to our articles of incorporation to change our corporate name to Advanced Cell Technology, Inc. On November 18, 2005, we consummated a merger with and into our wholly-owned subsidiary ACT (the “Reincorporation”). As a result of the Reincorporation, we became a Delaware corporation.

We have acquired, developed and maintain a portfolio of patents and patent applications that form the proprietary base for our research and development efforts in the area of embryonic and adult stem cell research. We believe that our intellectual property portfolio is one of the strongest in the field. Our team includes some of the world's leading scientists in the field of stem cell research and development, and experts in conducting clinical trials. We believe our technology base, combined with our know-how, provides us with a strong competitive advantage and will facilitate the successful development and commercialization of products for use in the treatment of a wide array of chronic, degenerative diseases and in regenerative repair of a variety of acute diseases, such as trauma, myocardial infarction and burns.

Our belief that our intellectual property represents one of the strongest portfolios in the field is supported by:

• The early and consistent pace of filing, and the breadth of the large number of filings in the portfolio.
• The relative immaturity of this field of study.
• The limited number of truly competitive portfolios of intellectual property.

Regenerative medicine is a new and emerging field of study involving development of medical therapies based on advances in stem cell and nuclear transfer technology. We have developed and maintain a broad intellectual property (IP) portfolio, with ownership or exclusive licensing of over 28 issued patents and over 170 patent applications in the

field of regenerative medicine and related areas. This significant volume of patents and patent licenses has been developed in the short span of approximately the past eight to eleven years.

Although we have strong competitors in this field, they are limited in number. We believe our intellectual property portfolio compares favorably with those of our competition based upon its size, focus and filing dates. With respect to the focus of our human embryonic stem cell portfolio, we believe that somatic cell nuclear transfer and chromatin transfer are, and will prove to be, one of the technological keys to successful development of stem cell therapies (see "Cellular Reprogramming," below). In addition, we have succeeded in deriving human embryonic cell lines without destroying the donor embryo through our proprietary single blastomere derivation technology. We own or have a license to numerous other technologies for dealing with transplant rejection, including means of activating oocytes during nuclear transfer, parthenogenesis, transdifferentiation, and dedifferentiation. Our intellectual property also includes patent rights and applications for specific applications of stem cell technology in producing retinal pigment epithelium (RPE), hemangioblasts, myoblast stem cells and numerous methods and compositions for the use of these technologies and derived cells in retinal disease, heart disease, immunodeficiency estates and cancer.

We have secured Food and Drug Administration (FDA) clearance to proceed to a Phase II Clinical Trial for its Myoblast program for the treatment of heart failure, and the trial is currently being developed. We believe that the company's myoblast technology has demonstrated that a myoblast transplantation treatment is feasible and safe in clinical trials conducted to date and that the technology could address the large market potential presented by heart failure.

Our research efforts to date in human embryonic technologies are at the level of clinical trials, pre-clinical development and basic research. November of 2009 we filed an Investigational New Drug (IND) Application with the US Food and Drug Administration (FDA) to initiate a Phase I/II multicenter study using embryonic stem cell derived retinal cells to treat patients with Stargardt's Macular Dystrophy (SMD), as part of our RPE program. These retinal cells were developed using our proprietary blastomere derivation techniques. In November 2010 the IND Application was cleared so that the Company can initiate a Phase I/II multicenter clinical trial using retinal cells derived from human embryonic stem cells (hESCs) to treat patients with Stargardt's Macular Dystrophy (SMD),

Our Hemangioblast program for the treatment of Diseases and Disorders of Circulatory and Vascular System is in preclinical development. These precursor cells derived from human embryonic stem (ES) cells can be used to achieve vascular repair in animal models of vascular injury.

We are focused on leveraging our key assets, including our intellectual property, our scientific team, our facilities and our capital, to accelerate the advancement of our stem cell technologies. In addition, we continue to pursue strategic collaborations with members of academia, industry and foundations to further accelerate the pace of our research efforts.

Our executive offices are located at 381 Plantation Street, Worcester, MA 01605. Our website is located at www.advancedcell.com, and our telephone number is 508-756-1212.

About This Offering

On July 29, 2009, we entered into a consent, amendment and exchange agreement (the "Consent and Amendment") with holders (the "Holders") of the Company's outstanding convertible debentures in the aggregate outstanding principal amount of $20,353,878 (the "Debentures") and warrants to purchase an aggregate of 192,148,119 shares of the Company's common stock (the "Warrants"), which were issued in private placements that closed in September 2005, August 2006, August 2007, and March 2008.

Simultaneously with the execution of Consent and Amendment, and as a condition of the Consent and Amendment, the Company and the Holders entered into a Standstill and Forbearance Agreement (the "Forbearance Agreement"). Pursuant to the Forbearance Agreement:

- The Company acknowledged certain defaults that have occurred under the Debentures and documents executed in connection therewith (the "Transaction Documents").

- The Holders agreed to forbear from exercising their rights and remedies under the Debentures and the Transaction Documents.

- The obligation of the Holders to forbear from exercising their rights and remedies under the Debentures and the Transaction Documents will terminate on the earliest of (i) the date, if any, on which a petition for relief under the date, if any, on which a petition for relief under the United States Bankruptcy Code or any similar state or Canadian law is filed by or against the Company or any of its subsidiaries or (ii) the date the Forbearance Agreement is otherwise terminated or expires, it being understood that the Holders holding 67% of the then outstanding principal amount of the Debentures shall have the right to terminate the Forbearance Agreement on 3 business days' prior notice to the Company.

- The Company provided a general release in favor of the Holders.

Pursuant to the Consent and Amendment:

- The Company agreed to issue to each Holder in exchange for such Holder's Debenture an amended and restated Debenture (the "Amended and Restated Debentures") in a principal amount equal to the principal amount of such Holder's Debenture times 1.35 minus any interest paid thereon.

- The conversion price under the Amended and Restated Debentures was reduced to $0.10, subject to further adjustment as provided therein (including for stock splits, stock dividends, and certain subsequent equity sales).

- The maturity date under the Amended and Restated Debentures was extended until December 31, 2010.

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The Amended and Restated Debentures bear interest at the rate of 12% per annum, which shall accrete to, and increase the principal amount payable upon maturity.

- The Amended and Restated Debentures will begin to amortize on September 25, 2009 at a rate of 6.25% of the outstanding principal amount per month, valued at the lesser of the then conversion price and 90% of the average volume weighted average price for the ten prior trading days.

- The Warrants were amended and restated (as amended and restated, the "Amended and Restated Warrants").

- The exercise price under the Amended and Restated Warrants was reduced to $0.10 subject to further adjustment as provided therein (including for stock splits, stock dividends, and certain subsequent equity sales).

- The termination date under the Amended and Restated Warrants was extended until June 30, 2014.

- Each Holder agreed not to convert more than 20% of such Holder's outstanding principal amount of Amended and Restated Debenture in any month during the period from September 1, 2009 through January 31, 2010, provided, however, that this limitation will terminate if (i)(a) the volume weighted average price of the Company's common stock for each of 5 consecutive trading days is greater than $0.15 per share, and (b) the trading volume on such days exceeds 7,500,000 shares per trading day, or (ii)(a) the volume weighted average price for any one trading day is greater than $0.20 per share and (b) the trading volume on such day exceeds 10,000,000 shares.

- The Company agreed to amend the Company's articles of incorporation to increase the number of authorized shares of Common Stock (the "Amendment"). The Amendment was effected in accordance with the Consent and Amendment on September 15, 2009.

- The Company agreed to increase the number of shares available for issuance under the Company's 2005 Stock Incentive Plan to 129,000,000 shares, by September 18, 2009. The amendment to the 2005 Stock Incentive Plan was timely effected on September 10, 2009.

- The Holders agreed to waive any event of default under the Debentures resulting solely from (i) any adjustment to the conversion price of the Debenture and exercise price of the Warrants that would result from the reduction of the conversion price of certain securities of the Company pursuant to the Stipulation of Settlement, dated March 11, 2009, between the Company and Alpha Capital, and (ii) any failure by the Company to reserve such number of authorized but unissued shares of common stock issuable upon conversion of the Debentures and exercise of the Warrants.

In connection with the foregoing, the Company relied upon the exemption from securities registration afforded by Rule 506 of Regulation D as promulgated by the United States Securities and Exchange Commission under the Securities Act of 1933, as amended (the "Securities Act") and/or Section 4(2) of the Securities Act. No advertising or general solicitation was employed in offering the securities. The offerings and sales were made to a limited number of persons, all of whom were accredited investors, and transfer was restricted by the Company in accordance with the requirements of the Securities Act of 1933.

This prospectus includes 165,947,548 shares of the Company's common stock issuable upon exercise of the Amended and Restated Warrants.

Estimated use of proceeds

This prospectus relates to shares of our Common Stock that may be offered and sold from time to time by the selling stockholders. We will not receive any of the proceeds resulting from the sale of Common Stock by the selling stockholders. We will receive the sale price of any Common Stock we sell to the selling stockholders upon exercise of warrants for cash. If all of the warrants the underlying are shares of which are included in this prospectus are exercised for cash, we will receive $16,594,755. There is no assurance that any of the warrants will be exercised. We expect to use the proceeds received from the exercise of the warrants, if any, for general working capital purposes.

Summary of the Shares offered by the Selling Stockholders

The following is a summary of the shares being offered by the selling stockholders:

Common Stock offered by the selling stockholders	Up to 165,947,548 shares of Common Stock issuable upon exercise of warrants.
Common Stock outstanding prior to the offering	1,139,314,444 (1)
Common Stock to be outstanding after the offering	1,305,261,992 assuming the full exercise of the warrants the underlying shares of which are included in this prospectus.
Use of proceeds	We will not receive any proceeds from the sale of the Common Stock hereunder.

(1) Based upon the total number of issued and outstanding shares as of December 9, 2010.

RISK FACTORS

An investment in the Company's common stock involves a high degree of risk. You should carefully consider the risks described below as well as other information provided to you in this prospectus, including information in the section of this document entitled "Forward Looking Statements." The risks and uncertainties described below are not the only ones facing us. Additional risks and uncertainties not presently known to us or that we currently believe are immaterial may also impair our business operations. If any of the following risks actually occur, our business, financial condition or results of operations could be materially adversely affected, the value of our common stock could decline, and you may lose all or part of your investment.

Risks Relating to the Company's Early Stage of Development

Our business is at an early stage of development and we may not develop therapeutic products that can be commercialized.

We do not yet have any product candidates in late-stage clinical trials or in the marketplace. Our potential therapeutic products will require extensive preclinical and clinical testing prior to regulatory approval in the United States and other countries. We may not be able to obtain regulatory approvals (see REGULATORY RISKS), enter clinical trials for any of our products, or commercialize any products. Our therapeutic and 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 use. Any product using any of our technology may fail to provide the intended therapeutic benefits, or achieve therapeutic benefits equal to or better than the standard of treatment at the time of testing or production. In addition, we will need to determine whether any of our potential products can be manufactured in commercial quantities or at an acceptable cost. Our efforts may not result in a product that can be or will be marketed successfully. Physicians may not prescribe our products, and patients or third party payors may not

accept our products. For these reasons we may not be able to generate revenues from commercial production.

We have limited clinical testing, regulatory, manufacturing, marketing, distribution and sales capabilities which may limit our ability to generate revenues.

Due to the relatively early stage of our therapeutic products, regenerative medical therapies and stem cell therapy-based programs, we have not yet invested significantly in regulatory, manufacturing, marketing, distribution or product sales resources. We cannot assure you that we will be able to invest or develop any of these resources successfully or as expediently as necessary. The inability to do so may inhibit or harm our ability to generate revenues or operate profitably.

We have a history of operating losses and we may not achieve future revenues or operating profits.

We have generated modest revenue to date from our operations. Historically we have had net operating losses each year since our inception. As of September 30, 2010, we have an accumulated deficit of $139,559,589 and a stockholders' deficit of $27,391,204. We incurred a net loss of $12,983,519 for the nine ended September 30, 2010. We incurred a net loss of $36,758,208 and $33,903,513 for the years ended December 31, 2009 and 2010. We have limited current potential sources of income from licensing fees and the Company does not generate significant revenue outside of licensing non-core technologies. Additionally, even if we are able to commercialize our technologies or any products or services related to our technologies it is not certain that they will result in revenue or profitability.

We are in the early stages of a strategic joint venture which may slow, impede or result in the termination of potential therapeutic products whose development is now the responsibility of the partnership and not solely of the Company.

In 2008, we entered into a new partnership (CHA) and as a result, we are subject to 3rd party interests (see RISKS RELATED TO THIRD PARTY RELIANCE) and control issues, not the least of which relates to certain of our employees no longer being exclusively managed by us. We therefore could be at risk for losing key employees. Additionally substantial operating and working capital will be required and there is no assurance that CHA Biotech Co. limited, partner in our joint venture, will be able to fund their requirements.

We have a limited operating history on which investors may evaluate our operations and prospects for profitable operations.

If we continue to suffer losses as we have in the past, investors may not receive any return on their investment and may their entire investment. Our prospects must be considered speculative in light of the risks, expenses and difficulties frequently encountered by companies in their early stages of development, particularly in light of the uncertainties relating to the new, competitive and rapidly evolving markets in which we anticipate we will operate. To attempt to address these risks, we must, among other things, further develop our technologies, products and services, successfully implement our research, development, marketing and commercialization strategies, respond to competitive developments and attract, retain and motivate qualified personnel. A substantial risk is involved in investing in us because, as an early stage company we have fewer resources than an established company, our management may be more likely to make mistakes at such an early stage, and we may be more vulnerable operationally and financially to any mistakes that may be made, as well as to external factors beyond our control.

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Risks Relating to Technology

We are dependent on new and unproven technologies.

Our risks as an early stage company are compounded by our heavy dependence on emerging and sometimes unproven technologies. If these technologies do not produce satisfactory results, our business may be harmed. Additionally some of our technologies and significant potential revenue sources involve ethically sensitive and controversial issues which could become the subject of legislation or regulations that could materially restrict our operations and, therefore, harm our financial condition, operating results and prospects for bringing our investors a return on their investment.

Over the last two years we have narrowed our potential product pool to focusing on our Retinal Program as well as the applications of our I.P.S. technology, which will limit our revenue sources.

Our human embryonic stem cell program is in the IND phase; our myoblast program has received FDA clearance to proceed to Phase II human clinical trials; our Hemangioblast program is in the preclinical development stage, and the Company doesn't foresee having a commercial product until clinical trials are completed. We have identified the programs that we are working to get into the clinical testing phase. We have narrowed the scope of our developmental focus to our Retinal Program and those related therapies, our blastomere program and, as part of our recently established partnership with CHA, developing products in the hemangioblast/immunology arena (see DESCRIPTION OF BUSINESS Section of prospectus). As a result of our narrower product focus we have fewer revenue sources. Our emphasis on fewer programs may hinder our results if these programs are not successful. Although our adult stem cell myoblast program has been approved for a Phase II clinical trial, we have suspended that program indefinitely due to a lack of funding. As a result of our emphasis on our retinal program, our hemangioblast program and our blastomere program, our ability to progress as a company is more significantly hinged on the success of fewer programs and thus, a setback or adverse development relating to any one of them could potentially have a significant impact on share price as well as an inhibitory effect on our ability to raise additional capital. Additionally, we partially rely on nuclear transfer and embryonic stem cell technologies that we may not be able to successfully develop, which will prevent us from generating revenues, operating profitably or providing investors any return on their investment. We cannot guarantee that we will be able to successfully develop our retinal, hemangioblast, blastomere, nuclear transfer technology, embryonic stem cell or myoblast technologies or that such development will result in products or services with any significant commercial utility. We anticipate that the commercial sale of such products or services, and royalty/licensing fees related to our technology, would be our primary sources of revenues. If we are unable to develop our technologies, investors will likely lose their entire investment in us.

We may not be able to commercially develop our technologies and proposed product lines, which, in turn, would significantly harm our ability to earn revenues and result in a loss of investment.
Our ability to commercially develop our technologies will be dictated in large part by forces outside our control which cannot be predicted, including, but not limited to, general economic conditions, the success of our research and pre-clinical and field testing, the availability of collaborative partners to finance our work in pursuing applications of nuclear transfer technology and technological or other developments in the biomedical field which, due to efficiencies, technological breakthroughs or greater acceptance in the biomedical industry, may render one or more areas of commercialization more attractive, obsolete or competitively unattractive. It is possible that one or more areas of commercialization will not be pursued at all if a collaborative partner or entity willing to fund research and development cannot be located. Our decisions regarding the ultimate products and/or services we pursue could have a significant adverse affect on our ability to earn revenue if we misinterpret trends, underestimate development costs and/or pursue wrong products or services. Any of these factors either alone or in concert could materially harm our

ability to earn revenues or could result in a loss of any investment in us.

If we are unable to keep up with rapid technological changes in our field or compete effectively, we will be unable to operate profitably.

We are engaged in activities in the biotechnology field, which is characterized by extensive research efforts and rapid technological progress. If we fail to anticipate or respond adequately to technological developments, our ability to operate profitably could suffer. We cannot assure you that research and discoveries by other biotechnology, agricultural, pharmaceutical or other companies will not render our technologies or potential products or services uneconomical or result in products superior to those we develop or that any technologies, products or services we develop will be preferred to any existing or newly-developed technologies, products or services.

Risks Related to Intellectual Property

Our business is highly dependent upon maintaining licenses with respect to key technology.

Several of the key patents we utilize are licensed to us by third parties. These licenses are subject to termination under certain circumstances (including, for example, our failure to make minimum royalty payments or to timely achieve development and commercialization benchmarks). The loss of any of such licenses, or the conversion of such licenses to non-exclusive licenses, could harm our operations and/or enhance the prospects of our competitors.

Certain of these licenses also contain restrictions, such as limitations on our ability to grant sublicenses that could materially interfere with our ability to generate revenue through the licensing or sale to third parties of important and valuable technologies that we have, for strategic reasons, elected not to pursue directly. The possibility exists that in the future we will require further licenses to complete and/or commercialize our proposed products. We cannot assure you that we will be able to acquire any such licenses on a commercially viable basis.

Certain of our technology is not protectable by patent.

Certain parts of our know-how and technology are not patentable. To protect our proprietary position in such know-how and technology, we intend to require all employees, consultants, advisors and collaborators to enter into confidentiality and invention ownership agreements with us. We cannot assure you, however, that these agreements will provide meaningful protection for our trade secrets, know-how or other proprietary information in the event of any unauthorized use or disclosure. Further, in the absence of patent protection, competitors who independently develop substantially equivalent technology may harm our business.

Patent litigation presents an ongoing threat to our business with respect to both outcomes and costs.

We have previously been involved in patent interference litigation, and it is possible that further litigation over patent matters with one or more competitors could arise. We could incur substantial litigation or interference costs in defending ourselves against suits brought against us or in suits in which we may assert our patents against others. If the outcome of any such litigation is unfavorable, our business could be materially adversely affected. To determine the priority of inventions, we may also have to participate in interference proceedings declared by the United States Patent and Trademark Office, which could result in substantial cost to us. Without additional capital, we may not have the resources to adequately defend or pursue this litigation.

We may not be able to protect our proprietary technology, which could harm our ability to operate profitably.

The biotechnology and pharmaceutical industries place considerable importance on obtaining patent and trade secret protection for new technologies, products and processes. Our success will depend, to a substantial degree, on our ability to obtain and enforce patent protection for our products, preserve any trade secrets and operate without infringing the proprietary rights of others. We cannot assure you that:

§ we will succeed in obtaining any patents in a timely manner or at all, or that the breadth or degree of protection of any such patents will protect our interests,

§ the use of our technology will not infringe on the proprietary rights of others,

- § patent applications relating to our potential products or technologies will result in the issuance of any patents or that, if issued, such patents will afford adequate protection to us or not be challenged invalidated or infringed, and
  - § patents will not issue to other parties, which may be infringed by our potential products or technologies.
- § we will continue to have the financial resources necessary to prosecute our existing patent applications, pay maintenance fees on patents and patent applications, or file patent applications on new inventions.

We are aware of certain patents that have been granted to others and certain patent applications that have been filed by others with respect to nuclear transfer technologies. The fields in which we operate have been characterized by significant efforts by competitors to establish dominant or blocking patent rights to gain a competitive advantage, and by considerable differences of opinion as to the value and legal legitimacy of competitors' purported patent rights and the technologies they actually utilize in their businesses.

Patents obtained by other persons may result in infringement claims against us that are costly to defend and which may limit our ability to use the disputed technologies and prevent us from pursuing research and development or commercialization of potential products.

A number of other pharmaceutical, biotechnology and other companies, universities and research institutions have filed patent applications or have been issued patents relating to cell therapies, stem cells, and other technologies potentially relevant to or required by our expected products. We cannot predict which, if any, of such applications will issue as patents or the claims that might be allowed. We are aware that a number of companies have filed applications relating to stem cells. We are also aware of a number of patent applications and patents claiming use of stem cells and other modified cells to treat disease, disorder or injury.

If third party patents or patent applications contain claims infringed by either our licensed technology or other technology required to make and use our potential products and such claims are ultimately determined to be valid, there can be no assurance that we would be able to obtain licenses to these patents at a reasonable cost, if at all, or be able to develop or obtain alternative technology. If we are unable to obtain such licenses at a reasonable cost, we may not be able to develop some products commercially. We may be required to defend ourselves in court against allegations of infringement of third party patents. Patent litigation is very expensive and could consume substantial resources and create significant uncertainties. And adverse outcome in such a suit could subject us to significant liabilities to third parties, require disputed rights to be licensed from third parties, or require us to cease using such technology.

We are not in full compliance with some of our license agreements.

We are not in full compliance with some of our licenses (see Our Intellectual Property in the DESCRIPTION OF BUSINESS section of this prospectus) and due to limited financial resources we cannot guarantee that we will regain full compliance status. If we are unable to be in compliance with our license agreements, our business may be harmed.

We may not be able to adequately defend against piracy of intellectual property in foreign jurisdictions.

Considerable research in the areas of stem cells, cell therapeutics and regenerative medicine is being performed in countries outside of the United States, and a number of potential competitors are located in these countries. The laws protecting intellectual property in some of those countries may not provide adequate protection to prevent our competitors from misappropriating our intellectual property. Several of these potential competitors may be further

along in the process of product development and also operate large, company-funded research and development programs. As a result, our competitors may develop more competitive or affordable products, or achieve earlier patent protection or product commercialization than we are able to achieve. Competitive products may render any products or product candidates that we develop obsolete.

Regulatory Risks

We cannot market our product candidates until we receive regulatory approval.

We must comply with extensive government regulations in order to obtain and maintain marketing approval for our products in the United States and abroad. The process of obtaining regulatory approval is lengthy, expensive and uncertain. In the United States, the FDA imposes substantial requirements on the introduction of biological products and many medical devices through lengthy and detailed laboratory and clinical testing procedures, sampling activities and other costly and time-consuming procedures. Satisfaction of these requirements typically takes several years and the time required to do so may vary substantially based upon the type and complexity of the biological product or medical device.

In addition, product candidates that we believe should be classified as medical devices for purposes of the FDA regulatory pathway may be determined by the FDA to be biologic products subject to the satisfaction of significantly more stringent requirements for FDA approval. Any difficulties that we encounter in obtaining regulatory approval may have a substantial adverse impact on our business and cause our stock price to significantly decline.

We cannot assure you that we will obtain FDA or foreign regulatory approval to market any of our product candidates for any indication in a timely manner or at all.

If we fail to obtain regulatory approval of any of our product candidates for at least one indication, we will not be permitted to market our product candidates and may be forced to cease our operations.

Even if some of our product candidates receive regulatory approval, these approvals may be subject to conditions, and we and our third party manufacturers will in any event be subject to significant ongoing regulatory obligations and oversight.

Even if any of our product candidates receives regulatory approval, the manufacturing, marketing and sale of our product candidates will be subject to stringent and ongoing government regulation. Conditions of approval, such as limiting the category of patients who can use the product, may significantly impact our ability to commercialize the product and may make it difficult or impossible for us to market a product profitably. Changes we may desire to make to an approved product, such as cell culturing changes or revised labeling, may require further regulatory review and approval, which could prevent us from updating or otherwise changing an approved product. If our product candidates are approved by the FDA or other regulatory authorities for the treatment of any indications, regulatory labeling may specify that our product candidates be used in conjunction with other therapies.

Once obtained, regulatory approvals may be withdrawn and can be expensive to maintain.

Regulatory approval may be withdrawn for a number of reasons, including the later discovery of previously unknown problems with the product. Regulatory approval may also require costly post-marketing follow-up studies, and failure of our product candidates to demonstrate sufficient efficacy and safety in these studies may result in either withdrawal of marketing approval or severe limitations on permitted product usage. In addition, numerous additional regulatory requirements relating to, among other processes, the labeling, packaging, adverse event reporting, storage, advertising, promotion and record-keeping will also apply. Furthermore, regulatory agencies subject a marketed product, its manufacturer and the manufacturer's facilities to continual review and periodic inspections. Compliance with these regulatory requirements are time consuming and require the expenditure of substantial resources.

If any of our product candidates is approved, we will be required to report certain adverse events involving our products to the FDA, to provide updated safety and efficacy information and to comply with requirements concerning the advertisement and promotional labeling of our products. As a result, even if we obtain necessary regulatory approvals to market our product candidates for any indication, any adverse results, circumstances or events that are subsequently discovered, could require that we cease marketing the product for that indication or expend money, time and effort to ensure full compliance, which could have a material adverse effect on our business.

If our products do not comply with applicable laws and regulations our business will be harmed.

Any failure by us, or by any third parties that may manufacture or market our products, to comply with the law, including statutes and regulations administered by the FDA or other U.S. or foreign regulatory authorities, could result in, among other things, warning letters, fines and other civil penalties, suspension of regulatory approvals and the resulting requirement that we suspend sales of our products, refusal to approve pending applications or supplements to approved applications, export or import restrictions, interruption of production, operating restrictions, closure of the facilities used by us or third parties to manufacture our product candidates, injunctions or criminal prosecution. Any of the foregoing actions could have a material adverse effect on our business.

Our products may not be accepted in the marketplace.

If we are successful in obtaining regulatory approval for any of our product candidates, the degree of market acceptance of those products will depend on many factors, including:

- Our ability to provide acceptable evidence and the perception of patients and the healthcare community, including third party payors, of the positive characteristics of our product candidates relative to existing treatment methods, including their safety, efficacy, cost effectiveness and/or other potential advantages,

- The incidence and severity of any adverse side effects of our product candidates,

- The availability of alternative treatments,

- The labeling requirements imposed by the FDA and foreign regulatory agencies, including the scope of approved indications and any safety warnings,

- Our ability to obtain sufficient third party insurance coverage or reimbursement for our products candidates,

- The inclusion of our products on insurance company coverage policies,

- The willingness and ability of patients and the healthcare community to adopt new technologies,

- The procedure time associated with the use of our product candidates,

- Our ability to manufacture or obtain from third party manufacturers sufficient quantities of our product candidates with acceptable quality and at an acceptable cost to meet demand, and

- Marketing and distribution support for our products.

We cannot predict or guarantee that physicians, patients, healthcare insurers, third party payors or health maintenance organizations, or the healthcare community in general, will accept or utilize any of our product candidates. Failure to achieve market acceptance would limit our ability to generate revenue and would have a material adverse effect on our business. In addition, if any of our product candidates achieve market acceptance, we may not be able to maintain that market acceptance over time if competing products or technologies are introduced that are received more favorably or are more cost-effective.

Risks Related to Domestic Governmental Regulation

Restrictions on the use of human embryonic stem cells, and the ethical, legal and social implications of that research, could prevent us from developing or gaining acceptance for commercially viable products in these areas.

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. In the event that our research related to human embryonic stem cells becomes the subject of adverse commentary or publicity, the market price for our common stock could be significantly harmed. 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.

Despite the rescission of President Bush's Executive order in August 2001 by President Barack Obama in March 2009, the overall effect of new laws drafted by the NIH and put into effect regarding the dropping of restrictions on hES research has yet to be seen or made clear.

While it is unclear whether Federal law continues to restrict the use of federal funds for human embryonic cell research, commonly referred to as hES cell research, there can be no assurance that our operations will not be restricted by any future legislative or administrative efforts by politicians or groups opposed to the development of hES cell technology or nuclear transfer technology. Additionally the executive order does not overturn the Dickey–Wicker Amendment, a 13-year-old ban on federal funding for the actual creation of new stem cell lines, an act that destroys an embryo. In the United States these efforts still must be funded privately or by state governments. Further, there can be no assurance that legislative or administrative restrictions directly or indirectly delaying, limiting or preventing the use of hES technology, nuclear transfer technology, IPS technology, the use of human embryonic material, or the sale, manufacture or use of products or services derived from nuclear transfer technology or other hES technology will not be adopted or extended in the future.

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. We are or may become subject to various federal, state and local laws, regulations and recommendations relating to safe working conditions, laboratory and manufacturing practices, the experimental use of animals and the use and disposal of hazardous or potentially hazardous substances used in connection with our research and development work. The preclinical testing and clinical trials of the products that we or our collaborators develop are subject to extensive government regulation that may prevent us from creating commercially viable products from our discoveries. In addition, the sale by us or our collaborators of any commercially viable product will be subject to government regulation from several standpoints, including manufacturing, advertising and promoting, selling and marketing, labeling, and distributing.

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. The regulatory process, particularly in the biotechnology field, is uncertain, can take many years and requires the expenditure of substantial resources. Biological drugs and non-biological drugs are rigorously regulated. In particular, proposed 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. We may never obtain regulatory approval to market our proposed products.

Our products may not receive FDA approval, which would prevent us from commercially marketing our products and producing revenues.

The FDA and comparable government agencies in foreign countries impose substantial regulations on the manufacture and marketing of pharmaceutical products through lengthy and detailed laboratory, pre-clinical and clinical testing procedures, sampling activities and other costly and time-consuming procedures. Satisfaction of these regulations typically takes several years or more and varies substantially based upon the type, complexity and novelty of the proposed product. We cannot assure you that FDA approvals for any products developed by us will be granted on a timely basis, if at all. Any such delay in obtaining, or failure to obtain, such approvals could have a material adverse effect on the marketing of our products and our ability to generate product revenue.

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For-profit entities may be prohibited from benefiting from grant funding.

There has been much publicity about grant resources for stem cell research, including Proposition 71 in California. While the California Institute CIRM has provided grant funds to some for-profit entities, there is no guarantee that it will continue to do so, particularly given the state's current budgetary conditions. As a result of these uncertainties regarding Proposition 71, we cannot assure you that funding, if any, will be available to us.

The government maintains certain rights in technology that we develop using government grant money and we may lose the revenues from such technology if we do not commercialize and utilize the technology pursuant to established government guidelines.

Certain of our and our licensors' research has been or is being funded in part by government grants. In connection with certain grants, the U.S. government retains rights in the technology developed with the grant. These rights could restrict our ability to fully capitalize upon the value of this research.

Risks Related to International Regulation

We may not be able to obtain required approvals in other countries.

The requirements governing the conduct of clinical trials and cell culturing and marketing of our product candidates outside the United States vary widely from country to country. Foreign approvals may take longer to obtain than FDA approvals and can require, among other things, additional testing and different clinical trial designs. Foreign regulatory approval processes generally include all of the risks associated with the FDA approval processes. Some foreign regulatory agencies also must approve prices of the products. Regulatory approval in one country does not ensure regulatory approval in another, but a failure or delay in obtaining regulatory approval in one country may negatively impact the regulatory process in others. We may not be able to file for regulatory approvals and may not receive necessary approvals to market our product candidates in any foreign country. If we fail to comply with these regulatory requirements or fail to obtain and maintain required approvals in any foreign country, we will not be able to sell our product candidates in that country and our ability to generate revenue will be adversely affected.

Financial Risks

We may not be able to raise the required capital to conduct our operations and develop and commercialize our products.

We require substantial additional capital resources in order to conduct our operations and develop and commercialize our products and run our facilities. We will need significant additional funds or a collaborative partner, or both, to finance the research and development activities of our therapies and potential products. Accordingly, we are continuing to pursue additional sources of financing. Our future capital requirements will depend upon many factors, including:

- The continued progress and cost of our research and development programs,
- The progress with pre-clinical studies and clinical trials,
- The time and costs involved in obtaining regulatory clearance,

- The costs in preparing, filing, prosecuting, maintaining and enforcing patent claims,

- The costs of developing sales, marketing and distribution channels and our ability to sell the therapies/products if developed,

- The costs involved in establishing manufacturing capabilities for commercial quantities of our proposed products

- Competing technological and market developments,
- Market acceptance of our proposed products,
- The costs for recruiting and retaining employees and consultants, and
- The costs for educating and training physicians about our proposed therapies/products.

Additional financing through strategic collaborations, public or private equity financings or other financing sources may not be available on acceptable terms, or at all. Additional equity financing could result in significant dilution to our shareholders. Further, if 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 products that we would otherwise seek to develop and commercialize on our own. If sufficient capital is not available, we may be required to delay, reduce the scope of or eliminate one or more of our programs or potential products, any of which could have a material adverse affect on our financial condition or business prospects.

Risks Relating to Our Debt Financings

If we are required for any reason to repay our outstanding debentures we would be required to deplete our working capital, if available, or raise additional funds. Our failure to repay the convertible debentures, if required, could result in legal action against us, which could require the sale of substantial assets.

We have outstanding, as of September 30, 2010, $4,557,959 aggregate original principal amount of debt. We are required to repay on a monthly basis, by payment, at our option, with cash or with shares of our common stock.

There are a large number of shares underlying our debt in full, and warrants. The sale of these shares may depress the market price of our common stock.

As of September 30, 2010, on an aggregated basis our debt and preferred stock financings may result in being converted into 88,546,195 shares of our common stock, and warrants and options that may be converted into approximately 250,322,044 shares of our common stock.

Sales of a substantial number of shares of our common stock in the public market could adversely affect the market price for our common stock and make it more difficult for you to sell shares of our common stock at times and prices that you feel are appropriate.

The issuance of shares upon conversion of the convertible debentures and exercise of outstanding warrants will cause immediate and substantial dilution to our existing stockholders.

The issuance of shares upon conversion of the convertible debentures and exercise of warrants, including the replacement warrants, will result in substantial dilution to the interests of other stockholders since the selling security holders may ultimately convert and sell the full amount issuable on conversion. Although no single selling security holder may convert its convertible debentures and/or exercise its warrants if such conversion or exercise would cause it to own more than 4.99% of our outstanding common stock, this restriction does not prevent each selling security

holder from converting and/or exercising some of its holdings and then converting the rest of its holdings. In this way, each selling security holder could sell more than this limit while never holding more than this limit. There is no upper limit on the number of shares that may be issued which will have the effect of further diluting the proportionate equity interest and voting power of holders of our common stock.

Our outstanding indebtedness on our Debentures imposes certain restrictions on how we conduct our business. In addition, all of our assets, including our intellectual property, are pledged to secure this indebtedness. If we fail to meet our obligations under the Debentures, our payment obligations may be accelerated and the collateral securing the debt may be sold to satisfy these obligations.

The Debentures and related agreements contain various provisions that restrict our operating flexibility. Pursuant to the agreement, we may not, among other things:

- Except for certain permitted indebtedness, enter into, create, incur, assume, guarantee or suffer to exist any indebtedness for borrowed money of any kind, including but not limited to, a guarantee, on or with respect to any of its property or assets now owned or hereafter acquired or any interest therein or any income or profits therefrom,

- Except for certain permitted liens, enter into, create, incur, assume or suffer to exist any liens of any kind, on or with respect to any of its property or assets now owned or hereafter acquired or any interest therein or any income or profits therefrom,

- Amend our certificate of incorporation, bylaws or other charter documents so as to materially and adversely affect any rights of holders of the Debentures and Warrants,

- Repay, repurchase or offer to repay, repurchase or otherwise acquire more than a de minimis number of shares of our common stock or common stock equivalents,

- Enter into any transaction with any of our affiliates, which would be required to be disclosed in any public filing with the Securities and Exchange Commission, unless such transaction is made on an arm's-length basis and expressly approved by a majority of our disinterested directors (even if less than a quorum otherwise required for board approval),

    - Pay cash dividends or distributions on any of our equity securities,

    - Grant certain registration rights,

    - Enter into any agreement with respect to any of the foregoing, or

- Make cash expenditures in excess of $1,000,000 per calendar month, subject to certain specified exceptions.

These provisions could have important consequences for us, including (i) making it more difficult for us to obtain additional debt financing from another lender, or obtain new debt financing on terms favorable to us, (ii) causing us to use a portion of our available cash for debt repayment and service rather than other perceived needs and/or (iii) impacting our ability to take advantage of significant, perceived business opportunities.

Our obligations under our securities purchase agreements are secured by substantially all of our assets.

Our obligations under certain security agreements, executed in connection with certain financings, with the holders of the debentures and warrants are secured by substantially all of our assets. As a result, if we default under the terms of

the security agreement, such holders could foreclose on their security interest and liquidate all of our assets. This would cause operations to cease.

Risks Related to Third Party Reliance

We depend on third parties to assist us in the conduct of our preclinical studies and clinical trials, and any failure of those parties to fulfill their obligations could result in costs and delays and prevent us from obtaining regulatory approval or successfully commercializing our product candidates on a timely basis, if at all.

We engage consultants and contract research organizations to help design, and to assist us in conducting, our preclinical studies and clinical trials and to collect and analyze data from those studies and trials. The consultants and contract research organizations we engage interact with clinical investigators to enroll patients in our clinical trials. As a result, we depend on these consultants and contract research organizations to perform the studies and trials in accordance with the investigational plan and protocol for each product candidate and in compliance with regulations and standards, commonly referred to as "good clinical practice", for conducting, recording and reporting results of clinical trials to assure that the data and results are credible and accurate and the trial participants are adequately protected, as required by the FDA and foreign regulatory agencies. We may face delays in our regulatory approval process if these parties do not perform their obligations in a timely or competent fashion or if we are forced to change service providers.

We depend on our collaborators to help us develop and test our proposed products, and our ability to develop and commercialize products may be impaired or delayed if collaborations are unsuccessful.

Our strategy for the development, clinical testing and commercialization of our proposed products requires that we enter into collaborations with corporate 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. Under agreements with collaborators, we may rely significantly on such collaborators to, among other things:

- Design and conduct advanced clinical trials in the event that we reach clinical trials;
- Fund research and development activities with us;
- Pay us fees upon the achievement of milestones; and
- Market with us any commercial products that result from our collaborations.

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 our research and development 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.

The development and commercialization of potential products will be delayed if collaborators fail to conduct these activities in a timely manner, or at all. 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.

We are in a Strategic Joint Venture which may slow, impede or result in the termination of potential therapeutic products whose development is now the responsibility of the partnership and not solely of the Company.

In 2008, the Company entered into a new partnership (CHA) and as a result, we are subject to 3rd party interests and control issues, not the least of which relates to certain of our employees no longer being exclusively managed by us. We therefore could be at risk for losing key employees. Additionally substantial operating and working capital will be required and there is no assurance that CHA Biotech Co. limited, partner in our joint venture, will be able to fund their requirements. Any failure on their part could negatively impact our product development, human capital and financial resources allocated to other of our programs.

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 proposed products.

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 to the extent they exist, can expect only limited amounts of their time to be dedicated to our activities. 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 time to be dedicated to our research goals.

Preclinical & Clinical Product Development Risks

We have limited experience in conducting and managing preclinical development activities, clinical trials and the application process necessary to obtain regulatory approvals.

Our limited experience in conducting and managing preclinical development activities, clinical trials and the application process necessary to obtain regulatory approvals might prevent us from successfully designing or implementing a preclinical study or clinical trial. If we do not succeed in conducting and managing our preclinical development activities or clinical trials, or in obtaining regulatory approvals, we might not be able to commercialize our product candidates, or might be significantly delayed in doing so, which will materially harm our business.

Our ability to generate revenues from any of our product candidates will depend on a number of factors, including our ability to successfully complete clinical trials, obtain necessary regulatory approvals and implement our commercialization strategy. In addition, even if we are successful in obtaining necessary regulatory approvals and bringing one or more product candidates to market, we will be subject to the risk that the marketplace will not accept those products. We may, and anticipate that we will need to, transition from a company with a research and development focus to a company capable of supporting commercial activities and we may not succeed in such a transition.

Because of the numerous risks and uncertainties associated with our product development and commercialization efforts, we are unable to predict the extent of our future losses or when or if we will become profitable.

Our failure to successfully commercialize our product candidates or to become and remain profitable could depress the market price of our common stock and impair our ability to raise capital, expand our business, diversify our product offerings and continue our operations.

None of the products that we are currently developing has been approved by the FDA or any similar regulatory authority in any foreign country. Our approach of using cell-based therapy for the treatment of Retinal disease (we are beginning with a treatment for Startgardt's disease, for which we filed an IND with the FDA) is risky and unproven and no products using this approach have received regulatory approval in the United States or Europe.

We believe that no company has yet been successful in its efforts to obtain regulatory approval in the United States or Europe of a cell-based therapy product for the treatment of retinal disease or degeneration in humans. Cell-based therapy products, in general, may be susceptible to various risks, including undesirable and unintended side effects, unintended immune system responses, inadequate therapeutic efficacy or other characteristics that may prevent or

limit their approval by regulators or commercial use. Many companies in the industry have suffered significant setbacks in advanced clinical trials, despite promising results in earlier trials. If our clinical trials are unsuccessful or significantly delayed, or if we do not complete our clinical trials, we will not receive regulatory approval for or be able to commercialize our product candidates.

Our lead product candidate, our therapeutic Retinal program for Startgardt's disease has not yet started Phase I Clinical Trials and has not yet received approval from the FDA or any similar foreign regulatory authority for any indication.

We cannot market any product candidate until regulatory agencies grant approval or licensure. In order to obtain regulatory approval for the sale of any product candidate, we must, among other requirements, provide the FDA and similar foreign regulatory authorities with preclinical and clinical data that demonstrate to the satisfaction of regulatory authorities that our product candidates are safe and effective for each indication under the applicable standards relating to such product candidate. The preclinical studies and clinical trials of any product candidates must comply with the regulations of the FDA and other governmental authorities in the United States and similar agencies in other countries. Our therapeutic Retinal program may never receive approval from the FDA or any similar foreign regulatory authority.

We may experience numerous unforeseen events during, or as a result of, the clinical trial process that could delay or prevent regulatory approval and/or commercialization of our product candidates, including the following:

- The FDA or similar foreign regulatory authorities may find that our product candidates are not sufficiently safe or effective or may find our cell culturing processes or facilities unsatisfactory,
- Officials at the FDA or similar foreign regulatory authorities may interpret data from preclinical studies and clinical trials differently than we do,
- Our clinical trials may produce negative or inconclusive results or may not meet the level of statistical significance required by the FDA or other regulatory authorities, and we may decide, or regulators may require us, to conduct additional preclinical studies and/or clinical trials or to abandon one or more of our development programs,
- The FDA or similar foreign regulatory authorities may change their approval policies or adopt new regulations,
- There may be delays or failure in obtaining approval of our clinical trial protocols from the FDA or other regulatory authorities or obtaining institutional review board approvals or government approvals to conduct clinical trials at prospective sites,
- We, or regulators, may suspend or terminate our clinical trials because the participating patients are being exposed to unacceptable health risks or undesirable side effects,
- We may experience difficulties in managing multiple clinical sites,
- Enrollment in our clinical trials for our product candidates may occur more slowly than we anticipate, or we may experience high drop-out rates of subjects in our clinical trials, resulting in significant delays,
- We may be unable to manufacture or obtain from third party manufacturers sufficient quantities of our product candidates for use in clinical trials, and
- Our product candidates may be deemed unsafe or ineffective, or may be perceived as being unsafe or ineffective, by healthcare providers for a particular indication.

Any delay of regulatory approval will harm our business.

Risks Related to Competition

The market for therapeutic stem cell products is highly competitive.

We expect that our most significant competitors will be fully integrated pharmaceutical companies and more established biotechnology companies. These companies are developing stem cell-based products and they have

significantly greater capital resources in research and development, manufacturing, testing, obtaining regulatory approvals, and marketing capabilities. Many of these potential competitors are further along in the process of product development and also operate large, company-funded research and development programs. As a result, our competitors may develop more competitive or affordable products, or achieve earlier patent recognition and filings.

The biotechnology industries are characterized by rapidly evolving technology and intense competition. Our competitors include major multinational pharmaceutical companies, specialty biotechnology companies and chemical and medical products companies operating in the fields of regenerative medicine, cell therapy, tissue engineering and tissue regeneration.

Many of these companies are well-established and possess technical, research and development, financial and sales and marketing resources significantly greater than ours. In addition, certain smaller biotech companies have formed strategic collaborations, partnerships and other types of joint ventures with larger, well established industry competitors that afford these companies' potential research and development and commercialization advantages. Academic institutions, governmental agencies and other public and private research organizations are also conducting and financing research activities which may produce products directly competitive to those we are developing. Moreover, many of these competitors may be able to obtain patent protection, obtain FDA and other regulatory approvals and begin commercial sales of their products before we do.

In the general area of cell-based therapies (including both ES cell and autologous cell therapies), we compete with a variety of companies, most of whom are specialty biotechnology companies, such as Geron Corporation, Genzyme Corporation, StemCells, Inc., Aastrom Biosciences, Inc., Viacell, Inc., MG Biotherapeutics, Celgene, BioHeart, Inc., Baxter Healthcare, Osiris Therapeutics and Cytori.

Each of these companies are well-established and have substantial technical and financial resources compared to us. However, as cell-based products are only just emerging as medical therapies, many of our direct competitors are smaller biotechnology and specialty medical products companies. These smaller companies may become significant competitors through rapid evolution of new technologies. Any of these companies could substantially strengthen their competitive position through strategic alliances or collaborative arrangements with large pharmaceutical or biotechnology companies.

The diseases and medical conditions we are targeting have no effective long-term therapies. Nevertheless, we expect that our technologies and products will compete with a variety of therapeutic products and procedures offered by major pharmaceutical companies (in the Retinal Disease indication one of our primary competitors is Celgene). Many pharmaceutical and biotechnology companies are investigating new drugs and therapeutic approaches for the same purposes, which may achieve new efficacy profiles, extend the therapeutic window for such products, alter the prognosis of these diseases, or prevent their onset.

We believe that our products, when and if successfully developed, will compete with these products principally on the basis of improved and extended efficacy and safety and their overall economic benefit to the health care system.

Competition for any stem cell products that we may develop may be in the form of existing and new drugs, other forms of cell transplantation, ablative and simulative procedures, and gene therapy. We believe that some of our competitors are also trying to develop stem and progenitor cell-based technologies. We expect that all of these products will compete with our potential stem cell products based on efficacy, safety, cost and intellectual property positions. We may also face competition from companies that have filed patent applications relating to the use of genetically modified cells to treat disease, disorder or injury. In the event our therapies should require the use of such genetically modified cells, we may be required to seek licenses from these competitors in order to commercialize certain of our proposed products, and such licenses may not be granted.

If we develop products that receive regulatory approval, they would then have to compete for market acceptance and market share. For certain of our potential products, an important success factor will be the timing of market

introduction of competitive products. This timing will be a function of the relative speed with which we and our competitors can develop products, complete the clinical testing and approval processes, and supply commercial quantities of a product to market. These competitive products may also impact the timing of clinical testing and approval processes by limiting the number of clinical investigators and patients available to test our potential products.

Our competition includes both public and private organizations and collaborations among academic institutions and large pharmaceutical companies, most of which have significantly greater experience and financial resources than we do.

Private and public academic and research institutions also compete with us in the research and development of therapeutic products based on human embryonic and adult stem cell technologies. In the past several years, the pharmaceutical industry has selectively entered into collaborations with both public and private organizations to explore the possibilities that stem cell therapies may present for substantive breakthroughs in the fight against disease.

The biotechnology and pharmaceutical industries are characterized by intense competition. We compete against numerous companies, both domestic and foreign, many of which have substantially greater experience and financial and other resources than we have. Several such enterprises have initiated cell therapy research programs and/or efforts to treat the same diseases targeted by us.

Companies such as Geron Corporation, Genzyme Corporation, StemCells, Inc., Aastrom Biosciences, Inc. and Viacell, Inc., as well as others, many of which have substantially greater resources and experience in our fields than we do, are well situated to effectively compete with us. Any of the world's largest pharmaceutical companies represents a significant actual or potential competitor with vastly greater resources than ours. These companies hold licenses to genetic selection technologies and other technologies that are competitive with our technologies. These and other competitive enterprises have devoted, and will continue to devote, substantial resources to the development of technologies and products in competition with us.

Many of our competitors have significantly greater experience than we have in the development, pre-clinical testing and human clinical trials of biotechnology and pharmaceutical products, in obtaining FDA and other regulatory approvals of such products and in manufacturing and marketing such products.

Accordingly our competitors may succeed in obtaining FDA approval for products more rapidly or effectively than we can. Our competitors may also be the first to discover and obtain a valid patent to a particular stem cell technology which may effectively block all others from doing so. It will be important for us or our collaborators to be the first to discover any stem cell technology that we are seeking to discover. Failure to be the first could prevent us from commercializing all of our research and development affected by that discovery. Additionally, if we commence commercial sales of any products, we will also be competing with respect to manufacturing efficiency and sales and marketing capabilities, areas in which we have no experience.

General Risks Relating to Our Business

We are 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. See "LEGAL PROCEEDINGS" in this prospectus for a more complete discussion of currently pending litigation against the Company.

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We may not be able to obtain third-party patient reimbursement or favorable product pricing, which would reduce our ability to operate profitably.

Our ability to successfully commercialize certain of our proposed products in the human therapeutic field may depend to a significant degree on patient reimbursement of the costs of such products and related treatments at acceptable levels from government authorities, private health insurers and other organizations, such as health maintenance organizations. We cannot assure you that reimbursement in the United States or foreign countries will be available for any products we may develop or, if available, will not be decreased in the future, or that reimbursement amounts will not reduce the demand for, or the price of, our products with a consequent harm to our business. We cannot predict what additional regulation or legislation relating to the health care industry or third-party coverage and reimbursement may be enacted in the future or what effect such regulation or legislation may have on our business. If additional regulations are overly onerous or expensive, or if health care related legislation makes our business more expensive or burdensome than originally anticipated, we may be forced to significantly downsize our business plans or completely abandon our business model.

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

Our products are likely to be significantly more expensive to manufacture than most other drugs currently on the market today. Our present manufacturing processes produce modest quantities of product intended for use in our ongoing research activities, and we have not developed processes, procedures and capability to produce commercial volumes of product. We hope to substantially reduce manufacturing costs through process improvements, development of new science, increases in manufacturing scale and outsourcing to experienced manufacturers. If we are not able to make these or other improvements, and depending on the pricing of the product, our profit margins may be significantly less than that of most drugs on the market today. In addition, we may not be able to charge a high enough price for any cell therapy product we develop, even if they are 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.

Our current source of revenues depends on the stability and performance of our sub-licensees.

Our ability to collect royalties on product sales from our sub-licensees will depend on the financial and operational success of the companies operating under a sublicense. Revenues from those licensees will depend upon the financial and operational success of those third parties. We cannot assure you that these licensees will be successful in obtaining requisite financing or in developing and successfully marketing their products. These licensees may experience unanticipated obstacles including regulatory hurdles, and scientific or technical challenges, which could have the effect of reducing their ability to generate revenues and pay us royalties.

We depend on key personnel for our continued operations and future success, and a loss of certain key personnel could significantly hinder our ability to move forward with our business plan.

Because of the specialized nature of our business, we are highly dependent on our ability to identify, hire, train and retain highly qualified scientific and technical personnel for the research and development activities we conduct or sponsor. The loss of one or more certain key executive officers, or scientific officers, would be significantly detrimental to us. In addition, recruiting and retaining qualified scientific personnel to perform research and development work is critical to our success. Our anticipated growth and expansion into areas and activities requiring additional expertise, such as clinical testing, regulatory compliance, manufacturing and marketing, will require the addition of new management personnel and the development of additional expertise by existing management

personnel. There is intense competition for qualified personnel in the areas of our present and planned activities, and there can be no assurance that we will be able to continue to attract and retain the qualified personnel necessary for the development of our business. The failure to attract and retain such personnel or to develop such expertise would adversely affect our business.

Our credibility as a business operating in the field of human embryonic stem cells is largely dependent upon the support of our Ethics Advisory Board.

Because the use of human embryonic stem cells gives rise to ethical, legal and social issues, we have instituted an Ethics Advisory Board. Our Ethics Advisory Board is made up of highly qualified individuals with expertise in the field of human embryonic stem cells. We cannot assure you that these members will continue to serve on our Ethics Advisory Board, and the loss of any such member may affect the credibility and effectiveness of the Board. As a result, our business may be materially harmed in the event of any such loss.

Our insurance policies may be inadequate and potentially expose us to unrecoverable risks.

We have limited director and officer insurance and commercial insurance policies. Any significant insurance claims would have a material adverse effect on our business, financial condition and results of operations. Insurance availability, coverage terms and pricing continue to vary with market conditions. We endeavor to obtain appropriate insurance coverage for insurable risks that we identify, however, we may fail to correctly anticipate or quantify insurable risks, we may not be able to obtain appropriate insurance coverage, and insurers may not respond as we intend to cover insurable events that may occur. We have observed rapidly changing conditions in the insurance markets relating to nearly all areas of traditional corporate insurance. Such conditions have resulted in higher premium costs, higher policy deductibles, and lower coverage limits. For some risks, we may not have or maintain insurance coverage because of cost or availability.

We have no product liability insurance, which may leave us vulnerable to future claims we will be unable to satisfy.

The testing, manufacturing, marketing and sale of human therapeutic products entail an inherent risk of product liability claims, and we cannot assure you that substantial product liability claims will not be asserted against us. We have no product liability insurance. In the event we are forced to expend significant funds on defending product liability actions, and in the event those funds come from operating capital, we will be required to reduce our business activities, which could lead to significant losses.
We cannot assure you that adequate insurance coverage will be available in the future on acceptable terms, if at all, or that, if available, we will be able to maintain any such insurance at sufficient levels of coverage or that any such insurance will provide adequate protection against potential liabilities. Whether or not a product liability insurance policy is obtained or maintained in the future, any product liability claim could harm our business or financial condition.

We presently have members of management and other key employees located in various locations throughout the country which adds complexities to the operation of the business.

Presently, we have members of management and other key employees located in both California and Massachusetts, which adds complexities to the operation of our business.

We face risks related to compliance with corporate governance laws and financial reporting standards.

The Sarbanes-Oxley Act of 2002, as well as related new rules and regulations implemented by the Securities and Exchange Commission and the Public Company Accounting Oversight Board, require changes in the corporate governance practices and financial reporting standards for public companies. These new laws, rules and regulations, including compliance with Section 404 of the Sarbanes-Oxley Act of 2002 relating to internal control over financial reporting, referred to as Section 404, have materially increased our legal and financial compliance costs and made some activities more time-consuming and more burdensome.

Risks Relating to Our Common Stock

Stock prices for biotechnology companies have historically tended to be very volatile.

Stock prices and trading volumes for many biotechnology companies fluctuate widely for a number of reasons, including but not limited to the following factors, some of which may be unrelated to their businesses or results of operations:

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- Clinical trial results,
- The amount of cash resources and ability to obtain additional funding,
- Announcements of research activities, business developments, technological innovations or new products by companies or their competitors,
- Entering into or terminating strategic relationships,
- Changes in government regulation,
- Disputes concerning patents or proprietary rights,
- Changes in revenues or expense levels,
- Public concern regarding the safety, efficacy or other aspects of the products or methodologies being developed,
- Reports by securities analysts,
- Activities of various interest groups or organizations,
- Media coverage, and
- Status of the investment markets.

This market volatility, as well as general domestic or international economic, market and political conditions, could materially and adversely affect the market price of our common stock and the return on your investment.

A significant number of shares of our common stock have become available for sale and their sale could depress the price of our common stock.

In 2008, a significant number of our outstanding securities that were previously restricted became eligible for sale under Rule 144 of the Securities Act, and their sale will not be subject to any volume limitations.

We may also sell a substantial number of additional shares of our common stock in connection with a private placement or public offering of shares of our common stock (or other series or class of capital stock to be designated in the future). The terms of any such private placement would likely require us to register the resale of any shares of capital stock issued or issuable in the transaction. We have also issued common stock to certain parties, such as vendors and service providers, as payment for products and services. Under these arrangements, we may agree to register the shares for resale soon after their issuance. We may also continue to pay for certain goods and services with equity, which would dilute your interest in the company.

Sales of a substantial number of shares of our common stock under any of the circumstances described above could adversely affect the market price for our common stock and make it more difficult for you to sell shares of our common stock at times and prices that you feel are appropriate.

We do not intend to pay cash dividends on our common stock in the foreseeable future.

Any payment of cash dividends will depend upon our financial condition, results of operations, capital requirements and other factors and will be at the discretion of our board of directors. We do not anticipate paying cash dividends on our common stock in the foreseeable future. Furthermore, we may incur additional indebtedness that may severely restrict or prohibit the payment of dividends.

Our common stock is subject to "penny stock" regulations and restrictions on initial and secondary broker-dealer sales.

The Securities and Exchange Commission (SEC) has adopted regulations which generally define "penny stock" to be any listed, trading equity security that has a market price less than $5.00 per share or an exercise price of less than $5.00 per share, subject to certain exemptions. Penny stocks are subject to certain additional oversight and regulatory requirements. Brokers and dealers affecting transactions in our common stock in many circumstances must obtain the written consent of a customer prior to purchasing our common stock, must obtain information from the customer and must provide disclosures to the customer. These requirements may restrict the ability of broker-dealers to sell our common stock and may affect your ability to sell your shares of our common stock in the secondary market.

As an issuer of “penny stock,” the protection provided by the federal securities laws relating to forward looking statements does not apply to us.

Although federal securities laws provide a safe harbor for forward-looking statements made by a public company that files reports under the federal securities laws, this safe harbor is not available to issuers of penny stocks. As a result, the Company will not have the benefit of this safe harbor protection in the event of any legal action based upon a claim that the material provided by the Company contained a material misstatement of fact or was misleading in any material respect because of the Company’s failure to include any statements necessary to make the statements not misleading. Such an action could hurt our financial condition.

FORWARD-LOOKING STATEMENTS

This prospectus contains forward-looking statements that involve risks and uncertainties. We use words such as “may,” “assumes,” “forecasts,” “positions,” “predicts,” “strategy,” “will,” “expects,” “estimates,” “anticipates,” “believes,” “projects,” “budgets,” “potential,” “continue” and variations thereof, and other statements contained in this prospectus, regarding matters that are not historical facts and are forward-looking statements. Because these statements involve risks and uncertainties, as well as certain assumptions, actual results may differ materially from those expressed or implied by such forward-looking statements. Factors that could cause actual results to differ materially include, but are not limited to risks inherent in: our early stage of development, including a lack of operating history, lack of profitable operations and the need for additional capital; the development and commercialization of largely novel and unproven technologies and products; our ability to protect, maintain and defend our intellectual property rights; uncertainties regarding our ability to obtain the capital resources needed to continue research and development operations and to conduct research, preclinical development and clinical trials necessary for regulatory approvals; uncertainty regarding the outcome of clinical trials and our overall ability to compete effectively in a highly complex, rapidly developing, capital intensive and competitive industry. See “Risk Factors” set forth herein for a more complete discussion of these factors. Readers are cautioned not to place undue reliance on these forward-looking statements, which speak only as of the date that they are made. We undertake no obligation to publicly update or revise any forward-looking statements, whether as a result of new information, future events or otherwise.

Forward-looking statements include our plans and objectives for future operations, including plans and objectives relating to our products and our future economic performance. Assumptions relating to the foregoing involve judgments with respect to, among other things, future economic, competitive and market conditions, future business decisions, and the time and money required to successfully complete development and commercialization of our technologies, all of which are difficult or impossible to predict accurately and many of which are beyond our control. Although we believe that the assumptions underlying the forward-looking statements contained herein are reasonable,

any of those assumptions could prove inaccurate and, therefore, we cannot assure you that the results contemplated in any of the forward-looking statements contained herein will be realized. Based on the significant uncertainties inherent in the forward-looking statements included herein, the inclusion of any such statement should not be regarded as a representation by us or any other person that our objectives or plans will be achieved.

USE OF PROCEEDS

We will receive no proceeds from the sale of shares of Common Stock offered by the selling stockholders. However, we will generate proceeds from the cash exercise of the warrants by the selling stockholders, if any. We intend to use those proceeds for general corporate purposes.

SELLING SECURITY HOLDERS

The following table details the name of each selling stockholder, the number of shares owned by that selling stockholder, and the number of shares that may be offered by each selling stockholder for resale under this prospectus. The selling stockholders may sell up to 165,947,548 shares of our Common Stock from time to time in one or more offerings under this prospectus. These shares are issuable upon the exercise of warrants held by the selling stockholders. Because each selling stockholder may offer all, some or none of the shares it holds, and because, based upon information provided to us, there are currently no agreements, arrangements, or understandings with respect to the sale of any of the shares, no definitive estimate as to the number of shares that will be held by each selling stockholder after the offering can be provided. The following table has been prepared on the assumption that all shares offered under this prospectus will be sold to parties unaffiliated with the selling stockholders.

Name of Selling Stockholder	Beneficial Ownership Before the Offering (1)		Percentage of Ownership Before Completion of Offering	Shares of Common Stock Included in Prospectus (2)	Beneficial Ownership After the Offering	Percentage of Ownership After Completion of Offering (3)
Newberg Family Trust UTD 12/18/90	948,509	(4)	*	925,859	22,650	*
JMB Capital Partners, LP	5,453,046	(5)	*	2,777,576	2,675,470	*
CAMOFI Master LDC	27,248,410	(7)	2.34%	15,230,628	12,017,782	*
Shapiro Family Trust Dtd. 9.25.89	6,237,076	(8)	*	3,018,340	3,218,736	*
G. Tyler Runnels or Jasmine Niklas Runnels, Trustees Family Trust	1,871,025	(9)	*	1,608,628	262,397	*
High Tide, LLC	2,041,043	(10)	*	1,778,646	262,397	*
JMG Triton Offshore Fund, Ltd	11,277,301	(11)	*	6,624,373	4,652,928	*
JMG Capital Partners, LP	11,205,419	(12)	*	6,624,373	4,581,046	*
Cranshire Capital, LP	7,505,538	(13)	*	4,192,847	3,312,691	*
MM&B Holdings, LLC	4,322,672	(14)	*	3,955,317	367,355	*
JGB Capital, LP	1,146,777	(15)	*	898,555	248,222	*
Overbrook Fund, LLC	1,204,060	(17)	*	941,662	262,398	*
Portside Growth and Opportunity Fund	3,000,719	(18)	*	2,349,975	650,744	*
Rockmore Investment Master Fund, Ltd.	3,190,382	(19)	*	2,770,022	420,360	*
Smithfield Fiduciary, LLC	31,646,027	(20)	2.7%	17,259,913	14,386,114	1.09%
Alpha Capital Ansalt	9,338,040	(21)	*	5,101,042	4,236,998	*
Midsummer Investments, Ltd.	30,604,660	(22)	2.62%	19,027,990	11,576,670	.*
Bushido Capital Master Fund	790,125	(23)	*	393,518	396,607	*
BCMF Trustees, LLC	1,281,799	(24)	*	636,791	645,008	*
Ralph Rabman	12,326	(25)	*	5,021	7,305	*
CFRR Holdings, LLC	16,568	(26)	*	6,764	9,804	*

ACM SPV, LLC	223,621	(27)	*	91,064	132,557	*
John A. Kryzanowski	8,022,538	(28)	*	3,885,542	4,136,996	*
DAFNA	452,927	(29)	*	452,927	-	*
Portside Growth and Opportunity Fund	1,255,732	(31)	*	1,237,684	18,048	*
Stonestreet, LP	268,014	(32)	*	180,548	87,466	*
Anthem/CIC Ventures Fund, LP	5,485,153	(33)	*	1,811,595	3,673,558	*
Anthem Ventures Annex Fund, LP	2,487,548	(34)	*	738,235	1,749,313	*
Evan S. Malik	178,849	(35)	*	90,580	88,269	*
Gamma Opportunity Fund Capital Partners LP Class A	641,913	(36)	*	226,449	415,464	*
Gamma Opportunity Fund Capital Partners LP Class C	641,911	(37)	*	226,451	415,460	*
CAMHZN Master LDC	8,286,905	(38)	*	4,078,057	4,208,848	*
RHP Master Fund, Ltd.	3,781,458	(39)	*	2,828,023	953,435	*
Brio Capital, LP	3,859,045	(40)	*	1,864,828	1,994,217	*
Gemini Master Fund, Ltd.	8,251,644	(41)	*	3,903,994	4,347,650	*
Paragon Capital, LP	7,451,301	(42)	*	3,602,812	3,848,489	*
The Black Diamond Fund, LLP	2,487,548	(43)	*	738,235	1,749,313	*
Chestnut Ridge Partners, LP	3,700,883	(44)	*	3,060,634	640,249	*
PDPI LLC	7,382,902	(45)	*	6,112,902	1,270,000	*
T.R. Winston & Company, LLC	34,711,868	(46)	2.96%	32,087,898	2,623,970	*
Burril & Company	142,110	(47)	*	142,110	-	*
Rodman & Renshaw	214,457	(48)	*	214,457	-	*
Axel, PhD	153,016	(49)	*	153,016	-	*
Pierce Atwood, LLP	4,715,636	(50)	*	2,091,667	2,623,969	*

* Less than 1%.

(1) The number and percentage of shares beneficially owned is determined in accordance with Rule 13d-3 of the Securities Exchange Act of 1934, as amended, and the information is not necessarily indicative of beneficial ownership for any other purpose. Under such rule, beneficial ownership includes any shares as to which the selling stockholders has sole or shared voting power or investment power and also any shares, which the selling stockholders has the right to acquire within 60 days. As of December 9, 2010, the Company had 1,139,314,444 shares of common stock issued and outstanding.

(2) Represents shares of common stock issuable upon exercise of Amended and Restated Warrants.

(3) Assumes the sales of all shares included in this prospectus.

(4) Includes 22,650 shares of common stock issuable upon conversion of Amended and Restated Debentures and 925,859 shares of common stock issuable upon exercise of Amended and Restated Warrants.

(5) Includes 2,675,470 shares of common stock issuable upon conversion of Amended and Restated Debentures and 2,777,576 shares of common stock issuable upon exercise of Amended and Restated Warrants.

(6) Reserved

(7) Includes 12,017,782 shares of common stock issuable upon conversion of Amended and Restated Debentures and 15,230,628 shares of common stock issuable upon exercise of Amended and Restated Warrants.

(8) Includes 3,218,736 shares of common stock issuable upon conversion of Amended and Restated Debentures and 3,018,340 shares of common stock issuable upon exercise of Amended and Restated Warrants.

(9) Includes 262,397 shares of common stock issuable upon conversion of Amended and Restated Debentures and 1,608,628 shares of common stock issuable upon exercise of Amended and Restated Warrants.

(10) Includes 262,397 shares of common stock issuable upon conversion of Amended and Restated Debentures and 1,778,646 shares of common stock issuable upon exercise of Amended and Restated Warrants.

(11) Includes 4,652,928 shares of common stock issuable upon conversion of Amended and Restated Debentures and 6,624,373 shares of common stock issuable upon exercise of Amended and Restated Warrants.

(12) Includes 4,581,046 shares of common stock issuable upon conversion of Amended and Restated Debentures and 6,624,373 shares of common stock issuable upon exercise of Amended and Restated Warrants.

(13) Includes 3,312,691 shares of common stock issuable upon conversion of Amended and Restated Debentures and 4,192,847 shares of common stock issuable upon exercise of Amended and Restated Warrants.

(14) Includes 367,355 shares of common stock issuable upon conversion of Amended and Restated Debentures and 3,955,317 shares of common stock issuable upon exercise of Amended and Restated Warrants.

(15) Includes 248,222 shares of common stock issuable upon conversion of Amended and Restated Debentures and 898,555 shares of common stock issuable upon exercise of Amended and Restated Warrants.

(16) RESERVED

(17) Includes 262,398 shares of common stock issuable upon conversion of Amended and Restated Debentures and 941,662 shares of common stock issuable upon exercise of Amended and Restated Warrants.

(18) Includes 650,744 shares of common stock issuable upon conversion of Amended and Restated Debentures and 2,349,975 shares of common stock issuable upon exercise of Amended and Restated Warrants.

(19) Includes 420,360 shares of common stock issuable upon conversion of Amended and Restated Debentures and 2,770,022 shares of common stock issuable upon exercise of Amended and Restated Warrants.

(20) Includes 14,386,114 shares of common stock issuable upon conversion of Amended and Restated Debentures and 17,259,913 shares of common stock issuable upon exercise of Amended and Restated Warrants.

(21) Includes 4,236,998 shares of common stock issuable upon conversion of Amended and Restated Debentures and 5,101,042 shares of common stock issuable upon exercise of Amended and Restated Warrants.

(22) Includes 11,576,670 shares of common stock issuable upon conversion of Amended and Restated Debentures and 19,027,990 shares of common stock issuable upon exercise of Amended and Restated Warrants.

(23) Includes 396,607 shares of common stock issuable upon conversion of Amended and Restated Debentures and 393,518 shares of common stock issuable upon exercise of Amended and Restated Warrants.

(24) Includes 645,008 shares of common stock issuable upon conversion of Amended and Restated Debentures and 636,791 shares of common stock issuable upon exercise of Amended and Restated Warrants.

(25) Includes 7,305 shares of common stock issuable upon conversion of Amended and Restated Debentures and 5,021 shares of common stock issuable upon exercise of Amended and Restated Warrants.

(26) Includes 9,804 shares of common stock issuable upon conversion of Amended and Restated Debentures and 6,764 shares of common stock issuable upon exercise of Amended and Restated Warrants.

(27) Includes 132,557 shares of common stock issuable upon conversion of Amended and Restated Debentures and 91,064 shares of common stock issuable upon exercise of Amended and Restated Warrants.

(28) Includes 4,136,996 shares of common stock issuable upon conversion of Amended and Restated Debentures and 3,885,542 shares of common stock issuable upon exercise of Amended and Restated Warrants.

(29) Includes 452,927 shares of common stock issuable upon exercise of Amended and Restated Warrants.

(30) RESERVED.

(31) Includes 18,048 shares of common stock issuable upon conversion of Amended and Restated Debentures and 1,237,684 shares of common stock issuable upon exercise of Amended and Restated Warrants.

(32) Includes 87,466 shares of common stock issuable upon conversion of Amended and Restated Debentures and 180,548 shares of common stock issuable upon exercise of Amended and Restated Warrants.

(33) Includes 3,673,558 shares of common stock issuable upon conversion of Amended and Restated Debentures and 1,811,595 shares of common stock issuable upon exercise of Amended and Restated Warrants.

(34) Includes 1,749,313 shares of common stock issuable upon conversion of Amended and Restated Debentures and 738,235 shares of common stock issuable upon exercise of Amended and Restated Warrants.

(35) Includes 88,269 shares of common stock issuable upon conversion of Amended and Restated Debentures and 90,580 shares of common stock issuable upon exercise of Amended and Restated Warrants.

(36) Includes 415,464 shares of common stock issuable upon conversion of Amended and Restated Debentures and 226,449 shares of common stock issuable upon exercise of Amended and Restated Warrants.

(37) Includes 415,460 shares of common stock issuable upon conversion of Amended and Restated Debentures and 226,451 shares of common stock issuable upon exercise of Amended and Restated Warrants.

(38) Includes 4,208,848 shares of common stock issuable upon conversion of Amended and Restated Debentures and 4,078,057 shares of common stock issuable upon exercise of Amended and Restated Warrants.

(39) Includes 953,435 shares of common stock issuable upon conversion of Amended and Restated Debentures and 2,828,023 shares of common stock issuable upon exercise of Amended and Restated Warrants.

(40) Includes 1,994,217 shares of common stock issuable upon conversion of Amended and Restated Debentures and 1,864,828 shares of common stock issuable upon exercise of Amended and Restated Warrants.

(41) Includes 4,347,650 shares of common stock issuable upon conversion of Amended and Restated Debentures and 3,903,994 shares of common stock issuable upon exercise of Amended and Restated Warrants.

(42) Includes 3,848,489 shares of common stock issuable upon conversion of Amended and Restated Debentures and 3,602,812 shares of common stock issuable upon exercise of Amended and Restated Warrants.

(43) Includes 1,749,313 shares of common stock issuable upon conversion of Amended and Restated Debentures and 738,235 shares of common stock issuable upon exercise of Amended and Restated Warrants.

(44) Includes 640,249 shares of common stock issuable upon conversion of Amended and Restated Debentures and 3,060,634 shares of common stock issuable upon exercise of Amended and Restated Warrants.

(45) Includes 1,270,000 shares of common stock issuable upon conversion of Amended and Restated Debentures and 6,112,902 shares of common stock issuable upon exercise of Amended and Restated Warrants.

(46) Includes 2,623,970 shares of common stock issuable upon conversion of Amended and Restated Debentures and 32,087,898 shares of common stock issuable upon exercise of Amended and Restated Warrants.

(47) Includes 142,110 shares of common stock issuable upon exercise of Amended and Restated Warrants.

(48) Includes 214,457 shares of common stock issuable upon exercise of Amended and Restated Warrants.

(49) Includes 153,016 shares of common stock issuable upon exercise of Amended and Restated Warrants.

(50) Includes 2,623,969 shares of common stock issuable upon conversion of Amended and Restated Debentures and 2,091,667 shares of common stock issuable upon exercise of Amended and Restated Warrants.

PLAN OF DISTRIBUTION

Each selling stockholder and any of its pledgees, assignees and successors-in-interest may, from time to time, sell any or all of its shares of common stock on the Over-the-Counter Bulletin Board or any other stock exchange, market or trading facility on which our shares are traded or in private transactions. These sales may be at fixed or negotiated prices. A selling stockholder may use any one or more of the following methods when selling shares:

- ordinary brokerage transactions and transactions in which the broker-dealer solicits purchasers;
- block trades in which the broker-dealer will attempt to sell the shares as agent but may position and resell a portion of the block as principal to facilitate the transaction;
- purchases by a broker-dealer as principal and resale by the broker-dealer for its account;
- an exchange distribution in accordance with the rules of the applicable exchange;
- privately negotiated transactions;
- settlement of short sales entered into after the effective date of the registration statement of which this prospectus is a part;
- broker-dealers may agree with the selling stockholders to sell a specified number of such shares at a stipulated price per share;
- Through the writing or settlement of options or other hedging transactions, whether through an options exchange or otherwise;
- a combination of any such methods of sale; or
- Any other method permitted pursuant to applicable law.

The selling stockholders may also sell shares under Rule 144 under the Securities Act of 1933, as amended, if available, rather than under this prospectus.

A selling stockholder or its pledgees, donees, transferees or other successors in interest, may also sell the shares directly to market makers acting as principals and/or broker-dealers acting as agents for themselves or their customers. Such broker-dealers may receive compensation in the form of discounts, concessions or commissions from the selling stockholder and/or the purchasers of shares for whom such broker-dealers may act as agents or to whom they sell as principal or both, which compensation as to a particular broker-dealer might be in excess of customary commissions. Market makers and block purchasers purchasing the shares will do so for their own account and at their own risk. It is possible that a selling stockholder will attempt to sell shares of common stock in block transactions to market makers or other purchasers at a price per share which may be below the then market price. A selling stockholder cannot assure that all or any of the shares offered in this prospectus will be issued to, or sold by, the selling stockholder. The selling

stockholders and any brokers, dealers or agents, upon effecting the sale of any of the shares offered in this prospectus, may be deemed to be "underwriters" as that term is defined under the Securities Act of 1933, as amended, or the Securities Exchange Act of 1934, as amended, or the rules and regulations under such acts. In such event, any commissions received by such broker-dealers or agents and any profit on the resale of the shares purchased by them may be deemed to be underwriting commissions or discounts under the Securities Act.

We are required to pay all fees and expenses incident to the registration of the shares, including fees and disbursements of counsel to the selling stockholder, but excluding brokerage commissions or underwriter discounts.

The selling stockholders, alternatively, may sell all or any part of the shares offered in this prospectus through an underwriter. No selling stockholder has entered into any agreement with a prospective underwriter and there is no assurance that any such agreement will be entered into.

A selling stockholder may pledge its shares to their brokers under the margin provisions of customer agreements. If a selling stockholder defaults on a margin loan, the broker may, from time to time, offer and sell the pledged shares. The selling stockholder and any other persons participating in the sale or distribution of the shares will be subject to applicable provisions of the Securities Exchange Act of 1934, as amended, and the rules and regulations under such act, including, without limitation, Regulation M. These provisions may restrict certain activities of, and limit the timing of purchases and sales of any of the shares by, the selling stockholder or any other such person. In the event that the selling stockholder is deemed affiliated with purchasers or distribution participants within the meaning of Regulation M, then the selling stockholder will not be permitted to engage in short sales of common stock. Furthermore, under Regulation M, persons engaged in a distribution of securities are prohibited from simultaneously engaging in market making and certain other activities with respect to such securities for a specified period of time prior to the commencement of such distributions, subject to specified exceptions or exemptions. In regards to short sells, the selling stockholder is contractually restricted from engaging in short sells. In addition, if such short sale is deemed to be a stabilizing activity, then the selling stockholder will not be permitted to engage in a short sale of our common stock. All of these limitations may affect the marketability of the shares.

If the selling stockholder notifies us that it has a material arrangement with a broker-dealer for the resale of the common stock, then we would be required to amend the registration statement of which this prospectus is a part, and file a prospectus supplement to describe the agreements between the selling stockholder and the broker-dealer.

DESCRIPTION OF SECURITIES TO BE REGISTERED

This prospectus includes 165,947,548 shares of our Common Stock offered by the selling stockholders. The following description of our Common Stock is only a summary. You should also refer to our certificate of incorporation and bylaws, which have been filed as exhibits to the registration statement of which this prospectus forms a part.

We are authorized to issue 1,750,000,000 shares of Common Stock having a par value of $0.001 per share and 50,000,000 shares of preferred stock having a par value of $0.001 per share ("Preferred Stock"). Holders of Common Stock are entitled to one vote for each share held on all matters submitted to a vote of stockholders and do not have cumulative voting rights. Accordingly, holders of a majority of the shares of Common Stock entitled to vote in any election of directors may elect all of the directors standing for election. Holders of Common Stock are entitled to receive proportionately any dividends as may be declared by our board of directors, subject to any preferential dividend rights of outstanding preferred stock. Our outstanding shares of Common Stock are fully paid and non-assessable. Holders of shares of Common Stock have no conversion, preemptive or other subscription rights, and there are no redemption or sinking fund provisions applicable to the Common Stock.

Effective March 3, 2009, we entered into a $5 million credit facility ("Facility") with a life sciences fund. Under the terms of the agreement, we may draw down funds, as needed, from the investor through the issuance of Series A-1 convertible preferred stock, par value $.001, at a basis of 1 share of Series A-1 convertible preferred stock for every $10,000 invested. The preferred stock pays dividends, in kind of preferred stock, at an annual rate of 10%, matures in four years from the initial drawdown date, and is convertible at the option of the holder into common stock at $0.75 per share. As of September 30, 2010, we had drawn down approximately $3,400,000 on this credit facility.

INTERESTS OF NAMED EXPERTS AND COUNSEL

The validity of the shares of common stock offered hereby will be passed upon for the Registrant by Sichenzia Ross Friedman Ference LLP, 61 Broadway, 32nd fl., New York, NY 10006. Sichenzia Ross Friedman Ference LLP or certain members or employees of Sichenzia Ross Friedman Ference LLP will receive 150,000 shares of the Company's restricted common stock.

DESCRIPTION OF BUSINESS

Overview

We are a biotechnology company focused on developing and commercializing human embryonic and adult stem cell technology in the emerging field of regenerative medicine.

We were incorporated in Nevada under the name Two Moon Kachinas Corp. on May 18, 2000. On December 30, 2004, we filed an amendment to our articles of incorporation to change our corporate name to A.C.T. Holdings, Inc. On January 31, 2005, we completed the acquisition of Advanced Cell Technology, Inc., a Delaware corporation (prior to the Reincorporation (as defined below), "ACT"), pursuant to the terms of an Agreement and Plan of Merger dated January 3, 2005. As a result of the transaction, we terminated our kachina doll business and succeeded to the business operations and research efforts of ACT in the field of biotechnology. On June 17, 2005, we filed an amendment to our articles of incorporation to change our corporate name to Advanced Cell Technology, Inc. On November 18, 2005, we consummated a merger with and into our wholly-owned subsidiary ACT (the "Reincorporation"). As a result of the Reincorporation, we became a Delaware corporation.

We have acquired, developed and maintain a portfolio of patents and patent applications that form the proprietary base for our research and development efforts in the area of embryonic and adult stem cell research. We believe that our intellectual property portfolio is one of the strongest in the field. Our team includes some of the world's leading scientists in the field of stem cell research and development, and experts in conducting clinical trials. We believe our technology base, combined with our know-how, provides us with a strong competitive advantage and will facilitate the successful development and commercialization of products for use in the treatment of a wide array of chronic, degenerative diseases and in regenerative repair of a variety of acute diseases, such as trauma, myocardial infarction and burns.

Our belief that our intellectual property represents one of the strongest portfolios in the field is supported by:

- The early and consistent pace of filing, and the breadth of the large number of filings in the portfolio.
- The relative immaturity of this field of study.
- The limited number of truly competitive portfolios of intellectual property.

Regenerative medicine is a new and emerging field of study involving development of medical therapies based on advances in stem cell and nuclear transfer technology. We have developed and maintain a broad intellectual property (IP) portfolio, with ownership or exclusive licensing of over 28 issued patents and over 170 patent applications in the field of regenerative medicine and related areas. This significant volume of patents and patent licenses has been developed in the short span of approximately the past eight to eleven years.

Although we have strong competitors in this field, they are limited in number. We believe our intellectual property portfolio compares favorably with those of our competition based upon its size, focus and filing dates. With respect to the focus of our human embryonic stem cell portfolio, we believe that somatic cell nuclear transfer and chromatin transfer are, and will prove to be, one of the technological keys to successful development of stem cell therapies (see "Cellular Reprogramming," below). In addition, we have succeeded in deriving human embryonic cell lines without destroying the donor embryo through our proprietary single blastomere derivation technology. We own or have a license to numerous other technologies for dealing with transplant rejection, including means of activating oocytes during nuclear transfer, parthenogenesis, transdifferentiation, and dedifferentiation. Our intellectual property also includes patent rights and applications for specific applications of stem cell technology in producing retinal pigment epithelium (RPE), hemangioblasts, myoblast stem cells and numerous methods and compositions for the use of these technologies and derived cells in retinal disease, heart disease, immunodeficiency estates and cancer.

We have secured Food and Drug Administration (FDA) clearance to proceed to a Phase II Clinical Trial for its Myoblast program for the treatment of heart failure, and the trial is currently being developed. We believe that the company's myoblast technology has demonstrated that a myoblast transplantation treatment is feasible and safe in clinical trials conducted to date and that the technology could address the large market potential presented by heart failure.

Our research efforts to date in human embryonic technologies are at the level of clinical trials, pre-clinical development and basic research. In November of 2009 we filed an Investigational New Drug (IND) Application with the US Food and Drug Administration (FDA) to initiate a Phase I/II multicenter study using embryonic stem cell derived retinal cells to treat patients with Stargardt's Macular Dystrophy (SMD), as part of our RPE program. These retinal cells were developed using our proprietary blastomere derivation techniques. In November 2010 the IND Application was cleared so that the Company can initiate a Phase I/II multicenter clinical trial using retinal cells derived from human embryonic stem cells (hESCs) to treat patients with Stargardt's Macular Dystrophy (SMD),

Our Hemangioblast program for the treatment of Diseases and Disorders of Circulatory and Vascular System is in preclinical development. These precursor cells derived from human embryonic stem (ES) cells can be used to achieve vascular repair in animal models of vascular injury.
We are focused on leveraging our key assets, including our intellectual property, our scientific team, our facilities and our capital, to accelerate the advancement of our stem cell technologies. In addition, we continue to pursue strategic collaborations with members of academia, industry and foundations to further accelerate the pace of our research efforts.

The Field of Regenerative Medicine

The emerging field of treatment called "regenerative medicine" or "cell therapy" refers to treatments that are founded on the concept of producing new cells to replace malfunctioning or damaged cells as a vehicle to treat disease and injury. Our focus is the development of effective methods to generate replacement cells from both human embryonic and adult stem cells.

Many significant and currently untreatable human diseases arise from the loss or malfunction of specific cell types in the body. This is especially true of diseases associated with aging such as Alzheimer's disease, Parkinson's disease, type II diabetes, heart failure, osteoarthritis, macular degeneration, and aging of the immune system, known as immunosenescence. This is also true for medical conditions resulting from damage to cells due to acute disease, such as trauma, infarction and burns. We believe that replacing damaged or malfunctioning cells with fully functional ones may be a useful therapeutic strategy in treating many of these diseases and conditions.

A stem cell is a cell that has the ability to branch out and change, or differentiate, into two or more different cell types. Stem cells are self-renewing primitive cells that have the ability to develop into functional, differentiated cells. In general, there are two broad categories of stem cells: adult stem cells and embryonic stem cells. Adult stem cells are derived from various tissues in the human body. Because they can branch out into many different cell types, they are referred to as "multipotent." Multipotent means these cells develop into multiple, but not all, types of cells in the body.

Embryonic stem cells, referred to as ES cells, which are derived from pre-implantation embryos, are unique because they are "pluripotent," which means that they can develop into all cells and tissues in the body, and they self-renew indefinitely in their undifferentiated state. The ability of ES cells 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.

Our business is focused on both the development and commercialization of adult stem cell transplantation therapies and ES cell based technologies.

Our adult stem cell-based products are specifically targeted at therapies for heart and other cardiovascular disease and are at a more advanced stage of development than our human ES cell based technologies. Our first human ES cell-based product retinal pigmented epithelial cells are poised to enter Phase I clinical trials pending clearance by the FDA. We believe retinal pigmented epithelial cells technologies have potentially broader and more powerful applications with respect to a wide range of diseases.

Human ES Cell Programs

Since the discovery of the human ES cell, medical researchers worldwide have generally recognized the significance of this new technology and have begun to focus research on the translation of this discovery into important new therapies. Specifically, researchers have focused on several key challenges including:

- isolating and purifying cell lines,
- growing stable cell lines in culture for long periods without mutations,
- manufacturing cell lines in numbers sufficient for therapy,
- differentiating ES cells into all of the cell types desired for therapies, and
- solving the potential rejection of ES cells used in therapies due to immuno-incompatibility with the patient.

We believe that solving the potential rejection of ES cells in patients is the greatest scientific obstacle to developing successful therapeutics. Our research and technologies are focused on solving this obstacle by creating stem cell therapeutics with compatible tissues. Compatible tissues are referred to as being histocompatible.

We believe the potential markets for regenerative medicine and stem cell therapy are large. The table below summarizes the potential United States patient populations which we believe may be amenable to cell or organ transplantation and represent target markets for products generated through our regenerative medicine technology.

POTENTIAL U.S. PATIENT POPULATIONS FOR CELL-BASED THERAPIES

Medical Condition	Number of Patients*
Cardiovascular disease	70 million *
Autoimmune disease	50 million *
Diabetes	18 million
Osteoporosis	10 million
Cancer	10 million
Alzheimer's disease	4.5 million
Parkinson's disease	1 million
Burns (severe)	1.1 million
Spinal-cord injuries	0.25 million
Birth defects	0.15 million/year

* These estimates are based on patient estimates published by the following organizations from April 2005 to the present: the American Heart Association, the American Autoimmune Related Diseases Association, SEER (Surveillance, Epidemiology and End Result), American Burn Association, March of Dimes, the Alzheimer's Association, the Alzheimer's Disease Education & Referral Center (National Institute on Aging), the National Institutes of Health's National Institute on Neurological Disorders and Stroke, the Foundation for Spinal Cord Injury Prevention, Care & Cure, the Centers for Disease Control and Prevention, the American Association of Diabetes Educators, the Northwest Parkinson's Foundation and the Parkinson's Action Network.

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Our Human Embryonic Stem Cell Technologies

The ability to produce embryonic stem cells that are immunologically compatible with the patient is the hallmark and the strength of our technology platform. We believe our technology platform will enable the transformation of a patient's cells into an embryonic state where those cells can be differentiated into specific therapeutically relevant cell types that are genetically identical to the patient. We believe our technology may also enable the production of stem cell lines, from sources external to the patient, that have a sufficiently high level of histocompatibility to be useful in making cell therapies readily accessible to a large segment of the patient population, without the need for exact genetic matching of tissues.

As a result, our technology avoids reliance on more limited approaches that involve use of cell lines that are not histocompatible with the recipient, or therapies based upon use of adult stem cells.

The use of human embryonic stem cells gives rise to ethical, legal and social issues previously rooted in the fact that ES-cell derivation deprives preimplantation embryos of the potential to develop into a human being. We have developed a method to derive human embryonic stem cell lines at the blastomere stage that does not result in the destruction of the preimplantation embryo.

In August 2001, then-President George Bush set guidelines for federal funding of research on embryonic stem cells from human embryos created by in-vitro fertilization, referred to as IVF, limiting funding to just 60 lines. IVF-ES cells have the drawback that they are not genetically matched to the recipient patient. These ES cells are allogeneic. The word allogeneic literally means "other DNA type." Therapies using allogeneic cell lines can result in immune system incompatibilities where the host immune system attacks and rejects the transplanted cells or the transplanted cells attack the host. These incompatibilities may be partially suppressed with powerful immunosuppressive drugs, but the side effects can be severe and result in life-threatening complications. As a result, these incompatibilities have the potential to generate significant inefficiencies in the application of cell therapies.

However, in March 2009, President Barack Obama issued an executive order opening the door to a significant increase in federal funding for ES cell research. That led to the National Institutes of Health (NIH) approval of 13 additional stem cell lines for use in agency-funded research. The NIH is considering whether to approve an additional 96 lines, including blastomere derived lines we submitted for consideration.

The strategic focus of our human ES cell technology is to produce cell lines that are both histocompatible with the patient and pluripotent. We have numerous proprietary technologies that we believe will generate histocompatible, pluripotent stem cells for patient-specific application. These cells maximize the potential for effective use as transplants to replace diseased or destroyed cells in human patients. If successfully developed, our cellular reprogramming technologies will make it possible to produce cells that have the proliferative capacity of young cells, have specific therapeutic application, and are immunologically compatible with the patient.

All of our ES cell technologies are at the level of basic research or in the pre-clinical stage of development.

Our ES Cell Research Programs

Our ES cell research programs are divided into three core categories: cellular reprogramming, our reduced complexity program, and stem cell differentiation. Each of these core areas of focus is discussed below.

I. Cellular Reprogramming

This research program involves development of therapies based on the use of genetically identical pluripotent stem cells generated by our cellular reprogramming technologies. These technologies can be used to generate patient-specific pluripotent cells and tissues for transplantation. We believe our technology platform will enable the transformation of a patient's cells into pluripotent ES cells that are histocompatible with the patient and have the potential to be differentiated into any of the over 200 different human cell types that may be therapeutically relevant in treating diseased or destroyed tissues in human patients. We expect that our cellular reprogramming technologies will offer a new avenue for the introduction of targeted genetic modifications in cells and for the regeneration of cell lifespan, thereby making youthful cells available for aging patients. The combination of these advances, the ability to produce young cells of certain kinds that are histocompatible with the patient, is a core potential application of our technology. We believe these cellular reprogramming technologies will be effective therapies where there is time to prepare customized therapy through reprogramming of the patient's own cells.

Some of the technologies that support our cellular reprogramming program are somatic cell nuclear transfer, chromatin transfer, factor reprogramming, and fusion technologies.

Somatic cell nuclear transfer (SCNT) refers to the process wherein a body cell is transferred to an egg cell from which the nuclear DNA has been removed. This results in the body cell being "reprogrammed" by the egg cell. This reprogramming transforms the cell from the type of cell it was, for instance a skin cell, into an embryonic cell with the power to become any cell type in the body. A related technology is called chromatin transfer. Through this technology, the DNA and attached proteins, or chromatin, of the somatic cell is reprogrammed prior to transfer into an egg cell. Chromatin transfer has the potential to improve the efficiencies and therefore reduce the cost of nuclear transfer. We believe that one critical advantage of our proprietary SCNT and chromatin transfer technologies is that the cells are "rejuvenated" by returning the cell to a youthful state. This is important because these youthful cells will have the proliferative capacity of young cells. These healthy replacement cells, which would be genetically identical to the patient's own cells, would then be used for cell transplantation.

Our fusion technologies involve the fusion of the cytoplasm of one cell into another. In the same manner that the cytoplasm of an egg cell is capable of transforming any cell back to an embryonic state, the fusion of the cytoplasm of other cell types, including differentiated cell types (such as blood cells) is capable of reprogramming another cell type, such as a skin cell. These technologies have the potential of transforming a cell from a patient into another medically-useful cell type also identical to the patient. They also have the potential to fuse the cytoplasm of undifferentiated cells, such as embryonic stem cells, with somatic cells to transport the somatic cell DNA back to pluripotency. Alternatively, factors expressed by embryonic stem cells can be introduced into somatic cells to induce pluripotency. We believe that the fusion and factor reprogramming technologies we are developing can be developed into as broad and powerful techniques as SCNT, producing histocompatible, youthful stem cells that are multi and potentially even pluripotent. If successfully developed, this technology may also provide a pathway that does not utilize human egg cells which would reduce the cost of the procedure and increase the number of patients that could benefit from its implementation.

II. Stem Cell Differentiation

Regenerative medicine requires that stem cells, from whatever source derived, be differentiated, or re-differentiated, into specific body cell types and then physically transplanted into a patient. Differentiation into tissues such as cardiac muscle, blood, and other tissues occurs spontaneously in ES cells being cultured in a dish. Successful application of stem cell technology will require control over the specific kinds of cells into which stem cells differentiate. Control of differentiation and the culture and growth of stem and differentiated cells are important current areas of research for us. Also, some chemicals, such as retinoic acid, can be used to trigger differentiation into specific cell types such as nerve cells. We intend to pursue differentiation approaches both in-house and through collaborations with other researchers who have particular interests in, and skills related to, cellular differentiation. These efforts include using both animal and human stem cell lines. Our research in this area includes projects focusing on developing many different cell types that may be used in the future to treat a wide range of diseases. Our researchers have generated stable retinal pigment epithelium, or RPE, cell lines for use in our clinical retinal program and are working on projects to generate stable cell lines with particular focus on blood lineage and vascular epithelial cell lines from hemangioblast cells.

Retinal Pigment Epithelium Program. In November, 2006 we published data demonstrating human ES cell-derived RPE cells were capable of rescuing visual function in Royal College of Surgeon rats. Following the publication of that data, we entered into a pre-clinical development collaboration with Casey Eye Institute at Oregon Health & Science University. The purpose of the collaboration was to conduct dosage and safety studies in preparation for IND and

Phase I human clinical trials. As mentioned, in November of last year we filed an Investigational New Drug (IND) Application with the US Food and Drug Administration (FDA) to initiate a Phase I/II multicenter study using embryonic stem cell derived retinal cells to treat patients with Stargardt's Macular Dystrophy (SMD). In November 2010 the IND Application was cleared so that the Company can initiate a Phase I/II multicenter clinical trial using retinal cells derived from human embryonic stem cells (hESCs) to treat patients with Stargardt's Macular Dystrophy (SMD).

Hemangioblast Program. Hemangioblasts are a newly-characterized stem cell capable of differentiating into both hematopoietic, meaning blood cell-forming, and angiogenic, meaning blood vessel endothelium-forming, cells. We believe it will be possible to utilize hemangioblast cells in engraftment to repair age-related endothelial dysfunction associated with numerous significant age-related diseases, including cardiovascular disease, stroke, and perhaps even cancer. In 2006 we successfully derived hemangioblast cells generated from the company's blastomere-derived human embryonic stem cell lines. In 2007, we published data reporting that through utilization of hemangioblast based therapy we generated function in vivo with respect to the repair of ischemic retinal vasculatures and restoration of blood flow in ischemic limbs. In addition, we also reported increased survival rates of animals suffering from myocardial infarction. The hemangioblast program is currently in preclinical development.

III. Adult Stem Cell Program

Our adult stem cell-based program is developing an autologous myoblast transplantation therapy delivered using a minimally invasive catheter injection system to restore cardiac function in patients with advanced heart disease. The key target for the therapy will be heart failure patients with New York Heart Association ("NYHA") scores Class II to IV. The company's therapy could also benefit patients supported on ventricular assistance devices and potential additional indications, such as acute myocardial infarction, peripheral artery disease, and non-cardiac tissue repair. Currently available treatment options for heart failure patients are inadequate and can only slow the progression of heart failure; none can halt or reverse the process. We believe our autologous myoblast transplantation therapy uses patented myoblast compositions for catheter delivery to the heart offering repair of the disease in heart failure patients and for those end-stage disease patients on ventricular assistance device support.

These indications represent a significant unmet medical need and hold significant potential for clinical approval.

Our transplantation therapy involves extraction through simple biopsy from a patient's thigh of myoblasts, which are non-embryonic, skeletal muscle stem cells, that can be expanded in culture and injected back into damaged and scarred regions of the heart. This therapy promotes repair of damaged cardiac tissue by autologous cells, thereby avoiding immune rejection as each patient receives their own cells. Skeletal muscle, unlike heart muscle, can repair itself after injury. Skeletal muscle contains immature myoblasts that can fuse with surrounding myoblasts or with damaged muscle fibers to regenerate contractile skeletal muscle. In experimental models, our researchers have demonstrated that skeletal myoblasts can be transplanted into an infarcted myocardium with the subsequent development of elongated, striated cells characteristic of both skeletal and cardiac muscle. Our Phase I clinical studies have demonstrated the efficacy of this therapy on a preliminary basis.

We have received FDA approval to proceed with our Phase II clinical trial, to evaluate the applications for myoblast transplantation in slowing and/or reversing the impact of heart failure.

We perform our myoblast expansion, packaging, shipment, and quality testing using proprietary procedures that adhere to GMP regulations for manufacturing clinical trial material. After expansion, the myoblasts are packaged and delivered to the clinical site for implantation into the injured heart tissue by a surgeon or interventional cardiologist. To maximize cell therapy effectiveness, adequate numbers of cells must be delivered to the site of damage in a repeatable and safe manner. Our therapy utilizes a minimally invasive catheter-based delivery methodology, which provides a safe, targeted and high efficiency approach to cell delivery to the infarct area.

We believe that, unlike currently available treatment options, myoblast therapy has the ability to repair and improve the function of a damaged heart.

Our preclinical and Phase I clinical studies support the conclusion that our therapy presents significant advantages over currently available treatments, including:

- Ability to restore cardiac function through new muscle formation
- Ability to prevent further decline of heart function

- No risk immunological rejection of myoblasts due to autologous nature of the therapy
- Complementary to and capable of improving outcomes of current therapeutic options for heart disease
- hematopoietic cells for blood diseases and cancer,
- myocardial and endothelial vascular tissue for cardiovascular disease,
- congestive heart failure, myocardial infarction and other cardiovascular disease
- skin cells for dermatological conditions,
- retinal pigment epithelium cells as treatment for macular degeneration and retinal pigmentosis,
- neural cells for spinal cord injury, Parkinson's disease and other neuro-degenerative diseases,
- pancreatic islet cells for diabetes,
- liver cells for hepatitis and cirrhosis,
- cartilage cells for arthritis, and
- lung cells for a variety of pulmonary diseases.

Potential Commercial Applications of our ES Cell and Adult Stem Cell Technologies

We believe that, if successfully developed, stem cell-based therapy has the potential to provide treatment for a broad range of acute and chronic degenerative diseases. We believe the potential applications of cell-based therapeutics include

While we expect that any future products will take the form of medical procedures, tangible therapeutics, or combinations thereof, we currently have no products, and the identity of our future products, if any, is dependent upon the results of our ongoing research efforts, and, therefore cannot be determined at this time.

Our Intellectual Property

Our research and development is supported by a broad intellectual property portfolio. We currently own or have exclusive licenses to over 45 patents and have over 170 patent applications pending worldwide in the field of regenerative medicine and stem cell therapy. We also have non-exclusive rights to a portfolio of patents and patent applications that support our core intellectual property.

Our success will likely depend upon our ability to preserve our proprietary technologies and operate without infringing the proprietary rights of other parties. However, we may rely on certain proprietary technologies and know-how that are not patentable. We protect such proprietary information, in part, by the use of confidentiality agreements with our employees, consultants and certain of our contractors.

We maintain a disciplined patent policy and, when appropriate, seek patent protection for inventions in our core technologies and in ancillary technologies that support our core technologies or which we otherwise believe will provide us with a competitive advantage. We pursue this strategy by filing patent applications for discoveries we make, either alone or in collaboration with scientific collaborators and strategic partners. Typically, although not always, we file patent applications both in the United States and in select international markets. In addition, we plan to obtain licenses or options to acquire licenses to patent filings from other individuals and organizations that we anticipate could be useful in advancing our research, development and commercialization initiatives and our strategic business interests.

The following table identifies the issued patents we own or license that we believe currently support our technology platform.

Owned by Advanced Cell Technology, Inc.

Number Patent	Country	Filing Date	Issue Date	Expiration Date*	Title
6,808,704	United States (US)	09/06/2000	10/26/2004	09/6/2020	Method for Generating Immune-Compatible Cells and Tissues Using Nuclear Transfer Techniques
783162	Australia (AU)	09/06/2000	01/12/2006	09/6/2020	Method for Generating Immune-Compatible Cells and Tissues Using Nuclear Transfer Techniques
265679	Mexico	09/06/2000	04/03/2009	09/06/2020	Method for Generating Immune-Compatible Cells and Tissues Using Nuclear Transfer Techniques
536786	New Zealand (NZ)	09/06/2000	01/11/2007	09/6/2020	Method for Generating Immune-Compatible Cells and Tissues Using Nuclear Transfer Techniques
782385	AU	10/13/2000	11/3/2005	10/13/2020	Method of Differentiation of Morula or Inner Cell Mass Cells and Method of Making Lineage-Defective Embryonic Stem Cells
518191	NZ	10/13/2000	05/10/2004	10/13/2020	Method of Differentiation of Morula or Inner Cell Mass Cells and Method of Making Lineage-Defective Embryonic Stem Cells
516236	NZ	06/30/2000	08/07/2005	06/30/2020	Cytoplasmic Transfer to De-Differentiate Recipient Cells
782286	AU	06/30/2000	10/27/2005	06/30/2020	Cytoplasmic Transfer to De-Differentiate Recipient Cells
531844	NZ	09/06/2000	12/08/05	09/06/2020	Telomere Restoration and Extension of Cell Life-Span in Animals Cloned from Senescent Somatic Cells
519347	NZ	12/20/2000	11/11/2004	12/20/2020	Method to Produce Cloned Embryos and Adults from Cultured Cells
00818200.0	China (CN)	12/20/2000	10/18/2006	12/20/2020	Method to Produce Cloned Embryos and Adults from Cultured Cells
5,453,366	US	03/15/1993	09/26/1995	09/26/2012	Method of Cloning Bovine Embryos
6,011,197	US	01/28/1999	01/04/2000	03/06/2017	Method of Cloning Bovines Using Reprogrammed Non-Embryonic Bovine Cells
6,395,958	US	07/15/1999	05/28/2002	03/06/2017	Method of Producing a Polypeptide in an Ungulate
5,496,720	US	02/10/1993	03/05/1996	03/05/2013	Parthenogenic Oocyte Activation
5,843,754	US	06/06/1995	12/01/1998	12/01/2015	Parthenogenic Bovine Oocyte Activation
6,194,202	US	03/04/1996	02/27/2001	02/10/2013	Parthenogenic Oocyte Activation
6,077,710	US	10/21/1998	06/20/2000	02/10/2013	Parthenogenic Oocyte Activation
5,346,990	US	03/12/1991	09/13/1994	09/13/2011	Sex-Associated Membrane Proteins and Methods for Increasing the Probability that Offspring will be of a Desired Sex

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Owned by Advanced Cell Technology, Inc.'s wholly-owned subsidiary Mytogen, Inc.

Number Patent	Country	Filing Date	Issue Date	Expiration Date*	Title
6,673,604	US	07/24/2000	01/06/2004	07/24/2020	Muscle Cells and Their Use in Cardiac Repair**
6,432,711	US	11/01/1994	08/13/2002	08/13/2019	Embryonic Stem Cells Capable of Differentiating into Desired Cell Lines
2,174,746	Canada (CA)	11/02/1994	04/24/2007	11/02/2014	Embryonic Stem Cells Capable of Differentiating into Desired Cell Lines

** Currently undergoing Inter Partes Reexamination

University of Massachusetts Exclusive License to Advanced Cell Technology, Inc.

Number Patent	Country	Filing Date	Issue Date	Expiration Date*	Title
518365	NZ	10/27/2000	08/12/2004	10/27/2020	Gynogenetic or Androgenetic Production of Pluripotent Cells and Cell Lines, and Use Thereof to Produce Differentiated Cells and Tissues
782846	AU	10/27/2000	12/15/2005	10/27/2020	Gynogenetic or Androgenetic Production of Pluripotent Cells and Cell Lines, and Use Thereof to Produce Differentiated Cells and Tissues
5994619	US	12/16/1996	11/30/1999	04/01/2016	Production of Chimeric Bovine or Porcine Animals Using Cultured Inner Cell Mass Cells
5905042	US	04/01/1996	05/08/1999	04/01/2016	Production of Chimeric Bovine or Porcine Animals Using Cultured Inner Cell Mass Cells

* Actual patent expiration dates may differ from the dates listed herein including due to patent term adjustments pursuant to 35 U.S.C. § 154(b) and 37 C.F.R. §§ 1.702-1.705.

The fundamental consequence of patent expiration is that the invention covered by that patent will enter the public domain. However, the expiration of patent protection, or anticipated patent protection, for the bulk of our portfolio is not scheduled to begin for approximately ten to fifteen years. Due to the rapid pace of technology development in this field, and the volume of intellectual property we anticipate will be generated over the next decade, it is unlikely that the expiration of any existing patents or patent rights would have an adverse affect on our business. Due to our current stage of development, our existing patent portfolio is not currently supporting a marketed product, so we will not suffer from any reduction in product revenue from patent expiration. Any actual products that we develop are expected to be supported by intellectual property covered by current patent applications that, if granted, would not expire for 20 years from the date first filed. For example, our patent rights under the University of Massachusetts license listed in the patent table, above, do not begin to expire until 2016. Due to the early stage of our business, we differ from, for example, the pharmaceutical industry where the loss of a key significant patent can result in contemporaneous loss of products, programs or revenues. As our table demonstrates, our business is at the front end of the patent protection spectrum and is not expected to be significantly impacted by expiration of existing patents or patents issued in response to existing applications.

Research and License Agreements

Licenses of Intellectual Property to Us

The following summarizes technology licensed to us.

UMass License - On February 1, 2002 and April 16, 1996, we entered into exclusive license agreements (indefinite license period) with the University of Massachusetts. The 1996 Agreement has been amended by amendments dated September 1, 1997, May 31, 2000 and September 19, 2002. Pursuant to these agreements, the University of Massachusetts, referred to as UMass, exclusively licensed to us certain biological materials, patent rights and related technology for commercialization in specified fields. The license agreements require us to use diligent efforts to develop licensed products and licensed services and require us to pay certain royalties, minimum annual royalties, milestone payments and sublicense income to UMass. UMass received 73,263 shares of common stock of ACT as partial consideration of the license granted. We are currently behind on our payments of all UMass license fees, since 2008, and as such we are in breach of the license agreement.

2002 License - Under the 2002 license, UMass licenses to us certain patent rights relating to the cloning of non-human animals for use in connection with the development, manufacture and sale of products and services in the field of non-human animals for agriculture, companion animals, research and diagnostic products, non-human and human therapeutics, and neutraceuticals, except production of immunoglobulin in the blood of Bos taurus and Bos indicus. We are required to pay royalties to UMass ranging from 1.5% to 2.0% based on the covered product or service. We agreed to pay minimum royalty payments of $15,000 on the first and second anniversary of the agreement, $20,000 on the third anniversary, $25,000 on the fourth anniversary, and increasing to $45,000 on the fifth anniversary and for each year thereafter. We also agreed to make milestone payments to UMass of up to $1,630,000 upon the achievement of various development and commercialization milestones. Finally, we have agreed to pay UMass 18% of all sublicense income.

1996 License - The 1996 license covers certain patent rights, biological materials and know-how related to the cloning of non-human animals and cells for use in cell fields except the production of immunoglobulin in the blood of Bos taurus and Bos indicus. We are required to pay royalties ranging from 2.5% to 4.5% on net sales of products and services covered by the license, and minimum royalty payments in the amount of $15,000 per year (beginning on the later of the fourth year after the effective date of the agreement or the completion of certain clinical trials) for net sales on products and services for use in human therapeutics, and $30,000 per year (beginning in the third year after the effective date of the agreement) for net sales on products and services for all uses other than in human therapeutics. UMass agreed to waive minimum royalty payments during any calendar year in which we fund research at UMass in the aggregate amount of $300,000. There are no milestone payments. We agreed to pay UMass 18% of all sublicense income except for equity. With respect to equity, we are required to pay UMass an amount equal to 10% of the total equity we receive for any transfer of rights under the 1996 license.

Both the 2002 agreement and the 1996 agreement remain in effect until all issued patents within the patent rights licensed under the agreement have expired, or for a period ten years after the effective date of the agreement if no patents have issued within that ten-year period. Each party has the right to terminate the agreement upon the occurrence of a material uncured breach. We also have the right to terminate at any time for any reason with ninety days' written notice.

Wake Forest License - On January 26, 2001, we entered into a materials and research data license agreement with Wake Forest University (indefinite license period), pursuant to which WFU granted to us a worldwide, exclusive, royalty-free, perpetual and irrevocable right and license to use certain data and stem cells and stem cell cultures created by us from biological materials provided by WFU to us for specified purposes only. The agreement allows us to utilize certain primate skin cells and ovary materials produced by WFU and transferred to us pursuant to an agreement relating to the transfer of biological materials. There are no milestone payments. There are no royalty requirements unless we desire to negotiate a commercial license for use of the biological materials provided to us by WFU. WFU received 60,000 shares of common stock of ACT Group, Inc., a now dissolved Delaware corporation referred to hereinafter as ACT Group. We have agreed to provide WFU samples of stem cells for WFU's research, education and teaching purposes and we have a first option to obtain an exclusive license to any intellectual property rights claimed by WFU in connection with the use of such stem cells. The term of the license granted is perpetual and irrevocable absent a breach by us.

Start Licensing License - On August 30, 2006, we entered into a Settlement and License Agreement with UMass and Start Licensing, Inc. (indefinite license period).Pursuant to this agreement Start Licensing licenses to us, on a nonexclusive, royalty-free and paid-up basis, certain patent rights for use with non-human animal research or studies, including preclinical trials, in connection with the research, development and sale of therapeutic and diagnostic human

cell products.

GenVec Agreement - On December 28, 2005, Mytogen and GenVec, Inc. entered into a patent assignment and security agreement (indefinite period). Under the agreement, as amended on July 31, 2007, GenVec assigned certain agreements and intellectual property to Mytogen, and retained a royalty-free non-exclusive license, with the right to grant sublicenses, to practice the intellectual property in connection with products, processes or services developed or provided by GenVec other than autologous and allogenic skeletal myoblasts for cardiac therapy. Under the original agreement, Mytogen granted a security interest in the assigned intellectual property, but the security interest was released in the amendment to the agreement. Under the agreement, as amended, Mytogen must use commercially reasonable efforts to commercialize the assigned intellectual property, including by spending specified amounts in support of research and development in support of such commercialization; Mytogen must pay GenVec one-half of the first milestone payment (anticipated to be two million U.S. dollars) received by Mytogen under the Terumo Agreement; and Mytogen must also pay GenVec four percent (4%) of the net sales revenue from sales or other provision of products, processes or services covered by the agreement

Exclusive Licenses of Intellectual Property by Us

The following summarizes licenses from us to third parties.

Exeter Life Sciences License - On October 22, 2003, we entered into an exclusive license with Exeter Life Sciences, Inc. (indefinite license period), pursuant to which we exclusively licensed to Exeter certain technology and patent rights for use in the fields of agriculture, endangered species, companion animals and equine animals. The license also grants Exeter a right of first negotiation to any improvement patents that are obtained by us that relate to the licensed intellectual property or which are useful, necessary or required to develop or manufacture certain animals, cells or tissues within the defined fields of use.

Under the agreement, we license rights to certain patent rights and technology useful for the fields of use of non-human animals for agriculture, endangered animals and companion animals; excluding production of such animals for the primary purpose of producing human and non-human animal therapeutics and human healthcare products, including without limitation the production of biopharmaceutical agents in milk, such as proteins, peptides and polypeptides for pharmaceutical, neutraceutical or other use, and excluding the production of immunoglobulin in the blood of Bos taurus and Bos indicus. The field includes:

- the cloning, development, manufacture and sale of cloned non-human animals, including without limitation, bovine, hircine, ovine, porcine, equine animals and ungulates (as well as any transgenic variance or enhancements thereto) or products that are composed of, made in or derived, extracted or isolated from cells or tissues of such animals for the production of food or fiber, and the rendering of services or uses that relate to the production of such products;

- the cloning, development, manufacture and sale of endangered species for purposes of researching, aiding, reproducing or assisting in the reproduction of such endangered species;

- the cloning, development, and sale of hircine, ovine, feline, canine and equine animals (as well as any transgenic variance or enhancements thereto) for personal, business or commercial purposes, specifically excluding the sale of these animals as scientific research laboratory subjects; and

- the cloning, development, manufacture and sale of cloned equine animals (as well as any transgenic variance or enhancements thereto) or products that are composed of, made in or derived, extracted or isolated from cells or tissues of such animals for non-therapeutic purposes,

including but not limited to, for use in agriculture, for use as food, for use as companion, service, work or recreational animals, or for use as racing or other equine event animals, and the rendering of services or uses that relate to the production of such products.

In consideration of the rights and licenses granted to Exeter, Exeter paid to us an initial license fee of $1,000,000, and has agreed to pay royalties equal to 5% of the net sales of all products and services covered by the license; provided that, sublicense income for license products that are the progeny of cloned animals covered by the license or products obtained from such progeny, the royalty is 3%. Exeter is required to pay an annual maintenance fee for the license, equal to $100,000 in 2005, increasing annually by $50,000 up to $500,000. Exeter's obligation to pay the annual maintenance fee was suspended until certain intellectual property that is the subject of litigation, namely the matter styled University of Massachusetts v. James M. Robl and Phillipe Collas, Massachusetts Superior Court, Suffolk County, Docket No. 04-0445-BLS, was settled in dispute. Negotiations are continuing to amend the license subject to the outcome of the settlement. The license also provides that we will refund certain amounts to Exeter if certain conditions concerning the referenced litigation are not met and that we will extend to Exeter rights associated with "improvement patents" that are obtained by us or the University in connection with the referenced litigation or any patent interference or opposition proceedings involving us that relate to the licensed intellectual property or which are useful, necessary or required to develop or manufacture cloned and/or transgenic non-human animals and cloned and/or transgenic cells and tissues from non-human animals within the field of use. The license grants Exeter a right of first negotiation to any improvement patents. There are no milestone payments. Exeter agrees to pay us a total of 25% of all sublicense income under the license. Either party may terminate the agreement in the event of an uncured breach. Exeter may terminate without cause on 60 days' prior written notice to us, or may terminate immediately in the event of a change in law that materially affects Exeter's ability to commercialize the licensed intellectual property under the license.

We expect that the Exeter Life Science License will be amended as a result of the Start Settlement and the settlement of the University of Massachusetts and Advanced Cell Technology, Inc. v. Roslin Institute (Edinburgh), Geron Corporation and Exeter Life Sciences, Inc., U.S. District Court for the District of Columbia (Case No. 1:05-cv-00706 RMU), and University of Massachusetts and Advanced Cell Technology, Inc. v. Roslin Institute (Edinburgh), Geron Corporation and Exeter Life Sciences, Inc., U.S. District Court for the District of Columbia (Case No. 1:05-cv-00353 RMU).

Lifeline License - On May 14, 2004, we entered into three license agreements (indefinite license periods) with Lifeline Cell Technology, formerly known as PacGen Cellco, LLC; the licenses were subsequently amended in August 2005. Pursuant to the license agreements, as amended, we licensed to Lifeline, on an exclusive or non-exclusive basis, as applicable, certain know-how and patent rights for, among other things, the research, development, manufacture and sale of human cells for cell therapy in the treatment of human diabetes and liver diseases, and retinal diseases and retinal degenerative diseases. The license agreements require milestone payments up to $1.75 million in the aggregate. The agreement requires Lifeline to meet minimum research and development requirements. The licenses continue until expiration of the last valid claim within the licensed patent rights. Either party may terminate the agreements for an uncured breach, and Lifeline may terminate the agreement at any time with 30 days' notice.

Exclusive License Agreement Number 1, as amended, covers patent rights and technology developed by us that are relevant to:

- the research, development, manufacture and sale of human and non-human animal cells for commercial research and

- the manufacture and selling of human cells for therapeutic and diagnostic use in the treatment of human diabetes and liver diseases, and retinal diseases and retinal degenerative diseases.

Lifeline has agreed to pay us royalties ranging from 3% to 10% on net sales of products and services covered by the license, and a minimum royalty fee of $175,000 in the first year, plus, commencing 12 months after the effective date of the agreement, additional minimum royalty fees in the amount of $15,000 at 12 months, $37,500 at 24 months, $60,625 at 36 months, and $75,000 annually thereafter. Lifeline also agreed to pay a license fee in the amount of $225,000 in the form of a Convertible Promissory Note, which was repaid in cash in 2007.

We expect that Lifeline Exclusive License Agreement Number 1, as amended, will be further amended as a result of the Start Settlement and the settlement of University of Massachusetts and Advanced Cell Technology, Inc. v. Roslin Institute (Edinburgh), Geron Corporation and Exeter Life Sciences, Inc., U.S. District Court for the District of Columbia (Case No. 1:05-cv-00706 RMU), and University of Massachusetts and Advanced Cell Technology, Inc. v. Roslin Institute (Edinburgh), Geron Corporation and Exeter Life Sciences, Inc., U.S. District Court for the District of Columbia (Case No. 1:05-cv-00353 RMU).

Exclusive License Agreement Number 2, as amended, covers patent rights and technology developed by UMass relevant to:

- the research, development, manufacture and sale of human and non-human animal cells and defined animal cell lines for commercial research,

- the manufacture and selling of human cells for therapeutic and diagnostic use in the treatment of human diabetes and liver diseases and retinal diseases and retinal degenerative diseases, and

- the use of defined animal cell lines in the process of manufacturing and selling human cells for therapeutic and diagnostic use in the treatment of human diabetes and liver diseases.

Lifeline is required to pay us royalties ranging from 3% to 12% on net sales of products and services covered by the license, and a minimum royalty fee of $100,000 in the first year, plus, commencing 12 months after the effective date of the agreement, additional minimum royalty fees in the amount of $15,000 at 12 months, $30,000 at 24 months, $45,000 at 36 months, and $60,000 annually thereafter. Lifeline also paid a license fee in the amount of $150,000 on June 1, 2007.

We expect that Lifeline Exclusive License Agreement Number 2, as amended, will be further amended as a result of the Start Settlement and the settlement of University of Massachusetts and Advanced Cell Technology, Inc. v. Roslin Institute (Edinburgh), Geron Corporation and Exeter Life Sciences, Inc., U.S. District Court for the District of Columbia (Case No. 1:05-cv-00706 RMU), and University of Massachusetts and Advanced Cell Technology, Inc. v. Roslin Institute (Edinburgh), Geron Corporation and Exeter Life Sciences, Inc., U.S. District Court for the District of Columbia (Case No. 1:05-cv-00353 RMU).

Exclusive License Agreement Number 3, as amended, covers patent rights and technology developed by Infigen relevant to the research, development, manufacture and sale of human cells for cell therapy in the treatment of therapeutic and diagnostic use in the treatment of human diabetes and liver diseases, and retinal diseases and retinal degenerative diseases. Lifeline is required to pay us royalties equal to 6% of net sales of products and services covered by the license, and a minimum royalty fee of $25,000 in the first year, plus, commencing 12 months after the effective date of the agreement, additional minimum royalty fees in the amount of $7,500 at 12 months, $7,500 at 24 months, $6,875 at 36 months, and $15,000 annually thereafter. Lifeline also paid a license fee in the amount of $225,000 in cash on June 1, 2007.

We expect that Lifeline Exclusive License Agreement Number 3, as amended, will be further amended or terminated, as a result of the dissolution of Infigen and the acquisition by us of certain of the Infigen patent rights.

Start Licensing License - On August 30, 2006, we entered into a Settlement and License Agreement with UMass and Start Licensing, Inc. (indefinite license period). See description of this agreement above. Pursuant to this agreement, we granted Start Licensing a worldwide, exclusive, fully paid-up and royalty-free license, with the right to grant sublicenses, to certain patent rights for use in connection with all uses and applications in non-human animals. The agreement was reached in connection with the settlement of the patent interference actions. The terms of the agreement also includes an initial payment to us, which has been made, and certain milestone payments. In addition, under the agreement, Start, Geron Corporation and Roslin Institute ("Roslin") each agree not to sue us under certain patent applications owned by Roslin.

Terumo Agreement - Diacrin, Inc. and Terumo Corporation entered into a development and license agreement on September 4, 2002 (indefinite license period); the agreement was transferred to Mytogen on December 28, 2005. Under the agreement, the parties agreed to collaborate to develop and commercialize products in the field described as autologous skeletal myoblasts for cardiac therapy (and conditionally allogenic skeletal myoblasts for cardiac therapy) in Japan and such other Asian countries as the parties may agree. Pursuant to the agreement, Terumo has an exclusive, royalty-bearing license, with a limited right to grant sublicenses, under certain technology and patent rights controlled by Mytogen; and a non-exclusive, non-royalty bearing right and license to use certain data resulting from clinical trials for products based on the licensed technology and patent rights for purposes of seeking regulatory approvals. The agreement specifies the rights and obligations of the parties with respect to collaboration and development of products covered by the agreement. The agreement also requires Terumo to make certain milestone payments, including the following: two million dollars upon initiation of any clinical trials of any covered product in Japan; two million dollars upon the first filing for regulatory approval of a covered product in Japan; one million dollars upon the first filing for regulatory approval of a covered product in any country other than Japan if the territory is expanded to include countries other than Japan; two million dollars upon the first commercial sale of a covered product in Japan; and one million dollars upon the first commercial sale of a covered product in any country other than Japan if the territory is expanded to include countries other than Japan. Terumo is also required under the agreement to pay royalties in an amount equal to ten percent (10%) of the net sales on covered products. In May 2008, Terumo exercised an option to extend a milestone for one year for $300,000. The milestone consisted of a Phase I clinical trial for the Myoblast Program in Japan and was extended for two years.

Pharming Technologies B.V. License - On February 26, 2008, we entered into a License Agreement with Pharming Technologies B.V., referred to as Pharming, pursuant to which we exclusively licensed to Pharming certain patents including oocyte activation patents for all uses and applications in or related to non-human animals (indefinite license period). We retained all use and applications of such patents in or related to humans.

Transition Holdings, Inc. - On December 18, 2008, we entered into a license agreement with an Ireland-based investor, Transition Holdings Inc. ("Transition"), for certain of our non-core technology (indefinite license period). Under the agreement, Transition agreed to acquire a license to the technology for $3.5 million in cash.

Stem Cell & Regenerative Medicine International, Inc. - On December 1, 2008, the Company and CHA Bio & Diostech Co., Ltd. ("CHA"), a leading Korean-based biotechnology company focused on the development of stem cell technologies, formed an international joint venture. The new company, Stem Cell & Regenerative Medicine International, Inc. ("SCRMI"), will develop human blood cells and other clinical therapies based on our Hemangioblast Program, one of our core technologies. SCRMI has agreed to pay the Company fee of $500,000 for an exclusive, worldwide, license to the Hemangioblast Program (indefinite license period).

CHA – On March 31, 2009, we entered into a licensing agreement (indefinite license period) under which we have licensed our retinal pigment epithelium ("RPE") technology, for the treatment of diseases of the eye, to CHA for development and commercialization exclusively in Korea. We are eligible to receive up to $1.9 million in fees based upon achieving certain milestones, including us making an IND submission to the US FDA to commence clinical trials in humans using the technology, which we currently plan to do during the second half of 2009. We received an up-front fee of $250,000 and additional consideration under the agreement in the amount of $850,000. Under the terms of the agreement, CHA will incur all of the cost associated with RPE clinical trials in Korea.

CHA – On May 21, 2009, we have entered into a licensing agreement (indefinite license period) under which we will license our proprietary single blastomere technology, which has the potential to generate stable cell lines, including retinal pigment epithelium (RPE) cells for the treatment of diseases of the eye, to CHA for development and commercialization exclusively in Korea. We received a $300,000 up-front license fee. We believe there are some 200 different retinal diseases that may be impacted by this stem cell derived therapy including macular degeneration. Age-related macular degeneration (AMD) affects more than 30 million people worldwide and is the leading cause of blindness in people over 60 years of age in the United States (Source: Foundation For Fighting Blindness).

Embroyme Sciences, Inc. – In 2008, we entered into a license agreement (indefinite license period) whereby we licensed to Embryome Sciences certain cell processing technologies, including the technology licensed from Kirin Beer.We received an up-front payment of $470,000 and will receive royalties from future sales of product that utilizes the technologies from the licenses.

Nonexclusive Licenses of Intellectual Property by Us

We have entered into numerous nonexclusive license agreements pursuant to which we have granted non-exclusive rights to various parties to use certain patent rights in defined fields. These licenses generally provide for commercialization of our intellectual property and typically contain minimum royalties, milestones and continuing royalties based upon percentages of revenue.

Regulations

In addition to safety regulations enforced by the FDA, we are also subject to regulations under the Occupational Safety and Health Act, the Environmental Protection Act, the Toxic Substances Control Act and other present and potential future and federal, state, local, and foreign regulations.

Outside the United States, we will be subject to regulations that govern the import of drug products from the United States or other manufacturing sites and foreign regulatory requirements governing human clinical trials and marketing approval for our products. The requirements governing the conduct of clinical trials, product licensing, pricing and reimbursements vary widely from country to country.

The United States Congress, several states and foreign countries have considered legislation banning or restricting human application of ES cell-based and nuclear transfer based technologies. No assurance can be given regarding future restrictions or prohibitions that might affect our technology and business. In addition, we cannot assure you that future judicial rulings with respect to nuclear transfer technology or human ES cells will not have the effect of delaying, limiting or preventing the use of nuclear transfer technology or ES cell-based technology or delaying, limiting or preventing the sale, manufacture or use of products or services derived from nuclear transfer technology or ES cell-derived material. Any such legislative or judicial development would harm our ability to generate revenues and operate profitably.

For additional information about governmental regulations that will affect our planned and intended business operations, see "Risk Factors".

Employees

As of December 1, 2010, we had 14 full-time employees, of whom 6 hold Ph.D. or M.D. degrees. Eleven employees are directly involved in research and development activities and 3 are engaged in business development and administration. We also use the services of numerous outside consultants in business and scientific matters. We believe that we have good relations with our employees and consultants.

Competition

The biotechnology industries are characterized by rapidly evolving technology and intense competition. Our competitors include major multinational pharmaceutical companies, specialty biotechnology companies and chemical and medical products companies operating in the fields of regenerative medicine, cell therapy, tissue engineering and tissue regeneration. Many of these companies are well-established and possess technical, research and development, financial and sales and marketing resources significantly greater than ours. In addition, certain smaller biotech companies have formed strategic collaborations, partnerships and other types of joint ventures with larger, well established industry competitors that afford these companies' potential research and development and commercialization advantages. Academic institutions, governmental agencies and other public and private research

organizations are also conducting and financing research activities which may produce products directly competitive to those we are developing. Moreover, many of these competitors may be able to obtain patent protection, obtain FDA and other regulatory approvals and begin commercial sales of their products before we do.

Several such enterprises have initiated cell therapy research programs and/or efforts to treat the same diseases targeted by us. Companies such as Geron Corporation, Genzyme Corporation, StemCells, Inc., Aastrom Biosciences, Inc. and Viacell, Inc., as well as others, many of which have substantially greater resources and experience in our fields than we do, are well situated to effectively compete with us. Any of the world's largest pharmaceutical companies represents a significant actual or potential competitor with vastly greater resources than ours. These companies hold licenses to genetic selection technologies and other technologies that are competitive with our technologies. These and other competitive enterprises have devoted, and will continue to devote, substantial resources to the development of technologies and products in competition with us.

In the general area of cell-based therapies (including both ES cell and autologous cell therapies), we compete with a variety of companies, most of whom are specialty biotechnology companies, such as Geron Corporation, Genzyme Corporation, StemCells, Inc., Aastrom Biosciences, Inc., Viacell, Inc., MG Biotherapeutics, Celgene, BioHeart, Inc., Baxter Healthcare, Osiris Therapeutics and Cytori. Each of these companies are well-established and have substantial technical and financial resources compared to us. However, as cell-based products are only just emerging as medical therapies, many of our direct competitors are smaller biotechnology and specialty medical products companies. These smaller companies may become significant competitors through rapid evolution of new technologies. Any of these companies could substantially strengthen their competitive position through strategic alliances or collaborative arrangements with large pharmaceutical or biotechnology companies.

The diseases and medical conditions we are targeting have no effective long-term therapies. Nevertheless, we expect that our technologies and products will compete with a variety of therapeutic products and procedures offered by major pharmaceutical companies (in the Retinal Disease indication one of our primary competitors is Celgene). Many pharmaceutical and biotechnology companies are investigating new drugs and therapeutic approaches for the same purposes, which may achieve new efficacy profiles, extend the therapeutic window for such products, alter the prognosis of these diseases, or prevent their onset. We believe that our products, when and if successfully developed, will compete with these products principally on the basis of improved and extended efficacy and safety and their overall economic benefit to the health care system.

Competition for any stem cell products that we may develop may be in the form of existing and new drugs, other forms of cell transplantation, ablative and simulative procedures, and gene therapy. We believe that some of our competitors are also trying to develop stem and progenitor cell-based technologies. We expect that all of these products will compete with our potential stem cell products based on efficacy, safety, cost and intellectual property positions. We may also face competition from companies that have filed patent applications relating to the use of genetically modified cells to treat disease, disorder or injury. In the event our therapies should require the use of such genetically modified cells, we may be required to seek licenses from these competitors in order to commercialize certain of our proposed products, and such licenses may not be granted.

If we develop products that receive regulatory approval, they would then have to compete for market acceptance and market share. For certain of our potential products, an important success factor will be the timing of market introduction of competitive products. This timing will be a function of the relative speed with which we and our competitors can develop products, complete the clinical testing and approval processes, and supply commercial quantities of a product to market. These competitive products may also impact the timing of clinical testing and approval processes by limiting the number of clinical investigators and patients available to test our potential products.

Research and Development

For the years ended December 31, 2009 and 2008 we incurred $3,531,540 and $8,635,577, respectively, on research and development.

DESCRIPTION OF PROPERTY

Our headquarters are located in Marlboro, Massachusetts, where we lease approximately 10,607 square foot of office and laboratory facilities. The monthly rent for this property is $12,596. The lease term is from April 1, 2010 through June 30, 2015. We also lease approximately 700 square feet of corporate office space in Santa Monica, CA. The lease for our Santa Moncia office terminates on February 28, 2011. The monthly rent for this space is $2,170.

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LEGAL PROCEEDINGS

Gary D. Aronson v. Advanced Cell Technology, Inc., Superior Court of California, County of Alameda, Case No. RG07348990. John S. Gorton v. Advanced Cell Technology, Inc, Superior Court of California, County of Alameda Case No. RG07350437. On October 1, 2007 Gary D. Aronson brought suit against us with respect to a dispute over the interpretation of the anti-dilution provisions of our warrants issued to Mr. Aronson on or about September 14, 2005. John S. Gorton initiated a similar suit on October 10, 2007. The two cases have been consolidated. The plaintiffs allege that we breached warrants to purchase securities issued by us to these individuals by not timely issuing stock after the warrants were exercised, failing to issue additional shares of stock in accordance with the terms of the warrants and failing to provide proper notice of certain events allegedly triggering Plaintiffs' purported rights to additional shares. The Plaintiffs withdrew their case the day before the trial date. We are now seeking attorney fees relating to us defending the case over the past 2.5 years.

Alexandria Real Estate-79/96 Charlestown Navy Yard v. Advanced Cell Technology, Inc. and Mytogen, Inc. (Suffolk County, Massachusetts) : The Company and its subsidiary Mytogen, Inc. are currently defending themselves against a civil action brought in Suffolk Superior Court, No. 09-442-B, by their former landlord at 79/96 Thirteenth Street, Charlestown, Massachusetts, a property vacated by us and Mytogen effective May 31, 2008. In that action, Alexandria Real Estate-79/96 Charlestown Navy Yard ("ARE") is alleging that it has been unable to relet the premises and therefore seeking rent for the vacated premises since September 2008. Alexandria is also seeking certain clean-up and storage expenses. We are defending against the suit, claiming that ARE had breached the covenant of quiet enjoyment as of when Mytogen vacated, and that had ARE used reasonable diligence in its efforts to secure a new tenant, it would have been more successful. No trial date has been set.

Bristol Investment Fund, Ltd. as Collateral Agent for the Holders of Certain Original Issue Discount Senior Convertible Debentures v. Alexandria Real Estate—79/96 Charlestown Navy Yard, LLC (Suffolk Superior Court). The Company has been named as a third party defendant in this action, filed September 16, 2009, in which the plaintiff alleges that Alexandria Real Estate ("Alexandria") improperly charged a trustee holding approximately $146,000 of funds in a Company account that Bristol claimed as collateral. Alexandria brought a third party complaint against the Company for indemnification.

Bristol Investment Fund, Ltd. and Bristol Capital, LLC v. Advanced Cell Technology, Inc. and Mytogen, Inc. (Supreme Court of the State of New York, County of New York): On March 9, 2009, plaintiffs filed a complaint and summons in the Supreme Court of the State of New York, County of New York against the Company and its subsidiary Mytogen, Inc. Plaintiffs' complaint alleges, among other things, that the Company has breached the terms of certain contracts with plaintiffs; namely, convertible debentures and a consulting agreement. Plaintiffs seek preliminary and permanent injunctive relief directing the Company to deliver to plaintiff Bristol Investment Fund, Ltd. ("Bristol") 2.5 million shares of its common stock, declaring a conversion price of $0.02 for the convertible debentures held by plaintiffs, and directing the Company to honor plaintiff's future conversion requests. Plaintiffs also seek compensatory damages in an amount to be determined at trial, but alleged in the complaint to exceed $1.5 million. On May 1, 2009, the Company filed an answer to plaintiffs' complaint. On May 13, 2009, the Company filed a motion to stay the action and to compel arbitration of all claims by Bristol. The court has not yet ruled on the Company's motion to stay the action and to compel arbitration. On or about September 16, 2009, plaintiffs filed an order to show cause, seeking the issuance of a preliminary injunction directing the Company to deliver to Bristol 2.5 shares of its common stock pursuant to a convertible debenture and 47.4 million shares of its common stock pursuant to common stock purchase warrants, declaring a conversion price of $0.02 for the convertible debenture held by plaintiffs, and enjoining or restraining the Company from issuing shares of its common stock to any entity other than plaintiffs or the other holders of convertible debentures. On September 25, 2009, the Company submitted its response in opposition to

plaintiffs' motion and moved by cross-motion for dismissal of the complaint, based on the terms of the consent, waiver, amendment and exchange agreement entered into between the Company and the holders of over 95% of the outstanding principal amount of the Amended and Restated Debentures. The court has not yet ruled on the respective motions. The Company intends to continue to contest the case vigorously.

MANAGEMENT'S DISCUSSION AND ANALYSIS OF FINANCIAL CONDITION AND RESULTS OF OPERATIONS

Forward Looking Statements

This prospectus contains forward-looking statements that involve risks and uncertainties. We use words such as "may," "assumes," "forecasts," "positions," "predicts," "strategy," "will," "expects," "estimates," "anticipates," "believes," "projects," "budgets," "potential," "continue" and variations thereof, and other statements contained in this prospectus, regarding matters that are not historical facts and are forward-looking statements. Because these statements involve risks and uncertainties, as well as certain assumptions, actual results may differ materially from those expressed or implied by such forward-looking statements. Factors that could cause actual results to differ materially include, but are not limited to risks inherent in: our early stage of development, including a lack of operating history, lack of profitable operations and the need for additional capital; the development and commercialization of largely novel and unproven technologies and products; our ability to protect, maintain and defend our intellectual property rights; uncertainties regarding our ability to obtain the capital resources needed to continue research and development operations and to conduct research, preclinical development and clinical trials necessary for regulatory approvals; uncertainty regarding the outcome of clinical trials and our overall ability to compete effectively in a highly complex, rapidly developing, capital intensive and competitive industry. See "Risk Factors" set forth herein for a more complete discussion of these factors. Readers are cautioned not to place undue reliance on these forward-looking statements, which speak only as of the date that they are made. We undertake no obligation to publicly update or revise any forward-looking statements, whether as a result of new information, future events or otherwise.

Forward-looking statements include our plans and objectives for future operations, including plans and objectives relating to our products and our future economic performance. Assumptions relating to the foregoing involve judgments with respect to, among other things, future economic, competitive and market conditions, future business decisions, and the time and money required to successfully complete development and commercialization of our technologies, all of which are difficult or impossible to predict accurately and many of which are beyond our control. Although we believe that the assumptions underlying the forward-looking statements contained herein are reasonable, any of those assumptions could prove inaccurate and, therefore, we cannot assure you that the results contemplated in any of the forward-looking statements contained herein will be realized. Based on the significant uncertainties inherent in the forward-looking statements included herein, the inclusion of any such statement should not be regarded as a representation by us or any other person that our objectives or plans will be achieved.

OVERVIEW

The following discussion should be read in conjunction with the financial statements and notes thereto included in this prospectus.

We are a biotechnology company focused on developing and commercializing human stem cell technology in the emerging fields of regenerative medicine and stem cell therapy.

Critical Accounting Policies

Deferred Issuance Cost— Payments, either in cash or share-based payments, made in connection with the sale of debentures are recorded as deferred debt issuance costs and amortized using the effective interest method over the

lives of the related debentures. The weighted average amortization period for deferred debt issuance costs is 48 months.

Fair Value Measurements — For certain financial instruments, including accounts receivable, accounts payable, accrued expenses, interest payable and notes payable, the carrying amounts approximate fair value due to their relatively short maturities.

On January 1, 2008, we adopted FASB ASC 820-10, “Fair Value Measurements and Disclosures.” FASB ASC 820-10 defines fair value, and establishes a three-level valuation hierarchy for disclosures of fair value measurement that enhances disclosure requirements for fair value measures. The carrying amounts reported in the consolidated balance sheets for receivables and current liabilities each qualify as financial instruments and are a reasonable estimate of their fair values because of the short period of time between the origination of such instruments and their expected realization and their current market rate of interest. The three levels of valuation hierarchy are defined as follows:

- Level 1 inputs to the valuation methodology are quoted prices for identical assets or liabilities in active markets.

- Level 2 inputs to the valuation methodology include quoted prices for similar assets and liabilities in active markets, and inputs that are observable for the asset or liability, either directly or indirectly, for substantially the full term of the financial instrument.

- Level 3 inputs to the valuation methodology are unobservable and significant to the fair value measurement.

Management analyzes all financial instruments with features of both liabilities and equity under ASC 480, "Distinguishing Liabilities From Equity" and ASC 815, "Derivatives and Hedging." Derivative liabilities are adjusted to reflect fair value at each period end, with any increase or decrease in the fair value being recorded in results of operations as adjustments to fair value of derivatives. The effects of interactions between embedded derivatives are calculated and accounted for in arriving at the overall fair value of the financial instruments. In addition, the fair values of freestanding derivative instruments such as warrant and option derivatives are valued using the Black-Scholes model.

Revenue Recognition— Our revenues are generated from license and research agreements with collaborators. Licensing revenue is recognized on a straight-line basis over the shorter of the life of the license or the estimated economic life of the patents related to the license. Deferred revenue represents the portion of the license and other payments received that has not been earned. Costs associated with the license revenue are deferred and recognized over the same term as the revenue. Reimbursements of research expense pursuant to grants are recorded in the period during which collection of the reimbursement becomes assured, because the reimbursements are subject to approval.

Stock Based Compensation— We record stock-based compensation in accordance with ASC 718, "Compensation – Stock Compensation." ASC 718 requires companies to measure compensation cost for stock-based employee compensation at fair value at the grant date and recognize the expense over the employee's requisite service period. We recognize in the statement of operations the grant-date fair value of stock options and other equity-based compensation issued to employees and non-employees.

Recent Accounting Pronouncements

In October 2009, the FASB issued Accounting Standards Update 2009-15 ("ASU 2009-15") regarding accounting for own-share lending arrangements in contemplation of convertible debt issuance or other financing. This ASU requires that at the date of issuance of the shares in a share-lending arrangement entered into in contemplation of a convertible debt offering or other financing, the shares issued shall be measured at fair value and be recognized as an issuance cost, with an offset to additional paid-in capital. Further, loaned shares are excluded from basic and diluted earnings per share unless default of the share-lending arrangement occurs, at which time the loaned shares would be included in the basic and diluted earnings-per-share calculation. This ASU is effective for fiscal years beginning on or after December 15, 2009, and interim periods within those fiscal years for arrangements outstanding as of the beginning of those fiscal years. The adoption of this ASU did not have a significant impact on our consolidated financial statements.

On December 15, 2009, the FASB issued ASU No. 2010-06 Fair Value Measurements and Disclosures Topic 820 "Improving Disclosures about Fair Value Measurements". This ASU requires some new disclosures and clarifies some existing disclosure requirements about fair value measurement as set forth in Codification Subtopic 820-10. The FASB's objective is to improve these disclosures and, thus, increase the transparency in financial reporting. The adoption of this ASU did not have a material impact on our consolidated financial statements.

On February 25, 2010, the FASB issued ASU 2010-09 Subsequent Events Topic 855 “Amendments to Certain Recognition and Disclosure Requirements,” effective immediately. The amendments in the ASU remove the requirement for an SEC filer to disclose a date through which subsequent events have been evaluated in both issued and revised financial statements. Revised financial statements include financial statements revised as a result of either correction of an error or retrospective application of U.S. GAAP. The FASB believes these amendments remove potential conflicts with the SEC’s literature. The adoption of this ASU did not have a material impact on our consolidated financial statements.

On March 5, 2010, the FASB issued ASU No. 2010-11 Derivatives and Hedging Topic 815 “Scope Exception Related to Embedded Credit Derivatives.” This ASU clarifies the guidance within the derivative literature that exempts certain credit related features from analysis as potential embedded derivatives requiring separate accounting. The ASU specifies that an embedded credit derivative feature related to the transfer of credit risk that is only in the form of subordination of one financial instrument to another is not subject to bifurcation from a host contract under ASC 815-15-25, Derivatives and Hedging — Embedded Derivatives — Recognition. All other embedded credit derivative features should be analyzed to determine whether their economic characteristics and risks are “clearly and closely related” to the economic characteristics and risks of the host contract and whether bifurcation is required. The ASU is effective for the Company on July 1, 2010. Early adoption is permitted. The adoption of this ASU will not have a material impact on our consolidated financial statements.

Results of Operations

Comparison of Nine Months Ended September 30, 2010 and 2009

	Nine Months Ended September 30, 2010		Nine Months Ended September 30, 2009	
	Amount	% of Revenue	Amount	% of Revenue
Revenue	$ 615,474	100.0%	$ 785,112	100.0%
Cost of Revenue	199,950	32.5%	324,148	41.3%
Gross profit	415,524	67.5%	460,964	58.7%
Research and development expenses and Grant reimbursements	6,728,225	1093.2%	2,138,843	272.4%
General and administrative expenses	13,662,066	2219.8%	1,961,195	249.8%
Change in estimate of accrued liabilities	(1,600,302)	-260.0%	-	0.0%
Loss on settlement of litigation	3,132,300	508.9%	4,903,949	624.6%
Non-operating income (expense)	8,523,246	1384.8%	(41,097,931)	-5234.7%
Net loss	$ (12,983,519)	-2109.5%	$ (49,640,954)	-6322.8%

Revenue

Revenue for the nine months ended September 30, 2010 and 2009 was $615,474 and $785,112, respectively, which represented a decrease of $169,638, or 22%. These amounts relate primarily to license fees and royalties collected that are being amortized over the period of the license granted, and are therefore typically consistent between periods. The decrease in revenue during the nine months ended September 30, 2010 was due to licenses being terminated during the fourth quarter 2009, while just one license renewal for $150,000 was added during the nine months ended September 30, 2010.
Of the revenue recognized during the nine months ended September 30, 2010, we recognized $154,410 (25%of total revenue) in license fee revenue from Transition Holdings, Inc. and another $112,500 (18% of total revenue) from International Stem Cell Corporation.

Research and Development Expenses and Grant Reimbursements

R&D expenses for the nine months ended September 30, 2010 and 2009 were $6,728,225 and $2,275,683, respectively, an increase of $4,452,542, or 196%. R&D consists mainly of facility costs, payroll and payroll related expenses, research supplies and costs incurred in connection with specific research grants, and for scientific research. The increase in R&D expenditures during the nine months ended September 30, 2010 as compared to the same period in 2009 is primarily due to 30,192,203 shares of common stock issued and to be issued to our chief scientific officer, valued at $2,717,298 during the nine months ended September 30, 2010. Further, we increased lab, supply and personnel expenses in 2010 pursuant to our recent IND submission with the Federal Drug Administration for our research in the treatment of Stargardt's Macular Dystrophy (SMD).

Our research and development expenses consist primarily of costs associated with basic and pre-clinical research exclusively in the field of human stem cell therapies and regenerative medicine, with focus on development of our technologies in cellular reprogramming, reduced complexity applications, and stem cell differentiation. These expenses represent both pre-clinical development costs and costs associated with non-clinical support activities such as quality control and regulatory processes. The cost of our research and development personnel is the most significant category of expense; however, we also incur expenses with third parties, including license agreements, sponsored research programs and consulting expenses.

We do not segregate research and development costs by project because our research is focused exclusively on human stem cell therapies as a unitary field of study. Although we have three principal areas of focus for our research, these areas are completely intertwined and have not yet matured to the point where they are separate and distinct projects. The intellectual property, scientists and other resources dedicated to these efforts are not separately allocated to individual projects, but rather are conducting our research on an integrated basis.

We expect that research and development expenses will continue to increase in the foreseeable future as we add personnel, expand our pre-clinical research, begin clinical trial activities, and increase our regulatory compliance capabilities. The amount of these increases is difficult to predict due to the uncertainty inherent in the timing and extent of progress in our research programs, and initiation of clinical trials. In addition, the results from our basic research and pre-clinical trials, as well as the results of trials of similar therapeutics under development by others, will influence the number, size and duration of planned and unplanned trials. As our research efforts mature, we will continue to review the direction of our research based on an assessment of the value of possible commercial applications emerging from these efforts. Based on this continuing review, we expect to establish discrete research programs and evaluate the cost and potential for cash inflows from commercializing products, partnering with others in the biotechnology or pharmaceutical industry, or licensing the technologies associated with these programs to third parties.

We believe that it is not possible at this stage to provide a meaningful estimate of the total cost to complete our ongoing projects and bring any proposed products to market. The use of human embryonic stem cells as a therapy is an emerging area of medicine, and it is not known what clinical trials will be required by the FDA in order to gain marketing approval. Costs to complete could vary substantially depending upon the projects selected for development, the number of clinical trials required and the number of patients needed for each study. It is possible that the completion of these studies could be delayed for a variety of reasons, including difficulties in enrolling patients, delays in manufacturing, incomplete or inconsistent data from the pre-clinical or clinical trials, and difficulties evaluating the trial results. Any delay in completion of a trial would increase the cost of that trial, which would harm our results of operations. Due to these uncertainties, we cannot reasonably estimate the size, nature nor timing of the costs to complete, or the amount or timing of the net cash inflows from our current activities. Until we obtain further relevant pre-clinical and clinical data, we will not be able to estimate our future expenses related to these programs or when, if ever, and to what extent we will receive cash inflows from resulting products.

General and Administrative Expenses

General and administrative expenses for the nine months ended September 30, 2010 and 2009 were $13,662,066 and $1,961,195, respectively, an increase of $11,700,871, or 597%. This expense increase was primarily due to 89,280,595 shares of our common stock issued or to be issued to our chief executive officer, valued at $8,035,254, and another 16,773,597 shares of our common stock issued to our directors, valued at $1,533,513, during the nine months ended September 30, 2010. Additionally, during the nine months ended September 30, 2010, we experienced an increase in legal fees in our efforts to secure financing and in defending the Company in various legal matters.

Change in Estimate of Accrued Liabilities

During the nine months ended September 30, 2010, we revised our estimate of certain accrued liabilities arising principally from legal and professional services received, and accordingly, recognized $1,600,302 as a reduction to our accrued liabilities.

Loss on Settlement of Litigation

Loss on settlement for the nine months ended September 30, 2010 and 2009 were $3,132,300 and $4,903,949, respectively. During the nine months ended September 30, 2009, we entered into a settlement agreement pursuant to which we agreed to settle certain past due accounts payable, for previous professional services and other operating expenses incurred, by the issuance of shares of our common stock. During that period, we settled $505,199 in accounts payable through the issuance of 39,380,847 shares of our common stock with a value of $5,299,148. Accordingly, we recorded a loss on settlement of $4,793,949 for the nine months ended September 30, 2009.

Non-operating income (expense)

Non-operating income (expense) for the nine months ended September 30, 2010 and 2009 was $8,523,246 and ($41,097,931), respectively, which represents an increase of $49,621,177. The change in non-operating income (expense) during the nine months ended September 30, 2010, compared to that of 2009, relates primarily to ($8,200,984) in loss on extinguishment of convertible debentures and note during the nine months ended September 30, 2009, and a total of ($28,864,191) in charges related to changes in valuation of derivative liabilities during the three months ended September 30, 2009 compared with $18,077,454 during the same period in 2010.

Interest income was $15,368 and $2,129 during the nine months ended September 30, 2010 and 2009, respectively. Interest income was higher in the nine months ended September 30, 2010 than in the nine months ended September 30, 2009 due to the higher cash balances held in interest-bearing deposits during the periods. Interest expense was $8,164,546 and $3,890,447 for the nine months ended September 30, 2010 and 2009, respectively, which represents an increase of $4,274,099, or 110%. The increase in interest expense in the nine months ended September 30, 2010, compared to the earlier period primarily to amortization of debt discounts and deferred financing costs being recorded during 2010 for all debt and preferred stock outstanding.

The change in the fair value of derivatives was $18,077,454 and ($788,680) for the nine months ended September 30, 2010 and 2009, respectively. The significant reduction in our debt balances due to conversions to common stock, as well as changes in the value of the Company’s common stock contributed most significantly to the change in the fair value of derivatives during the nine months ended September 30, 2010.

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Net Loss

Net loss for the nine months ended September 30, 2010 and 2009 was $12,983,519 and $49,640,954, respectively. The change in net loss in each period is primarily the result of changes to the fair value of derivatives, offset by interest charges related to convertible debentures and interest charges on our debt.

LIQUIDITY AND CAPITAL RESOURCES

Cash Flows

The following table sets forth a summary of our cash flows for the periods indicated below:

	Nine Months Ended September 30,	
	2010	2009
Net cash used in operating activities	$ (7,298,540)	$ (3,059,608)
Net cash used in investing activities	(199,045)	(7,538)
Net cash provided by financing activities	7,153,865	3,308,000
Net increase (decrease) in cash and cash equivalents	(343,720)	240,854
Cash and cash equivalents at the end of the period	$ 2,195,118	$ 1,057,758

Operating Activities

Our net cash used in operating activities during the nine months ended September 30, 2010 and 2009 was $7,298,540 and $3,059,608, respectively. Cash used in operating activities increased during the current period primarily due to an increase in operating expenditures.

Cash Flows from Investing and Financing Activities

Cash used in investing activities during the nine months ended September 30, 2010 and 2009 was $199,045 and $7,538, respectively. Our cash used in investing activities during the nine months ended September 30, 2010 was attributed to payment of a deposit on a leased space as well as payments for the purchase of fixed assets for approximately $186,000. Cash flows provided by financing activities during the nine months ended September 30, 2010 was $7,153,865. During the nine months ended September 30, 2010, we received $830,165 from the issuance of Series A-1 convertible preferred stock, $1,985,000 from the issuance of Series B preferred stock, $1,685,000 from the issuance of convertible debentures and $2,650,000 from the issuance of convertible promissory notes.

We plan to fund our operations for the next twelve months primarily from the following financings:

- During 2010, we received cash proceeds of $2,650,000 in convertible promissory note financings with JMJ Financial. As of September 30, 2010, $3,520,000 remains available to us.
- During 2010, we received $1,685,000 from the 2009 convertible debenture.
- During 2010, we received $830,165 from the issuance of our Series A-1 convertible preferred stock credit facility. The facility allows for a maximum placement of $5,000,000.
- During 2010, we received $1,985,000 from the issuance of Series B preferred stock. The agreement allows for a maximum placement of $10,000,000.

- We continue to repay our debt financings in shares of common stock, enabling us to use our cash resources to fund our operations.

To a substantially lesser degree, financing of our operations is provided through grant funding, payments received under license agreements, and interest earned on cash and cash equivalents.

With the exception of 2002, when we sold certain assets of a subsidiary resulting in a gain for the year, we have incurred substantial net losses each year since inception as a result of research and development and general and administrative expenses in support of our operations. We anticipate incurring substantial net losses in the future.

On a longer term basis, we have no expectation of generating any meaningful revenues from our product candidates for a substantial period of time and will rely on raising funds in capital transactions to finance our research and development programs. Our future cash requirements will depend on many factors, including the pace and scope of our research and development programs, the costs involved in filing, prosecuting and enforcing patents, and other costs associated with commercializing our potential products. We intend to seek additional funding primarily through public or private financing transactions, and, to a lesser degree, new licensing or scientific collaborations, grants from governmental or other institutions, and other related transactions. If we are unable to raise additional funds, we will be forced to either scale back or business efforts or curtail our business activities entirely. We anticipate that our available cash and expected income will be sufficient to finance most of our current activities through December 31, 2011. We cannot assure you that public or private financing or grants will be available on acceptable terms, if at all. Several factors will affect our ability to raise additional funding, including, but not limited to, the volatility of our common stock.

Comparison of the Years Ended December 31, 2009 and 2008

	2009		2008	
	Amount	% of Revenue	Amount	% of Revenue
Revenue	$ 1,415,979	100.0%	$ 787,106	100.0%
Cost of Revenue	500,899	35.4%	765,769	97.3%
Gross profit	915,080	64.6%	21,337	2.7%
	3,394,700	239.7%	8,530,408	1083.8%

Research and development expenses and Grant reimbursements				
General and administrative expenses	3,439,085	242.9%	5,009,418	636.4%
Loss on settlement of litigation	4,903,949	346.3%	5,436,137	690.6 %
Non-operating income (expense):	(25,935,554)	-1831.6%	(14,948,887)	-1899.2%
Net loss	$ (36,758,208)	-2596.0%	$ (33,903,513)	-4307.4%

Revenues

Revenues relate to license fees and royalties collected that are being amortized over the period of the license granted, and are therefore typically consistent between periods. The increase in revenue during the year ended December 31, 2009, was due to more new licenses being granted as compared to the year ended December 31, 2008 as well as license agreements that were terminated in 2009 that were recognized in 2009 revenue. During 2009, we recognized approximately $382,000 in license fee revenue for licenses that were terminated in 2009. Further, we received $3,600,000 in license fees in 2009, and of that we recognized an additional $231,000 in license fee revenues during the year ended December 31, 2009 as compared with 2008. We expect that our collaboration efforts with CHA Biotech in the SCRMI joint venture will provide us valuable opportunities to develop and license our technologies.

Research and Development Expenses and Grant Reimbursements

Research and development expenses ("R&D") consists mainly of facility costs, payroll and payroll related expenses, research supplies and costs incurred in connection with specific research grants, and for scientific research. R&D expenditures declined from $8,635,577 in 2008 to $3,531,540 for 2009. The decline in R&D expenditures during the 2009 as compared to 2008 is primarily due to the fact that we closed our Charlestown, Massachusetts and Alameda, California facilities at the end of May 2008 and that we laid off a majority of our employees.

Our research and development expenses consist primarily of costs associated with basic and pre-clinical research exclusively in the field of human stem cell therapies and regenerative medicine, with focus on development of our technologies in cellular reprogramming, reduced complexity applications, and stem cell differentiation. These expenses represent both pre-clinical development costs and costs associated with non-clinical support activities such as quality control and regulatory processes. The cost of our research and development personnel is the most significant category of expense; however, we also incur expenses with third parties, including license agreements, sponsored research programs and consulting expenses.

We do not segregate research and development costs by project because our research is focused exclusively on human stem cell therapies as a unitary field of study. Although we have three principal areas of focus for our research, these areas are completely intertwined and have not yet matured to the point where they are separate and distinct projects. The intellectual property, scientists and other resources dedicated to these efforts are not separately allocated to individual projects, but rather are conducting our research on an integrated basis.

We expect that research and development expenses will increase in the foreseeable future as we add personnel, expand our pre-clinical research, begin clinical trial activities, and increase our regulatory compliance capabilities. The amount of these increases is difficult to predict due to the uncertainty inherent in the timing and extent of progress in our research programs, and initiation of clinical trials. In addition, the results from our basic research and pre-clinical trials, as well as the results of trials of similar therapeutics under development by others, will influence the number, size and duration of planned and unplanned trials. As our research efforts mature, we will continue to review the direction of our research based on an assessment of the value of possible commercial applications emerging from these efforts. Based on this continuing review, we expect to establish discrete research programs and evaluate the cost and potential for cash inflows from commercializing products, partnering with others in the biotechnology or pharmaceutical industry, or licensing the technologies associated with these programs to third parties.

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We believe that it is not possible at this stage to provide a meaningful estimate of the total cost to complete our ongoing projects and bring any proposed products to market. The use of human embryonic stem cells as a therapy is an emerging area of medicine, and it is not known what clinical trials will be required by the FDA in order to gain marketing approval. Costs to complete could vary substantially depending upon the projects selected for development, the number of clinical trials required and the number of patients needed for each study. It is possible that the completion of these studies could be delayed for a variety of reasons, including difficulties in enrolling patients, delays in manufacturing, incomplete or inconsistent data from the pre-clinical or clinical trials, and difficulties evaluating the trial results. Any delay in completion of a trial would increase the cost of that trial, which would harm our results of operations. Due to these uncertainties, we cannot reasonably estimate the size, nature nor timing of the costs to complete, or the amount or timing of the net cash inflows from our current activities. Until we obtain further relevant pre-clinical and clinical data, we will not be able to estimate our future expenses related to these programs or when, if ever, and to what extent we will receive cash inflows from resulting products.

General and Administrative Expenses

General and administrative expenses for 2009 compared to 2008 decreased by $1,570,333 to $3,439,085 in 2009. This expense decrease was primarily a result of management's efforts to reduce costs and streamline operations so that we could move closer to achieving profitability. General and administrative expenses should continue to slightly decrease over the short term as we continue to streamline our operations. We expect that with the successful IND submission of our core technologies and a rebound of the U.S. and world economy there will come additional opportunities for growth and capital.

Loss on Settlement of Litigation

In 2008, we settled $603,474 in accounts payable through the issuance of 220,735,436 shares of our common stock. In 2009, we settled $505,199 in accounts payable through the issuance of 39,380,847 shares of our common stock. We recorded a loss on settlement of $4,793,949 and $5,436,137 in our accompanying statements of operations for the years ended December 31, 2009 and 2008, respectively.

On June 30, 2009, an investor submitted a conversion notice in the principal amount of $150,000 into 7,500,000 shares of common stock at $0.02 per share. At that time, we did not have sufficient authorized shares to satisfy this conversion notice. On July 6, 2009, by means of a settlement between the two parties, we agreed to deliver the 7,500,000 shares of our common stock no later than September 25, 2009. We delivered the 7,500,000 shares on September 25, 2009. Further, we agreed to provide the investor with an additional $110,000 principal, which is to be upon the same terms and conditions as the original 2008 debenture. Accordingly, we recognized a loss on settlement in the amount of $110,000 during the year ended December 31, 2009.

Other Income (Expense)

Other income (expense), net, for 2009 and 2008 was ($25,935,554) and ($14,948,887), respectively. The change of ($10,986,667) is primarily due to the $38,517,692 loss on extinguishment of convertible debentures and note, offset by the decrease in the adjustments to fair value of derivatives of 23,103,668 also by interest expense of $10,86,498 as compared to $26,614,761 in 2008.

Interest expense including late fees was $9,190,807 and $26,614,761, for the years ended 2009 and 2008, respectively. The decrease in interest expense is due to the additional debt that was issued in 2008 and the late fees incurred as we did not issue shares to convert the debt to equity and we do not have the cash to pay down the notes.

Further, the interest expense in 2008 was greater than in 2009 because we amortized remaining debt discounts on all outstanding debentures as a result of our default on August 6, 2008.

The gain on the fair value of derivatives was $23,103,668 and $13,082,247, for the years ended 2009 and 2008, respectively. The decline in our share price in 2007 and 2008 contributed most significantly to the gain on the fair value of derivatives, as well as issuance of new debt and warrants during 2009. In periods when the share price declines, the derivative securities become less attractive to exercise or out-of-the-money, and therefore the value of the derivative liabilities declines.

Comparison of the Years Ended December 31, 2008 and 2007

	2008		2007	
	Amount	% of Revenue	Amount	% of Revenue
Revenue	$ 787,106	55.6%	$ 647,349	82.2%
Cost of Revenue	765,769	54.1%	428,913	54.5%
Gross profit	21,337	1.5%	218,436	27.8%
Research and development expenses and Grant reimbursements	8,530,408	602.4%	16,772,470	2130.9%
General and administrative expenses	5,009,418	353.8%	6,781,705	861.6%
(Gain) loss on settlement of litigation	5,436,137	383.9%	(193,862)	-24.6%
Non-operating income (expense):	(14,948,887)	-1055.7%	7,243,152	920.2%
Net loss	$ (33,903,513)	-2394.4%	$ (15,898,725)	-2019.9%

Revenues

Revenues relate to license fees and royalties collected that are being amortized over the period of the license granted, and are therefore typically consistent between periods. The increase in revenue during the year ended December 31, 2008, was due to more new licenses being granted as compared to the year ended December 31, 2007. We received approximately $3,500,000 in license fees in 2008, and of that we recognized just $300,000 in license fee revenues during the year ended December 31, 2008. We also received an additional $1,500,000 from Transition Holdings, Inc. as license fee revenue in the first quarter 2009. We expect that our collaboration efforts with CHA Biotech in the SCRMI joint venture will provide us valuable opportunities to develop and license our technologies.

Research and Development Expenses and Grant Reimbursements

Research and development expenses (“R&D”) consists mainly of facility costs, payroll and payroll related expenses, research supplies and costs incurred in connection with specific research grants, and for scientific research. R&D expenditures declined from $16,839,649 in 2007 to $8,635,577 for 2008. The decline in R&D expenditures during the 2008 as compared to 2007 is primarily due to the fact that we closed our Charlestown, Massachusetts and Alameda, California facilities at the end of May 2008.

Our research and development expenses consist primarily of costs associated with basic and pre-clinical research exclusively in the field of human stem cell therapies and regenerative medicine, with focus on development of our technologies in cellular reprogramming, reduced complexity applications, and stem cell differentiation. These expenses represent both pre-clinical development costs and costs associated with non-clinical support activities such as quality control and regulatory processes. The cost of our research and development personnel is the most significant category of expense; however, we also incur expenses with third parties, including license agreements, sponsored research programs and consulting expenses.

We do not segregate research and development costs by project because our research is focused exclusively on human stem cell therapies as a unitary field of study. Although we have three principal areas of focus for our research, these areas are completely intertwined and have not yet matured to the point where they are separate and distinct projects. The intellectual property, scientists and other resources dedicated to these efforts are not separately allocated to individual projects, but rather are conducting our research on an integrated basis.

We expect that research and development expenses will increase in the foreseeable future as we add personnel, expand our pre-clinical research, begin clinical trial activities, and increase our regulatory compliance capabilities. The amount of these increases is difficult to predict due to the uncertainty inherent in the timing and extent of progress in our research programs, and initiation of clinical trials. In addition, the results from our basic research and pre-clinical trials, as well as the results of trials of similar therapeutics under development by others, will influence the number, size and duration of planned and unplanned trials. As our research efforts mature, we will continue to review the direction of our research based on an assessment of the value of possible commercial applications emerging from these efforts. Based on this continuing review, we expect to establish discrete research programs and evaluate the cost and potential for cash inflows from commercializing products, partnering with others in the biotechnology or pharmaceutical industry, or licensing the technologies associated with these programs to third parties.

We believe that it is not possible at this stage to provide a meaningful estimate of the total cost to complete our ongoing projects and bring any proposed products to market. The use of human embryonic stem cells as a therapy is an emerging area of medicine, and it is not known what clinical trials will be required by the FDA in order to gain marketing approval. Costs to complete could vary substantially depending upon the projects selected for development, the number of clinical trials required and the number of patients needed for each study. It is possible that the completion of these studies could be delayed for a variety of reasons, including difficulties in enrolling patients, delays in manufacturing, incomplete or inconsistent data from the pre-clinical or clinical trials, and difficulties evaluating the trial results. Any delay in completion of a trial would increase the cost of that trial, which would harm our results of operations. Due to these uncertainties, we cannot reasonably estimate the size, nature nor timing of the costs to complete, or the amount or timing of the net cash inflows from our current activities. Until we obtain further relevant pre-clinical and clinical data, we will not be able to estimate our future expenses related to these programs or when, if ever, and to what extent we will receive cash inflows from resulting products.

General and Administrative Expenses

General and administrative expenses for 2008 compared to 2007 decreased by $1,772,287 to $5,009,418 in 2008. This expense decrease was primarily a result of management’s efforts to reduce costs and streamline operations so that we could move closer to achieving profitability. General and administrative expenses should continue to slightly decrease over the short term as we continue to streamline our operations and reduce our costs until we are able to expand.

Loss on Settlement of Litigation

In 2008, we settled $603,474 in accounts payable through the issuance of 220,735,436 shares of our common stock. We recorded a loss on settlement of $5,436,137 in our accompanying statement of operations for the year ended December 31, 2008. In 2007, we recognized a gain on settlement in the amount of $193,862.

Other Income (Expense)

Other income (expense), net, for 2008 and 2007 was ($20,385,024) and $7,437,014, respectively. The change of ($27,822,038) is primarily due to the increase in interest expense, the decrease in the adjustments to fair value of derivatives and the loss on settlement of debt.

The interest expense including late fees was $26,614,761 and $21,023,663, for the years ended 2008 and 2007, respectively. The increase in interest expense is due to the additional debt that was issued and the late fees incurred as we have not issued shares to convert the debt to equity and we do not have the cash to pay down the notes. Further,

the interest expense in 2008 was greater than in 2007 because we amortized remaining debt discounts on all outstanding debentures as a result of our default on August 6, 2008.

The gain on the fair value of derivatives was $13,082,247 and $32,835,057, for the years ended 2008 and 2007, respectively. The decline in our share price in 2007 and 2008 contributed most significantly to the gain on the fair value of derivatives. In periods when the share price declines, the derivative securities become less attractive to exercise or out-of-the-money, and therefore the value of the derivative liabilities declines.

During the year ended 2008, we had a loss of $5,436,137 related to debt settlement compared to a gain of $193,862 during the year ended 2007. Between September 29, 2008 and January 20, 2009, the Company settled certain past due accounts payable by the issuance of shares of its common stock. In aggregate, the Company settled $1,108,673 in accounts payable through the issuance of 260,116,283 shares of its common stock. A loss of $4,695,289 was recorded related to the settlement of this debt during the year ended December 31, 2008 related to the settlement of these payable balances.

Liquidity and Capital Resources

Cash Flows

The following table sets forth a summary of our cash flows for the periods indicated below:

	2009	2008	2007
Net cash used in operating activities	$ (5,142,778)	$ (2,964,820)	$ (16,031,464)
Net cash used in investing activities	(7,538)	(174,514)	(139,873)
Net cash provided by financing activities	6,872,250	2,790,122	8,648,117
Net decrease in cash and cash equivalents	1,721,934	(349,212)	(7,523,220)
Cash and cash equivalents at the end of the period	$ 2,538,838	$ 816,904	$ 1,166,116

Cash used in operating activities changed from $2,964,820 in 2008 to $5,142,778 in 2009. The decrease is primarily attributable to the fact that we closed 2 facilities in May 2008 and have correspondingly reduced our operating costs. Cash used in operating activities in 2007 was $16,031,464. The primary difference between 2007 and 2008 is cash used to fund operations during 2007.

Cash used in investing activities was minimal in 2009, 2008 and 2007, and primarily consisted of purchases of property and equipment.

Cash generated by financing activities in 2009, 2008 and 2007 arose from proceeds from new convertible debt and preferred stock that we successfully raised.

Contractual Obligations

At December 31, 2009, our significant contractual obligations were as follows:

	Payments due by Period				
	Less than One Year	One to Three Years	Three to Five Years	More Than Five Years	Total
Operating lease obligations	164,165	311,943	318,210	80,878	875,196
Total	$ 164,165	$ 311,943	$ 318,210	$ 80,878	$ 875,196

Off-Balance Sheet Arrangements

We do not maintain any off-balance sheet arrangements, transactions, obligations or other relationships with unconsolidated entities that would be expected to have a material current or future effect upon our financial condition or results of operations.

SELECTED FINANCIAL DATA

	For the Year Ended December 31,				
	2009	2008	2007 (restated)	2006 (restated)	2005
Revenue	$ 1,415,979	$ 787,106	$ 647,349	$ 440,842	$ 395,007
Net loss	(36,758,208)	(33,903,513)	(15,898,725)	(16,861,789)	(9,393,778)
Net loss per common share:					
Basic	$ (0.07)	$ (0.14)	$ (0.26)	$ (0.58)	$ (0.43)
Diluted	$ (0.07)	$ (0.14)	$ (0.26)	$ (0.58)	$ (0.43)

	As of December 31,				
	2009	2008	2007 (restated)	2006 (restated)	2005
Total assets	$ 5,088,008	$ 2,577,778	$ 8,607,045	$ 16,989,718	$ 18,074,316
Long-term debt:					
2005 Convertible debenture and embedded derivatives, net of discounts	$ -	$ 85,997	$ 1,276,871	$ 10,466,735	$ 14,148,465
2006 Convertible debenture and embedded derivative, fair value	-	1,993,354	3,047,491	13,238,476	-
2007 Convertible debenture and embedded derivatives, fair value	-	7,706,344	3,482,542	-	-
2008 Convertible debenture and embedded derivatives, fair value	-	4,066,505	-	-	-
Convertible promissory notes and embedded derivatives, fair value	-	1,757,470	-	-	-
Amended and restated convertible debentures, net of discounts	7,605,107	-	-	-	-
Convertible promissory notes, net of discounts	744,417	-	-	-	-
2009 Convertible promissory notes, net of discounts	281,271	-	-	-	-
Total Long-term debt	$ 8,630,795	$ 15,609,670	$ 7,806,904	$ 23,705,211	$ 14,148,465
Redeemable preferred stock	$ 908,195	$ -	$ -	$ -	$ -
Cash dividends delcared per common share	$ -	$ -	$ -	$ -	$ -

MARKET PRICE OF AND DIVIDENDS ON REGISTRANT'S COMMON EQUITY AND RELATED STOCKHOLDER MATTERS

The Company's Common Stock is listed on the Over-the-Counter Bulletin Board under the symbol "ACTC." The following table sets forth the range of high and low bid prices of our common stock for the periods indicated. These prices are based on inter-dealer bid and asked prices, without markup, markdown, commissions, or adjustments and may not represent actual transactions.

Fiscal Year 2008	High Bid	Low Bid
First Quarter	$ 0.25	$ 0.14
Second Quarter	$ 0.13	$ 0.06
Third Quarter	$ 0.07	$ 0.01
Fourth Quarter	$ 0.05	$ 0.02

Fiscal Year 2009	High Bid	Low Bid
First Quarter	$ 0.29	$ 0.04
Second Quarter	$ 0.27	$ 0.10
Third Quarter	$ 0.24	$ 0.12
Fourth Quarter	$ 0.13	$ 0.09

Fiscal Year 2010	High Bid	Low Bid
First Quarter	$ 0.12	$ 0.082
Second Quarter	$ 0.10	$ 0.071
Third Quarter	$ 0.08	$ 0.057
Fourth Quarter	$ 0.11	$ 0.044

As of December 3, 2010, the last sale price reported on the Over-the-Counter Bulletin Board for the Company’s Common Stock was approximately $0.107 per share.

As of December 3, 2010, there were approximately 214 shareholders of record of our common stock.

Penny Stock Rules

Our shares of Common Stock are subject to the "penny stock" rules of the Securities Exchange Act of 1934 and various rules under this Act. In general terms, "penny stock" is defined as any equity security that has a market price less than $5.00 per share, subject to certain exceptions. The rules provide that any equity security is considered to be a penny stock unless that security is registered and traded on a national securities exchange meeting specified criteria set by the SEC, authorized for quotation from the NASDAQ stock market, issued by a registered investment company, and excluded from the definition on the basis of price (at least $5.00 per share), or based on the issuer's net tangible assets or revenues. In the last case, the issuer's net tangible assets must exceed $3,000,000 if in continuous operation for at least three years or $5,000,000 if in operation for less than three years, or the issuer's average revenues for each of the past three years must exceed $6,000,000.

Trading in shares of penny stock is subject to additional sales practice requirements for broker-dealers who sell penny stocks to persons other than established customers and accredited investors. Accredited investors, in general, include individuals with assets in excess of $1,000,000 or annual income exceeding $200,000 (or $300,000 together with their spouse), and certain institutional investors. For transactions covered by these rules, broker-dealers must make a special suitability determination for the purchase of the security and must have received the purchaser's written consent to the transaction prior to the purchase. Additionally, for any transaction involving a penny stock, the rules require the delivery, prior to the first transaction, of a risk disclosure document relating to the penny stock. A broker-dealer also must disclose the commissions payable to both the broker-dealer and the registered representative, and current quotations for the security. Finally, monthly statements must be sent disclosing recent price information for the penny stocks. These rules may restrict the ability of broker-dealers to trade or maintain a market in our common stock, to the extent it is penny stock, and may affect the ability of shareholders to sell their shares.

Dividends

We never paid cash dividends and have no plans to do so in the foreseeable future. Our future dividend policy will be determined by our board of directors and will depend upon a number of factors, including our financial condition and performance, our cash needs and expansion plans, income tax consequences, and the restrictions that applicable laws, our current preferred stock instruments, and our future credit arrangements may then impose.

Currently under Delaware law, unless further restricted in its certificate of incorporation, a corporation may declare and pay dividends out of surplus, or if no surplus exists, out of net profits for the fiscal year in which the dividend is declared and/or the preceding fiscal year (provided that the amount of capital of the corporation is not less than the aggregate amount of the capital represented by the issued and outstanding stock of all classes having a preference upon the distribution of assets).

Securities Authorized for Issuance Under Equity Compensation Plan

The following table shows information with respect to each equity compensation plan under which the Company's common stock is authorized for issuance as of the fiscal year ended December 31, 2009.

EQUITY COMPENSATION PLAN INFORMATION

	Number of securities to be issued upon exercise of outstanding options, warrants and rights (a)	Weighted average exercise price of outstanding options, warrants and rights (b)	Number of securities remaining available for issuance under equity complensation plans (excluding securities reflected in column (a)) (c)
Equity compensation plans approved by security holders	28,486,119(1)	$ 0.32	119,826,292(2)
Equity compensation plans not approved by security holders	5,930,391	0.50	-
Total	34,416,510	0.35	119,826,292

(1) Awards for 2,492,000 options have been issued under the Advanced Cell Technology, Inc. 2004 Stock Option Plan I ("2004 Plan 1"), 1,301,161 options have been issued under the Advanced Cell Technology, Inc. 2004 Stock Option Plan II ("2004 Plan 2" and together with the 2004 Plan I, the "2004 ACT Plans"), and 26,594,958 options have been issued under the 2005 Stock Plan.

(2) This number included 370,000 shares available under the 2004 Plan I, 230,000 shares available under the 2004 Plan II, and 119,226,292 shares available under the 2005 Stock Plan.

CHANGES IN AND DISAGREEMENTS WITH ACCOUNTANTS ON ACCOUNTING AND FINANCIAL DISCLOSURE

None.

QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK

Our exposure to market risk is limited primarily to interest income sensitivity, which is affected by changes in the general level of U.S. interest rates, particularly because a significant portion of our investments are in short term debt

securities issued by the U.S. government and institutional money market funds. The primary objective of our investment activities is to preserve principal. Due to the nature of our marketable securities, we believe that we are not exposed to any material market risk. We do not have any derivative financial instruments or foreign currency instruments. If interest rates had varied by 10% in the three months ended March 31, 2010, it would not have had a material effect on our results of operations or cash flows for that period.

DIRECTORS, EXECUTIVE OFFICERS, PROMOTERS AND CONTROL PERSONS

Our directors are elected at the annual meeting of shareholders to hold office until the annual meeting of shareholders for the ensuing year or until their successors have been duly elected and qualified. Officers are elected annually by the Board of Directors and serve at the discretion of the Board. The directors and executive officers of the Company are as follows:

Name	Age	Position
William M. Caldwell, IV	62	Chief Executive Officer and Chairman of the Board of Directors
Robert P. Lanza M.D.	53	Chief Scientific Officer
Alan C. Shapiro, Ph.D.	64	Member of the Board of Directors
Erkki Ruoslahti, M.D., Ph.D.	69	Member of the Board of Directors
Gary Rabin	44	Member of the Board of Directors

Background of Executive Officers and Directors

William M. Caldwell, IV has been our Chief Executive Officer and Chairman of the Board of Directors since January 2005. He has a 30-year management career working with emerging technologies and restructuring distressed corporate environments. During his career he has served in senior executive positions both in marketing and finance. He has worked with Booz Allen and Hamilton; the Flying Tiger Line Inc.; Van Vorst Industries; and Kidder Peabody. He started a firm specializing in strategy and financial planning which was instrumental in restructuring over $1.0 billion of debt for over twenty companies and partnerships. He was a pioneer in the satellite radio auctions as President of Digital Satellite Broadcasting Corporation; assisted in the financing and became President and ultimately CEO in the restructuring of CAIS Internet, and has advised corporations, both public and private, in technology, telecommunications, retailing, real estate, hospitality, publishing, and transportation. He received his B.A. degree from the University of Southern California and was a Multinational Enterprise Fellow at the Wharton School of the University of Pennsylvania. He serves as a director of Lee Pharmaceuticals and King Koil Franchising Corp. Mr. Caldwell is not an officer or director of any other reporting company. Mr. Caldwell's long career as a CEO and board member with companies in diverse industries qualifies him to be a board member of Advanced Cell Technology, Inc.

Robert P. Lanza, M.D. has been our Chief Scientific Officer since October 2007. Dr. Lanza has over 20 years of research and industrial experience in the areas of tissue engineering and transplantation medicine. Before joining us in 1998, from 1990 to 1998, Dr. Lanza was Director of Transplantation Biology at BioHybrid Technologies, Inc., where he oversaw that company's xenotransplantation and bioartificial pancreas programs. He has edited or authored sixteen books, including Principles of Tissue Engineering (2d ed. co-edited with R. Langer and J. Vacante), Yearbook of Cell and Tissue Transplantation, One World The Health & Survival of the Human Species in the Twenty-First Century, and Xeno: The Promise of Transplanting Animal Organs into Humans (co-authored with D.K.C. Cooper). Dr. Lanza received his B.A. and M.D. Degrees from the University of Pennsylvania, where he was both a University Scholar and Benjamin Franklin Scholar. Dr. Lanza is not an officer or director of any other reporting company.

Alan C. Shapiro, Ph.D. has served as director since 2005. He adds more than 30 years' experience in corporate and international financial management to the Company. Dr. Shapiro is currently the Ivadelle and Theodore Johnson Professor of Banking and Finance at the Marshall School of Business, University of Southern California, where he previously served as the Chairman of the Department of Finance and Business Economics, Marshall School of

Business. Prior to joining the University of Southern California, Dr. Shapiro taught as an Assistant Professor at the University of Pennsylvania, Wharton School of Business, and has been a visiting professor at Yale University, UCLA, the Stockholm School of Economics, University of British Columbia, and the U.S. Naval Academy. Dr. Shapiro has published over 50 articles in such academic and professional journals as the Journal of Finance, Harvard Business Review, and the Journal of Business, among many others. He frequently serves as an expert witness in cases involving valuation, economic damages, international finance, takeovers, and transfer financing through Trident Consulting Group LLC. He received his B.A. in Mathematics from Rice University, and a Ph.D. in Economics from Carnegie Mellon University. Dr. Shapiro is a trustee of Pacific Corporate Group's Private Equity Fund. Dr. Shapiro's board experience on multiple public company boards, his recognized expertise as a highly sought after financial advisor and his career as a professor and Chair in the field of Finance and Administration qualifies him as a valued member of Advanced Cell Technology's Board of Directors.

Erkki Ruoslahti, M.D., Ph.D. has served as a director since November 2005. Dr. Ruoslahti joined The Burnham Institute in 1979 and served as its President from 1989 to 2002. Dr. Ruoslahti is the recipient of the 2005 Japan Prize for his work in cell biology. Dr. Ruoslahti's other honors include the Gairdner Prize, and membership in the U.S. National Academy of Sciences, Institute of Medicine, and American Academy of Arts and Sciences. He is a Knight of the Order of the White Rose of Finland. Dr. Ruoslahti earned his M.D. and Ph.D. from the University of Helsinki in Finland. After postdoctoral training at the California Institute of Technology, he held various academic appointments in Finland and at City of Hope National Medical Center in Duarte, California. Dr. Ruoslahti's research has been the basis of several drugs currently on the market or in clinical trials. He has been a founder and director of several biotechnology companies. Dr. Ruoslahti is not an officer or director of any other reporting company. Based upon his scientific background and years as a senior operations manager in the scientific research and development community, Dr. Ruoslahti is uniquely qualified to be a member of Advanced Cell Technology’s Board of Directors.

Gary Rabin has served as a director since December 2007. Mr. Rabin has a twenty year career in finance that primarily encompasses investment management and capital raising targeting small-cap and emerging growth companies. Currently, he is the Managing Partner of Vine Holdings, a long/short hedge fund focused on the media and communications industry. Until July 2007, he was a Portfolio Manager at MAC Investment Management, LLC ("MAC"), which he joined in November 2005. MAC is a long/short fundamental equity hedge fund concentrating on growth-oriented stocks including technology, communications and healthcare. Previously, he was a Managing Director and Portfolio Manager at Marketus Associates, a long/short hedge fund where he focused on communications, healthcare services, energy and special situations. Prior to that, he was Managing Director and Co-Head of the Media and Telecom Investment Banking Group at CIBC World Markets ("CIBC"), where he was responsible for all corporate finance and M&A, financial restructurings, and principal investing activities (both debt and equity) within the sector. Before joining CIBC, Mr. Rabin served in an operating capacity at a broadband services company when he was Chief Strategy Officer of CAIS Internet, Inc. ("CAIS"). At CAIS, he was responsible for raising over $500 million of financing commitments in both the public equity markets and from his relationships at Kohlberg, Kravis Roberts & Co., Qwest Communications, Cisco, Nortel, 3Com and Microsoft. Mr. Rabin has also started and served as Managing Director and Head of the Global Telecom Investment Banking Group at ING Barings Furman Selz, and was a founder of the telecom group at UBS Securities. He began his career in finance in 1987, and concentrated on energy, utilities, and metals until 1993. Throughout his career, Mr. Rabin has been responsible for building and developing businesses. Mr. Rabin earned an AB in Economics from the University of Michigan. Mr. Rabin’s long career as a senior manager in both the investment banking community and as a senior financial executive qualifies him to be a member of the Board of Directors of Advance Cell Technology, Inc.

EXECUTIVE COMPENSATION

COMPENSATION DISCUSSION AND ANALYSIS

This section describes the compensation program for our executive officers. In particular, this section focuses on our 2009 compensation program and related decisions.

The Board of Directors has established a Compensation Committee, the majority of which are independent outside directors which approves all compensation and awards to executive management. The members of the Compensation Committee have extensive executive level experience in other companies and bring a perspective of reasonableness to compensation matters with our Company. In addition, the Compensation Committee compares executive compensation practices of similar companies at similar stages of development.

The objectives of our compensation program are as follows:

- Reward performance that drives substantial increases in shareholder value, as evidenced through both future operating profits and increased market price of our common shares; and
- Attract, hire and retain well-qualified executives.

The compensation level of our executives generally reflects their unique position and incentive to positively affect our future operating performance and shareholder value. Part of the compensation of our executives is from equity compensation, primarily through stock option grants or restricted stock awards.

Specific salary and bonus levels, as well as the amount and timing of equity incentive grants, are determined informally and judgmentally, on an individual-case basis, taking into consideration each executive's unique talents and experience as they relate to our needs. With respect to equity compensation, the Compensation Committee approves all option grants, generally based on the recommendation of the president and chief executive officer. Executive compensation is paid or granted pursuant to each executive's compensation agreement. Compensation adjustments are made occasionally based on changes in an executive's level of responsibility or on changed local and specific executive employment market conditions. Based on these factors the Compensation Committee approved the execution of employment agreement with the Company’s only two executive officers.

With respect to the cash bonus awarded to Mr. Caldwell, $100,000 was awarded pursuant to the Employment Agreement between the Company and Mr. Caldwell, dated October 1, 2009. The Board approved the award of $100,000 as a signing/retention bonus because this was the amount that the Board thought was fair in light of Mr. Caldweld’s expected contributions to the Company and one that he would also find acceptable. With respect to the balance of the bonus awarded to Mr. Caldwell, the Company’s Board awarded all current employees who participated in achievement of the filing of the Investigational New Drug (“IND”) application a bonus equal to one month’s salary which amounted to an award of $40,000 to Mr. Caldwell.

With respect to the cash bonus awarded to Dr. Lanza, $50,000 was awarded as a signing bonus in connection with the execution of the Employment Agreement between the Company and Dr. Lanza, dated October 1, 2009. The Board approved the award because the board did not want Dr. Lanza seeking other employment and the Board thought that this bonus award coupled with the other compensation provided for in Dr. Lanza’s employment agreement would create a compensation package that Dr. Lanza would find acceptable. The balance of the bonus awarded to Dr. Lanza (equal to $31,250) was awarded to him as part of the bonuses warded to all employees that participated in the filing of the IND application and equaled one month’s salary.

With respect to the stock options awarded to Mr. Caldwell and Dr. Lanza, the exercise price was the price of the Company's common stock on the day that Board approved the grant of the options. With respect to the amount of the options the Board approved the grant of options equaled one half of the amount of options that the employee currently had. The Board believed that 50% was fair in light of the contributions of Mr. Caldwell and Dr. Lanza. In particular, each employee (who had previously been issued options) received options equal to 50% of the aggregated options previously issued to such employee. Thus, the number of options issued to Mr. Caldwell and Dr. Lanza was determined based on the same formula used to determine the number of options issued to all other employees of the Company (who had previously been issued options). (Employees who were not previously issued options received option awards based upon the recommendation of senior management.) At the time of approval of these options, all of the Company's previously issued options had exercise prices that were so far above the market price as to effectively have no value to the employees. The Board believed that this formula was fair in light of the fact that, as noted above, the previously issued options no longer had any value to the employees, such employees who were issued options based on this formula had been through a forced furlough and had made a commitment to return to the Company despite the Company's then precarious financial condition, and such a formula would provide a significant award to such employees. The contributions of Mr. Caldwell, which the board believed merited this option award based on the same formula as that provided to other employees with previously issued options, included serving as the Company's principal executive officer and principal financial officer. In such roles, Mr. Caldwell was instrumental in raising needed capital for the Company, ensuring the Company complied with its reporting obligations under the Securities Exchange Act of 1934, as amended, and overseeing the company's operations. The contributions of Dr. Lanza, which the board believed merited this option award based on the same formula as that provided to other employees with previously issued options, included serving as the Company's chief scientific officer and chief medical officer. In such roles, Dr. Lanza oversaw the Company's drug development efforts, led the scientific efforts of the Company, and developed and managed the Company's pre-clinical studies.

Risk Management Considerations

In response to the ongoing global economic recession, in 2009 the compensation committee considered the incentives under our executive compensation program and whether they introduced or encouraged excessive risk taking or other behaviors by our executives that could have a negative impact on our business. The compensation committee determined that our executive compensation program provides an appropriate balance of incentives and that it does not encourage our executives to take excessive risks or otherwise create risks that are reasonably likely to have a material adverse effect on us.

Summary Compensation Table

The following table summarizes the annual compensation paid to our named executive officers for the three years ended December 31, 2009, 2008 and 2007:

Name and Principal Position	Year	Salary ($)	Bonus ($)	Stock Awards ($)	Option Awards ($)	All Other Compensation ($)	Total ($)

William M. Caldwell, IV	2009	417,500	140,000	-	210,866	1,879(1)	770,245
Chief Executive Officer,	2008	350,000	-	-	-	995(1)	350,995
Principle Financial Officer, and	2007	348,374	150,000	-	-	2,376(1)	500,750
Chairman of the Board of Directors							
Robert P. Lanza, M.D.,	2009	311,250	81,250	-	441,665	1,524(1)	835,689
Chief Scientific Officer	2008	290,000	35,000	-	168,237	636(1)	493,873
	2007	342,805	50,000	-	28,910	483(1)	422,198
Jonathan F. Atzen	2008	78,077	-	93,669	1,598	3,001(2)	176,345
Sr. Vice President, General Counsel	2007	338,537	60,000	-	6,391	12,360(2)	417,288
and Secretary (2)							

Please see the assumptions relating to the valuation of our stock option awards which are contained in Notes to audited Financial Statements included in this prospectus.

(1) This amount represents a life insurance premium paid by the Company for the named executive officer.

(2) Effective as of March 7, 2008, Mr. Atzen resigned from his positions at the Company and terminated his employment arrangement with the Company. This amount in 2008 represents $2,670 in payments made to Mr. Atzen as part of his $1,000 monthly car allowance through his termination date and $331 in life insurance premiums paid by the Company for Mr. Atzen. This amount in 2007 represents $12,000 in payments made to Mr. Atzen as part of his $1,000 monthly car allowance and $360 in life insurance premiums paid by the Company for Mr. Atzen.

Employment Agreements

Employment Agreement with William M. Caldwell, IV On February 22, 2010, we entered into an employment agreement with William M. Caldwell, IV, who has been our chief executive officer and chairman since January 2005. Pursuant to the Employment Agreement, the parties agreed as follows:

Mr. Caldwell will continue to serve as our chief executive officer, for a term of two and 1/3 years commencing on October 1, 2009, subject to earlier termination as provided therein. The term under the Employment Agreement will renew automatically for additional one year terms unless either party provides written notice of intent not to renew the employment agreement at least 90 days prior to such automatic renewal.

We will pay Mr. Caldwell an initial base salary of $480,000 per annum, which base salary will increase annually by not less than the annual increase in the consumer price index, and may be increased during the term by a greater amount at the sole discretion of the Company's board of directors.

Within 10 days of execution of the employment agreement, Mr. Caldwell received a retention bonus of $100,000.

Commencing in the 2010 calendar year, we will pay Mr. Caldwell an annual bonus based on the performance of our common stock. We may also pay Mr. Caldwell additional bonuses in the Company's sole discretion.

We will recommend to the Company's board of directors that the Company issue to Mr. Caldwell restricted common stock in an amount equal to the greater of (a) 70,000,000 shares or (b) 7% of the Company's fully diluted shares of issued and outstanding common stock.

If Mr. Caldwell's employment under the Employment Agreement is terminated by the Company without cause, or by Mr. Caldwell for good reason, we will pay Mr. Caldwell severance of two years' base salary.

Employment Agreement with Robert P. Lanza, M.D. On October 1, 2009, the Company entered into an employment agreement (the "Agreement") with Robert P. Lanza, the Company's chief scientific officer since October 2007. Pursuant to the Agreement, the parties agreed as follows:

Robert P. Lanza will continue to serve as the Company's chief scientific officer, for a term of two years commencing on October 1, 2009, subject to earlier termination as provided therein. The term under the Agreement may be extended by mutual written agreement.

The Company will pay Mr. Lanza a base salary of $375,000 per annum, which may be increased during the term at the sole discretion of the Company's board of directors. The Company may also pay Mr. Lanza annual bonuses in the Company's sole discretion.

The Company will issue to Mr. Lanza 30,192,203 shares of free trading common stock from the Company's 2005 Employee Incentive Plan.

If Mr. Lanza's employment under the Agreement is terminated by the Company without cause, the Company will pay Mr. Lanza severance of one year's base salary.

The following table sets forth information regarding stock option awards to our named executive officers under our stock option plans for the year ended December 31, 2009 as follows:

Name	Grant date	Estimated future payouts under non-equity incentive plan awards			Estimated future payouts under equity incentive plan awards			All other stock awards: Number of shares of stock or units	All other option awards: Number of securities underlying options	Exercise or base price of option awards	Grant d fair valu stock a optio awards
		Threshold ($)	Target ($)	Maximum ($)	Threshold (#)	Target (#)	Maximum (#)	(#)	(#)	($/Sh)	
William M. Caldwell, IV	11/13/2009	-	-	-	2,554,273	2,554,273	2,554,273	-	-	0.098	$ 210,
Robert P. Lanza, M.D.	11/13/2009	-	-	-	5,350,000	5,350,000	5,350,000			0.098	$ 441,
Johnathan F. Atzen	-	-	-	-	-	-	-	-	-	-	

(1) The aggregate fair value of the stock option awards were calculated as of the grant date utilizing the Black-Scholes option-pricing model and in accordance with FASB ASC Topic 718. The assumptions used in the Black-Scholes option-pricing model are disclosed in the Company's Annual Report on Form 10-K for the fiscal year ended December 31, 2009.

Outstanding Equity Awards at December 31, 2009

Name	Number of Securities Underlying Unexercised Options (#) Exercisable		Number of Securities Underlying Unexercised Options (#) Unexercisable	Option Exercise Price ($)	Option Expiration Date ($)
William M. Caldwell, IV	651,161	(1)	-	0.25	12/31/2014
Chief Executive Officer and	1,903,112	(1)	-	0.85	1/31/2015
Chairman of the Board of Directors	1,383,565	(2)	1,170,708	0.098	11/13/2019
Robert P. Lanza, M.D.,	750,000	(3)	-	0.05	8/12/2014
Chief Scientific Officer	500,000	(4)	-	0.85	1/31/2015
	250,000	(3)	-	2.2	9/15/2015
	1,896,552	(5)	2,103,448	0.21	2/7/2018
	2,897,917	(6)	2,452,083	0.098	11/13/2019

(1) These options held by Mr. Caldwell vested in full as of December 31, 2008.

(2) These options held by Mr. Caldwell vest as follows: 50% of the shares vest immediately with the remaining vesting at 1/12 per month.

(3) These options held by Dr. Lanza vested in full as of December 31, 2006.

(4) These options held by Dr. Lanza vested in full as of January 31, 2009.

(5) These options held by Dr. Lanza vest in equal monthly installments over 48 months.

(6) These options held by Dr. Lanza vest as follows: 50% of the shares vest immediately with the remaining vesting at 1/12 per month.

Option Exercises and Stock Vested Table.

There were no exercises of stock options by, or stock awards vested for, the named executive officers in the year ended December 31, 2009.

Pension Benefits

We do not have any plan which provides for payments or other benefits at, following, or in connection with retirement.

Non-qualified Deferred Compensation

We do not have any defined contribution or other plan which provides for the deferral of compensation on a basis that is not tax-qualified.

DIRECTOR COMPENSATION

Name and Principal Position	Year	Fees Earned or Paid in Cash ($)	Stock Awards ($)	Option Awards ($)	All Other Compensation ($)	Total ($)
Alan C. Shapiro, Ph.D.	2009	72,188	-	-	-	72,188
Erkki Ruoslahti, M.D., Ph.D.	2009	15,850	-	-	-	15,850
Gary Rabin						