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FORM 10-K

SECURITIES AND EXCHANGE COMMISSION
WASHINGTON, D.C. 20549

/X/ ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934

FOR THE FISCAL YEAR ENDED DECEMBER 31, 1998
OR

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

COMMISSION FILE NUMBER 0-19871

CYTOTHERAPEUTICS, INC.

(Exact name of Registrant as specified in its charter)

DELAWARE	94-3078125
(State or other jurisdiction of incorporation or organization)	(I.R.S. Employer Identification No.)

701 GEORGE WASHINGTON HIGHWAY, LINCOLN, RI 02865
(Address of principal executive offices) (zip code)

Registrant's telephone number, including area code: (401) 288-1000

Securities registered pursuant to Section 12(b) of the Act:
NONE

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

COMMON STOCK, $.01 PAR VALUE
JUNIOR PREFERRED STOCK PURCHASE RIGHTS

Title of class

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

Indicate by check mark if disclosure of delinquent filers pursuant to Item 405 of Regulation S-K is not contained herein, and will not be contained, to the best of registrant's knowledge, in definitive proxy or information statements incorporated by reference in Part III of this Form 10-K or any amendment to this Form 10-K. /x/

Aggregate market value of Common Stock held by non-affiliates at March 31, 1999: $21,819,231. Inclusion of shares held beneficially by any person should not be construed to indicate that such person possesses the power, direct or indirect, to direct or cause the direction of management policies of the registrant, or that such person is controlled by or under common control with the Registrant. Common stock outstanding at March 31, 1999: 18,374,089 shares.

DOCUMENTS INCORPORATED BY REFERENCE

Portions of the Registrant's Definitive Proxy Statement for its 1999 Annual Meeting of Shareholders are incorporated by reference into Part III of this Report.

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FORWARD LOOKING STATEMENTS

This report contains certain forward-looking statements regarding, among other things, the Company's expected results of operations, the progress of the Company's collaborations, product development and clinical programs, the need for, and timing of, additional capital and capital expenditures, collaboration prospects, costs of manufacture of products, the protection of and the need for additional intellectual property rights, regulatory matters, the need for additional facilities and potential market opportunities. The Company's actual results may vary materially from those contained in such forward-looking statements because of risks to which the Company is subject such as risks of delays in research, adverse results from the Company's development or clinical testing programs, obsolescence of the Company's technology, lack of available funding, competition from third parties, termination of the Company's collaborations, intellectual property rights of third parties, unavailability of needed raw materials, failure of the Company or its collaborators to perform, litigation, regulatory restrictions, and other risks to which the Company is subject.

SEE "CAUTIONARY FACTORS RELEVANT TO FORWARD-LOOKING INFORMATION" FILED HEREWITH AS EXHIBIT 99 AND INCORPORATED HEREIN BY REFERENCE.

ITEM 1.

BUSINESS

THE COMPANY

CytoTherapeutics, Inc. ("CytoTherapeutics" or the "Company") is a leader in the development of novel cell therapies designed to treat human diseases. The Company is developing products based on two principal technologies: stem cell therapies and encapsulated cell therapies. The Company's stem cell therapies are based on the transplantation of human stem cells to replace or repair damaged or defective cells; the Company's encapsulated cell therapies are based upon the use of living cells encapsulated in the Company's proprietary membranes and inserted into specific sites in the body. The Company believes that it has achieved a leadership position in the neural stem cell area with its research and development program for neural stem/progenitor cells. The Company has also established a research program to discover the stem cells of the pancreas and of the liver, and has established a broad intellectual property position with respect to stem/progenitor cell therapies through its own patented discoveries and exclusive licensing arrangements. The Company is currently developing an encapsulated cell product for the treatment of chronic pain, with additional research efforts directed to other disorders including, but not limited to, ophthalmic diseases and disorders. The Company currently has one product candidate in clinical trials: its encapsulated cell implant to treat chronic pain.

CytoTherapeutics, Inc. was incorporated in Delaware in 1988 and currently has one subsidiary, StemCells, Inc., a California corporation acquired by the Company in September 1997.

THE UNMET NEED

Many diseases result from organ failure where organs cannot be transplanted to cure the disease (e.g., neurodegenerative diseases and pancreatic failure) or where there are constraints due to a short supply of organs for transplant. The Company believes its stem cell technologies may provide the basis for replacing certain lost or damaged cells or regenerating organs damaged by disease. Furthermore, biotechnology has discovered or created a number of new and promising proteins, but the lack of an effective way to deliver these proteins locally has limited their widespread use. The Company believes its encapsulated-cell therapies may provide a platform for effective local delivery of these and other proteins to treat diseases. If the Company can successfully develop either or both of its cell therapy technologies, it believes that its technologies may provide the basis for addressing a number of diseases with significant unmet medical needs.

CELL THERAPY BACKGROUND

ROLE OF CELLS IN HUMAN HEALTH AND TRADITIONAL THERAPIES

In healthy individuals, cells maintain normal physiological function by secreting or metabolizing substances, such as sugars, amino acids, neurotransmitters and hormones, which are essential to life. When cells are damaged or destroyed, they no longer produce, metabolize or accurately regulate critical molecular substances required by the body. For example, the progressive decline common to many neurodegenerative diseases, such as Parkinson's disease and amyotrophic lateral sclerosis ("ALS"), is associated with impaired cellular function.

Recent advances in biotechnology have led to the discovery of a number of specific proteins that are, in certain diseases or disorders, inadequately produced by the body's own cells. While these proteins overcome some of the limitations of traditional pharmaceuticals, such as lack of specificity, they do not reproduce the natural ability of cells to secrete such substances at the precise sites of action and in the appropriate physiological quantities or for the duration required. As a result, investigators have considered

using cell therapy to replace vital cells which are failing by implanting cells which carry the ability to provide a needed critical molecule or by implanting cells to replace those which have failed. In situations of irreversible failure of vital cells, transplantation of cells offers the possibility of replacing the functions of these failed cells, thus potentially restoring health.

THE POTENTIAL OF CELL-BASED THERAPY

Cell-based therapy, the use of cells to treat diseases, has the potential to provide a broad therapeutic approach of comparable importance to traditional pharmaceuticals and, more recently, to genetically engineered biologics. However, autologous cells (cells from the individual into whom they are to be transplanted) are available in limited supply, may be abnormal if the patient is ill and often can only be obtained through significant surgical procedures. Allogeneic (same species) cellular transplants and xenogeneic (cross-species) cellular transplants generally require the use of potent immunosuppressive drugs. These drugs broadly compromise the patient's immune system in order to decrease the likelihood of rejection of the transplanted cells and expose the transplant recipient to adverse side-effect(s), such as increased risk of infection or cancer. CytoTherapeutics believes its stem cell technologies may provide a way to replace specific cells that have been damaged or destroyed. This approach may be necessary when cell replacement requires repair of cellular architecture or direct cell-to-cell contact. Such replacement with stem cells, which may grow and differentiate to produce differentiated progeny (i.e., mature, lineage-restricted cells), may allow for the restoration of function through the replacement of normal cells where this has not been possible in the past. CytoTherapeutics also believes its encapsulation technologies may reduce or eliminate the need for immunosuppression, as well as allow site-specific delivery and relative control of cell output.

CYTOTHERAPEUTICS' PORTFOLIO TECHNOLOGIES: STEM CELL TECHNOLOGY AND ENCAPSULATED CELL TECHNOLOGY

STEM CELL TECHNOLOGY

Stem cells may be functionally characterized as cells whose progeny include both daughter stem cells (by self-renewal) as well as more differentiated cells. Stem cells exist in humans as a self-renewing source of cells needed in the various systems of the body (e.g., hematopoietic, neural and neural crest, hepatic, pancreatic endocrine cells, and mesenchymal stem cells). These rare, self-renewing stem cells are present in many tissues and are responsible for organ regeneration after injury or during normal cell replacement. The Company believes that these cells can form the basis of therapies that have the potential to replace specific subsets of cells that have been injured or lost through disease, injury or genetic defect.

The Company is seeking to identify, isolate and find methods of expanding a variety of different human stem cell cultures for use in treatment of a variety of human diseases and disorders. The Company believes that there are a finite number of stem cells in the human system and that it is possible for the person or entity that first identifies and isolates a given stem cell culture to obtain patent protection for such cells. The Company's strategy is to be the first to identify, isolate and patent multiple types of human stem/progenitor cell cultures with commercial importance.

Neurodegenerative diseases such as Parkinson's disease, epilepsy and Alzheimer's disease affect a significant portion of the U.S. population and currently have no effective long-term therapies. The Company believes that its neural stem/progenitor cells may be useful in treating such diseases. The Company is continuing research into, and has initiated the development of, its human neural stem/ progenitor cell-based therapies.

The Company has advanced its research programs to discover the human pancreatic stem cell and the liver stem cell. Pancreatic stem cells may be useful in the treatment of Type 1 diabetes and other diseases characterized by loss of pancreatic function. Liver stem cells may be useful in the treatment of diseases such as hepatitis, cirrhosis of the liver and liver cancer.

There can be no assurance that the Company will successfully develop its stem cell therapies. Even in the event that such therapies are successfully developed, there can be no assurances that they will achieve the benefits described above, that these therapies will achieve benefits therapeutically equal to or better than the standard of treatment at time of testing, or that the advantages of such technology will be greater than the potential disadvantages.

ADVANTAGES OF THE COMPANY'S STEM CELL TECHNOLOGY

NO OTHER TREATMENT

To the best of the knowledge of the Company, no one has developed an approved method for replacing lost or damaged tissues from the human nervous system. Replacement of tissues in other areas of the human body is limited to those few areas where autologous transplantation is now feasible. In a few additional areas, allogeneic transplantation is now used, but is limited by the scarcity of organs available through donation. The Company believes that its stem cell technologies have the potential to reestablish function in at least some of the patients who have suffered the losses referred to above.

NATURE OF REPLACEMENT CELLS

The Company believes that stem cells can self-renew and differentiate into the multiple kinds of cells that are commonly lost in, for example, neurodegenerative diseases. Transplantation of these stem cells may allow these cells to migrate limited distances to the proper location within the body, to expand and differentiate and to replace damaged or defective cells. If the Company can show that the foregoing process occurs, after transplantation the cells that are substituted could form new cells that could facilitate the return to proper function. The Company believes that such replacement of damaged or defective cells by functional cells is unlikely to be achieved with any other treatment.

ENCAPSULATED CELL TECHNOLOGY

Encapsulated cell therapies represent a potentially broadly applicable delivery platform for treating a number of diseases that are currently untreatable or poorly treated with present technologies. The Company is employing its proprietary encapsulation techniques to develop semipermeable polymer implants containing living cells that are designed to be placed into selected sites in the body to treat specific diseases or conditions. The implants are also designed to allow nutrients to reach the encapsulated cells and to allow wastes and the therapeutic protein(s) to pass out of the implant while protecting the cells from elements of the patient's immune system.

The Company's implants are designed to be biocompatible, remaining in contact with the recipient's tissues without generating a response that would significantly inhibit the functioning of the encapsulated cells or cause significant injury to host tissues. When such biocompatibility is achieved, the membrane can selectively permit nutrients and oxygen to pass from the recipient through the membrane into the implant, nourishing the cells and allowing them to function. Similarly, such biocompatibility, together with the permeability of the membrane, enables the substances produced by the encapsulated cells to pass through the membrane and produce the desired therapeutic effect.

ADVANTAGES OF THE COMPANY'S ENCAPSULATED CELL TECHNOLOGY

Many diseases have no satisfactory treatment today, in certain cases, because therapeutic substances generally do not reach the required sites in appropriate concentrations when administered by conventional methods. The Company believes that its encapsulated-cell technology represents an approach that may offer a number of advantages over other forms of delivery for therapeutics.

SITE-SPECIFIC DELIVERY

Researchers have identified a number of substances that may be beneficial in the treatment of human disorders. However, it has been difficult or impossible to find a safe and effective way to deliver many of

these potent substances to the required sites at the required concentrations and at reasonable costs. Systemic delivery, such as oral or intravenous delivery, may cause significant side effects since very potent molecules are being delivered to sites in the body where they are not normally present or needed. This is especially likely where large amounts are administered systemically to achieve therapeutic levels in the central nervous system ("CNS"). A previous clinical trial of a new protein, CNTF, sponsored by another company, for example, resulted in significant side effects after systemic administration.

In contrast, CytoTherapeutics' cell-containing devices are designed to deliver these therapeutic substances to specific locations where they are needed, thus avoiding many of the side-effects associated with conventional routes of administration. This form of delivery should result in better therapeutic ratios--reflecting an ability to provide effective doses with lower toxicity. In addition, because therapeutic substances are produced by living cells sustained within the implant, these substances potentially may be delivered over extended periods of time. The production of these substances at the site of action could eliminate problems of drug stability that hampers effective treatment with other methods such as pumps and polymer carriers.

RETRIEVABILITY

The Company's implants are designed with a tether at the end of the active portion of the implant to allow them to be retrieved with relative ease. By exposing the tether, which is sutured below the skin, and withdrawing the device, a physician should be able to retrieve or replace the implant. Should complications arise, or if a new implant is desired, a physician should be able to retrieve the capsule. Moreover, the capsule keeps the cells in the location intended as opposed to unencapsulated cells that cannot be so constrained.

DELIVERY OF MULTIPLE SUBSTANCES

The Company's implants may also provide the advantage of delivering multiple therapeutic substances simultaneously at a single site. The Company believes that such an ability could lead to development of improved therapies. The Company's implant to treat chronic pain is one such example of delivery of multiple substances.

GENE THERAPY

The Company believes that its encapsulated-cell therapies may provide an effective way to deliver gene therapy: the use of encapsulated cells to deliver genetic information over an extended period may be able to increase the efficiency of gene transfer to the host and hence improve the effectiveness of gene therapy. In addition, the implant could be retrieved, if desired or required. The Company does not presently have commercial access to any such genes for use in gene therapy.

There can be no assurance that the Company will successfully develop its encapsulated-cell therapies or that, if successfully developed, such therapies will achieve the benefits described above or that the advantages of such therapies will be greater than the potential disadvantages.

RESEARCH EFFORTS AND PRODUCT DEVELOPMENT PROGRAMS

OVERVIEW OF RESEARCH AND PRODUCT DEVELOPMENT STRATEGY

STEM CELL TECHNOLOGY. The Company has devoted substantial resources to its research programs to isolate and develop a series of stem/progenitor cells that the Company believes can serve as a basis for replacing diseased or injured cells. The focus of the Company's efforts to date have been directed at the identification, isolation and the development of methods to expand a variety of stem/progenitor cells of the human nervous system, liver and pancreas.

ENCAPSULATED CELL TECHNOLOGY. The Company believes that its encapsulated-cell technology can be used to deliver a wide variety of therapeutic substances or vital cells to the sites where they are required. The Company's lead product, its implant for treatment of chronic pain, is designed to provide a new means of delivering substances with known therapeutic effects directly to the CNS. The Company has also established a research program to examine and develop applications of the Company's encapsulated-cell technology to potential treatments for diseases of the eye, based on its encapsulated-cell technology. Furthermore, the Company has focused research efforts directed to identifying and banking a "hardy" human cell that can survive for sustained periods and be engineered to produce multiple therapeutic substances.

The following table lists the potential therapeutic indications for and current status of CytoTherapeutics' primary research and product development programs and projects and is qualified in its entirety by reference to the more detailed descriptions of such programs and projects appearing elsewhere in this Report. The Company continually evaluates its research and product development efforts and reallocates resources among existing programs or to new programs in light of experimental results, commercial potential, availability of third-party funding, likelihood of near-term efficacy, collaboration success or significant technology enhancement, as well as other factors. The Company's research and product development programs are at relatively early stages of development and will require substantial resources to commercialize. There can be no assurance that the Company will successfully develop any product or obtain regulatory approvals, enter clinical trials, achieve other milestones or commercialize any products in accordance with currently anticipated timetables, or at all.

RESEARCH AND PRODUCT DEVELOPMENT PROGRAMS

PROGRAM DESCRIPTION	STAGE/STATUS(1)
STEM CELL TECHNOLOGY	
HUMAN NEURAL STEM CELL Repair or replace damaged CNS tissue	PRECLINICAL - IN VITRO ability to initiate and expand stem cell-containing human neural cultures and differentiation into three types of CNS cells - Direct isolation of neurosphere-initiating stem cells from brain - IN VIVO demonstration of proper differentiation and engraftment of human neural cell cultures containing CNS stem cells in rodent CNS
OPHTHALMOLOGIC DISEASES Repair or replace damaged retinal tissue	PRECLINICAL RESEARCH Proof-of-concept in preclinical animal model(s)
STEM CELL DISCOVERY Repair or replace damaged pancreatic islet or liver tissue	RESEARCH Discovery program to identify, isolate and patent human stem cells for the pancreas and liver
ENCAPSULATED CELL TECHNOLOGY	
CHRONIC PAIN PARTNER: ASTRA AB Encapsulated bovine adrenal chromaffin cells to deliver natural analgesic substances to CNS via the intrathecal space/lumbar region	CLINICAL TRIALS Phase IIB--enrollment for double-blind, placebo-controlled clinical trial for cancer patients completed
OPHTHALMOLOGIC DISEASES (2) Delivery of growth factors via encapsulated cells	PRECLINICAL RESEARCH Proof-of-concept in preclinical animal model(s)
HUMAN HARDY CELL DISCOVERY(2) Multiple therapeutic applications for encapsulated cell implants	RESEARCH Identify and bank human cell for use in encapsulated cell implants which survive for extended periods in vivo and can be engineered to produce multiple products

(1) "Research" refers to early stage research and product development activities IN VITRO, including the selection and characterization of product candidates for preclinical testing. "Preclinical" refers to further testing of a defined product candidate IN VITRO and in animals prior to clinical studies.

(2) Progress in these programs is dependent upon CytoTherapeutics developing an appropriate platform cell(s) for these programs.

RESEARCH AND DEVELOPMENT PROGRAMS

STEM CELL TECHNOLOGY

The Company's portfolio of stem cell technology results from the Company's exclusive licensing of neural stem/progenitor cell technology and other technologies applicable to the pancreas and liver, the Company's own research and development efforts to date, and the acquisition of StemCells, Inc. in 1997. The Company, through its subsidiary, StemCells, has begun a program seeking to discover and isolate various stem cells from the human body. The Company believes that stem cells represent a fundamentally new approach to the treatment of diseases caused by lost or damaged tissue. The Company has assembled an experienced team of scientists and scientific advisors to consult with and advise the Company's scientists on their continuing research and development of stem/progenitor cells. This team includes, among others, Irving L. Weissman, M.D., of Stanford University, Fred H. Gage, Ph.D., of The Salk Institute and David Anderson, Ph.D., of the California Institute of Technology.

NEURAL STEM/PROGENITOR CELL RESEARCH AND DEVELOPMENT PROGRAM

The Company began its work with neural stem/progenitor cultures in collaboration with NeuroSpheres, Ltd., in 1992. The Company believes that NeuroSpheres was the first to invent these cultures and NeuroSpheres has filed patent applications on its inventions relating to these cultures. The Company is the exclusive, worldwide licensee from NeuroSpheres to such inventions for transplantation in the human body. See "License Agreements and Sponsored Research Agreements--NeuroSpheres, Ltd." In December 1998, the Company announced that the US Patent and Trademark Office had granted patent No. 5,851,832, covering the Company's methods for the human neural cell cultures containing central nervous system stem cells, for compositions of human neural cell cultures expanded by these methods, and for use of these cultures in human transplantation and remyelination. These human neural stem/progenitor cell cultures may be useful for repairing or replacing damaged central nervous system tissue, including the brain and the spinal cord.

Previously, in 1997, Company scientists invented a reproducible method for isolating and growing human neural stem/progenitor cultures. In preclinical IN-VITRO and early IN-VIVO studies, the Company demonstrated that these cells differentiate into all three of the cell types of the CNS. Based on these results, the Company believes that these cells may form the basis for replacement of cells lost in certain degenerative diseases. The Company is continuing research into, and has initiated the development of, its human neural stem/progenitor cell cultures. The Company has initiated the cultures and demonstrated that these cultures can be expanded for a number of generations IN VITRO in defined media. A collaborator of the Company, Dr. Anders Bjorklund, has shown that cells from these cultures can be successfully engrafted into the brains of rodents where they migrated and differentiated into the appropriate cell lineages for the site of the brain into which they were transplanted.

In 1998, the Company expanded its preclinical efforts in this area by initiating programs aimed at the discovery and use of specific monoclonal antibodies to facilitate identification and isolation of neural and other stem and progenitor cells or their differentiated progeny. Also in 1998, Company researchers devised methods to advance the IN-VITRO culture and passage of human neural stem cells that have resulted in a 100-fold increase in cell production of these neural stem/progenitor cells after 6 passages. The Company is expanding its preclinical efforts toward the goal of selecting the proper indications to pursue.

The Company's neural stem/progenitor cell program is at an early stage and there can be no assurance that it will result in any commercial product.

PANCREATIC AND LIVER STEM CELLS DISCOVERY RESEARCH PROGRAMS

The Company's discovery program for the pancreatic stem/progenitor cell is currently being conducted by Nora Sarvetnick, Ph.D. of The Scripps Research Institute, who has initiated programs for the

identification and isolation of the stem/progenitor cell for the pancreas. An estimated 16 million people in the United States have diabetes mellitus, a serious, lifelong condition, with approximately 650,000 new patients diagnosed annually. Diabetes is widely recognized as one of the leading causes of death and disability in the United States and is associated with long term complications that affect almost every major part of the body. Diabetes-related treatment costs exceed $100 billion annually. In 1998 the Company obtained an exclusive, worldwide license from The Scripps Research Institute to novel technology, developed by Dr. Sarvetnick as a result of the research sponsored by the Company, which may be useful in identifying and isolating pancreatic islet stem/progenitor cells. The Company believes that this technology may facilitate their isolation using specific markers and leading to the development of cell-based treatments for diabetes and other diseases characterized by loss of pancreatic function.

The Company initiated its discovery work for the liver stem/progenitor cell through a sponsored research agreement with Markus Grompe, Ph.D. of Oregon Health Sciences University. Dr. Grompe's work focuses on the discovery and development of a suitable method for identifing and assessing liver stem/progenitor cells for use in transplantation. Approximately 1 in 10 Americans suffers from diseases and disorders of the liver for which there are currently no effective, long-term treatments. In 1998, Company researchers continued to advance methods for establishing enriched cell populations suitable for transplantation in preclinical animal models for evaluating these methods. The Company is focused on discovering and utilizing its proprietary methods to identify, isolate and culture liver stem/progenitor cells and to evaluate these cells in preclinical animal models.

An important element of the Company's program in stem cell discovery is the development of intellectual property positions with respect to stem and progenitor cells. The Company believes that the first person or entity to isolate and perfect intellectual property rights in new stem/progenitor cells will be able to exclude others from using such cells commercially. To this end, the Company has also obtained rights to certain inventions relating to stem cells from, and is conducting stem cell related research at, several academic institutions. See "License Agreement and Sponsored Research Agreements." The Company expects to expand its search for new stem/progenitor cells and to seek to acquire rights to additional inventions relating to stem/progenitor cells from third parties.

The Company's pancreatic and liver stem/progenitor cells programs are at an early stage and there can be no assurance that they will result in any commercial products.

ENCAPSULATED-CELL TECHNOLOGY

CHRONIC PAIN PROGRAM

The Company estimates that more than one million patients in the United States suffer unrelieved severe, chronic pain. Chronic, intractable pain often accompanies, or is the result of, a number of serious diseases, procedures and conditions such as cancer, infection, nerve damage, back surgery, arthritis, amputation, fractures and other conditions. Even where therapies exist, they often have limits to their effectiveness in treating severe, chronic pain. For example, patients may become intolerant of or unresponsive to narcotics such as morphine, and may experience undesirable side effects.

The Company believes that its encapsulated cell technology can be used to treat chronic pain by implanting encapsulated cells that continuously release small quantities of naturally occurring analgesic substances, such as catecholamines and opioid peptides. The Company, together with certain of its academic collaborators, has developed methods for the encapsulation of bovine adrenal chromaffin cells for implantation into the lumbar region of the spinal column to treat chronic pain. The Company believes that encapsulating properly chosen cell types which secrete desired therapeutic substances may provide more effective pain relief than traditional approaches and/or may enable treatment of patients who experience little or no relief with other therapies.

During 1993 and 1994, the Company collaborated on a pilot clinical study of its chronic pain implant technology with Dr. Patrick Aebischer, a founding scientist of the Company. The study conducted at the Centre Hospitalier Universitaire Vaudois ("CHUV") in Switzerland included nine seriously or terminally ill patients experiencing severe, intractable pain for whom narcotics, such as morphine, provided inadequate relief or could not be tolerated. The implant procedure was performed safely in all nine patients. Viable implants containing cells were retrieved from eight of the nine patients upon the death of the patient or at or beyond the end of the intended trial period.

In May 1995, the Company commenced its first Company-sponsored Investigational New Drug ("IND") trial in the United States. The Phase I trial was an open label study which included 15 terminally ill cancer patients experiencing severe, intractable pain and having a life expectancy of less than five months. According to the trial protocol, patients were to receive treatment for the remainder of their lives. By February 26, 1997, all 15 patients had completed the study.

In February 1996, the Company initiated an extension of the Phase I trial. In this extension, four patients received a device containing approximately three times the number of cells used in the devices implanted in the first 15 patients. By February 9, 1998, three of the four patients had completed the study. The one patient that remains in the study has had a device in place for nearly three years without any related significant safety issues.

A Phase IIA clinical trial for the treatment of neuropathic pain was then initiated in Switzerland in May 1997. A parallel study was initiated in August 1997 in the United States. These trials were designed to evaluate the safety and retrievability of the larger device. Neuropathic pain patients were implanted with the device for 10 weeks. During the period, patients were monitored for safety and pain scores. Following removal of the original device, patients could elect to be reimplanted for six months.

In addition, in November 1997, a Phase IIB, placebo-controlled, double-blinded, multi-center trial in cancer patients was initiated in central Europe and Switzerland. In this trial, patients with end-stage cancer were implanted with either a cell-containing device or a placebo device for 10 weeks and are being monitored for pain scores, concurrent pain-related drug usage and quality of life. According to the trial protocol and following removal of the original device, patients could elect to be implanted with an active device for six months. Upon completion of enrollment in March 1999, approximately 85 evaluable patients had participated in the trial.

In December 1997, the Company became aware, after explant of devices from some patients enrolled in the Phase IIA trials, that a significant number of devices had migrated into or out of the intrathecal space during the evaluation period. In some cases migration resulted in device breakage. To date, there have been no reports of significant medical complications related to device migration or breakage. However, in January 1998, the Company and its partner, Astra Pain Control, announced that they had halted accrual of patients into the Phase IIB trial in order to allow for a full investigation and the development of implantation procedure modifications. The Company investigated the migration phenomenon and determined that it was necessary to modify the device and the implantation procedure to prevent migration. These modifications included the development of a "tether clip" to assist in securing the implants. After the development and implementation of modifications to the implantation procedure, the Company and its partner, Astra Pain Control, announced they had resumed accrual of patients in the Phase II trials in June 1998.

All clinical trials are being conducted by Astra Pain Control.

The Company has been closely monitoring the development of regulatory regimes intended to deal with the risks of xenotransplantation and the use of bovine cells. See "Government Regulations." Although the FDA has proposed guidelines for the conduct of xenotransplantation trials, a number of European countries, for example, have been more restrictive. The FDA has imposed strict and potentially onerous restrictions on the clinical use of non-human cells. These proposed FDA regulations could substantially

increase the production costs of implants for the Company's pain program. In addition, such regulations may adversely affect physicians' and patients' perceptions about xenotransplantation. The Company cannot predict the effect of existing regulations or possible future regulatory actions except that, if not modified, they will likely increase the cost of producing pain implants. There can be no assurance that such regulations will not block sales or make the product commercially non-viable.

There can be no assurances that the Company will receive regulatory and/or ethical committee approvals to continue the Phase II trials or to initiate other clinical trials in a timely manner or that such clinical trials will be successfully completed or that, if successfully completed, such trials will lead to the commercialization of any product.

In March 1995, the Company entered into a Collaborative Research and Development Agreement with Astra AB for the development and marketing of certain encapsulated cell products to treat pain. Astra has the right to terminate this Agreement anytime after April 1998. However, in May 1998, Astra AB agreed to increase its annual research and development payments to the Company under this Agreement in order to facilitate the completion of the Phase IIB clinical trial. The Company expects that the results from this trial will be available about mid-1999. The Company expects Astra to make a decision on continued support for the Company's chronic pain program based in substantial part on Astra's review of the results of this trial. Continuation of the Company's chronic pain program will likely depend on a prompt decision by Astra to continue or increase such support. See "Corporate Collaborations--Astra AB."

OPHTHALMOLOGY PROGRAM

Many diseases of the eye are presently ineffectively treated, which can lead to reduced vision and blindness. There are more than one million blind people in the United States and many more Americans suffer from potentially visually impairing ophthalmologic disorders. The worldwide populations at risk are much larger.

Certain diseases of the eye, e.g., glaucoma and anterior segment inflammation, can be treated today with topical preparations, although the efficacy of these treatments is variable. These disorders are treatable largely because some or all of the disease processes occur in the anterior portion of the eye, which is accessible to topical drugs. Other serious diseases, such as diabetic retinopathy and age-related macular degeneration, are not treatable, in part because they occur in the posterior portion of the eye, an area that is essentially unreachable with most current treatment methods.

Many of these untreatable diseases affect the retina, a posterior part of the eye critical to sight. The retina is part of the CNS and the Company believes that its encapsulated-cell implant technologies can be applied to bypass the blood-retinal barrier of the eye using the same approach as bypassing the blood-brain barrier in the rest of the CNS. If these implants are successfully developed, the Company believes this delivery platform could allow treatment of serious sight-threatening disorders.

CytoTherapeutics has begun design and production of implants adapted for use in the eye and has started initial pre-clinical testing in animals with these implants.

OTHER ENCAPSULATED CELL PROGRAMS

The Company has sponsored research to evaluate the feasibility and tolerability of using encapsulated cells to deliver neurotrophic factors into the CNS to treat neurodegenerative diseases such as ALS and Huntington's disease. An investigator-sponsored pilot clinical study of the Company's encapsulated cell implant to deliver CNTF (ciliary neurotrophic factor) into the brain ventricles of six Huntington's patients is currently underway in France.

TECHNOLOGY DEVELOPMENT

The Company continues to develop its encapsulated-cell technology. Through its cell biology program, the Company is developing genetically engineered cell lines that will function optimally when encapsulated. The Company's present work focuses on identification of appropriately hardy human cells because of the increasing regulatory constraints on use of non-human cells. There can be no assurance such development will be successful.

The Company is developing cell lines which may represent important components in second generation products (e.g., an engineered cell line to deliver analgesics in its pain program) or new products (such as a single device to deliver multiple therapeutic substances). It is also conducting research to improve cell line expression levels of therapeutic substances, as well as regulation and consistency of output.

The Company continues to evaluate new and modified forms of membranes for use in its implants. These evaluations are focused on developing membranes with increased strength, improved handling characteristics, enhanced transport qualities and greater biocompatibility. These efforts are undertaken internally, as well as externally with Akzo Nobel Membrana GmbH. See "Corporate Collaborations-- Akzo Nobel Membrana GmbH."

The Company is also assessing and developing distribution, handling, and insertion systems to facilitate the distribution of its implants to clinicians and enable clinicians both to surgically implant these devices into patients and to retrieve and replace them, as necessary. See "Manufacturing."

SUBSIDIARY

STEMCELLS, INC.

On September 26, 1997, CytoTherapeutics acquired by merger StemCells, Inc., a California corporation ("StemCells"). Through the merger, CytoTherapeutics acquired StemCells in exchange for 1,320,691 shares of the Company's common stock and options and warrants for the purchase of 259,296 common shares. Simultaneously with the acquisition of StemCells, Richard M. Rose, M.D., President of StemCells, Inc., became President, Chief Executive Officer and a director of CytoTherapeutics, and Irving L. Weissman, M.D., a founder of StemCells, Inc., became a director of CytoTherapeutics.

The Company's current stem cell research is being conducted pursuant to the provisions of an agreement between CytoTherapeutics and Drs. Weissman and Gage providing for a two-year research plan. If the goals of the research plan are accomplished, the stem cells research will continue to be funded under an extension of such Research Plan approved by a Research Committee consisting of two persons chosen by Drs. Weissman and Gage, two persons chosen by the Company and a fifth member appointed by Drs. Weissman and Gage, subject to the reasonable approval of the Company. Increases in stem cells research funding of not more than 25% a year approved by the Committee will be funded by CytoTherapeutics (although CytoTherapeutics also retains the right to fund such programs at a higher level) for as long as the goals of the Research Plan are being met, provided however, that CytoTherapeutics will retain the option of (i) ceasing or reducing neural stem research even if all of Research Plan goals are being met by accelerating the vesting of all still-achievable performance-based options granted to Drs. Weissman and Gage and other scientists and (ii) ceasing or reducing non-neural stem cell research even if all Plan goals are being met by affording StemCells' scientific founders the opportunity to continue development of the non-neural stem research by licensing the technology related to such research to them in exchange for a payment to CytoTherapeutics equal to all funding for such research, plus royalty payments.

CORPORATE COLLABORATIONS

ASTRA AB

In March 1995, the Company signed a collaborative research and development agreement with Astra for the development and marketing of certain encapsulated-cell products to treat pain. Astra made an initial, non-refundable payment of $5,000,000 and may make up to $16,000,000 in additional payments subject to the achievement of certain development milestones. Under the agreement, the Company is obligated to conduct certain research and development pursuant to a four-year research plan agreed upon by the parties. Over the term of the research plan, the Company expects to receive annual research payments from Astra of approximately $5-7 million, which the Company expects should approximate the research and development costs incurred by the Company under the plan. Approximately $38 million of research and development funding has been received by the Company through December 31, 1998. Subject to the successful development of such candidate products and obtaining necessary regulatory approvals, Astra is obligated to fund and to conduct all clinical trials of candidate products arising from the collaboration and to seek approval for their sale and use. Astra has the exclusive worldwide right to market products covered by the agreement. Until the later of either the last to expire of all patents included in the licensed technology or a specified fixed term, the Company is obligated to manufacture and supply products and is entitled to a fixed royalty on the worldwide net sales of such products in return for the license granted to Astra and the supply of product. Astra has the right to terminate the agreement for any reason after April 1, 1998.

In May 1998, after the resumption of the Phase II clinical trial of the lead product candidate, Astra AB agreed to increase annual research and development payments under this Agreement in order to fund the completion of the Phase IIB clinical trials. It is expected that results from this trial will be available in about mid-1999. There can be no assurance that Astra will continue to fund this program beyond mid-1999.

MODEX THERAPEUTIQUES SA

In July 1996, CytoTherapeutics, together with certain founding scientists, established Modex Therapeutiques SA ("Modex") a Swiss biotherapeutics company to pursue extensions of CytoTherapeutics' broad-based, encapsulated-cell technology for certain applications outside the central nervous system. Modex, headquartered in Lausanne, Switzerland, was formed to integrate technologies developed at three universities located in Lausanne--the University of Lausanne, the Centre Hospitalier Universitaire Vaudois (CHUV), the Ecole Polytechnique Federale de Lausanne--as well as from the Albert Einstein College of Medicine of Yeshiva University in New York City and CytoTherapeutics to develop products to treat non-CNS diseases such as diabetes, obesity and anemia. In October 1997, the Company completed a series of transactions which resulted in the establishment of Modex as an independent company in which CytoTherapeutics has an equity position of approximately 17%.

In October 1997, as part of Modex obtaining funds from outside investors, the Company and Modex modified the terms of their existing royalty-bearing Cross License Agreement to (i) expand the field in which Modex is exclusively licensed to apply the Company's encapsulated-cell technology to include, in addition to the original field of diabetes, obesity and anemia, the treatment of hemophilia A and B utilizing Factor VIII and/or Factor IX, and two additional applications to be agreed to by the Company and Modex; (ii) eliminate the requirement to make future milestone payments to Modex of up to 300,000 shares of the Company's Common Stock; (iii) limit the scope of the Company's technology licensed to Modex to existing and future encapsulation technology; and (iv) specify the terms under which the Company will manufacture any products Modex may develop based on the Company's technology and grant Modex an option to manufacture or have manufactured such products on payment of a higher royalty. The Cross License Agreement continues to provide for the payment of royalties from Modex to the Company on the sale of any licensed products. The revised agreement similarly limits the scope of the Modex technology exclusively licensed, on a royalty-bearing basis, to the Company for the application of

diseases, conditions and disorders of the central nervous system to existing and future encapsulation technology and to certain additional existing technology.

AKZO NOBEL MEMBRANA GMBH

To develop additional new membranes to be used in the Company's encapsulated-cell products and to obtain access to membrane expertise from one of the world's leading membrane companies, the Company entered into a Development and Supply Agreement with Akzo Nobel Membrana GmbH ("Akzo") dated December 1, 1993. Akzo is the world's largest supplier of medical grade membranes. Under the terms of the agreement, Akzo has begun development of improved membranes for use by the Company. The Company has agreed to reimburse Akzo for a portion of Akzo's costs incurred in the development. In the event the Company determines to use membranes developed by Akzo in the Company's products, Akzo will supply membranes to the Company at Akzo's cost plus a certain profit. Akzo will also be entitled to a royalty on sales of the Company's products utilizing Akzo's membranes. Akzo has agreed not to supply membranes to any other third party for encapsulation of cells for in vivo therapeutic applications. Either Akzo or the Company can terminate the Agreement. In the event Akzo is unable or unwilling to supply sufficient quantity of membranes to meet the Company's needs, Akzo will license the technology necessary to manufacture the membranes to CytoTherapeutics.

The Company has the right to utilize membranes from other manufacturers in its products provided the Company pays a small royalty to Akzo on the sales of such products. The Company will also continue its internal membrane development efforts, and may utilize internally developed membranes in its products without obligation to Akzo.

For the years ending December 31, 1998, 1997 and 1996, the Company paid Akzo under the terms of the agreement approximately $192,000, $98,000 and $295,000, respectively.

SIGNAL PHARMACEUTICALS, INC.

In December 1997, StemCells, Inc. entered into two license agreements with Signal Pharmaceuticals, Inc. under which each party licensed to the other certain patent rights and biological materials for use in defined fields. An initial disagreement as to the interpretation of the rights licensed to StemCells, Inc. was resolved by the parties, and the agreements are operating in accordance with their terms.

GENENTECH, INC.

In November 1996, the Company signed collaborative development and licensing agreements with Genentech relating to the development of products using the Company's technology to deliver certain of Genentech's proprietary growth factors to treat Parkinson's disease, Huntington's disease and amyotrophic lateral sclerosis ("ALS").

Under the terms of the agreement for Parkinson's disease, Genentech had the right, in its discretion, to terminate the Parkinson's program at specified milestones in the program, and on May 21, 1998, Genentech exercised its right to terminate the Parkinson's collaboration. For information regarding certain financial consequences of such termination, see "Management's Discussion and Analysis of Financial Condition and Results of Operations--Liquidity and Capital Resources."

Under the terms of the Company's agreements with Genentech relating to Huntington's disease and ALS, the Company is responsible for conducting and funding all pre-clinical and clinical development, subject to specified rights of Genentech to participate in the development and marketing of the proposed products. Should Genentech share in the development cost of the proposed products, the Companies will share profits at a negotiated percentage upon commercialization. Should Genentech elect not to participate in the development, upon commercialization, the Company will pay Genentech an agreed-upon royalty based upon sales. Under these agreements, the Company's license to Genentech's proprietary growth factors (neurotrophin 4/5 and cardiotrophin-1) is dependent upon the Company using reasonable

efforts to achieve certain development milestones within prescribed periods. The Company does not presently intend to devote significant resources to the continuing pursuit of these projects and thus does not currently expect to maintain such licenses.

LICENSE AGREEMENTS AND SPONSORED RESEARCH AGREEMENTS

NEUROSPHERES, LTD.

In March 1994, the Company entered into a Contract Research and License Agreement with NeuroSpheres, Ltd. Under the agreement, the Company obtained from NeuroSpheres an exclusive, worldwide, royalty-bearing license for the commercial development and use of certain neural stem cells for transplantation to treat human disease. In 1997, the Company settled a dispute that arose between it and NeuroSpheres, Ltd. under the agreement. Pursuant to the settlement, the Company has obtained an exclusive patent license from NeuroSpheres in the field of transplantation, subject to a limited right of NeuroSpheres to purchase a nonexclusive license from the Company. Such right was unexercised by Neurospheres and expired in April 1998. The Company and NeuroSpheres have no further research obligations to one another. The Company has developed additional intellectual property relating to the subject matter of the license.

COGNETIX, INC.

In February 1997, CytoTherapeutics and Cognetix, Inc. entered into a Collaboration and Development Agreement to screen selected peptides isolated by Cognetix for possible development into therapeutic products aimed at a broad range of human disease states using CytoTherapeutics' cell-based delivery technology. The Company and Cognetix have also entered into an option agreement giving the Company the right to option up to three of Cognetix's compounds for use in treating eye diseases. CytoTherapeutics has exercised its right to one protein, ConG. The Company and Cognetix are presently discussing revisions to their relationship under the agreements.

STATE OF RHODE ISLAND

In 1989, the Company entered into an agreement with the State of Rhode Island pursuant to which an agency of the State reimbursed the Company $1,172,000 for certain research activities the Company funded at Brown University. Under the terms of this grant, the Company is obligated to pay royalties ranging from three to five percent of revenues from products developed under the agreement, to a maximum of $1,758,000.

ACADEMIC RELATIONSHIPS

The Company and its wholly owned subsidiary, StemCells, Inc., have entered into a number of research and/or license agreements with academic organizations. These research agreements provide that the Company will fund certain research costs and, in return, will have a license or an option for a license to the resulting inventions. Under these license agreements, the Company and/or StemCells, Inc. will typically be subject to obligations of due diligence and the requirement to pay royalties on products that use patented technology licensed under such agreements.

The Company has expended and expects to continue to expend substantial sums to support academic research programs. To date, the Company's principal academic collaborations have been with Brown University and Dr. Patrick Aebischer at the Centre Hospitalier Universitaire Vaudois in Switzerland. Research and development expenses paid in connection with these collaborations aggregated approximately $701,000, $1,326,000 and $1,337,000 for the years ended December 31, 1998, 1997 and 1996, respectively. The Company and StemCells, Inc. also have a number of collaborative relationships with other academic institutions and academic researchers.

StemCells, Inc. has entered into a number of research agreements with academic institutions. These include a Sponsored Research Agreement with The Scripps Research Institute and a Sponsored Research Agreement with Oregon Health Sciences University. These agreements require StemCells, Inc. to fund certain research (in the amounts of approximately $931,000 over three years and $105,000 in 1997 and $558,000 in 1998) in return for licenses or options to license the inventions resulting from such research.

In addition, StemCells, Inc. has entered into license agreements with the California Institute of Technology and the University of Utah Research Foundation. These license agreements and the agreements referred to in the foregoing paragraph relate largely to stem cells or to progenitor cells and to their isolation and identification.

MANUFACTURING

ENCAPSULATED CELLS

The Company believes the ability to manufacture encapsulated-cell products that are safe and effective will be a key source of competitive advantage in its encapsulated-cell therapy business. Thus, the Company intends to manufacture its proposed products and maintain control of this important proprietary element of its business wherever possible.

The manufacturing process for the Company's lead product (its chronic pain implant) is comprised of five modules: (i) manufacture of the fiber membrane; (ii) assembly of implants; (iii) acquisition and culturing of the cells; (iv) placement of the cells within the implant; and (v) packaging of the cell-loaded implants for shipping to the clinical site. The Company is employing this process, using current Good Manufacturing Practices ("cGMP"), for manufacturing its pain implants for use in clinical trials. Quality control tests are performed on each batch of the finished pain devices to assess sterility and potency. Only batches meeting all specifications are released for use in clinical trials. Critical equipment and processes have been validated to assure manufacturing consistency and control. A 21,000-square foot laboratory and pilot manufacturing facility is now in operation.

Implants for clinical trials are currently produced in small quantities. The commercial-scale manufacture of these products is expected to require specialized automated or semi-automated equipment and expansion of manufacturing facilities. The Company's current manufacturing process has been designed to facilitate the incorporation of additional automation over time.

The facilities and equipment required to manufacture the Company's encapsulated-cell implants are different from those required to manufacture potentially competitive biopharmaceutical products.

The Company's pilot manufacturing plant, without additional expansion or increasing staffing, does not have sufficient capacity to permit the Company to produce all of the products necessary to complete clinical trials in all indications the Company may wish to develop. In addition, the Company has not yet developed the capability to manufacture any of its proposed products on a commercial scale and is unaware of any other company that has manufactured any membrane encapsulated-cell product on a commercial scale. Manufacture of the Company's proposed products is expected to require specialized, automated equipment capable of forming complex polymer membranes into implants which combine media, matrices and living cells, and this process must be carried out on a precisely controlled basis, under sterile conditions in a clean-room environment. Failure to achieve commercial scale manufacturing capability at a reasonable cost or to demonstrate consistent results using manufactured prototypes in preclinical animal studies or clinical trials could prevent or delay submission of products for regulatory approval and initiation of new development programs, which could have a materially adverse effect on the Company. Regulatory restrictions have substantially increased the likely cost of manufacturing a product containing xenogeneic cells for commercial use. Since in certain cases the Company has agreed on pricing for supply of its products before commercial production begins, additional costs of production arising from regulations or otherwise may cause the Company's cost of production to exceed the price it receives for

producing such products. In addition, fearing liability, certain suppliers of raw materials used by the Company in connection with its implants have or may restrict use of such materials in humans.

There can be no assurance that the Company will be able to develop the capability of manufacturing any of its proposed products on a cost-effective basis, or to identify and contract with manufacturers to produce such products or needed raw materials, at a cost or in the quantities necessary to make a commercially viable product.

STEM CELLS

The keys to successful commercialization of neural stem/progenitor cells are expected to include efficacy, safety, consistency of the product and economy of the process. The Company expects to address these issues by appropriate testing and banking representative vials of large-scale cultures. Commercial production is expected to involve expansion of banked cells and packaging them in an appropriate container(s) after formulating the cells in an effective carrier (which may also be used to affect the stability and engrafting of the stem cells or their progeny). Because of the early stage of the Company's stem/ progenitor cell programs, the issues that will affect manufacture of stem/progenitor cell products are relatively unclear.

MARKETING

The Company expects to market and sell its products primarily through co-marketing, licensing or other arrangements with third parties. The Company does not have experience in sales, marketing or distribution and does not expect to develop such capabilities in the near future. Generally, the Company in its commercial arrangements with third parties intends to have the marketing of its products undertaken by its partners, although the Company may seek to retain limited marketing rights in specific markets, particularly where the product may be addressed by a specialty or niche sales force.

PATENTS, PROPRIETARY RIGHTS AND LICENSES

The Company believes that proprietary protection of its inventions will be of major importance to its future business. The Company has a program of vigorously seeking and protecting intellectual property it believes may be useful in connection with its products. The Company believes that its know-how will also provide a significant competitive advantage and intends to continue to develop and protect its know-how. The Company may also, from time to time, seek to acquire licenses to important externally developed technologies.

The Company has exclusive or non-exclusive rights to a portfolio of patents and patent applications related to the encapsulation of cells and related technologies and to various stem cells and methods of deriving and using them. In general, these encapsulation patents and patent applications pertain to the release of neurotransmitters from encapsulated cells, use of various cell types, encapsulation devices and their manufacture, encapsulation methods and various aspects of the therapeutic use of capsules in the treatment of various diseases. The stem/progenitor cell patents and patent applications relate mainly to compositions of matter, methods of obtaining such cells, and methods for preparing and utilizing such cells. Currently, the Company's U.S. patent portfolio includes 10 issued U.S. patents in the stem cell therapy area, an increase of 5 issued patents in 1998, with an additional 28 patent applications pending in the stem cell therapy area (three of which have been allowed and are pending issuance), and also includes 56 issued U.S. patents in the encapsulated-cell therapy area, an increase of 20 additional patents in 1998.

The patent positions of pharmaceutical and biotechnology companies, including those of the Company, are uncertain and involve complex and evolving legal and factual questions. The coverage sought in a patent application can be denied or significantly reduced before or after the patent is issued. Consequently, the Company does not know whether any of its pending applications will result in the issuance of patents, or if any existing or future patents will provide significant protection or commercial advantage or will be circumvented by others. Since patent applications are secret until patents are issued in the United States or

until the applications are published in foreign countries, and since publication of discoveries in the scientific or patent literature often lags behind actual discoveries, the Company cannot be certain that it was the first to make the inventions covered by each of its pending patent applications or that it was the first to file patent applications for such inventions. There can be no assurance that patents will issue from the Company's pending or future patent applications or, if issued, that such patents will be of commercial benefit to the Company, afford the Company adequate protection from competing products or not be challenged or declared invalid.

In the event that a third party has also filed a patent application relating to inventions claimed in Company patent applications, the Company may have to participate in interference proceedings declared by the United States Patent and Trademark Office to determine priority of invention, which could result in substantial uncertainties and cost for the Company, even if the eventual outcome is favorable to the Company. There can be no assurance that the Company's patents, if issued, would be held valid by a court of competent jurisdiction.

A number of pharmaceutical, biotechnology and other companies, universities and research institutions have filed patent applications or have been issued patents relating to cell therapy and encapsulation, stem cells and other technologies potentially relevant to or required by the Company's expected products. In particular, a third party has received a U.S. patent which such third party asserts relates to cells for alleviating chronic pain in humans. The Company cannot predict which, if any, of such applications will issue as patents or the claims that might be allowed. The Company is aware that a number of companies have filed applications relating to stem cells. The Company is also aware of a number of patent applications and patents claiming use of genetically modified cells to treat disease, disorder or injury. The Company also cannot predict the impact of the application of existing patent applications and patents on future unencapsulated products. The Company is aware of two patents issued to a competitor claiming certain methods for treating defective, diseased or damaged cells in the mammalian CNS by grafting genetically modified donor cells from the same mammalian species. The Company is also aware of third party patents and patent applications claiming rights to the neurotrophic factors which the Company hopes to deliver with its cell encapsulation technology, and to the production of these factors through the use of genetically modified cells. The Company expects to use genetically modified cells to produce these factors for use in its products.

The Company may also be required to seek licenses in regard to other cell lines, the techniques used in creating or obtaining such cell lines, growth factors required to obtain and maintain such cell lines, the materials used in the manufacture of its implants or otherwise. If third party patents or patent applications contain claims infringed by the Company's technology and such claims or claims in issued patents are ultimately determined to be valid, there can be no assurance that the Company 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 the Company is unable to obtain such licenses at a reasonable cost, it may be adversely affected. There can be no assurance that the Company will not be obliged to defend itself in court against allegations of infringement of third-party patents. Patent litigation is very expensive and could consume substantial resources and create significant uncertainties. An adverse outcome in such a suit could subject the Company to significant liabilities to third parties, require disputed rights to be licensed from third parties, or require the Company to cease using such technology.

The Company also relies upon trade-secret protection for its confidential and proprietary information. There can be no assurance that others will not independently develop substantially equivalent proprietary information or techniques, gain access to the Company's trade secrets or disclose such technology, or that the Company can meaningfully protect its trade secrets.

The Company's policy is to require its employees, consultants, significant scientific collaborators and sponsored researchers to execute confidentiality agreements upon the commencement of an employment or consulting relationship with the Company. These agreements generally provide that all confidential information developed or made known to the individual by the Company during the course of the

individual's relationship with the Company is to be kept confidential and not disclosed to third parties except in specific circumstances. In the case of employees and consultants, the agreements generally provide that all inventions conceived by the individual in the course of rendering services to the Company shall be the exclusive property of the Company. There can be no assurance, however, that these agreements will provide meaningful protection or adequate remedies for the Company in the event of unauthorized use, transfer or disclosure of such information or inventions.

The Company has obtained rights from universities and research institutions to technologies, processes and compounds that it believes may be important to the development of its products. These agreements typically require the Company to pay license fees, meet certain diligence obligations and, upon commercial introduction of certain products, pay royalties. These include exclusive license agreements with Brown University to certain patents and know-how regarding present and certain future developments in encapsulation technology; and with NeuroSpheres, Ltd., The Scripps Institute and the California Institute of Technology to certain patents and know-how regarding present and certain future developments in neural and pancreatic stem cells. The Company's licenses may be canceled or converted to non-exclusive licenses if the Company fails to use the relevant technology or the Company breaches its agreement. Loss of such licenses could expose the Company to the risks of third-party patents and/or technology. There can be no assurance that any of these licenses will provide effective protection against the Company's competitors.

COMPETITION

The Company's initial products are expected to compete with a variety of therapeutic products and procedures. Major pharmaceutical companies currently offer a number of pharmaceutical products to treat chronic pain, neurodegenerative diseases, and other diseases for which the Company's technologies may be applicable. The Company believes that its products, if successfully developed, will compete with these products principally on the basis of improved and extended efficacy and safety and the overall economic benefit to the health care system offered by such products. However, many pharmaceutical and biotechnology companies are investigating new drugs and therapeutic approaches to treat neurodegenerative diseases, which may achieve new and better efficacy profiles, extend the therapeutic window for such products, alter the prognosis of these diseases or prevent their onset.

The market for therapeutic products that address degenerative diseases is large, and competition is intense and is expected to increase. The Company's most significant competitors are expected to be fully integrated pharmaceutical companies and more established biotechnology companies. Such competitors have significant resources and expertise in research and development, manufacturing, testing, obtaining regulatory approvals and marketing and also have significantly greater capital resources. Smaller companies may also prove to be significant competitors, particularly through collaborative arrangements with large pharmaceutical or biotechnology companies. Many of these competitors have significant products approved or in development which could be competitive with the Company's potential products, and also operate large, well-funded research and development programs. In addition, the Company competes with other companies and institutions for highly qualified scientific and management personnel.

The Company's products to treat chronic pain, if successfully developed, will compete with epidural and intrathecal opiates, such as morphine and its analogs, and with adjuvant analgesics, antidepressants and anticonvulsants, as well as with new therapeutics under development, such as SNX 111, a conopeptide. New delivery and dose control methods for traditional pain treatments, such as morphine pumps, may also compete with the Company's products.

The Company's stem/progenitor cell products, if successfully developed, might face competition from orally administered drugs, other forms of cell transplantation, ablative and stimulative procedures, gene therapy and new drugs under development. In addition, the Company believes that its competitors are trying to develop stem/progenitor cell-based technologies. The Company expects that these products, if developed, will compete with the Company's potential stem/progenitor cell products based on efficacy,

safety, cost and intellectual property positions. The Company expects that gene therapy, if successfully developed, will also be a source of competition for potential stem/progenitor cell products.

There can be no assurance that the Company's competitors will not succeed in developing technologies and products that are more effective than those being developed by the Company or that would render the Company's technology obsolete or non-competitive. The Company may also face competition from companies which have filed patent applications relating to cell encapsulation and the use of genetically modified cells to treat disease, disorder or injury. The Company may be required to seek licenses from these competitors in order to commercialize certain of its proposed products and there can be no assurance that the Company will be able to obtain such licenses at a reasonable cost, if at all.

Any product that the Company succeeds in developing and for which it gains regulatory approval must then compete for market acceptance and market share. For certain of the Company's potential products, an important competitive factor will be the timing of market introduction of competitive products. Accordingly, the Company expects that an important competitive factor will be the relative speed with which the Company and its competitors can develop products, complete the clinical testing and approval processes and supply commercial quantities of a product to market. With respect to clinical testing, competition may delay progress by limiting the number of clinical investigators and patients available to test the Company's potential products.

Competition for the Company's products is also expected to be based on product efficacy, safety, the timing and scope of regulatory approvals including, in certain instances, obtaining marketing exclusivity under the Orphan Drug Act, availability of supply, marketing and sales capability, reimbursement coverage, price and patent and technology position. There can be no assurance that the Company's technology, if fully developed, will become commercially viable.

GOVERNMENT REGULATION

The manufacturing and marketing of the Company's potential products and its research and development activities are and will continue to be subject to regulation for safety and efficacy by numerous governmental authorities in the United States and other countries. In the United States, pharmaceuticals, biologicals and medical devices are subject to rigorous FDA regulation. The Federal Food, Drug and Cosmetic Act, as amended, and the Public Health Service Act, as amended, the regulations promulgated thereunder, and other Federal and state statutes and regulations govern, among other things, the testing, manufacture, safety, efficacy, labeling, storage, export, record keeping, approval, marketing, advertising and promotion of the Company's potential products. Product development and approval within this regulatory framework takes a number of years and involves substantial uncertainty combined with the expenditure of substantial resources. In addition, the United States, states and other jurisdictions have restrictions on the use of fetal tissue that could restrict the Company's use of such materials.

Three branches of the FDA, the Center for Drug Evaluation and Research, the Center for Biologics Evaluation and Research and the Center for Devices and Radiological Health, review and approve drugs, biologics and devices, respectively. The FDA has indicated to the Company that the Center for Biologics Evaluation and Research will have primary jurisdiction for pre-market review of the Company's potential products that utilize the Company's encapsulated-cell technology. However, the FDA has also indicated that the Center for Drug Evaluation and Research and the Center for Devices and Radiological Health will play a role in the agency's review of the Company's potential products. In addition, the FDA has published certain guidelines regarding living cells and their transplantation and has begun to develop guidelines for the regulation of transplantation of xenogeneic cells and organs.

The steps required before the Company's potential products may be marketed in the United States include (i) preclinical laboratory and animal tests, (ii) the submission to the FDA of an application for an Investigational New Drug Exemption ("IND"), which must become effective before U.S. human clinical trials may commence, (iii) adequate and well-controlled human clinical trials to establish the safety and efficacy of the product, (iv) the submission to the FDA of a marketing authorization application(s) and

(v) FDA approval of the application(s) prior to any commercial sale or shipment of the drug. Biologic product manufacturing establishments located in certain states also may be subject to separate regulatory and licensing requirements.

Preclinical tests include laboratory evaluation of the product and animal studies to assess the potential safety and efficacy of the product and its formulation as well as the quality and consistency of the manufacturing process. The results of the preclinical tests are submitted to the FDA as part of an IND, and the IND becomes effective 30 days following its receipt by the FDA, absent questions, requests for delay or objections from the FDA.

Clinical trials involve the evaluation of the product in healthy volunteers or, as may be the case with the Company's potential products, in a small number of patients under the supervision of a qualified physician. Clinical trials are conducted in accordance with protocols that detail the objectives of the study, the parameters to be used to monitor safety and the efficacy criteria to be evaluated. Any product administered in a U.S. clinical trial must be manufactured in accordance with cGMP. Each protocol is submitted to the FDA as part of the IND. The protocol for each clinical study must be approved by an independent Institutional Review Board ("IRB") at the institution at which the study is conducted and the informed consent of all participants must be obtained. The IRB will consider, among other things, the existing information on the product, ethical factors, the safety of human subjects, the potential benefits of therapy and the possible liability of the institution.

Clinical development is traditionally conducted in three sequential phases. The phases may overlap, however. In Phase I, products are typically introduced into healthy human subjects or into selected patient populations to test for safety (adverse reactions), dosage tolerance, absorption and distribution, metabolism, excretion and clinical pharmacology. Phase II involves studies in a limited patient population to (i) determine the efficacy of the product for specific targeted indications and populations, (ii) determine optimal dosage and dosage tolerance and (iii) identify possible adverse effects and safety risks. When a dose is chosen and a candidate product is found to be effective and to have an acceptable safety profile in Phase II evaluations, Phase III trials are undertaken to conclusively demonstrate clinical efficacy and to test further for safety within an expanded patient population, generally at multiple study sites. The FDA continually reviews the clinical trial plans and results and may suggest changes or may require discontinuance of the trials at any time if significant safety issues arise. The results of the preclinical studies and clinical studies are submitted to the FDA in the form of a marketing approval authorization application.

The testing and approval process is likely to require substantial time, effort and expense and there can be no assurance that any FDA approval will be granted on a timely basis, if at all. The time to approval is affected by a number of factors, including relative risks and benefits demonstrated in clinical trials, the availability of alternative treatments and the severity of the disease. Additional animal studies or clinical trials may be requested during the FDA review period and may delay marketing approval. After FDA approval for the initial indications and requisite approval of the manufacturing facility, further clinical trials may be necessary to gain approval for the use of the product for additional indications. The FDA may also require unusual or restrictive post-marketing testing and surveillance to monitor for adverse effects, which can involve significant expense or grant only conditional approvals.

Among the conditions for product licensure is the requirement that the prospective manufacturer's quality control and manufacturing procedures conform to cGMP. Even after product licensure approval, the manufacturer must comply with cGMP on a continuing basis, and what constitutes cGMP may change as the state of the art of manufacturing changes. Domestic manufacturing facilities are subject to regular FDA inspections for cGMP compliance (normally at least every two years), and foreign manufacturing facilities are subject to periodic FDA inspections or inspections by the foreign regulatory authorities with reciprocal inspection agreements with the FDA. Domestic manufacturing facilities may also be subject to inspection by foreign authorities.

The Orphan Drug Act provides incentives to drug manufacturers to develop and manufacture drugs for the treatment of diseases or conditions that affect fewer than 200,000 individuals in the United States. Orphan drug status can also be sought for treatments for diseases or conditions that affect more than 200,000 individuals in the United States if the sponsor does not realistically anticipate its product becoming profitable from sales in the United States. The Company may apply for orphan drug status for certain of its therapies. Under the Orphan Drug Act, a manufacturer of a designated orphan product can seek tax benefits, and the holder of the first FDA approval of a designated orphan product will be granted a seven-year period of marketing exclusivity in the United States for that product for the orphan indication. While the marketing exclusivity of an orphan drug would prevent other sponsors from obtaining approval of the same compound for the same indication, it would not prevent other types of products from being approved for the same use including in some cases, slight variations on the originally designated orphan product. Legislation has been introduced in the U.S. Congress in the past, and is likely to be introduced again in the future, that would restrict the extent and duration of the market exclusivity of an orphan drug, and there can be no assurance that the benefits of the existing statute will remain in effect.

Export of the Company's investigational products is governed by laws and regulations administered by the FDA. The Company has sought and received FDA clearance for export of finished products for clinical trials outside the United States. However, both the Company's past and future export practices could be subject to FDA challenge and there can be no assurance that the FDA would agree that such practices are in compliance with applicable law and regulations or that such exports would be allowed.

Proposed regulations of the FDA and other governmental agencies would place restrictions, including disclosure requirements, on researchers who have a financial interest in the outcome of their research. Under the proposed regulations, the FDA could also apply heightened scrutiny to, or exclude the results of, studies conducted by such researchers when reviewing applications to the FDA which contain such research. Certain of the Company's collaborators have stock options or other equity interests in the Company that could subject such collaborators and the Company to the proposed regulations.

There has been increasing regulatory concern about the risks of xenotransplantation. Certain of these concerns have focused on the use of cells derived from cows (such as are used in the Company's pain program) and cells from primates and pigs. The United Kingdom has adopted a moratorium on xenotransplantation pending further research and discussion; the EC Commission has introduced a ban on the use of "high-risk material" from cattle and sheep in the Member States of the European Union in the manufacture of pharmaceuticals (this ban would apparently not include the type of cells used in the Company's pain program). In addition, the FDA has recently proposed guidelines which impose significant constraints on the clinical use of non-human cells. The regulations proposed, particularly if they are made more restrictive, could impact significantly on the cost of clinical trials and the cost to manufacture products using xenogeneic cells; the Company has begun to concentrate on the use of human cells as opposed to cells derived from non-human animals. Furthermore, the FDA has published a "Proposed Approach to Regulation of Cellular and Tissue-Based Products" which relates to the use of human cells. The Company cannot presently determine the effects of such actions or what other actions might be taken. Restrictions on the testing or use of cells, whether human or non-human, as human therapeutics could adversely affect the Company's product development programs and the Company itself and could prevent the Company from producing and/or selling certain products or make the cost of production by the Company prohibitively high.

In addition to safety regulations enforced by the FDA, the Company is 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 supranational, foreign, Federal, state and local regulations.

Outside the United States, the Company will be subject to regulations which govern the import of drug and device products from the United States or other manufacturing sites and foreign regulatory requirements governing human clinical trials and marketing approval for its products. The requirements

governing the conduct of clinical trials, product licensing, pricing and reimbursements vary widely from country to country. In particular, the European Union ("EU") is revising its regulatory approach to high tech products and representatives from the United States, Japan and the EU are in the process or harmonizing and making more uniform the regulations for the registration of pharmaceutical products in these three markets. Although certain of such proposals have been adopted, the Company cannot anticipate what effect the adoption of the final forms of this harmonization or the changes to the EU high tech procedure may have.

REIMBURSEMENT AND HEALTH CARE COST CONTROL

The Company's ability to commercialize products successfully may depend in part on the extent to which reimbursement for the costs of such products and related treatments will be available from government health administration authorities, private health insurers and others both in the United States and abroad. Significant uncertainty exists as to the reimbursement status of newly approved health care products. Reimbursement limitations or prohibitions with respect to any product developed by the Company could adversely affect the Company's ability to establish and maintain price levels sufficient for realization of an appropriate return on its investment in developing new therapies. Government and other third-party payers are increasingly attempting to contain health care costs by limiting both coverage and the level of reimbursement for new therapeutic products approved for marketing by the FDA and by refusing, in some cases, to provide any coverage for uses of approved products for disease indications for which the FDA has not granted marketing approval. If adequate coverage and reimbursement levels are not provided by third party payers for uses of the Company's therapeutic products, the market acceptance of these products would be adversely affected.

The revenues and profitability of health care-related companies may be affected by the continuing efforts of governmental and third-party payers to contain or reduce the cost of health care through various means. For example, in certain foreign markets pricing or profitability of prescription pharmaceuticals is subject to government control. In the United States, there have been, and the Company expects that there will continue to be, a number of Federal and state proposals to implement government control over health care costs. Efforts at healthcare reform are likely to continue in future legislative sessions. It is uncertain what legislative proposals will be adopted or what actions Federal, state or private payers for healthcare goods and services may take in response to healthcare reform proposals of legislation. The Company cannot predict the effect healthcare reforms may have on its business. Any such reforms as well as the uncertainty their proposal engenders could have a material adverse effect on the Company.

EMPLOYEES

As of March 31, 1999, the Company had 82 full-time employees, including 11 employees with Ph.D. or M.D. degrees. Approximately 70 employees work in research and development, regulatory affairs, prototype manufacturing, quality assurance and control and laboratory support services. A number of the Company's employees have held positions with other biotechnology or pharmaceutical companies or have worked in university research programs. No employees are covered by collective bargaining agreements.

SCIENTIFIC ADVISORY BOARD

Members of the Company's Scientific Advisory Board provide the Company with strategic guidance in regard to its research and product development programs, as well as assistance in recruiting employees and collaborators. Each Scientific Advisory Board member has entered into a consulting agreement with the Company. These consulting agreements typically specify the compensation to be paid to the consultant and require that all information about the Company's products and technology be kept confidential. All of the Scientific Advisory Board members are employed by employers other than the Company and may have commitments to or consulting or advising agreements with other entities which may limit their availability to the Company. The Scientific Advisory Board members have generally agreed, however, for so long as they serve as consultants to the Company, not to provide any services to any other entities which would

conflict with the services the member provides to the Company. Members of the Scientific Advisory Board offer consultation on specific issues encountered by the Company as well as general advice on the directions of appropriate scientific inquiry for the Company. In addition, certain Scientific Advisory Board members assist the Company in assessing the appropriateness of moving the Company's projects to more advanced stages. The following persons are members of the Company's Scientific Advisory Board:

IRVING L. WEISSMAN, M.D., is the Karel and Avice Beekhuis Professor of Cancer Biology, Professor of Pathology and Professor of Developmental Biology at Stanford University. Dr. Weissman is a cofounder of SyStemix, Inc., and Chairman of the Scientific Advisory Board of SyStemix, Inc. He has served on the Scientific Advisory Boards of Amgen Inc., DNAX and T-Cell Sciences, Inc. Dr. Weissman is Chairman of the Scientific Advisory Board of CytoTherapeutics.

PATRICK AEBISCHER, M.D., PH.D., is the Director of the Gene Therapy Center at the Centre Hospitalier Universitaire Vaudois, Lausanne, Switzerland and Professor of Biomaterials, Brown University. He is also Professor of the Swiss Polytechnical School in Lausanne. Dr. Aebischer is a founding scientist of the Company and a member of its Board of Directors and Chairman of the Board of Modex Therapeutiques SA.

DAVID J. ANDERSON, PH.D., is Professor of Biology, California Institute of Technology, Pasadena, California and Investigator, Howard Hughes Medical Institute.

ANDERS BJORKLUND, M.D., is Professor, University of Lund, Lund, Sweden.

CONSTANCE L. CEPKO, PH.D., is Professor, Department of Genetics, Harvard Medical School, Boston, Massachusetts.

FRED H. GAGE, PH.D., is Professor, Laboratory of Genetics, The Salk Institute for Biological Studies, La Jolla, California and Adjunct Professor, Department of Neurosciences, University of California, San Diego, California.

ITEM 2. PROPERTIES

The Company's research laboratories and administrative offices are located in a 65,000 square-foot multipurpose building housing wet labs, specialty research areas and administrative offices located in Lincoln, Rhode Island. The facilities are leased pursuant to a fifteen-year lease agreement with the Company having certain renewal options. The Company has also leased a 21,000 square-foot pilot manufacturing facility and a 3,000 square-foot cell processing facility for its pain program in Lincoln, Rhode Island. This facility was financed by bonds issued by the Rhode Island Industrial Facilities Corporation. The Company has also leased additional space near its pilot plant for expanded research and development. In 1998, the Company entered into a three-year lease for approximately 6,000 square feet of laboratory space in Sunnyvale, California.

The Company's current facilities are expected to be sufficient to accommodate the Company's needs at least past the end of 1999.

ITEM 3. LEGAL PROCEEDINGS

None.

ITEM 4. SUBMISSION OF MATTERS TO A VOTE OF SECURITY HOLDERS

None.

PART II

ITEM 5. MARKET FOR REGISTRANT'S COMMON EQUITY AND RELATED STOCKHOLDERS MATTERS

The Common Stock of CytoTherapeutics is traded on the National Market System of NASDAQ under the Symbol CTII. The quarterly ranges of high and low sales prices since January 1, 1996 are shown below:

1999	HIGH	LOW
First Quarter (through March 29, 1999).....	$ 1 3/4	$ 1 5/32

1998	HIGH	LOW
Fourth Quarter.....	$ 2 5/32	$ 7/8
Third Quarter.....	$ 1 5/16	$ 7/8
Second Quarter.....	$ 3 7/16	$ 1 1/4
First Quarter.....	$ 4 3/16	$ 2 9/16

1997	HIGH	LOW
Fourth Quarter.....	$ 7 1/8	$ 3 11/16
Third Quarter.....	$ 6 1/8	$ 4 3/4
Second Quarter.....	$ 8 3/4	$ 4 15/16
First Quarter.....	$10 7/8	$ 8 3/8

1996	HIGH	LOW
Fourth Quarter.....	$11	$ 7 5/8
Third Quarter.....	$12 5/8	$ 7 1/8
Second Quarter.....	$15 1/2	$10 5/8
First Quarter.....	$18 3/4	$12 3/4

No cash dividends have been declared on the Common Stock since the Company's inception.

As of March 29, 1998, there were approximately 277 holders of record of the Common Stock.

On December 11, 1996, the Company sold 829,171 shares of Common Stock to Genentech in connection with the Company's collaboration agreement with Genentech for $10.01 per share. The shares were issued as a transaction exempt from registration pursuant to Section 4(2) of the Securities Act of 1933 based on, among other things, availability of information about the issuer and representations by the purchaser as to sophistication.

ITEM 6. SELECTED FINANCIAL DATA

	YEAR ENDED DECEMBER 31,				
	1998	1997	1996	1995	1994
	(IN THOUSANDS, EXCEPT PER SHARE AMOUNTS)				
STATEMENT OF OPERATIONS DATA					
Revenue from collaborative agreements	$ 8,803	$ 10,617	$ 7,104	$ 11,761	$ 1,250
Research and development expenses	17,659	18,604	17,130	14,730	13,514
Acquired research and development		8,344			
Net loss	(12,628)	(18,114)	(13,759)	(8,891)	(16,461)
Basic and diluted net loss per share(1)	(0.69)	(1.08)	(0.89)	(0.69)	(1.52)
Shares used in computing basic and diluted net loss per share(1)	18,291	16,704	15,430	12,799	10,833

	DECEMBER 31,				
	1998	1997	1996	1995	1994
	(IN THOUSANDS)				
Balance Sheet Data					
Cash, cash equivalents and marketable securities	$ 17,386	$ 29,050	$ 42,607	$ 44,192	$ 19,138
Total assets	32,866	44,301	58,397	56,808	32,194
Long-term debt, including capitalized leases	3,762	4,108	8,223	5,441	5,641
Redeemable common stock	5,249	5,583	8,159		
Stockholders' equity	17,897	28,900	34,747	45,391	22,637

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(1) See Note 2 to consolidated financial statements.

ITEM 7. MANAGEMENT'S DISCUSSION AND ANALYSIS OF FINANCIAL CONDITION AND RESULTS OF OPERATIONS

The following discussion of the financial condition and results of operations of CytoTherapeutics, Inc. should be read in conjunction with the accompanying financial statements and the related footnotes thereto.

OVERVIEW

Since its inception in August 1988, the Company has been primarily engaged in research and development of human therapeutic products. No revenues have been derived from the sale of any products, and the Company does not expect to receive revenues from product sales for at least several years. The Company expects that its research and development expenditures will increase substantially in future years as research and product development efforts accelerate and clinical trials are initiated or broadened. The Company has incurred annual operating losses since inception and expects to incur substantial operating losses in the future. As a result, the Company is dependent upon external financing from equity and debt offerings and revenues from collaborative research arrangements with corporate sponsors to finance its operations. The Company's results of operations have varied significantly from year to year and quarter to quarter and may vary significantly in the future due to the occurrence of material, nonrecurring events, including without limitation, the receipt of one-time and nonrecurring licensing and milestone payments.

RESULTS OF OPERATIONS

YEARS ENDED DECEMBER 31, 1998, 1997 AND 1996

Revenues from collaborative agreements totaled $8,803,000, $10,617,000 and $7,104,000 for the years ending December 31, 1998, 1997 and 1996, respectively. Revenues were earned primarily from a Development, Marketing and License Agreement with Astra AB, which was signed in March 1995. Included in the 1997 revenue is a $3,000,000 milestone payment from Astra related to the Phase II clinical program for the Company's pain control implant. Revenue for 1998 reflects an increase in funding by more than 20% from Astra.

Research and development expenses totaled $17,659,000 in 1998, as compared to $18,604,000 in 1997 and $17,130,000 in 1996. The decrease of $945,000, or 5%, from 1997 to 1998 was primarily attributable to a reduction in spending on research agreements and a reduction in research and development personnel. The increase of $1,474,000, or 9%, from 1996 to 1997 was primarily attributable to an increase in manufacturing supplies associated with Phase II clinical trials and an additional $917,000 of expense from Modex Therapeutiques SA, the Company's formerly 50%-owned subsidiary, which was included in the Company's operating results through October 1997.

Acquired research and development consists of a one-time charge of $8,344,000 related to the acquisition of StemCells, Inc. in 1997. Commercialization of the acquired technology will require significant incremental research expenditures over a number of years.

General and administrative expenses were $4,603,000 for the year ended December 31, 1998, compared with $6,158,000 in 1997 and $5,679,000 in 1996. The reduction of $1,555,000, or 25%, from 1997 to 1998 was primarily attributable to a reduction in legal fees, recruiting and relocation expenses as well as a reduction in employees. The increase of $479,000, or 8%, from 1996 to 1997 was primarily attributable to increased spending for legal fees associated with the NeuroSpheres, Ltd. arbitration, patents, recruiting fees and other professional services.

Interest income for the years ended December 31, 1998, 1997 and 1996 totaled $1,254,000, $1,931,000 and $2,260,000, respectively. The average cash and investment balances were $21,795,000, $33,343,000 and $37,600,000 in 1998, 1997 and 1996, respectively. The decrease in interest income from 1996 to 1997 to 1998 was attributable to lower average balances.

In 1998, interest expense was $472,000, compared with $438,000 in 1997 and $618,000 in 1996. The Company capitalized $210,000 of interest expense on the new facility in 1997. The changes in interest expense in 1996, 1997 and 1998 are primarily attributable to interest capitalization and debt repayment.

In October 1997, the Company recognized a gain in the amount of $3,387,000 related to the sale of 50% of the Company's interest in Modex.

The net loss in 1998, 1997 and 1996 was $12,628,000, $18,114,000, and $13,759,000, respectively. The loss per share was $0.69, $1.08 and $0.89 in 1998, 1997 and 1996, respectively. The large increase in 1997 is attributable to a one-time charge of $8,344,000 for acquired research and development related to the purchase of StemCells, Inc. offset by a gain on partial sale of the Company's interest in Modex in the amount of $3,387,000.

LIQUIDITY AND CAPITAL RESOURCES

Since its inception, the Company has financed its operations through the sale of common and preferred stock, the issuance of long-term debt and capitalized lease obligations, revenues from collaborative agreements, research grants and interest income.

The Company had unrestricted cash, cash equivalents and marketable securities totaling $17,386,000 at December 31, 1998. Cash equivalents and marketable securities are invested in agencies of the U.S. government, investment grade corporate bonds and money market funds.

The Company's liquidity and capital resources have been and will continue to be significantly affected by the Company's relationships with corporate partners.

In March 1995, the Company signed a collaborative research and development agreement with Astra AB for the development and marketing of encapsulated-cell products to treat pain. Astra made an initial, nonrefundable payment of $5,000,000, included in revenue from collaborative agreements in 1995, a milestone payment of $3,000,000 in 1997 and may remit up to an additional $13,000,000 subject to the achievement of certain development milestones. Under the agreement, the Company is obligated to conduct certain research and development pursuant to a four-year research plan agreed upon by the parties. Over the term of the research plan, the Company expects to receive annual payments of $5 million to $7 million from Astra, which should approximate the research and development costs incurred by the Company under the plan. Subject to successful product development and obtaining necessary regulatory approvals, Astra is obligated to conduct all clinical trials of products arising from the collaboration and to seek approval for their sale. Astra has the exclusive worldwide right to market products covered by the agreement. Until the later of either expiration of all patents included in the licensed technology or a specified term, the Company is entitled to a royalty on the worldwide net sales of such products in return for the marketing license granted to Astra and the Company's obligation to manufacture and supply products. Astra has the right to terminate the agreement after April 1, 1998. In May 1998, Astra agreed to increase annual research and development payments from $7 million to $8.5 million for the calendar year 1998. This increase in funding was recognized as revenue in the third and fourth quarters of 1998.

The current Phase II pain trial completed patient enrollment in March 1999, with efficacy data from the trial expected by the third quarter of 1999. Astra has agreed to fund the first and second quarters of 1999 at the rate of $2.5 million per quarter. Funding for the second half of 1999 is contingent upon, among other factors, the results of the current Phase II trial. Should Astra determine to discontinue funding for the Company's development of encapsulated-cell products to treat pain, or to reduce such funding or otherwise modify the terms of the Company's relationship with Astra, any such action could have a material, adverse effect on the Company's liquidity and capital resources, and, unless other funding sources were obtained, would likely result in the Company's inability to continue to fund further development of its proposed encapsulated-cell products.

The Company's liquidity and capital resources will also be affected by the termination of the Company's collaborative development and licensing agreement with Genentech, Inc. relating to the development of products for the treatment of Parkinson's disease. In November 1996, the Company signed collaborative development and licensing agreements with Genentech relating to the development of products using the Company's technology to deliver certain of Genentech's proprietary growth factors to treat Parkinson's disease, Huntington's disease and amyotrophic lateral sclerosis ("ALS"). Under the terms of the agreement for Parkinson's disease, Genentech purchased 829,171 shares of the Company's Common Stock for $8.3 million to fund development of products to treat Parkinson's disease. Genentech had the right, in its discretion, to terminate the Parkinson's program at specified milestones in the program. Under the agreement, if the Parkinson's program was terminated and the funds the Company received from the sale of stock to Genentech pursuant to the Parkinson's agreement exceeded the expenses incurred by the Company in connection with such product development efforts by more than $1 million, Genentech had the right to require the Company to repurchase from Genentech shares of the Company's Common Stock having a value equal to the amount of the overfunding, at the same per share price paid by Genentech ($10.01 per share). As such, a portion of the Common Stock purchased by Genentech has been classified by the Company as Redeemable Common Stock; as of December 31, 1998, based upon prior accountability, the Company classified $5.2 million of such stock as Redeemable Common Stock. On May 21, 1998, Genentech exercised its right to terminate the Parkinson's collaboration and has requested that the Company redeem, at a price of $10.01 per share, shares of the Company's Common Stock having an aggregate value of at least $3.1 million. The Company is negotiating with Genentech regarding the amount of such redemption (which the Company currently expects may be approximately $3.1 million) and the

manner of payment for such redemption. Any such redemption would have a material adverse effect on the Company's liquidity and capital resources.

In May 1996, the Company secured an equipment loan facility with a bank in the amount of $2,000,000. The Company has borrowed $2,000,000 under this agreement as of December 31, 1998. The loan required interest-only payments for the first two years; principal payments are payable over a two-year period which began in August 1998. The loan is secured by equipment purchased with the proceeds of the credit facility. Current balance on this credit facility is $1.25 million. While the Company was in compliance with financial covenants under this credit facility as of December 31, 1998, the Company expects that it will be required to seek a waiver of certain financial covenants under this facility as of the end of the first or second quarter of 1999; there can be no assurance that the Company will be able to obtain such a waiver.

In October 1997, the Company completed a series of transactions which resulted in the establishment of its previously 50%-owned Swiss subsidiary, Modex Therapeutiques, SA, as an independent company. In the transactions, the Company reduced its ownership interest from 50% to approximately 25% in exchange for $4 million cash and elimination of its prior contingent obligation to contribute an additional Sfr 2.4 million (approximately $1.7 million) to Modex in July 1998. In the transactions, all of the put and call arrangements between the Company and other stockholders of Modex were eliminated and the Company forgave $463,000 due from Modex to the Company. The Company recorded a gain on the transaction of $3,387,000. In April 1998, Modex completed a financing, in which the Company elected not to participate, which resulted in a further reduction of its ownership interest to less than 20%.

The Company and Modex also modified the terms of their existing royalty-bearing Cross License Agreement to (i) expand the field in which Modex is exclusively licensed to apply the Company's proprietary encapsulated cell technology to include, in addition to the original field of diabetes, obesity and anemia, the treatment of hemophilia A and B utilizing Factor VIII and/or Factor IX and two additional applications to be agreed to by the Company and Modex; (ii) eliminate the requirement to make future milestone payments to Modex of up to 300,000 shares of the Company's Common Stock; (iii) limit the scope of the Company's technology licensed to Modex to existing and future encapsulation technology; and (iv) specify the terms under which the Company will manufacture any products Modex may develop based on the Company's technology and grant Modex an option to manufacture or have manufactured such products on payment of a higher royalty. The Cross License Agreement continues to provide for the payment of royalties from Modex to the Company on the sale of any licensed products. The revised agreement similarly limits the scope of the Modex technology exclusively licensed, on a royalty-bearing basis, to the Company for the application of diseases, conditions and disorders of the central nervous system to existing and future encapsulation technology and certain additional existing technology. In addition to their purchase of Modex Common Stock from the Company, the investors participating in the transaction invested $1.6 million directly in Modex.

In September 1997, a merger of the Company's wholly owned subsidiary and StemCells, Inc., was completed in the form of a purchase. Through the merger, the Company acquired StemCells for a purchase price totaling approximately $9,475,000, consisting of 1,580,000 new shares of the Company's Common Stock at $0.01 par value, valued at $7,900,000, the assumption of certain liabilities of $934,000 and transaction costs of $641,000. The purchase price was allocated, through a valuation, to license agreements valued at $1,131,000 to be amortized over three years and acquired research and development of $8,344,000 which has been expensed. As part of the acquisition of StemCells, Richard M. Rose, M.D., became President, Chief Executive Officer and a Director of CytoTherapeutics; and Irving Weissman, M.D., became a Director of CytoTherapeutics. Upon consummation of the merger, the Company entered into consulting arrangements with the principal scientific founders of StemCells, Dr. Weissman, Fred H. Gage, Ph.D., and David J. Anderson, Ph.D. Each such scientific founder has joined the Company's Scientific Advisory Board.

To attract and retain Drs. Rose, Weissman, Gage and Anderson, and to expedite the progress of the Company's stem cell program, the Company awarded these individuals options to acquire a total of approximately 1.6 million shares of the Company's Common Stock, at an exercise price of $5.25 per share. Approximately 100,000 of these options are exercisable immediately, 1,031,000 of these options vest and become exercisable only on the achievement of specified milestones related to the Company's stem cell development program, and the remaining 469,000 options vest over eight years. If the milestones specified relating to the 1,031,000 options are achieved, at that time the Company will record compensation expense for the excess of the quoted market price of the Common Stock over the exercise price of $5.25 per share for 562,000 options, and the fair market value for 469,000 of such options determined using the Black-Scholes method.

Stem cells research will be conducted pursuant to the provisions of an agreement between the Company and Drs. Weissman and Gage providing for a two-year research plan. If the goals of the research plan are accomplished, the Company has agreed to fund continuing stem cells research. Increases in stem cells research funding of not more than 25% per year will be funded by the Company (although the Company retains the right to fund such programs at a higher level) as long as the goals of the research plan are being met, provided, however, that the Company will retain the option of (i) ceasing or reducing neural stem cell research even if all research plan goals are met by accelerating the vesting of all still-achievable performance-based options and (ii) ceasing or reducing non-neural stem cell research even if all plan goals are being met by affording the scientific research founders the opportunity to continue development of the non-neural stem cell research by licensing the technology related to such research to the founders in exchange for a payment to the Company equal to all funding for such research, plus royalty payments.

In April 1997, CytoTherapeutics entered into an agreement with NeuroSpheres Ltd. replacing all previous agreements and resolving its dispute with NeuroSpheres. The pending action in the United States District Court, its counterpart actions in Calgary, Alberta, Canada, as well as all arbitration proceedings, have been discontinued. Under the terms of the settlement, the Company has an exclusive royalty-bearing license to growth factor-responsive neural stem/progenitor cells for transplantation. NeuroSpheres had an option to acquire co-exclusive rights, but failed to exercise the option by the April 1998 deadline. Accordingly, the NeuroSpheres option to acquire co-exclusive rights has lapsed, and the Company retains exclusive rights for transplantation. The parties have no further research obligations to each other.

In February 1997, the Company and Cognetix, Inc. entered into a Collaboration and Development Agreement to screen selected peptides isolated by Cognetix for possible development into therapeutic products aimed at a broad range of human disease states using CytoTherapeutics' encapsulated cell-based delivery technology. The Company and Cognetix have also entered into an option agreement giving the Company the right to option up to three of Cognetix's compounds for use in treating eye diseases. As part of the agreement with Cognetix, CytoTherapeutics had purchased $250,000 of Cognetix preferred stock and, subject to certain milestones, was obligated to purchase up to a total of $1,750,000 of Cognetix's stock over the next year. In July 1997, the Company loaned $250,000 to Cognetix that was repaid with interest in October 1997. In October 1998, the Company sold the $250,000 of preferred stock back to Cognetix for $298,914. The Company and Cognetix are presently discussing proposed revisions to their relationship under the agreements.

Under the terms of the Company's agreements with Genentech entered into in November 1996 relating to the development of products using the Company's technology to deliver certain of Genentech's proprietary growth factors to treat Huntington's disease and ALS, the Company is responsible for conducting and funding all pre-clinical and clinical development, subject to specified rights of Genentech to participate in the development and marketing of the proposed products. Should Genentech share in the development cost of the proposed products, the Companies will share profits at a negotiated percentage upon commercialization. Should Genentech elect not to participate in the development, upon commercialization, the Company will pay Genentech an agreed-upon royalty based upon sales. Under these agreements, the Company's license to Genentech's proprietary growth factors is dependent upon the Company using reasonable efforts to achieve certain development milestones within prescribed periods. The

Company does not presently intend to devote significant resources to the continuing pursuit of these projects and thus does not currently expect to maintain such licenses.

In both the encapsulated cell and stem cell areas, substantial additional funds will be required to support the Company's research and development programs, for acquisition of technologies and intellectual property rights, for preclinical and clinical testing of its anticipated products, pursuit of regulatory approvals, acquisition of capital equipment, laboratory and office facilities, establishment of production capabilities and for general and administrative expenses. Until the Company's operations generate significant revenues from product sales, cash reserves and proceeds from equity and debt offerings, and funding from collaborative arrangements will be used to fund operations.

The Company intends to pursue opportunities to obtain additional financing in the future through equity and debt financings, lease agreements related to capital equipment, grants and collaborative research arrangements. The source, timing and availability of any future financing will depend principally upon equity market conditions, interest rates and, more specifically, on the Company's continued progress in its exploratory, preclinical and clinical development programs. There can be no assurance that such funds will be available on favorable terms, if at all.

The Company expects that its existing capital resources, revenues from collaborative agreements and income earned on invested capital will be sufficient to fund its operations into the first quarter of 2000. The Company's cash requirements may vary, however, depending on numerous factors. Lack of necessary funds may require the Company to delay, scale back or eliminate some or all of its research and product development programs and/or its capital expenditures or to license its potential products or technologies to third parties.

YEAR 2000

The year 2000 problem results from the fact that computer programs were often written using two digits rather than four to define the applicable year. Computer programs that have date-sensitive software may recognize a date using "00" as the year 1900 rather than the year 2000. The Company has tested its material software applications to determine whether each program is prepared to accommodate date information for the year 2000 and beyond. The Company found all of its material software programs to be year 2000 compliant and does not anticipate any significant disruption of its operations as a result of the failure of any of its software programs to be year 2000 compliant.

The Company is also testing the status of its facilities systems such as phones, voice mail, heating/air conditioning, electricity and security systems and its laboratory and manufacturing equipment to determine if they are year 2000 compliant. The Company expects to complete this testing in the third quarter of 1999. If any of the systems or equipment is found not to be year 2000 compliant, the Company intends to either seek to repair the systems or equipment to cause it to be year 2000 compliant or replace such systems or equipment with year 2000 compliant products. The cost to repair or replace any such system or equipment that is not year 2000 compliant could be material. The Company is also polling its major vendors and suppliers to determine if they are year 2000 compliant and to identify any potential issues. Each of the suppliers and vendors that has responded to the Company's inquiry has confirmed either orally or in writing that it does not believe that its sales of products or provision of services to the Company will be interrupted as a result of the year 2000 issue. As a result of its investigations, the Company does not currently believe that it is reasonably likely that its operations will be significantly impacted by the year 2000 issue. Although the Company believes that the cost of remediation associated with achieving year 2000 compliance or the costs associated with systems failures will not be significant, there can be no assurance that the failure of one or more of the Company's major suppliers to be year 2000 compliant will not have an adverse effect on the Company's operations or financial results.

ITEM 7A. QUANTITIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK

The Company is exposed to market risk from changes in interest rates with respect to its investments in marketable securities. Interest rate risk with respect to the Company short and long-term debt is considered to be immaterial.

The Company maintains an investment portfolio of various issuers, types and maturities. These securities are classified as available-for-sale, and consequently, are recorded on the balance sheet at fair value with unrealized gains or losses reported as accumulated other comprehensive income in stockholders' equity, net of taxes. At any time, a sharp rise in interest rates could adversely affect the fair value of the investment portfolio. The Company currently does not hedge these interest rate exposures.

The table below presents principal amounts and related weighted average interest rates by year of maturity and fair value for the debt securities included in the Company's investment portfolio. Such debt securities are principally fixed rate financial instruments.

	1999	2000	TOTAL	FAIR VALUE
Available-for-sale debt securities	10,219,171	501,720	10,720,891	10,715,693
Average interest rate	5.44%	5.61%		

ITEM 8. FINANCIAL STATEMENTS AND SUPPLEMENTARY DATA

REPORT OF INDEPENDENT AUDITORS

Stockholders and Board of Directors
CytoTherapeutics, Inc.

We have audited the accompanying consolidated balance sheets of CytoTherapeutics, Inc. as of December 31, 1998 and 1997, and the related consolidated statements of operations, changes in redeemable common stock and stockholders' equity, and cash flows for each of the three years in the period ended December 31, 1998. Our audits also included the financial statement schedule listed in the Index at Item 14(a). These financial statements and schedule are the responsibility of the Company's management. Our responsibility is to express an opinion on these financial statements and schedule based on our audits.

We conducted our audits in accordance with generally accepted auditing standards. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement. An audit includes examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements. An audit also includes assessing the accounting principles used and significant estimates made by management, as well as evaluating the overall financial statement presentation. We believe that our audits provide a reasonable basis for our opinion.

In our opinion, the consolidated financial statements referred to above present fairly, in all material respects, the consolidated financial position of CytoTherapeutics, Inc. at December 31, 1998 and 1997, and the consolidated results of its operations and its cash flows for each of the three years in the period ended December 31, 1998, in conformity with generally accepted accounting principles. Also, in our opinion, the related financial statement schedule, when considered in relation to the basic financial statements taken as a whole, presents fairly in all material respects the information set forth therein.

Ernst & Young LLP

Boston, Massachusetts
February 12, 1999

CYTOTHERAPEUTICS, INC.

CONSOLIDATED BALANCE SHEETS

	DECEMBER 31,	
	1998	1997
ASSETS		
Current assets:		
Cash and cash equivalents	$ 7,864,788	$15,941,701
Marketable securities	9,520,939	13,108,497
Accrued interest receivable	206,609	553,186
Other current assets	841,674	576,008
Total current assets	18,434,010	30,179,392
Property, plant and equipment, net	8,356,009	7,922,751
Other assets, net	6,075,663	6,199,323
Total assets	32,865,682	$44,301,466
LIABILITIES AND STOCKHOLDERS' EQUITY		
Current liabilities:		
Accounts payable	$ 710,622	$ 867,804
Accrued expenses	1,020,119	3,241,547
Deferred revenue	2,500,000	16,144
Current maturities of capitalized lease obligations	317,083	419,095
Current maturities of long-term debt	1,000,000	658,986
Total current liabilities	5,547,824	5,203,576
Capitalized lease obligations, less current maturities	3,261,667	3,552,500
Long-term debt, less current maturities	500,000	555,525
Deferred rent	222,673	--
Commitments and contingencies		
Redeemable common stock, $.01 par value; 524,337 and 557,754 shares issued and outstanding at December 31, 1998 and 1997, respectively	5,248,610	5,583,110
Common stock to be issued	187,500	506,600
Stockholders' equity:		
Convertible preferred stock, $.01 par value; 1,000,000 shares authorized; no shares issued and outstanding	--	--
Common stock, $.01 par value; 45,000,000 shares authorized; 17,800,323 and 17,526,220 shares issued and outstanding at December 31, 1998 and 1997, respectively	178,003	175,262
Additional paid-in capital	122,861,606	121,472,844
Accumulated deficit	(103,664,084)	(91,036,254)
Unrealized gains (losses) on marketable securities	(5,198)	(8,877)
Accumulated other comprehensive income (loss)	(103,669,282)	(91,045,131)
Deferred compensation	(1,472,919)	(1,702,820)
Total stockholders' equity	17,897,408	28,900,155
Total liabilities and stockholders' equity	$ 32,865,682	$44,301,466

See accompanying notes to consolidated financial statements.

CYTOTHERAPEUTICS, INC.

CONSOLIDATED STATEMENTS OF OPERATIONS

	YEAR ENDED DECEMBER 31,		
	1998	1997	1996
Revenue from collaborative agreements	$ 8,803,163	$ 10,617,443	$ 7,104,284
Operating expenses:			
Research and development	17,658,530	18,603,523	17,130,392
Acquired research and development	--	8,343,684	--
General and administrative	4,602,758	6,158,410	5,678,783
	22,261,288	33,105,617	22,809,175
LOSS FROM OPERATIONS	(13,458,125)	(22,488,174)	(15,704,891)
Other income (expense):			
Interest income	1,253,781	1,931,260	2,259,886
Interest expense	(472,400)	(437,991)	(618,213)
Gain on partial sale of Modex	--	3,386,808	--
Loss on sale/leaseback	--	(342,014)	--
Loss on equity investment	--	(105,931)	--
Other income (expense)	48,914	(57,538)	404,128
Currency exchange loss	--	--	(100,048)
	830,295	4,374,594	1,945,753
NET LOSS	$ (12,627,830)	$ (18,113,580)	$ (13,759,138)
BASIC AND DILUTED NET LOSS PER SHARE	$ (.69)	$ (1.08)	$ (.89)
SHARES USED IN COMPUTING BASIC AND DILUTED NET LOSS PER SHARE	18,290,548	16,704,144	15,429,564

See accompanying notes to consolidated financial statements.

CYTOTHERAPEUTICS, INC.

CONSOLIDATED STATEMENTS OF CHANGES IN REDEEMABLE COMMON STOCK AND STOCKHOLDERS' EQUITY

	REDEEMABLE COMMON STOCK		COMMON STOCK		ADDITIONAL PAID-IN CAPITAL	ACCUMULATED DEFICIT	UNREALIZED GAINS (LOSSES) ON MARKETABLE SECURITIES	CUMULATIVE TRANSLATION ADJUSTMENTS
	SHARES	AMOUNT	SHARES	AMOUNT				
Balances, January 1, 1996	--	$ --	15,176,997	$ 151,770	$ 104,271,658	$ (59,163,536)	$ 131,486	$ --
Issuance of common stock	--	--	168,260	1,683	1,526,118	--	--	--
Issuance of common stock under the stock purchase plan	--	--	18,338	184	140,557	--	--	--
Exercise of warrants	--	--	6,128	61	(61)	--	--	--
Issuance of common stock to consultants and employees	--	--	48,700	487	429,079	--	--	--
Common stock issued pursuant to employee benefit plan	--	--	13,719	137	162,231	--	--	--
Issuance of redeemable common stock	829,171	8,300,000	--	--	--	--	--	--
Redeemable common stock lapses	(14,106)	(141,202)	14,106	141	141,061	--	--	--
Exercise of stock options	--	--	168,085	1,681	979,016	--	--	--
Amortization of deferred compensation	--	--	--	--	--	--	--	--
Change in unrealized losses on marketable securities	--	--	--	--	--	--	(116,726)	--
Change in cumulative translation adjustment	--	--	--	--	--	--	--	(60,416)
Net loss	--	--	--	--	--	(13,759,138)	--	--
Comprehensive income (loss)								
Balances, December 31, 1996	815,065	8,158,798	15,614,333	156,144	107,649,659	(72,922,674)	14,760	(60,416)

	DEFERRED COMPENSATION	TOTAL STOCKHOLDERS' EQUITY
Balances, January 1, 1996	$ --	$ 45,391,378
Issuance of common stock	--	1,527,801
Issuance of common stock under the stock purchase plan	--	140,741
Exercise of warrants	--	--
Issuance of common stock to consultants and employees	(185,201)	244,365
Common stock issued pursuant to employee benefit plan	--	162,368
Issuance of redeemable common stock	--	--
Redeemable common stock lapses	--	141,202
Exercise of stock options	--	980,697
Amortization of deferred compensation	95,083	95,083
Change in unrealized losses on marketable securities	--	(116,726)
Change in cumulative translation		

adjustment.....	--	(60,416)
Net loss.....	--	(13,759,138)
Comprehensive income (loss).....		(13,936,280)
Balances, December 31, 1996.....	(90,118)	34,747,355

CYTOTHERAPEUTICS, INC.

CONSOLIDATED STATEMENTS OF CHANGES IN REDEEMABLE COMMON STOCK AND STOCKHOLDERS' EQUITY (CONTINUED)

	REDEEMABLE COMMON STOCK		COMMON STOCK		ADDITIONAL PAID-IN	ACCUMULATED	UNREALIZED GAINS (LOSSES) ON MARKETABLE	CUMULATIVE TRANSLATION	DEFERRED	TOTAL STOCKHOLDERS' EQUITY
	SHARES	AMOUNT	SHARES	AMOUNT	CAPITAL	DEFICIT	SECURITIES	ADJUSTMENTS	COMPENSATION	
Issuance of common stock.....	--	--	307,548	3,074	1,552,432	--	--	--	--	1,555,506
Issuance of common stock under the stock purchase plan.....	--	--	31,822	319	180,103	--	--	--	--	180,422
Deferred compensation recorded in connection with the granting of stock options....	--	--	--	--	1,750,000	--	--	--	(1,750,000)	--
Common stock issued pursuant to employee benefit plan.....	--	--	25,588	256	169,196	--	--	--	--	169,452
Issuance of common stock--StemCells..	--	--	1,219,381	12,194	7,381,206	--	--	--	--	7,393,400
Redeemable common stock lapses.....	(257,311)	(2,575,688)	257,311	2,573	2,573,115	--	--	--	--	2,575,688
Exercise of stock options.....	--	--	75,237	752	244,427	--	--	--	--	245,179
Deferred compensation--amortization and cancellations....	--	--	(5,000)	(50)	(27,294)	--	--	--	137,298	109,954
Change in unrealized losses on marketable securities.....	--	--	--	--	--	--	(23,637)	--	--	(23,637)
Change in cumulative translation adjustment.....	--	--	--	--	--	--	--	60,416	--	
Net loss.....	--	--	--	--	--	(18,113,580)	--	--	--	
Comprehensive income (loss)....										
Balances, December 31, 1997.....	557,754	5,583,110	17,526,220	175,262	121,472,844	(91,036,254)	(8,877)	--	(1,702,820)	

adjustment.....	60,416
Net loss.....	(18,113,580)
Comprehensive income (loss)....	(18,076,801)
Balances, December 31, 1997.....	28,900,155

CYTOTHERAPEUTICS, INC.

CONSOLIDATED STATEMENTS OF CHANGES IN REDEEMABLE COMMON STOCK AND STOCKHOLDERS' EQUITY (CONTINUED)

	REDEEMABLE COMMON STOCK		COMMON STOCK		ADDITIONAL PAID-IN CAPITAL	ACCUMULATED DEFICIT	UNREALIZED GAINS (LOSSES) ON MARKETABLE SECURITIES	DEFERRED COMPENSATION	TOTAL STOCKHOLDERS' EQUITY
	SHARES	AMOUNT	SHARES	AMOUNT					
Issuance of common stock under the stock purchase plan	--	--	43,542	436	83,622				84,058
Common stock issued pursuant to employee benefit plan	--	--	84,812	848	143,025	--	--	--	143,873
Issuance of common stock--StemCells	--	--	101,320	1,013	505,587	--	--	--	506,600
Redeemable common stock lapses	(33,417)	(334,500)	33,417	334	334,166	--	--	--	334,500
Exercise of stock options	--	--	11,012	110	1,254	--	--	--	1,364
Deferred compensation--amortization and cancellations	--	--	--	--	321,108	--	--	229,901	551,009
Change in unrealized losses on marketable securities	--	--	--	--	--	--	3,679	--	3,679
Net loss	--	--	--	--	--	(12,627,830)	--	--	(12,627,830)
Comprehensive income (loss)									(12,624,151)
Balances, December 31, 1998	524,337	$5,248,610	17,800,323	$ 178,003	$122,861,606	$(103,664,084)	$ (5,198)	$(1,472,919)	$17,897,408

See accompanying notes to consolidated financial statements.

CYTOTHERAPEUTICS, INC.

CONSOLIDATED STATEMENTS OF CASH FLOWS

	YEAR ENDED DECEMBER 31,		
	1998	1997	1996
CASH FLOWS FROM OPERATING ACTIVITIES:			
Net loss	$(12,627,830)	$(18,113,580)	$(13,759,138)
Adjustments to reconcile net loss to net cash used for operating activities:			
Depreciation and amortization	2,244,146	1,968,234	1,671,068
Acquired research and development	--	8,343,684	--
Amortization of deferred compensation	551,009	109,954	95,083
Other non cash charges	410,173	105,931	406,733
Loss (gain) on investment	--	(3,386,808)	--
Loss on sale of fixed assets	--	413,856	871
Changes in operating assets and liabilities:			
Accrued interest receivable	346,577	100,004	140,025
Other current assets	(265,665)	(232,604)	220,688
Accounts payable and accrued expenses	(2,378,613)	(1,233,501)	1,077,350
Deferred revenue	2,483,856	(1,842,948)	109,092
NET CASH USED IN OPERATING ACTIVITIES	(9,236,347)	(13,767,778)	(10,038,228)
CASH FLOWS FROM INVESTING ACTIVITIES:			
Proceeds from sale of Modex, net of cash disposed	--	2,958,199	--
Purchases of marketable securities	(18,982,387)	(14,182,521)	(3,083,621)
Proceeds from sales of marketable securities	22,573,624	23,736,242	14,924,200
Purchase of property, plant and equipment	(2,153,524)	(7,710,126)	(4,412,190)
Proceeds on sale of fixed assets	--	8,003,926	3,000
Purchase of other investment	--	(250,000)	--
Acquisition of other assets	(400,219)	(1,599,418)	(811,305)
StemCells assets acquired	--	(640,490)	--
Advance to Cognetix	--	250,000	--
Repayment from Cognetix	--	(250,000)	--
NET CASH PROVIDED BY (USED IN) INVESTING ACTIVITIES	1,037,494	10,315,812	6,620,084
CASH FLOWS FROM FINANCING ACTIVITIES:			
Proceeds from issuance of redeemable common stock	--	--	8,300,000
Proceeds from issuance of common stock	227,931	1,905,380	1,668,542
Proceeds from the exercise of stock options and warrants	1,364	245,179	980,697
Proceeds from debt financings	1,259,300	--	4,059,947
Repayments of debt and lease obligations	(1,366,655)	(2,496,849)	(1,171,926)
NET CASH PROVIDED BY (USED IN) FINANCING ACTIVITIES	121,940	(346,290)	13,837,260
Effect of exchange rate on cash and cash equivalents	--	(181,627)	(46,111)
INCREASE (DECREASE) IN CASH AND CASH EQUIVALENTS	(8,076,913)	(3,979,883)	10,373,005
Cash and cash equivalents, January 1	15,941,701	19,921,584	9,548,579
CASH AND CASH EQUIVALENTS, DECEMBER 31	$ 7,864,788	$15,941,701	$19,921,584
SUPPLEMENTAL DISCLOSURE OF CASH FLOW INFORMATION:			
INTEREST PAID	$ 444,047	$ 436,461	$ 616,671

Non-cash: During 1998, the Company issued 101,320 shares of common stock to liquidate a common stock liability.

See accompanying notes to consolidated financial statements.

CYTOTHERAPEUTICS, INC.

NOTES TO CONSOLIDATED FINANACIAL STATEMENTS

DECEMBER 31, 1998

1. NATURE OF BUSINESS

CytoTherapeutics, Inc. (the "Company") is a biopharmaceutical company engaged in the development of cell-based therapeutics designed to deliver therapeutic substances to the central nervous system or regenerate damaged tissue.

2. SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES

PRINCIPLES OF CONSOLIDATION

The 1998 and 1997 consolidated financial statements include accounts of the Company and StemCells, Inc., a wholly owned subsidiary. The 1996 consolidated financial statements include accounts of the Company and Modex Therapeutiques S.A., a 50%-owned subsidiary. Significant intercompany accounts have been eliminated in consolidation.

USE OF ESTIMATES

The preparation of the consolidated financial statements in conformity with generally accepted accounting principles requires management to make estimates and assumptions that affect the amounts reported in the consolidated financial statements and accompanying notes. Actual results could differ from those estimates.

CASH, CASH EQUIVALENTS AND MARKETABLE SECURITIES

Cash and cash equivalents include funds held in investments with original maturities of three months or less. The Company's policy regarding selection of investments, pending their use, is to insure safety, liquidity, and capital preservation while obtaining a reasonable rate of return. Marketable securities consist of investments in agencies of the U.S. government, investment grade corporate notes and money market funds. The fair values for marketable securities are based on quoted market prices.

The Company determines the appropriate classification of cash equivalents and marketable securities at the time of purchase and reevaluates such designation as of each balance sheet date. The Company has classified such holdings as available-for-sale securities, which are carried at fair value, with unrealized gains and losses reported as a separate component of stockholders' equity.

PROPERTY, PLANT AND EQUIPMENT

Property, plant and equipment, including that held under capitalized lease obligations, is stated at cost and depreciated using the straight-line method over the estimated life of the respective asset, as follows:

Building and improvements	3-15 years
Machinery and equipment	3-10 years
Furniture and fixtures	3-10 years

PATENT COSTS

The Company capitalizes certain patent costs related to patent applications. Accumulated costs are amortized over the estimated economic life of the patents, not to exceed 17 years, using the straight-line method, commencing at the time the patent is issued. Costs related to patent applications are written off to

2. SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES (CONTINUED)
expense at the time such patents are deemed to have no continuing value. At December 31, 1998 and 1997, total costs capitalized were $4,285,000 and $3,486,000 and the related accumulated amortization was $347,000 and $208,000, respectively. Patent expense totaled $3,000, $365,000, and $249,000 in 1998, 1997 and 1996, respectively.

STOCK BASED COMPENSATION

The Company grants qualified stock options for a fixed number of shares to employees with an exercise price equal to the fair market value of the shares at the date of grant. The Company accounts for stock option grants in accordance with APB Opinion No. 25, ACCOUNTING FOR STOCK ISSUED TO EMPLOYEES, and, accordingly, recognizes no compensation expense for qualified stock option grants.

For certain non-qualified stock options granted, the Company recognizes as compensation expense the excess of the deemed fair value of the common stock issuable upon exercise of such options over the aggregate exercise price of such options. The compensation is amortized over the vesting period of each option or the recipient's term of employment, if shorter.

INCOME TAXES

The liability method is used to account for income taxes. Deferred tax assets and liabilities are determined based on differences between financial reporting and income tax bases of assets and liabilities as well as net operating loss carryforwards and are measured using the enacted tax rates and laws that are expected to be in effect when the differences reverse. Deferred tax assets may be reduced by a valuation allowance to reflect the uncertainty associated with their ultimate realization.

REVENUE FROM COLLABORATIVE AGREEMENTS

Revenues from collaborative agreements are recognized as earned upon either the incurrence of reimbursable expenses or the achievement of certain milestones. Payments received in advance of research performed are designated as deferred revenue. Substantially all of the Company's revenues and all of the Company's long-lived assets attribute to research performed in the United States; the Company derives significant revenues from its collaboration with Astra AB, a company head-quartered in Sweden (See Note 15).

FOREIGN CURRENCY TRANSLATION

Prior to the sale of a majority ownership position in Modex, assets and liabilities of operations outside the United States are translated into United States dollars using current exchange rates; revenue and expense items are translated into United Stated dollars using a weighted average exchange rate for the period. The gains and losses resulting from such translation are accumulated as a separate component of shareholders' equity, whereas gains and losses resulting from foreign currency transactions generally are included in results of operations.

2. SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES (CONTINUED)
NET LOSS PER SHARE

Net loss per share is computed using the weighted average number of shares of common stock outstanding. Common equivalent shares from stock options and warrants are excluded, as their effect is antidilutive.

In 1997, the Company adopted Statement of Accounting Standards No. 128, EARNINGS PER SHARE (EPS), which is effective for both interim and annual financial statements for periods ended after December 15, 1997. Under Statement 128, primary EPS computed in accordance with Opinion 15 has been replaced with a simpler calculation called basic EPS. Basic EPS is calculated by dividing income available to common stockholders by the weighted average common shares outstanding. Fully dilutive EPS did not change significantly but has been renamed diluted EPS. The adoption of Statement 128 had no effect on the Company's financial statements since common equivalent shares from stock options and warrants have been excluded as their effect is antidilutive.

IMPACT OF RECENTLY ISSUED ACCOUNTING STANDARDS

As of January 1, 1998, the Company adopted Statement 130, REPORTING COMPREHENSIVE INCOME. Statement 130 establishes new rules for the reporting and display of comprehensive income and its components; however, the adoption of this Statement had no impact on the Company's net income or shareholders' equity. Statement 130 requires unrealized gains or losses on the Company's available-for-sale securities and the foreign currency translation adjustments, which prior to adoption were reported separately in shareholders' equity, to be included in other comprehensive income. Prior year financial statements have been reclassified to conform to the requirements of Statement 130.

Effective January 1, 1998, the Company adopted the Financial Accounting Standards Board's Statement of Financial Accounting Standards No. 131, DISCLOSURES ABOUT SEGMENTS OF AN ENTERPRISE AND RELATED INFORMATION (Statement 131). Statement 131 superseded FASB Statement No. 14, Financial Reporting for Segments of a Business Enterprise. Statement 131 establishes standards for the way that public business enterprises report information about operating segments in annual financial statements and requires that those enterprises report selected information about operating segments in interim financial reports. Statement 131 also establishes standards for related disclosures about products and services, geographic areas, and major customers. Inasmuch as the Company's activities are all directed toward research and development of cell-based therapeutic projects that have similar basic and economic characteristics, the Company believes that aggregation of all such projects is consistant with the objectives and basic principles of Statement 131.

3. STEMCELLS, INC.

In September 1997, a merger of a wholly owned subsidiary of the Company and StemCells, Inc. was completed in the form of a purchase. Through the merger, the Company acquired StemCells for a purchase price totaling approximately $9,475,000, consisting of 1,320,691 shares of the Company's common stock and options and warrants for the purchase of 259,296 common shares at nominal consideration, valued at $7,900,000 in the aggregate, the assumption of certain liabilities of $934,000 and transaction costs of $641,000. The purchase price was allocated, based upon a valuation, to license agreements valued at $1,131,000 to be amortized over three years and acquired research and development of $8,344,000 which

3. STEMCELLS, INC. (CONTINUED)
has been expensed. As part of the acquisition of StemCells, Richard M. Rose, M.D., became President, a Chief Executive Officer and a director of the Company, and Irving L. Weissman, M.D. became a director of the Company.

Upon consummation of the merger, the Company entered into consulting arrangements with the principal scientific founders of StemCells: Dr. Irving Weissman, Fred H. Gage, Ph.D. and David Anderson, Ph.D. Additionally, in connection with the merger, the Company was granted an option by the former shareholders of StemCells to repurchase 500,000 of the Company's shares of Common Stock exchanged for StemCells shares, upon the occurrence of certain events as defined.

To attract and retain Drs. Rose, Weissman, Gage and Anderson, and to expedite the progress of the Company's stem cell program, the Company awarded these individuals options to acquire a total of approximately 1.6 million shares of the Company's Common Stock, at an exercise price of $5.25 per share, the quoted market price at the grant date; approximately 100,000 of these options are exercisable immediately, 1,031,000 of these options vest and become exercisable only upon the achievement of specified milestones related to the Company's stem cell development program and the remaining 469,000 options vest over eight years. In connection with the 469,000 options issued to a non-employee, Dr. Anderson, the Company has recorded deferred compensation of $1,750,000, the fair value of such options at the date of grant, which will be amortized over an eight-year period. If the milestones specified relating to the 1,031,000 option grant are achieved, at that time the Company will record compensation expense for the excess of the quoted market price of the common stock over the exercise price of $5.25 per share for 562,000 options and the fair market value for 469,000 of such options determined using the Black-Scholes method. The Company has also designated a pool of 400,000 options to be granted to persons in a position to make a significant contribution to the success of the stem cell program. Stem cell research will be conducted pursuant to the provisions of an agreement between the Company and Drs. Weissman and Gage providing for a two-year research plan. If the goals of the research plan are accomplished, the Company has agreed to fund continuing stem cell research. Increases in stem cells research funding of not more than 25% a year will be funded by the Company as long as the goals of the research plan are being met. However, the Company will retain the option of (i) ceasing or reducing neural stem cell research even if all research plan goals are met but will be required to accelerate the vesting of all still-achievable performance based stock options, and (ii) ceasing or reducing non-neural stem cell research even if all plan goals are being met by affording the scientific research founders the opportunity to continue development of the non-neural stem cell research by licensing the technology related to such research to the founders in exchange for a payment to the Company equal to all prior Company funding for such research, plus royalty payments.

4. MODEX

In October 1997, the Company completed a series of transactions which resulted in the establishment of its previously 50%-owned Swiss subsidiary, Modex Therapeutiques, S.A. (Modex), as an independent company. In the transactions, the Company reduced its ownership interest from 50% to approximately 25% in exchange for $4 million cash and elimination of its prior contingent obligation to contribute an additional Sfr 2.4 million (approximately $1.7 million) to Modex in July 1998. In the transactions, all of the put and call arrangements between the Company and other stockholders of Modex were eliminated and the Company forgave $463,000 due from Modex to the Company. The Company recorded a gain on the

4. MODEX (CONTINUED)
transactions of $3,387,000 and accounted for its now approximately 25% investment under the equity method.

In April 1998, Modex completed an additional equity offering, in which the Company did not participate. This resulted in a reduction in the Company's ownership interest to less than 20%; therefore, the Company began to account for this investment under the cost method.

The Company and Modex also modified the terms of their existing royalty-bearing Cross License Agreement to (i) expand the field in which Modex is exclusively licensed to apply the Company's proprietary encapsulated cell technology to include, in addition to the original field of diabetes, obesity and anemia, the treatment of hemophilia A and B utilizing Factor VIII and/or Factor IX and two additional applications to be agreed to by the Company and Modex; (ii) eliminate the requirement to make future milestone payments to Modex of up to 300,000 shares of the Company's common stock; (iii) limit the scope of the Company's technology licensed to Modex to existing and future encapsulation technology; and (iv) specify the terms under which the Company will manufacture any products Modex may develop based on the Company's technology and grant Modex an option to manufacture or have manufactured such products on payment of a higher royalty. The Cross License Agreement continues to provide for the payment of royalties from Modex to the Company on the sale of any licensed products. The revised agreement similarly limits the scope of the Modex technology exclusively licensed, on a royalty-bearing basis, to the Company for the application of diseases, conditions and disorders of the central nervous system to existing and future encapsulation technology and certain additional existing technology.

5. MARKETABLE SECURITIES

The following is a summary of available-for-sale securities:

	DECEMBER 31, 1998			
	COST	GROSS UNREALIZED GAINS	GROSS UNREALIZED LOSSES	ESTIMATED FAIR VALUE
U.S. government securities	$ 1,500,994	$ 1,720	$ (504)	$ 1,502,210
U.S. corporate securities	9,225,095	3,244	(9,658)	9,218,681
Total debt securities	$ 10,726,089	$ 4,964	$ (10,162)	10,720,891
Debt securities included in cash and cash equivalents				(1,199,952)
Debt securities included in marketable securities				$ 9,520,939

	DECEMBER 31, 1997			
	COST	GROSS UNREALIZED GAINS	GROSS UNREALIZED LOSSES	ESTIMATED FAIR VALUE
U.S. government securities	$ 3,153,834	$ 92	$ (3,951)	$ 3,149,975
U.S. corporate securities	21,261,850	1,645	(6,663)	21,256,832
Total debt securities	$ 24,415,684	$ 1,737	$ (10,614)	24,406,807
Debt securities included in cash and cash equivalents				(11,298,310)
Debt securities included in marketable securities				$ 13,108,497

Maturities of marketable securities held at December 31, 1998, are as follows:

Less than one year	$10,219,171
One through five years	501,720
	$10,720,891

6. OTHER INVESTMENT

In December 1993, the Company sold substantially all of the assets of its primary cell diabetes product development program, including related equipment, and licensed related intellectual property to Neocrin Company in exchange for preferred stock representing a then 10% ownership interest with a fair market value of $2,030,748. The transaction resulted in a gain before closing expenses of $1,957,913 and a net gain of $1,780,209. In February 1995, the Company purchased an additional $500,100 of Neocrin's preferred stock at the current market value, as required under the original purchase agreement.

6. OTHER INVESTMENT (CONTINUED)

In December 1995, Neocrin completed an equity offering in which the Company did not participate, at a valuation substantially lower than prior financings. As a result, the Company determined that the carrying value in its investment had been permanently impaired and provided a $2,530,848 valuation reserve to reduce the investment value to zero.

7. PROPERTY, PLANT AND EQUIPMENT

Property, plant and equipment consists of the following:

	DECEMBER 31,	
	1998	1997
Land	$ --	$ --
Building and improvements	5,665,077	4,977,906
Machinery and equipment	9,887,251	8,549,405
Furniture and fixtures	869,831	717,377
Construction in progress	--	23,947
	16,422,159	14,268,635
Less accumulated depreciation and amortization	8,066,150	6,345,884
	$ 8,356,009	$ 7,922,751

Depreciation and amortization expense was $1,720,000, $1,778,000, and $1,564,000 for the years ending December 31, 1998, 1997 and 1996, respectively.

Certain property, plant and equipment have been acquired under capitalized lease obligations. These assets totaled $6,587,000, at December 31, 1998 and 1997 with related accumulated amortization of $2,860,000 and $2,297,000 at December 31, 1998 and 1997, respectively.

In connection with the Company's new facility, the Company capitalized $210,000 of interest costs in 1997.

8. OTHER ASSETS

Other assets are as follows:

	DECEMBER 31,	
	1998	1997
Patents, net	$ 3,938,755	$ 3,278,709
License agreements, net	659,750	1,036,750
Security deposit--building lease	750,000	750,000
Restricted cash	603,457	552,357
Other investments	--	450,000
Deferred financing costs, net	123,701	131,507
	$ 6,075,663	$ 6,199,323

At December 31, 1998 and 1997, accumulated amortization was $818,000 and $302,000, respectively, for patents and license agreements.

9. ACCRUED EXPENSES

Accrued expenses are as follows:

	DECEMBER 31,	
	1998	1997
External services	$ 412,253	$ 1,709,818
Employee compensation	262,679	755,951
Collaborative research	196,505	499,575
Other	148,682	276,203
	$ 1,020,119	$ 3,241,547

10. LEASES

The Company has undertaken direct financing transactions with the State of Rhode Island and received proceeds from the issuance of industrial revenue bonds totaling $5,000,000 to finance the construction of its pilot manufacturing facility. The related leases are structured such that lease payments will fully fund all semiannual interest payments and annual principal payments through maturity in August 2014. Fixed interest rates vary with the respective bonds' maturities, ranging from 5.1% to 9.5%. The bonds contain certain restrictive covenants which limit, among other things, the payment of cash dividends and the sale of assets. In addition, the Company is required to maintain a debt service reserve, which totals $583,000, until December 1999.

In 1997, the Company completed construction of a new headquarters and laboratory facility. In November 1997, the Company entered into sale and leaseback agreement with a real estate investment trust. Under the terms of these agreements, the Company sold its new facility for $8,000,000 incurring a $342,000 loss on the sale. The Company simultaneously entered into a fifteen-year lease for the facility. The lease agreement calls for minimum rent of $750,000 for the first five years, $937,500 for years six to ten, $1,171,900 for years eleven to fourteen and $1,465,000 in year fifteen with a $750,000 security deposit

10. LEASES (CONTINUED)
held for the term of the lease. The Company is recognizing rent expense on a straight line basis. At December 31, 1998, the Company has incurred $223,000 in deferred rent expense. Future minimum capitalized lease obligations with noncancelable terms in excess of one year at December 31, 1998, are as follows:

1999	$ 623,614
2000	606,684
2001	589,217
2002	519,719
2003	436,909
Thereafter	3,150,294
Total minimum lease payments	5,926,437
Less amounts representing interest	2,347,687
Present value of minimum lease payments	3,578,750
Less current maturities	317,083
Capitalized lease obligations, less current maturities	$3,261,667

Rent expense for the years ended December 31, 1998, 1997 and 1996, was $1,052,000, $499,000 and $495,000, respectively.

11. LONG-TERM DEBT

Long-term debt is as follows:

	DECEMBER 31, 1998	DECEMBER 31, 1997
Term note payable, interest at the prime rate plus 1/2% (8.75% at December 31, 1998), principal payments commence in August 1998, due ratably through May 2000; secured by certain equipment	$ 1,500,000	$ 740,700
Term note payable, interest at the prime rate plus 1/2% (8.75% at December 31, 1998), due ratably through December 1998; secured by certain equipment	--	432,588
Other	--	41,223
	1,500,000	1,214,511
Current maturities of long-term debt	1,000,000	658,986
Long-term debt, less current maturities	$ 500,000	$ 555,525

Both term note agreements include certain restrictive covenants that limit, among other things, the payment of dividends, sale of assets and the incurrence of additional indebtedness.

11. LONG-TERM DEBT (CONTINUED)

Maturities of long-term debt for the years ending December 31 are as follows:

1999	$1,000,000
2000	500,000
	$1,500,000

12. REDEEMABLE COMMON STOCK

Under a research agreement to fund development of products to treat Parkinson's disease (see Note 15), Genentech, Inc. purchased 829,171 shares of Common Stock for $8.3 million in December 1996. The agreement provided that if the agreement is terminated and the funds received from the sale of Common Stock exceed by more than $1 million the expenses incurred by the Company in connection with such development, Genentech, Inc. has the right to require the Company to repurchase shares of Common Stock having a value equal to the amount of over funding, at the share price paid by Genentech. Accordingly, the Common Stock is classified as redeemable Common Stock until such time as the related funds are expended. At December 31, 1998, $3,051,000 had been spent on the collaboration with Genentech and, accordingly, the Company has reclassified those common shares and related value to stockholders' equity. On May 21, 1998, Genentech exercised its right to terminate the Parkinson's collaboration and has requested that the Company redeem, at a price of $10.01 per share, shares of the Company's Common Stock having an aggregate value of at least $3.1 million. The Company is negotiating with Genentech regarding the amount of such redemption (which the Company currently expects may be approximately $3.1 million) and the manner of payment for such redemption.

13. COMMON STOCK TO BE ISSUED

In 1998, the Company entered into an agreement with a Company advisor, under which the advisor prepared a strategic and business overview and provided related implementation support for the Company. The advisor agreed to accept cash and the Company's Common Stock as payment for its services. At December 31, 1998, the Company had paid the cash portion but had not issued the 85,258 shares of Common Stock ($187,500) due to the advisor.

In 1997, the merger with StemCells, Inc. required that StemCells shareholders tender their StemCells shares and receive shares of CytoTherapeutics in exchange. At December 31, 1997, 27,087 shares of StemCells common stock and promissory notes totaling $168,750 remained to be tendered in exchange for 101,310 shares of CytoTherapeutics Common Stock with a value of $506,600 at the date of merger.

14. STOCKHOLDERS' EQUITY

STOCK OPTION AND EMPLOYEE STOCK PURCHASE PLANS

The Company has adopted several stock plans which provide for the issuance of incentive and nonqualified stock options, performance awards and stock appreciation rights, at prices to be determined by the Board of Directors, as well as the purchase of Common Stock under an employee stock purchase plan at a discount to the market price. In the case of incentive stock options, such price will not be less than the fair market value on the date of grant. Options generally vest ratably over four years and are

14. STOCKHOLDERS' EQUITY (CONTINUED)
exercisable for ten years from the date of grant or within three months of termination. At December 31, 1998, the Company had reserved 3,560,826 shares of common stock for the exercise of stock options. The following table presents the combined activity of the Company's stock option plans (exclusive of the plans noted below) for the years ended December 31:

	1998		1997		1996	
	OPTIONS	WEIGHTED AVERAGE EXERCISE PRICE	OPTIONS	WEIGHTED AVERAGE EXERCISE PRICE	OPTIONS	WEIGHTED AVERAGE EXERCISE PRICE
Outstanding at January 1.....	2,446,573	$ 7.48	2,423,025	$ 8.34	1,921,284	$ 7.72
Granted.....	1,174,118	1.70	679,074	5.33	852,160	9.48
Exercised.....	(11,012)	.12	(82,737)	2.96	(168,085)	5.83
Canceled.....	(1,955,553)	7.08	(572,789)	9.21	(182,334)	9.42
Outstanding at December 31.....	1,654,126	$ 3.62	2,446,573	$ 7.48	2,423,025	$ 8.34
Options exercisable at December 31...	1,108,936	$ 4.33	1,338,163	$ 7.79	1,105,251	$ 7.11

In addition to the options noted above, in conjunction with the StemCells merger, StemCells' options were exchanged for options to purchase 250,344 shares of the Company's Common Stock at $.01 per share originally issued under a prior StemCells options plan; 75,384 of these options are exercisable at December 31, 1997, 96,750 of these options vest and become exercisable only upon achievement of specified milestones, and the remaining 78,210 options vest over three years from the date of grant. Additionally, the Company adopted the 1997 CytoTherapeutics, Inc. StemCells Research Stock Option Plan (the "StemCells Research Plan") whereby an additional 2,000,000 shares of Common Stock has been reserved. During 1997, the Company awarded options under the StemCells Research Plan to purchase 1.6 million shares of the Company's Common Stock to the Chief Executive Officer and scientific founders of StemCells at an exercise price of $5.25 per share; approximately 100,000 of these options are exercisable immediately, 1,031,000 of these options vest and become exercisable only upon achievement of specified milestones and the remaining 469,000 options vest over eight years.

On July 10, 1998 the Company's Board of Directors approved a stock repricing program for all permanent employees who held stock options. The price of the new options was $1.281, the closing price on July 10, 1998. Options were exchanged based on a .75 to 1 ratio. Employees surrendered 1,064,472 options for repricing and the Company granted 751,018 repriced options, net of departures, in accordance with this plan. All exchanged options were subject to a six month blackout period that expired on February 12, 1999. The effect of this repricing is reflected in the above rollforward.

In July 1998, the Company adopted a shareholder rights plan, and the Board of Directors declared a dividend consisting of one purchase right (a "Right") for each share of Common Stock outstanding on August 4, 1998. Each share of Common Stock issued after that date will be issued with an attached Right. Each Right entitles the holder, upon the occurrence of certain events, to purchase 1/100th of a share of Junior Preferred Stock at an initial exercise price of $10, subject to adjustments for stock dividends, splits and similar events. The Rights are exercisable only if a person or group acquires 15 percent or more of the Company's Common Stock or commences a tender of exchange offer, the consummation of which would result in ownership by such person or group of 15 percent or more of the Company's Common Stock. The

14. STOCKHOLDERS' EQUITY (CONTINUED)
Rights may be redeemed by the Board of Directors at any time prior to the expiration of the rights plan on July 27, 2008 at the redemption price of $.01 each and may be amended by the Board at any time prior to becoming exercisable. At March 31, 1999 there were 18,370,663 Junior Preferred Stock Purchase Rights outstanding.

FAS 123 DISCLOSURES

The Company has adopted the disclosure provisions only of Statement of Financial Accounting Standards No. 123, ACCOUNTING FOR STOCK-BASED COMPENSATION ("FAS 123"), and will continue to account for its stock option plans in accordance with the provisions of APB 25, ACCOUNTING FOR STOCK ISSUED TO EMPLOYEES. The following table presents weighted average price and life information about significant option groups outstanding at December 31, 1998:

	OPTIONS OUTSTANDING			OPTIONS EXERCISABLE	
RANGE OF EXERCISE PRICES	NUMBER OUTSTANDING	WEIGHTED AVERAGE REMAINING CONTRACTUAL LIFE (YRS.)	WEIGHTED AVERAGE EXERCISE PRICE	NUMBER EXERCISABLE	WEIGHTED AVERAGE EXERCISE PRICE
Less than $5.00	1,180,750	7.44	$ 1.30	689,246	$ 1.25
$5.01 - $10.00	240,876	6.07	7.31	203,856	7.13
Greater than $10.00	232,500	4.97	11.59	215,834	11.50
	1,654,126			1,108,936	

Pursuant to the requirements of FAS 123, the following are the pro forma net loss and net loss per share for 1998, 1997, and 1996, as if the compensation cost for the option plans and the stock purchase plan had been determined based on the fair value at the grant date for grants in 1998, 1997, and 1996, consistent with the provisions of FAS 123:

	1998		1997		1996	
	AS REPORTED	PRO FORMA	AS REPORTED	PRO FORMA	AS REPORTED	PRO FORMA
Net loss	$ (12,627,830)	$ (14,919,389)	$ (18,113,580)	$ (19,924,437)	$ (13,759,138)	$ (14,931,000)
Net loss per share	$ (.69)	$ (.82)	$ (1.08)	$ (1.19)	$ (.89)	$ (.97)

The weighted average fair value per share of options granted during 1998, 1997 and 1996, was $0.82, $3.40, and $5.67, respectively. The fair value of options and shares issued pursuant to the stock purchase plan at the date of grant were estimated using the Black-Scholes model with the following weighted average assumptions:

	OPTIONS			STOCK PURCHASE PLAN		
	1998	1997	1996	1998	1997	1996
Expected life (years)	5	5	5	.5	.5	5
Interest rate	5.2%	6.2%	6.5%	4.64%	5.5%	6.5%
Volatility	63.5%	59.0%	63.0%	63.5%	59.0%	63.0%

14. STOCKHOLDERS' EQUITY (CONTINUED)

The Company has never declared nor paid dividends on any of its capital stock and does not expect to do so in the foreseeable future.

The effects on 1998, 1997 and 1996 pro forma net loss and net loss per share of expensing the estimated fair value of stock options and shares issued pursuant to the stock purchase plan are not necessarily representative of the effects on reporting the results of operations for future years as the period presented includes only one, two and three years, respectively, of option grants under the Company's plans. As required by FAS 123, the Company has used the Black-Scholes model for option valuation, which method may not accurately value the options described.

STOCK WARRANTS

In conjunction with StemCells merger, the Company has exchanged StemCells warrants for warrants to purchase 8,952 shares of Company Common Stock at $4.71 per share. In conjunction with various equipment leasing agreements, the Company has outstanding warrants to purchase 31,545 shares of Common Stock at prices ranging from $4.00 to $9.00 per share. The warrants expire through October 2000. In connection with a public offering of Common Stock in April 1995, the Company issued warrants to purchase 434,500 shares of Common Stock at $8 per share. The warrants are nontransferable and expire in April 2000, subject to certain required exercise provisions. In addition to the foregoing rights, the holder of such warrants has the right, in the event the Company issues additional shares of Common Stock or other securities convertible into Common Stock, to purchase at the then market price of such common stock, sufficient additional shares of Common Stock to maintain the warrant holder's percentage ownership of the Company's Common Stock at 15%. This right, subject to certain conditions and limitations, expires in April 2000.

COMMON STOCK RESERVED

The Company has reserved 7,818,936 shares of Common Stock for the exercise of options, warrants and other contingent issuances of Common Stock.

15. RESEARCH AGREEMENTS

In November 1997, StemCells, Inc., a wholly-owned subsidiary of the Company, signed a Research Funding and Option Agreement with The Scripps Research Institute ("Scripps") relating to research on certain stem-cell research. Under the terms of the agreement, StemCells agreed to fund research in the total amount of approximately $931,000 at Scripps over a period of three years. StemCells has paid $77,000 at December 31, 1997. In addition, the Company agreed to issue to Scripps 4,837 shares of the Company's common stock and a stock option to purchase 9,674 shares of the Company's Common Stock with an exercise price of $.01 per share upon the achievement of specified milestones. Under the agreement, StemCells has an option for an exclusive license to the inventions resulting from the sponsored research, subject to the payment of royalties and certain other amounts, and is obligated to make payments totaling $425,000 for achievement of certain milestones.

In February 1997, the Company and Cognetix, Inc. entered into a Collaboration and Development Agreement to screen selected peptides isolated by Cognetix for possible development into therapeutic products aimed at a broad range of human disease states using CytoTherapeutic's cell-based delivery

15. RESEARCH AGREEMENTS (CONTINUED)
technology. Continuation of the agreement is contingent upon meeting an agreed-upon proof of concept test. The companies will generally share expenses associated with the development of any specific product candidate and any resulting revenues, except as otherwise determined on a product-by-product basis. As part of the agreement with Cognetix, the Company purchased $250,000 of Cognetix preferred stock and, subject to certain milestones, was obligated to purchase as much as $1,500,000 of additional Cognetix stock over the next year. In July 1997, the Company loaned $250,000 to Cognetix which was repaid with interest in October 1997. In October 1998, the Company sold the $250,000 of preferred stock back to Cognetix for $298,914. The Company and Cognetix are presently discussing proposed revisions to their relationship under the agreement.

In April 1997, the Company entered into an agreement with Neurospheres, Ltd. which superseded all previous licensing agreements and settled a dispute with Neurospheres. Under the terms of the settlement, the Company has an exclusive royalty bearing license for growth-factor responsive stem cells for transplantation. Neurospheres had an option to acquire co-exclusive rights but did not exercise by the April 1998 deadline. The Company retains exclusive rights for transplantation. The parties have no further research obligations to each other.

In November 1996, the Company signed collaborative development and licensing agreements with Genentech, Inc. relating to the development of products using the Company's technology to deliver certain of Genentech's proprietary growth factors to treat certain diseases of the central nervous system.

Under the terms of the agreement, Genentech purchased 829,171 shares of redeemable common stock for $8.3 million to fund development of products to treat Parkinson's disease. Genentech had the right, at its discretion to terminate the Parkinson's program at specified milestones in the program. The agreement provided that if the Parkinson's agreement was terminated and the funds of the Company received from the sale of stock to Genentech pursuant to the Parkinson's agreement exceed the expenses incurred by the Company in connection with such studies by more than $1 million, Genentech had the right to require the Company to repurchase from Genentech shares of the Company's common stock having a value equal to the overfunding, based upon the share price paid by Genentech. As such, the common stock purchased by Genentech is classified as redeemable common stock until the funds are expended on the program. On May 21, 1998, Genentech, exercised its right to terminate the collaboration and negotiations are currently underway to determine the balance of redeemable common stock to be redeemed in accordance with the agreement. (See Note 12)

The Company also licensed growth factors for the treatment of Huntington's disease and for amyotrophic lateral sclerosis (ALS) from Genentech. Under the terms of such agreements, the Company is responsible for conducting and funding all preclinical and clinical development, subject to specified rights of Genentech to participate in the development and marketing of the proposed products. Should Genentech elect to share in the development costs of the proposed products, the companies will share profits from certain territories at negotiated percentages. Where Genentech does not participate in the development, upon commercialization, the Company will pay Genentech an agreed upon royalty based on sales.

In March 1995, the Company signed a collaborative research and development agreement with Astra AB for the development and marketing of encapsulated-cell products to treat pain. Astra made an initial, nonrefundable payment of $5,000,000, included in revenue from collaborative agreements in 1995, a

15. RESEARCH AGREEMENTS (CONTINUED)
milestone payment of $3,000,000 in 1997 and may remit up to an additional $13,000,000 subject to the achievement of certain development milestones. Under the agreement, the Company is obligated to conduct certain research and development pursuant to a four-year research plan agreed upon by the parties. Over the term of the research plan, the Company expects to receive annual payments of $5 million to $7 million from Astra which should approximate the research and development costs incurred by the Company under the Plan. Subject to successful product development and obtaining necessary regulatory approvals, Astra is obligated to conduct all clinical trials of products arising from the collaboration and to seek approval for their sale. Astra has the exclusive worldwide right to market products covered by the agreement. Until the later of either expiration of all patents included in the licensed technology or a specified term, the Company is entitled to a royalty on the worldwide net sales of such products in return for the marketing license granted to Astra and the Company's obligation to manufacture and supply products. Astra has the right to terminate the agreement after April 1, 1998.

In May 1998, Astra AB agreed to increase annual research and development payments from $7 million to $8.5 million for the calendar year 1998. This increase in funding was recognized as revenue in the third and fourth quarters of 1998. The current Phase II pain trial is expected to complete patient enrollment by March 31, 1999, with efficacy data from the trial expected by the third quarter of 1999. Astra AB has agreed to fund the first and second quarters of 1999 at the rate of $2.5 million per quarter. Funding for the second half of 1999 is contingent on the results of the current Phase II trial. Should Astra determine to discontinue funding for the Company's development of encapsulated-cell products to treat pain, or to reduce such funding or otherwise modify the terms of the Company's relationship with Astra, any such action could have a material, adverse effect on the Company's liquidity and capital resources, and, unless other funding sources were obtained, would likely result in the Company's inability to continue to fund further development of its proposed encapsulated-cell products.

The Company has entered into other collaborative research agreements whereby the Company funds specific research programs. Pursuant to such agreements, the Company is typically granted rights to the related intellectual property or an option to obtain such rights on terms to be agreed, in exchange for research funding and specified royalties on any resulting product revenue. To date, the Company's principal academic collaborations have been with Brown University and Dr. Aebischer and Centre Hospitalier Universitaire Vaudois in Switzerland. Research and development expenses incurred under these collaborations amounted to approximately $1,259,000, $1,326,000, and $1,337,000 for the years ended December 31, 1998, 1997 and 1996, respectively.

16. INCOME TAXES

Due to net losses incurred by the Company in each year since inception, no provision for income taxes has been recorded. At December 31, 1998, the Company had tax net operating loss carryforwards of $26,966,000 and research and development tax credit carryforwards of $3,646,000 which expire at various times through 2012. Due to the "change in ownership" provisions of the Tax Reform Act of 1986, the Company's utilization of its net operating loss carryforwards and tax credits may be subject to annual limitation in future periods.

16. INCOME TAXES (CONTINUED)

Significant components of the Company's deferred tax assets and liabilities are as follows:

	DECEMBER 31,	
	1998	1997
Deferred tax assets:		
Capitalized research and development costs	$ 28,124,000	$ 23,876,000
Net operating losses	10,786,000	9,977,000
Research and development credits	3,646,000	2,963,000
Other	235,000	275,000
	42,791,000	37,091,000
Deferred tax liabilities:		
Patents	(1,537,000)	(1,296,000)
	41,254,000	35,795,000
Valuation allowance	(41,254,000)	(35,795,000)
Net deferred tax assets	$ --	$ --

Since there is uncertainty relating to the ultimate use of the loss carryforwards and tax credits, a valuation allowance has been recognized at December 31, 1998 and 1997, to fully offset the Company's deferred tax assets. The valuation allowance increased $5,459,000 in 1998, due primarily to the increases in capitalized research and development costs, net operating loss carryforwards and tax credits.

17. EMPLOYEE RETIREMENT PLAN

The Company has a qualified defined contribution plan covering substantially all employees. Participants are allowed to contribute a fixed percentage of their annual compensation to the plan and the Company may match a percentage of that contribution. The Company matches 50% of employee contributions, up to 6% of employee compensation, with the Company's common stock. The related expense was $146,000, $169,000, and $162,000 for the years ended December 31, 1998, 1997 and 1996, respectively.

18. CONTINGENCIES

The Company is routinely involved in arbitration, litigation and other matters as part of the ordinary course of its business. While the resolution of any matter may have an impact on the Company's financial results for a particular reporting period, management believes the ultimate disposition of these matters will not have a materially adverse effect on the Company's consolidated financial position or results of operations.

ITEM 9. CHANGES IN AND DISAGREEMENTS WITH ACCOUNTANTS ON ACCOUNTING AND FINANCIAL DISCLOSURE

None.

PART III

ITEM 10. DIRECTORS AND EXECUTIVE OFFICERS OF THE REGISTRANT, PROMOTERS AND CONTROL PERSONS

DIRECTORS AND EXECUTIVE OFFICERS

The sections entitled "Election of Directors" and "Executive Officer" in the Company's definitive proxy statement for its 1999 Annual Meeting of Shareholders are hereby incorporated by reference.

ITEM 11. EXECUTIVE COMPENSATION

The section entitled "Executive Compensation" in the Company's definitive proxy statement for its 1999 Annual Meeting of Shareholders is hereby incorporated by reference.

ITEM 12. SECURITY OWNERSHIP OF CERTAIN BENEFICIAL OWNERS AND MANAGEMENT

The section entitled "Share Ownership" in the Company's definitive proxy statement for its 1999 Annual Meeting of Shareholders is hereby incorporated by reference.

ITEM 13. CERTAIN RELATIONSHIPS AND RELATED TRANSACTIONS

The section entitled "Certain Relationships and Related Transactions" in the Company's definitive proxy statement for its 1999 Annual Meeting of Shareholders is hereby incorporated by reference.

PART IV

ITEM 14. EXHIBITS, FINANCIAL STATEMENT SCHEDULES AND REPORTS ON FORM 8-K

(A) DOCUMENTS FILED AS PART OF THIS FORM 10-K.

(1) Financial Statement Schedules:

Schedules not included herein are omitted because they are not applicable or the required information appears in the Financial Statements or Notes thereto.

(2) Exhibits.

EXHIBIT NO.	TITLE OR DESCRIPTION
3.1*	Restated Certificate of Incorporation of the Registrant.
3.2++	Amended and Restated By-Laws of the Registrant.
4.1*	Specimen Common Stock Certificate.
4.2++++	Form of Warrant Certificate issued to a certain purchaser of the Registrant's Common Stock in April 1995.
10.4*	Amendment to Registration Rights dated as of February 14, 1992 among the Registrant and certain of its stockholders.

EXHIBIT NO.	TITLE OR DESCRIPTION
10.5* **	Research Agreement dated March 1, 1989 between the Registrant and Brown University as amended by Modification No. 1 dated December 21, 1990, Modification No. 2 dated February 22, 1991 and Modification No. 3 dated November 1, 1991.
10.5A*	Letter Agreement dated March 4, 1992 between the Registrant and Brown University.
10.6*	License Agreement dated March 16, 1989 between the Registrant and Brown University, as amended by Amendment Agreement dated May 2, 1991.
10.7*	Research Agreement dated March 16, 1989 between Registrant and Washington University.
10.12*	Employment Agreement dated January 3, 1991 between the Registrant and Dr. Seth A. Rudnick.
10.15*	Form of at-will Employment Agreement between the Registrant and most of its employees.
10.16*	Agreement for Consulting Services dated March 16, 1989 between the Registrant and Dr. Patrick Aebischer.
10.18*	Agreement for Consulting Services dated March 16, 1989 between the Registrant and Dr. Paul Lacy.
10.20*	Form of Agreement for Consulting Services between the Registrant and members of its Scientific Advisory Board.
10.21*	Form of Nondisclosure Agreement between the Registrant and its Contractors.
10.22*	Funding Agreement dated June 22, 1989 between the Registrant and the Rhode Island Partnership for Science and Technology.
10.28*	Master Lease and Warrant Agreement dated April 23, 1991 between the Registrant and PacifiCorp Credit, Inc.
10.29*	1988 Stock Option Plan.
10.30*	1992 Equity Incentive Plan.
10.31*	1992 Stock Option Plan for Non-Employee Directors.
10.32*	1992 Employee Stock Purchase Plan.
10.35#	Consulting Agreement dated as of September 1, 1992 between Dr. Edwin C. Cadman and the Registrant.
10.36**#	Letter Agreement between Registrant and Dr. Patrick Aebischer dated October 13, 1992 as amended by a letter agreement dated December 23, 1993.
10.37+	Employment Agreement dated September 9, 1992 between Registrant and Frederic A. Eustis, III.
10.41**!!!!	Development and Supply Agreement dated December 1993 between Registrant and AKZO Faser AG.
10.42**!!!!	Asset Transfer Agreement dated as of December 23, 1994 between Registrant and Neocrin Company.
10.43##**	Research Agreement dated as of February 1, 1994 between Genentech, Inc. and Registrant.

EXHIBIT NO.	TITLE OR DESCRIPTION
10.44##**	Research Agreement dated as of March 16, 1994 between NeuroSpheres, Ltd. and Registrant.
10.46++	Termination Agreement dated as of August 4, 1994 between Registrant and Medtronic, Inc.
10.47++	Term Loan Agreement dated as of September 30, 1994 between The First National Bank of Boston and Registrant.
10.48++	Lease Agreement between the Registrant and Rhode Island Industrial Facilities Corporation, dated as of August 1, 1992.
10.49++	First Amendment to Lease Agreement between Registrant and The Rhode Island Industrial Facilities Corporation dated as of September 15, 1994.
10.50++	Supplementary Agreement dated as of July 1, 1994 between Akzo Nobel Faser AG and the Registrant.
10.51**++++	Development, Marketing and License Agreement, dated as of March 30, 1995 between Registrant and Astra AB.
10.52++++	Form of Unit Purchase Agreement to be executed by the purchasers of the Common Stock and Warrants offered in April 1995.
10.53+++	Form of Common Stock Purchase Agreement to be executed among the Registrant and certain purchasers of the Registrant's Common Stock.
10.54!**	Research and Commercialization Agreement dated as of September 4, 1995 among the Company, Dr. Patrick Aebischer and Canton of Vaud, Switzerland.
10.55!!	Employment agreement dated as of July 2, 1996 between Dr. Sandra Nusinoff Lehrman and Registrant.
10.56!!	Consulting agreement dated as of September 1, 1996 between Dr. Edwin C. Cadman and the Registrant.
10.57!!	Convertible loan agreement dated as of July 10, 1996 between the Company and Modex Therapeutiques SA.
10.58###	Lease Agreement dated as of November 21, 1997 by and between Hub RI Properties Trust, as Landlord, and CytoTherapeutics, Inc., as Tenant.
10.59!!	Modex Therapeutiques SA stockholders voting agreement dated as of July 10, 1996 among Modex, the Company, the Societe Financiere Valoria SA and the other stockholders listed therein.
10.60!!	CTI individual stockholders option agreement dated as of July 10, 1996 among the Company and the individuals listed therein.
10.61!!	CTI Valoria option agreement dated of July 10, 1996 between the Company and the Societe Financiere Valoria SA.
10.62**!!!	Development Collaboration and License Agreement dated as of November 22, 1996 between Genentech, Inc. and the Registrant.
10.63!!!	Consulting Agreement dated as of December 1, 1996, between Peter Simon and the Registrant.

EXHIBIT NO.	TITLE OR DESCRIPTION
10.64!!!	Term Loan Agreement dated as of October 22, 1996 between The First National Bank of Boston and the Registrant.
10.65***	Agreement and Plan of Merger dated as of August 13, 1997 among StemCells, Inc., the Registrant and CTI Acquisition Corp.
10.67***	Consulting Agreement dated as of September 25, 1997 between Dr. Irving Weissman and the Registrant.
10.68###	Letter Agreement among each of Dr. Irving Weissman and Dr. Fred H. Gage and the Registrant.
10.69**	Amended and Restated Cross License Agreement dated as of October 29, 1997 between Modex Therapeutiques SA and the Registrant.
10.70###	Letter Agreement dated as of September 30, 1997 between Dr. Seth Rudnick and the Registrant.
10.71****	StemCells, Inc. 1996 Stock Option Plan.
10.72****	1997 StemCells Research Stock Option Plan (the "1997 Plan").
10.73****	Form of Performance-Based Incentive Option Agreement issued under the 1997 Plan.
10.74###	Employment Agreement dated as of September 25, 1997 between Dr. Richard M. Rose and the Registrant.
10.75###	Employment agreement dated as of April 17, 1997, between John S. McBride and the Registrant.
10.76###	Severance agreement dated as of July 21, 1997, between Dr. Sandra Nusinoff Lehrman and the Registrant.
10.77###	Severance agreement dated as of July 29, 1997 between Dr. E. Edward Baetge and the Registrant.
10.78###	Loan Agreement dated as of May 15, 1996 between Fleet National Bank and the Registrant, together with the related Promissory Note executed by the Registrant, and an amendatory agreement dated as of May 15, 1997.
10.79~	Rights Agreement, dated as of July 27, 1998 between Bank Boston, N.A. as Rights Agent and the Registrant.
10.80	Employment Agreement dated as of June 8, 1998 between Philip K. Yachmetz and the Registrant.
10.81	Consulting Services Agreement dated as of July 27, 1998, as amended December 19, 1998 between Dr. John J. Schwartz and the Registrant.
10.82	Letter Agreement dated as of December 19, 1998 between John J. Schwartz and the Registrant.
10.83**	License Agreement dated as of October 27, 1998 between The Scripps Research Institute and the Registrant.
10.84**	License Agreement dated as of October 27, 1998 between The Scripps Research Institute and the Registrant.
10.85**	License Agreement dated as of November 20, 1998 between The Scripps Research Institute and the Registrant.

EXHIBIT NO.	TITLE OR DESCRIPTION
10.86	Employment Agreement dated as of March 20, 1998 between Billie M. York and the Registrant
21	Subsidiaries of the Registrant.
23.1	Consent of Ernst & Young LLP, Independent Auditors.
27	Financial Data Schedule for fiscal year ended December 31, 1998.
99	Cautionary Factors Relevant to Forward-Looking Information.

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++ Previously filed with the Commission as Exhibits to, and incorporated herein by reference to, the Registrant's Registration Statement on Form S-1, File No. 33-85494.

+++ Previously filed with the Commission as Exhibits to, and incorporated herein by reference to, the Registrant's Registration Statement on Form S-3, File No. 33-97272.

++++ Previously filed with the Commission as Exhibits to, and incorporated herein by reference to, the Registrant's Registration Statement on Form S-1, File No. 33-91228.

* Previously filed with the Commission as Exhibits to, and incorporated herein by reference to, Registration Statement on Form S-1, File No. 33-45739.

Previously filed with the Commission as Exhibits to, and incorporated herein by reference to, the Registrant's Annual Report on Form 10-K for fiscal year ended December 31, 1992 and filed March 30, 1993.

** Confidential treatment requested as to certain portions. The term "confidential treatment" and the mark "**" as used throughout the indicated Exhibits mean that material has been omitted and separately filed with the Commission.

Previously filed with the Commission as Exhibits to, and incorporated herein by reference to, the Registrant's Quarterly Report on Form 10-Q for the quarter ended March 31, 1994 and filed on May 14, 1994.

+ Previously filed with the Commission as Exhibits to, and incorporated herein by reference to, the Registrant's Annual Report on Form 10-K for the fiscal year ended December 31, 1993 and filed on March 30, 1994.

! Previously filed with the Commission as an Exhibit to and incorporated by reference to, the Registrant's Quarterly Report on Form 10-Q for the quarter ended March 31, 1996.

!! Previously filed with the Commission as an Exhibit to and incorporated by reference to, the Registrant's Quarterly Report on Form 10-Q for the quarter ended September 30, 1996.

!!! Previously filed with the Commission as an Exhibit to, and incorporated herein by reference to, the Registrant's Annual Report on Form 10-K for the fiscal year ended December 31, 1996 and filed on March 31, 1997.

!!!! Previously filed with the Commission as an Exhibit to, and incorporated herein by reference to, the Registrant's Annual Report on Form 10-K for the fiscal year ended December 31, 1995.

*** Previously filed with the Commission as Exhibits to, and incorporated herein by reference to, the Registrant's Quarterly Report on Form 10-Q for the quarter ended September 30, 1997 and filed on November 14, 1997.

**** Previously filed with the Commission as Exhibits to, and incorporated herein by reference to, the Registrant's Registration Statement on Form S-8, File No. 333-37313.

Previously filed with the Commission as an Exhibit to, and incorporated herein by reference to, the Registrant's annual report on Form 10-K for the fiscal year ended December 31, 1997 and filed on March 30, 1998.

~ Previously filed with the Commission as an Exhibit to, and incorporated herein by reference to, the Registrant's current report on Form 8-K filed on August 3, 1998.

(B) CURRENT REPORTS ON FORM 8-K.

On December 29, 1998, the Company filed a Report on Form 8-K with the Securities and Exchange Commission announcing the election of two new directors and a new Chairman of the Board of Directors.

SIGNATURES

Pursuant to the requirements of Section 13 or 15(d) of the Securities Exchange Act of 1934, the Registrant has duly caused this report to be signed on behalf by the undersigned, thereunto duly authorized.

CYTOTHERAPEUTICS, INC.

BY: /S/ RICHARD M. ROSE, M.D.
Richard M. Rose, M.D.
President and Chief Executive Officer

Dated: March 31, 1999

Pursuant to the requirements of the Securities Exchange Act of 1934, this report has been signed below by the following persons on behalf of the Registrant and in the capacities and on the dates indicated.

SIGNATURE	CAPACITY	DATE
/s/ RICHARD M. ROSE, M.D. Richard M. Rose, M.D.	President, Chief Executive Officer, and Director (principal executive officer)	March 31, 1999
/s/ JOHN S. MCBRIDE John S. McBride	Chief Financial Officer and Treasurer (principal financial and accounting officer); Executive Vice President, Business Operations	March 31, 1999
/s/ PATRICK AEBISCHER, M.D., PH.D. Patrick Aebischer, M.D., Ph.D.	Director	March 31, 1999
/s/ MOSES GODDARD, M.D. Moses Goddard, M.D.	Director	March 31, 1999
/s/ MARK J. LEVIN Mark J. Levin	Director	March 31, 1999
/s/ RICHARD J. RAMSDEN Richard J. Ramsden	Director	March 31, 1999
/s/ JOHN J. SCHWARTZ, PH.D. John J. Schwartz, Ph.D.	Director, Chairman of the Board	March 31, 1999
/s/ IRVING L. WEISSMAN, M.D. Irving L. Weissman, M.D.	Director	March 31, 1999

EXHIBIT 10.80

PHILIP K. YACHMETZ
EMPLOYMENT AGREEMENT

EXHIBIT 10.80

EMPLOYMENT AGREEMENT

THIS EMPLOYMENT AGREEMENT is made as of this 8th day of June, 1998 (the "Effective Date"), by and between CYTOTHERAPEUTICS, INC., a Delaware corporation ("Employer") having its principal place of business at 701 George Washington Highway, Lincoln, Rhode Island 02865 and PHILIP K. YACHMETZ ("Employee") with a principal residence at 7 North Koewing Place, West Orange, New Jersey 07052-4014, collectively referred to as the "parties."

RECITALS

Whereas Employer desires to employ Employee at its Lincoln, Rhode Island Facility and Employee desires to be so employed,

The parties enter this Agreement to set forth the terms and conditions of Employee's employment by Employer, to address certain matters related to Employee's employment with Employer, and Employee's loyalty and commitment to Employer.

NOW THEREFORE, in consideration of these promises and the parties' material covenants, representations, and warranties made herein, the parties agree as follows:

STATEMENT OF AGREEMENT

SECTION 1. EMPLOYMENT

a. Position. Employer wishes to employ and Employee hereby accepts the position of Senior Vice President - Business Development, General Counsel and Secretary for the term of this Agreement. Employee shall report directly to Employer's Chief Executive Officer.

b. Employee's Commitment. Employee shall consider his employment by Employer as his principal employment, shall devote his full business time and attention to his duties and responsibilities under this Agreement, and shall perform them to the best of his abilities. While subject to any provision of this Agreement, Employee shall maintain loyalty to Employer, and shall take no action that would directly or indirectly promote any competitor or injure Employer's interests. Subject to the foregoing, employee may engage in other charitable or business activities to the extent that they do not interfere or create a conflict with his obligations under this Agreement; provided that Employee first discloses any such activities to Employer, and that Employee's

continued participation in any such activity shall be subject to Employer's ongoing approval, which may be withheld at Employer's sole discretion.

c. Duties. Employee's primary duties and responsibilities as Senior Vice President - Business Development, General Counsel and Secretary shall be to:

(1) Direct and oversee all legal matters pertaining to CTI, including contractual relationships, general corporate and securities matters, patent, copyright and the coordination of any legal matters handled by outside counsel.

(2) Direct the research and analysis of such business opportunities, strategic partnerships, alliances and collaborations, including the establishment and recommendation of strategic initiatives as directed by the Employer's CEO from time to time; responsible for implementation of such strategic initiatives of Senior Management as directed by the Employer's CEO from time to time, including the negotiation of agreements related to external alliances, direct the policies and programs related to corporate licensing objectives for the acquisition of licensing opportunities and techniques.

(3) Serve as corporate secretary of the Company and its subsidiaries.

SECTION 2. COMPENSATION, BENEFITS AND EXPENSES

a. Salary. Subject to Subsection 2b, Employer shall pay Employee as salary of Two Hundred Fifty Thousand dollars ($250,000.00) annually, payable in accordance with Employer's payroll practices in effect from time to time.

b. Bonus.

(1) Employee shall receive a "sign on" bonus of Fifteen Thousand Dollars ($15,000) payable, $10,000 in cash and $5,000 in registered shares of Employer's common stock (2,712 shares), calculated at the price per share of $1.84375 ($1 27/32) per share, the closing price of the Employer's common stock as quoted on the Nasdaq stock exchange for the Effective Date of Employment.

(2) In addition, Employee shall be eligible (in the sole discretion of the Employer) to receive performance related bonuses at the end of each calendar year, including 1998, in a percentage amount of base salary similar to that for which other members of the Employer's senior management are eligible or are awarded under guidelines in effect at such time. Employee's bonus shall be based on (i) the reduction in comparable outside legal fees versus the base period of January 1, 1998 through June 30, 1998, (ii) the level of cash funding received by Employer from business development transactions with third parties in which Employee is materially involved, and (iii) the attainment of other specific performance objectives mutually agreed with Employer's

Chief Executive Officer. The payment and amount of any such bonus shall be determined in the sole discretion of the Employer and its Board of Directors.

c. Stock Options. Through the Employer's 1992 Equity Incentive Plan (the "Incentive Plan") and subject to the terms and conditions set forth herein, Employee is hereby granted, as of the Effective Date of this Agreement, an option to acquire 75,000 shares of the common stock of the Employer at a strike price per share equal to the closing price of the Employer's common stock on the date such option is approved by the Employer's Board of Directors or such other strike price as may be specified by the Board of Directors. The time-based option will vest as follows: (i) 30,000 of the shares will vest on the Effective Date, and (ii) the remaining 45,000 shares shall vest at the rate of 3,000 shares per month on each monthly anniversary of the Effective Date so long as Employee continues to be employed hereunder. Employee shall have one (1) year from the last such vesting date within which to exercise such option. The expiration of the Initial Term of this Agreement shall not effect the validity, the vesting schedule or the exercise period of such option granted Employee.

The compensation set forth in Sections 2a, 2b and 2c may be increased from time to time at the will and discretion of Employer.

d. Relocation. As soon as reasonably practicable following the Effective Date, Employee will establish his principal office at the Company's offices in Lincoln, Rhode Island and a temporary residence within driving distance of such office. The Employer shall pay or reimburse Employee up to an amount not to exceed $2,500 per month for all costs of such temporary housing and related expenses, including, but not limited to, apartment rent and security deposit, furniture rental, utilities, cable television, basic telephone service and similar expenses, for the term of this Agreement and for such additional period while Employee is still rendering services to the Employer pursuant to Section 4.a.(1) (collectively the "Temporary Residence Period"). Employer shall also during the Temporary Residence Period pay or reimburse Employee for two (2) round trip airfares per month to the New Jersey/New York area for use by Employee or his daughter. Until such time as Employee has established his temporary residence in Rhode Island, Employer shall reimburse Employee for hotel, travel, meal and related costs to and from New Jersey. The cost of Employee's temporary housing and the cost of the two (2) round trips airfares set forth above are hereinafter collectively referred to as the "Temporary Relocation Expenses."

e. Benefits. Employee will be entitled to participate in any and all employee benefit plans from time to time in effect for senior management of the Employer generally, including, but not limited to, medical, dental and hospitalization plans, retirement and 401(k) savings plans, life insurance and accidental death plans, disability plans, etc., except to the extent that such plans provide duplicative benefits or a lower level of benefits than that specifically provided Employee herein. Additionally, Employee shall be entitled to participation similar to that provided other members of

Employer's senior management in any supplemental stock or option grants, stock appreciation rights awards, phantom stock rights, "golden parachute" or "golden handcuff" policies of the Employer in effect as of the Effective Date or adopted by Employer thereafter for the general benefit of its senior management. Employee's participation shall be subject to (i) the terms of the applicable plan documents, (ii) generally applicable policies of the Employer, and (iii) the discretion of the Board of Directors of the Employer and plan administrators, as provided for or contemplated by such plan. Employee will be entitled to four (4) weeks vacation per year. Employer will provide Employee with a leased automobile at a cost to be approved by Employer's CEO, cover the cost of up to three (3) state bar memberships per year and the cost of professional association memberships consistent with Employer's policy for its senior management.

f. Withholdings, "Gross Up" of Compensation. Employer shall withhold from any amounts payable as compensation all federal, state, municipal, or other taxes as are required by any law, regulation, or ruling. Employer shall "gross up" any and all Temporary Relocation Expenses paid or reimbursed to Employee during the Temporary Residence Period by 36% in order to offset any and all income tax liability to Employee for the payment or reimbursement of these expenses by Employer. In addition, in the event Employee sustains an increased state income tax liability due to the payment of state income taxes in both Rhode Island and New Jersey versus Employee's paying only New Jersey state income tax, then Employer shall "gross up" the compensation paid to Employee hereunder in order to reimburse and offset any and all incremental increase in Employee's state income tax liability.

g. Business Expenses. Employer shall reimburse Employee for expenses reasonably incurred in the course of his employment, in accordance with Employer's policies in effect from time to time.

SECTION 3. TERM

a. Initial Term. The term of Employee's employment shall commence on the Effective Date and shall expire on June 7, 1999 (the "Initial Term") unless extended as otherwise provided herein. Employer and Employee shall, on or about the ninth (9th) monthly anniversary of the Effective Date, meet and discuss in good faith whether it is in the best interests of both parties to extend the term of this Agreement. In the event it is mutually agreed that the term of this Agreement shall be extended (the "Renewal Term"), then the terms and conditions for the Renewal Term shall be mutually agreed by Employer and Employee on or before the eleventh (11th) monthly anniversary of the Effective Date. In the event either party elects to not extend the term of this Agreement, or the Employer and Employee are unable to mutually agree on the terms and conditions for the Renewal Term on or before the eleventh (11th) monthly anniversary of the Effective Date, then this Agreement shall expire on June 7, 1999 and the provisions of Section 4 shall apply.

b. Termination. Notwithstanding any other provision of this Agreement, Employee's employment shall terminate at any time, as follows:

(1) Employer may terminate your employment upon thirty (30) days written notice to Employee in the event you become disabled during your employment through any illness, injury, accident or condition of either a physical or psychological nature and, as a result, you are unable to perform substantially all of your duties and responsibilities hereunder for ninety (90) consecutive days during the Initial Term. In that event, the Employer shall pay Employee the severance set forth in Section 4.

(2) Employee's employment may also be terminated by Employer at any time without prior notice upon a showing of "reasonable cause." Should Employee be terminated by Employer for "reasonable cause," no severance pay will be paid to Employee nor will his health insurance benefits be continued by Employer at its expense for any period of time as addressed in Section 4 of this Agreement. "Reasonable cause" shall be defined for the purposes of this Agreement as being: (a) any act of fraud, embezzelement or other material dishonesty by Employee with respect to the Employer which is proven to be directly detrimental to Employer's best interest; (b) Employee's willful failure to perform material duties and responsibilities described in Section 1 (c) above, after receiving notice and a reasonable opportunity to cure; (d) Employee's conviction of, or plea of nolo contendre to, any act that constitutes a felony under the laws of the state of Rhode Island or the United States; or (e) Employee's material breach of Section 5 of this Agreement.

SECTION 4. SEVERANCE

a. Severance Payments and Benefits. In the event at the end of the Initial Term either Employee chooses not to renew this Agreement, or Employer fails to offer Employee employment in the capacity provided for herein at an annual salary and related benefits at least equal to the salary and benefits provided for herein and at a primary work location in the Northeastern United States (subject to such travel as the Employer may reasonably request), or Employer and Employee are unable to mutually agree to other terms and conditions for Employee's continued employment during any such Renewal Term, Employee shall receive the following Severance Payments and Benefits from Employer:

(1) A continuation of Employee's salary equal to the amount of his regular salary as of the date of the expiration of the Initial Term for a period of three (3) months, during which Employee shall continue to devote no more than fifty percent (50%) of his time to performing or consulting with Employer with respect to his duties and responsibilities described in Section 1(c) above. In the event such part time services are rendered from Rhode Island, then Employer

will continue to pay or reimburse Employee for the Temporary Relocation Expenses for such three (3) month period pursuant to Section 2.d and provide the other benefits set forth in Sections 2.e., 2.f. and 2.g.

(2) A lump sum payment equal to six (6) month's of Employee's regular salary as of the date of the expiration of the Initial Term, such lump sum to be payable no later than the expiration of the three (3) month period set forth in Section 4.a.(1) above.

(3) Payment of any accrued but unpaid bonus under Section 2.b.(2) for the year in which the Initial Term expires, such bonus sum to be payable no later than the expiration of the three (3) month period set forth in Section 4.a.(1) above.

(4) During the nine (9) month period following the expiration of the Initial Term and to the extent allowed by the Employer's benefit plans, Employee shall continue to be eligible to participate in, and shall accrue benefits as does an active employee in all benefit plans, including, but not limited to, medical, dental and hospitalization plans, retirement and 401(k) savings plans, life insurance and accidental death plans, disability plans, etc., in which Employee is enrolled as of the expiration of the Initial Term, and in each case as applicable during such period. Employee shall be treated as an employee of the Employer during the first three months of such nine month period for the purposes of Section 2.c, 2.d., 2.e., 2.f and 2.g. of this Agreement.

b. Payments Upon Employee's Disability. In the event of an early termination of this Agreement pursuant to Section 3.b.(1) due to Employee's disability then the Severance Pay and Benefits provided in Section 4.a. shall be paid to Employee. If Severance Pay and Benefits are payable because of Employee's disability, they shall be deemed to be made as compensation for Employee's past services to Employer.

c. Reference Letter Upon Separation of Employment. Employer agrees to provide Employee with a letter of recommendation upon Employee's separation of employment, granted that Employee's separation of employment from Employer is for any reason other than "reasonable cause."

SECTION 5. CONFIDENTIALITY

a. Confidential Information. "Confidential Information" means information in whatever form, including information that is written, electronically stored, orally transmitted, or memorized, that is of commercial value to Employer and that was created, discovered, developed, or otherwise becomes known to Employee, or in which property rights are held, assigned to, or otherwise acquired by or conveyed to Employer, including any Employee Invention (as subsequently defined) or idea, knowledge, know-how, process, system, method, technique research and development,

technology, software, technical information, trade secret, as defined in state statute, trademark, copyrighted material, reports, records, documentation, data, customer or supplier lists, tax or financial information, business or marketing plans, strategy or forecast. Confidential Information does not include information that is or becomes generally known within Employer's industry through no act or omission by Employee, provided, however, that the compilation, manipulation, or other exploitation of generally known information may constitute Confidential Information.

b. Employee Invention. "Employee Invention" means any idea, invention, software, technique, modification, process, improvement, or similar item, whether or not reduced to writing or stored electronically or otherwise, and whether or not protectible by patent, trademark, copyright, or other intellectual property law, that is crated, conceived, or developed by Employee or under his direction, whether solely or with others, during or after his employment by Employer, that relates in any way to, or is useful in any manner in, the business now or then conducted or proposed to be conducted by Employer or which is based upon or otherwise derives from or makes use of the Confidential Information.

c. Ownership; Disclosure. Any Confidential Information, whether or not developed by Employee, shall at all times be Employer's exclusive property. Employee shall promptly disclose any Employee Invention to Employer in writing.

d. Restrictions. During the term of this Agreement, and for ten (10) years thereafter, Employee shall not, without Employer's prior written consent:

(1) Use any Confidential Information for the benefit of himself of any other party other than Employer or disclose it to any other person or entity;

(2) Remove any Confidential Information or other documentation, device, plan or other record or evidence pertaining to Employer's business from Employer's premises, except when specifically authorized to do so in pursuit of Employer's business; or

e. Purpose. The parties acknowledge and agree that the Confidential Information is a valuable business asset, and that this Section is necessary to protect Employer's legitimate business interests.

SECTION 6. ADDITIONAL REPRESENTATIONS AND WARRANTIES

In addition to his other representation and warranties set forth in this Agreement, Employee further represents and warrants as follows:

a. Employee's performance of this Agreement shall not breach any agreement to which he is or was a party that requires him to hold any information in confidence or in trust;

b. Employee has not and shall not breach any such Agreement;

c. Employee shall not bring to Employer or use in connection with his employment any confidential or proprietary information belonging to another entity without first delivering a written release of that information to Employer; and

d. Employee has provided Employer with an original or true copy of any employment, non-competition, confidential or proprietary information, or similar agreement to which he is or has been a party which is now in effect or which may be in effect during the term of this Agreement.

SECTION 7. REMEDIES

a. Irreparable Harm. The parties acknowledge and agree that irreparable harm would result in the event of a breach or threat of a breach by Employee of Section 5 or the making of any untrue representation or warranty by Employee in this Agreement. Therefore, in such an event, and notwithstanding any other provision of this Agreement:

(1) Employer shall be entitled to a restraining order, order of specific performance, or other injunctive relief, without showing actual damage and without bond or other security; and

(2) Employer's obligation to make any payment or provide any benefit under this Agreement, including without limitation any severance benefits, shall immediately cease.

b. Remedies Not Exclusive. Employer's remedies under this Section are not exclusive, and shall not prejudice or prohibit any other rights or remedies under this Agreement or otherwise. To the extent required to be enforceable by applicable law, the cessation of Employer's obligation to make payments or continue benefits under this Section shall be deemed to be in the nature of liquidated damages and not a penalty.

c. Cessation of Payments. In the event Employer obtains relief as provided in this Section, or in the event of Employee's breach of Section 5 or the making of any untrue representation or warranty by Employee in this Agreement, Employer's obligation to make any payment or provide any benefit under this Agreement, including any severance benefits, shall immediately cease.

SECTION 8. LEGAL COUNSEL

a. Understanding, Voluntary Agreement. Employee represents and warrants that he has been afforded a reasonable opportunity to review this Agreement,

to understand its terms, and to discuss it with an attorney of his choice, and that he knowingly and voluntarily enters this Agreement.

b. Waiver of Separate Representation. To the extent Employee has not engaged separate legal counsel to represent him in connection with this Agreement, the parties acknowledge an agree that their respective interest in this Agreement are in conflict, that they have the right to retain independent counsel, that they have been fully informed about this right and conflicts of interest that arise from retaining the same legal counsel to represent both of them, and that this Section constitutes written disclosure of these conflicts. The parties further affirm that they are waiving separate representation freely, voluntarily, and with full knowledge of the effect of this waiver. NO party shall at any time claim that this Agreement is void or unenforceable in any respect because of the lack of use of independent counsel, or that the legal counsel who prepared this Agreement acted improperly in doing so.

SECTION 9. CONFIDENTIAL AGREEMENT

This Agreement is confidential, Employee and Employer shall keep its provisions confidential and shall not disclose them to anyone, including any past, present, or prospective employee of Employer; provided, that this Section shall not prohibit Employee from discussing this Agreement in confidential communications with his family members, attorneys, accountants, or other professional advisors, provided that the provisions of Section 5 shall at all times apply to communications with any such persons, and provided Employer may disclose the terms of this Agreement to the extent it is required by federal or state law, rule or regulation.

SECTION 10. MISCELLANEOUS PROVISIONS

a. Waivers. No assent, express or implied, by any party to any breach or default under this Agreement shall constitute a waiver of or assent to any breach or default of any other provision of this Agreement or any breach or default of the same provision on any other occasion.

b. Entire Agreement, Modification. This Agreement constitutes the entire agreement of the parties concerning its subject matter and supersedes all other oral or written understandings, discussions, and agreements, and may be modified only in a writing signed by both parties.

c. Binding Effect; No Third Party Beneficiaries This Agreement shall bind and benefit the parties and their respective heirs, devisees, beneficiaries, grantees, donees, legal representatives, successors, and assigns. Nothing in this Agreement shall be construed to confer any rights or benefits on third parties.

d. Assignment. Neither party may assign its interest in this Agreement without the other's prior written consent; provided that Employer may assign its interest to another entity which controls, is controlled by, or is under common control with Employer.

e. Severability. If any provision of this Agreement, including the restriction on time and geographic area contained in the Covenant Not to Compete and Confidential Information provisions of this Agreement, is found in binding arbitration or by a court or other tribunal of competent jurisdiction to be invalid or unenforceable, the attempt shall first be made to read that provision in such a way to make it valid and enforceable in light of the parties' apparent intent as evidenced by this Agreement. If such a reading is impossible, the tribunal having jurisdiction may revise the provision in any reasonable manner, to the extent necessary to make it binding and enforceable. If no such revision is possible, the offending provision shall be deemed stricken from the Agreement, and every other provision shall remain in full force and effect.

f. Forum. All lawsuits, actions, and other proceedings arising from this Agreement or the transactions it contemplates shall be prosecuted in the appropriate court in New Jersey and all parties agree to both subject matter and in personam jurisdiction in that forum.

g. Governing Law. This Agreement shall be governed by and construed under the laws of the State of Rhode Island.

h. Legal Counsel. The parties acknowledge that they have read and fully understand the contents of this Agreement and execute it after having had an opportunity to consult with legal counsel.

IN WITNESS WHEREOF, the partied have executed this Agreement to be effective as specified above.

PHILIP K. YACHMETZ	CYTOTHERAPEUTICS, INC.
BY: /S/ PHILIP K. YACHMETZ	BY: /S/ RICHARD M. ROSE
- ----------	----------
Philip K. Yachmetz	Richard M. Rose, MD President & CEO

EXHIBIT 10.81

JOHN SCHWARTZ
AMENDED AND RESTATED CONSULTING AGREEMENT

EXHIBIT 10.81

CONSULTING SERVICES AGREEMENT BETWEEN

CYTOTHERAPEUTICS, INC.
AND
JOHN SCHWARTZ

THIS CONSULTING SERVICES AGREEMENT (hereinafter referred to as the "Agreement") effective as of the 27th day of July, 1998 (the "Effective Date"), as amended and restated as of this 19th day of December, 1998, by and between CytoTherapeutics, Inc., a corporation organized under the laws of the state of Delaware with a place of business at 701 George Washington Highway, Lincoln, Rhode Island 02865 (hereinafter referred to as "Company"), and John Schwartz, an individual, with a place of business at 110 Atherton Avenue, Atherton, California 94207 (hereinafter referred to as "Consultant").

In consideration of the promises and mutual covenants contained herein and on the terms and conditions hereinafter set forth, it is agreed as follows:

1. PROVISION OF SERVICES - Consultant shall provide to Company, at the direction of the Company's Chief Executive Officer and in cooperation with the Officers, employees and Directors of the Company, up to twenty (20) hours per month of strategic business advice and counsel ("Services"). In addition, when requested in writing by the Company's Chief Executive Officer, Consultant shall use his business judgment and experience to materially participate in the negotiation and consummation of a strategic collaboration transaction with third parties designated by the Company's Chief Executive Officer ("Additional Services"). Such Additional Services are not subject to the twenty (20) hours per month limit established for the Services.

2. COMPENSATION - (a) Company agrees and shall compensate Consultant in consideration of his performance of the Services and the Additional Services as follows:

   (1) Within ten (10) business days of the execution of this Agreement, and as compensation for Services rendered during the period of September 27, 1997 through July 26, 1998, the sum of Fifty Thousand Dollars ($50,000) in cash, plus a fully vested option, exercisable for a period of 10 years from the Effective Date, to purchase 20,000 shares

of Company's common stock with an exercise price equal to the closing bid price for the shares of the Company's common stock as quoted by the Nasdaq stock market for the Effective Date of this Agreement ($1.281 per share);

(2) For Services to be rendered during the Term of this Agreement, Consultant shall be paid the sum of Five Thousand Dollars ($5,000) in cash per month on each of the monthly anniversaries of the Effective Date, for a total cash compensation of One Hundred Twenty Thousand Dollars ($120,000) during the Term of this Agreement. In addition, Consultant shall receive upon execution of this Agreement an option to purchase 76,000 shares of the Company's common stock with an exercise price equal to the closing bid price for the shares of the Company's common stock as quoted by the Nasdaq stock market for the Effective Date of this Agreement (the "Initial Option"), and on July 27, 1999, the first anniversary of the Effective Date, an option to purchase 48,000 shares of the Company's common stock with an exercise price equal to the closing bid price for the shares of the Company's common stock as quoted by the Nasdaq stock market for the date of such grant (the "Supplemental Option"). The Initial Option shall vest at the rate of 3,167 shares per month for the first 23 months, with a final vesting of 3,159 shares in the 24th month. The Supplemental Option, when granted, will vest at the rate of 2,000 shares per month for 24 months. Both the Initial Option and the Supplemental Option shall be exercisable for a period of 10 years from the date of the initial grant.

(3) For the Additional Services, upon the consummation of a strategic collaboration transaction with such third party designated by the Company's Chief Executive Officer in accordance with Section 1 hereof (the "Collaboration Agreement"), Consultant shall be paid a fee equal to three percent (3%) of the Transaction Consideration, as defined below (the "Additional Fee"), in accordance with the following terms:

(i) Payment of the Additional Fee shall be made within thirty (30) days of the end of each calendar year and each such Additional Fee payment shall be calculated on the basis of the Transaction Consideration actually received by the Company in the immediately preceding calendar year.

(ii) The Additional Fee shall be paid fifty percent (50%) in cash and fifty percent (50%) in the form of an option or warrant, at the election of the Company (the "Option"), to purchase

registered shares of the Company's common stock, each such Option being based on the following terms:

(A) The number of shares included in each such Option shall be calculated by dividing the sum equal to one and a half percent (1.5%) of the Transaction Consideration actually received in the immediately preceding calendar year by the average closing bid price for the common stock of the Company as quoted by the Nasdaq stock market for the ten (10) trading days beginning thirty (30) days immediately preceding the first public announcement by the Company to occur (the "Closing Bid Price") concerning (x) the consummation of the Collaboration Agreement, or (y) the execution of a Letter of Intent with respect to the Collaboration Agreement, or (z) the confirmation of the existence of any discussions concerning the Collaboration Agreement;

(B) Each such Option shall be fully vested upon their issuance, shall bear an exercise price of twenty cents ($ 0.20) per share and shall be exercisable for a period of ten years from the date of their respective issuance.

(iii) The Additional Fee shall be due and payable to Consultant for each calendar year, or portion thereof, of the original term of the Collaboration Agreement, as envisaged and specified under the terms thereof, provided the Company receives Transaction Consideration within such calendar year or portion thereof. No Additional Fee shall be due and payable to Consultant for any renewal period or extension of the original term of the Collaboration Agreement.

(iv) In the event of (a) the sale and transfer of all or substantially all of the assets of the Company, or (b) any transaction as a result of which any one individual or entity owns thirty percent (30%) or more of the common stock of the Company (hereinafter "Change of Control"), then any Additional Fee which would be due to Consultant during the remaining portion of the original term of the Collaboration Agreement, as envisaged and specified under the terms of thereof, shall be accelerated and become due and payable within thirty (30) days of such Change of Control. Solely for the purposes of this Section 2(a)(3)(iv), the accelerated Additional Fee shall be calculated on all Transaction Consideration due during the remaining portion of the original term of the Collaboration Agreement, but shall exclude any contingent payments which would only be due upon the occurrence of a milestone event.

For purposes of this Agreement, "Transaction Consideration" means the total proceeds and other consideration paid and to be paid or contributed and to be contributed to the Company pursuant to a Collaboration Agreement and any amendment, modification, novation, accord and satisfaction thereof, including: (i) cash; (ii) notes, loans, and letters of credit at the face value thereof, (iii) securities, and other tangible and intangible property at the fair market value thereof; and (iv) payments to be made to Company in installments, such as annual sponsored research payments and milestone payments for the achievement of established criteria, but excluding royalties.

(b) In addition to the compensation set forth in paragraph 2(a) above, the Company agrees to reimburse Consultant for reasonable out-of-pocket expenses actually incurred by Consultant in the performance of the Services and the Additional Services, including, but not limited to telephone and facsimile charges and calls, car rental, lodging, travel expenses, meals and associated expenses.

3. TERM - This Agreement shall enter into force and effect as of the Effective Date and shall remain in force and effect for a period of twenty-four (24) months (the "Term"). In the event this Agreement shall not be renewed beyond such Term, any provisions which by their nature and/or provisions extend beyond the Term of this Agreement shall survive the expiration of this Agreement and be binding on the parties hereto with full force and effect.

4. CONFIDENTIALITY OF INFORMATION AND DOCUMENTS - In the event that Company shall submit information and/or documents to Consultant in order to permit him to perform the Services required under this Agreement, Consultant shall keep such information and/or documents in the strictest confidence using the same degree of care that Consultant uses in safeguarding his own confidential information both during and after the completion of the services under this Agreement and for a period of ten (10) years after completion of the Services, unless it shall receive from Company the consent of Company in writing to disclose it. However, nothing herein shall be interpreted as preventing Consultant from disclosing and/or using said information or documents which (i) are already rightfully in the possession of Consultant without obligation of confidence, but were not obtained directly or indirectly from Company or its affiliates; or (ii) are independently developed by Consultant not as part of the Services rendered or called for under the terms of this Agreement; or (iii) are or become available to the general public without breach of this Agreement; or (iv) are rightfully received by Consultant from a third party who is not under obligation of confidence, but who

did not obtain them directly or indirectly from Company or its affiliates; or (v) are required to be disclosed pursuant to law or court order, or as may be authorized by Company.

5. LIABILITY OF CONSULTANT - In furnishing Company with the Services provided herein, Consultant shall not be liable to Company or its creditors for errors of judgment or for any matters, except for willful malfeasance, bad faith or gross negligence in the performance of the Services or Additional Services or the reckless disregard of its obligations and duties under the terms of this Agreement. It is further agreed and understood that Consultant may rely upon information furnished to it by Company which Consultant reasonably believes to be accurate and reliable and that, except as provided herein, Consultant shall not be accountable for any loss suffered by Company by the reason of Company's action or non-action on the basis of any advice, recommendation or approval of Consultant, except as provided above.

6. INDEPENDENT CONTRACTOR - Execution of this Agreement in no way creates, nor shall this Agreement be interpreted or construed as creating, an employment, agency, partnership or joint venture relationship between Company and Consultant and it is understood Consultant will be acting as an independent contractor

7. MISCELLANEOUS

   a. OTHER ACTIVITIES OF CONSULTANT. Company recognizes that Consultant now renders and may continue to render management and other advisory services to other companies which may or may not have policies and conduct activities similar to those of Company. Consultant shall be free to render such advice and other services and Company hereby consents thereto. Consultant shall not be required to devote its full time and attention to the performance of the Services or the Additional Services hereunder to Company, but shall only devote so much of its time and attention as Company and Consultant mutually deem reasonable and necessary for such Services and Additional Services.

   b. CONTROL. Nothing contained herein shall be deemed to require Company to take any action contrary to its Certificate of Incorporation or By-Laws, or any applicable statute or regulation, or to deprive its Officers and Board of Directors of their responsibility for any control of the conduct or the affairs of Company.

c. This Agreement, read together with the letters addressed by the Company to Consultant dated July 27, 1998 and August 11, 1998 (copies of which are attached hereto), shall constitute the entire agreement between Company and Consultant relating to the Services to be performed, and no representations, promises, understandings, or agreements, oral or otherwise, not herein contained shall be of any force or effect. No modification or waiver of any provision of this Agreement shall be valid unless it is in writing and signed by both Company and Consultant. This Agreement shall be binding upon the heirs, executors, administrators, successors and assigns of the parties hereto.

d. This Agreement shall be governed by, and construed in accordance with, the laws of the State of Delaware.

e. In the event of any litigation between the parties to declare or enforce any provision of this Agreement, the prevailing party shall be entitle to recover from the losing party, in addition to any other recovery and costs, reasonable attorney's fees and costs incurred in such litigation, in both the trial and in the appellate courts.

IN WITNESS WHEREOF, the parties hereto, by their duly authorized representatives, have signed this Agreement as of the date first above written.

JOHN SCHWARTZ	CYTOTHERAPEUTICS, INC.
By: ----------	By:
John Schwartz	Richard M. Rose, M.D. President & Chief Executive Officer

EXHIBIT 10.82

JOHN SCHWARTZ
DIRECTOR'S AGREEMENT

EXHIBIT 10.82

CYTOTHERAPEUTICS, INC.
701 GEORGE WASHINGTON HIGHWAY
LINCOLN, RHODE ISLAND 02865
401.288.1000

December 19, 1998

John Schwartz
110 Atherton Avenue
Atherton, California 94027

Dear John:

This letter agreement (this "Agreement") will confirm our agreement with respect to your service with CytoTherapeutics, Inc. (the "Company") under the terms and conditions that follow:

1. Position and Duties.

(a) As soon as reasonably practicable following the receipt by the Company of a copy of this Agreement signed by you (but in no event later than 30 days following such receipt), pursuant to the by-laws of the Company, the Board of Directors (the "Board") shall (i) undertake to increase by one (1) the number of seats on the Board, and within five (5) business days following such increase in the number of seats, (ii) elect you to such seat and appoint you to serve as Chairman of the Board. Commencing on the date of such election and appointment (such date, the "Effective Date"), you shall serve as Chairman for a Term expiring at the Annual Meeting of Stockholders in May, 2001. In addition, and without further compensation, you agree to serve as a member of the Board and of the Board of Directors of one or more of the Company's Affiliates, as defined below, if so elected or appointed from time to time. While subject to any provision of this Agreement, you shall perform your duties to the best of your abilities, maintain loyalty to the Company, and shall take no action that would directly or indirectly promote any competitor or injure the Company's interests. Subject to the foregoing, you may engage in other business or charitable activities to the extent that they do not interfere or create a conflict with your obligations under this Agreement.

(b) Specifically, but not exclusively, your duties and responsibilities will be (i) to preside at all meetings of the Board and stockholders; (ii) to create such committees of the Board as you deem prudent and advisable for the management of the Company, to designate the membership of such Board committees and to designate the powers of the Board that such committees shall have and may exercise in the management of the affairs of the Company, in each case subject to the approval of the full Board; (iii) to nominate, in consultation with the President & Chief Executive Officer of the Company, the two next successive qualified additional members (A) for election to the Board by the Board prior to the next Annual Meeting of Stockholders, or (B) for nomination by the Board for election to the Board at the next Annual Meeting of Stockholders, or (C) for election to the Board by the Board subsequent to the next Annual Meeting of Stockholders but prior to the Annual Meeting of Stockholders in May, 2000, such nominees to be so elected or nominated by the Board unless the Board reasonably determines that such nominees are not qualified to serve as members of the Board; (iv) to provide strategic guidance and advice to the senior management of the Company with respect to the management of the operations of the Company; (v) and to provide support and guidance to the senior management of the Company in their efforts (A) to manage and direct the strategic development and implementation of the Company's business plan, and (B) to secure, promote and maintain the appropriate financing and capital structure of the Company. You will report directly to and serve at the discretion of the Board.

2. Compensation; Time Commitment.

a. For all services that you perform for the Company and its Affiliates as Chairman the Company will provide you as compensation (i) the remaining compensation provided for inthat certain Consulting Services Agreement, dated July 27, 1998, as amended contemporaneously herewith, between you and the Company (the "Consulting Agreement"),(ii) any other compensation provided for in Paragraphs 2 and 3 of this Agreement, , and (iii) Thirty Six Thousand Dollars ($36,000) per year, plus a fee of One Thousand Five Hundred Dollars ($1,500) per Board meeting or Committee meeting (if held at a date and time separate from the Board meeting) where you are physically present, plus Five Hundred Dollars ($500) per Board meeting or Committee meeting (if held at a date and time separate from the Board meeting) held by conference call, payable quarterly in arrears (this cash compensation plus any other compensation provided for herein shall be referred to as the "Compensation"). Notwithstanding any provision of the Consulting Agreement to the contrary,for administrative convenience purposes, the Company will aggregate all cash compensation due to you under the Consulting Agreement and this Agreement in any calendar quarter and issue one payment in arrears to you.

b. As Chairman of the Board of Directors, you will be expected to devote no less than fifteen (15) business days per calendar quarter to the performance of your duties and responsibilities collectively under this Agreement and the Consulting

Agreement (hereinafter "Duties and Responsibilities"). In the event you devote more than fifteen (15) days in any calendar quarter to the performance of your Duties and Responsibilities, you shall, within thirty (30) days of the end of the calendar quarter, provide an accounting to the President and Chief Executive Officer of the Company detailing the actual time spent during such preceding calendar quarter. After review and approval by the President and Chief Executive Officer of the Company you will be promptly further compensated for additional days exceeding fifteen (15) in any calendar quarter at the rate of One Thousand Five Hundred Dollars ($1,500) per day. All such additional payments made shall be promptly reported by the President and Chief Executive Officer to the Compensation Committee of the Board (the "Compensation Committee") for subsequent ratification by such Compensation Committee, such ratification not to delay the payment of any such additional payments.

c. The elements of your duties, the respective time commitment required for such duties and your Compensation will be periodically reviewed by the Compensation Committee of the Board (the "Compensation Committee"), in no event less than once annually, in order to determine whether under then present circumstances any increase or decrease adjustment is required or appropriate. Any such increase or decrease shall be made only by mutual agreement, confirmed in writing.

3. Stock Options. Through the CytoTherapeutics, Inc. 1992 Equity Incentive Plan (the "Incentive Plan"), and subject to the terms and conditions of the Incentive Plan, you will be granted effective as of the Effective Date an option to acquire 40,000 shares of the common stock ("Common Stock") of the Company (the "Time-Based Option") with an exercise price per share of Common Stock subject to such Time-Based Option equal to the fair market value of a share of Common Stock on the date of grant. Notwithstanding any provision of the Incentive Plan, subject to your continued service as Chairman of the Company, the Time-Based Option will vest over twenty-nine (29) months from the Effective Date at the rate of one-twenty ninth (1/29) per month on the last day of each month during the ensuing twenty-nine (29) months. Except as otherwise expressly provided herein and in Paragraph 5 hereof, the Time-Based Option shall be governed by the terms of the Incentive Plan, as in effect from time to time.

4. Benefits. You will be entitled to participate in any and all benefit plans from time to time in effect for members of the Board generally, except to the extent that such plans are duplicative of benefits otherwise provided to you under this Agreement. Such participation shall be subject to (a) the terms of the applicable plan documents, (b) generally applicable policies of the Company and (c) the discretion of the Board and plan administrators, as provided for in or contemplated by such plans. The Company shall reimburse you for all expenses reasonably incurred by you in connection with your performance of your duties hereunder on a basis consistent with Company policies.

5. Term; Termination; Effect of Termination. Unless earlier terminated pursuant to this Paragraph 5, your position as Chairman of the Company shall commence on the Effective Date and shall expire at the Annual Meeting of Stockholders of the Company held in May, 2001, unless extended thereafter by mutual agreement between you and the Company at that time (such period shall be referred to herein as the "Term" of this Agreement").

a. The Company may remove you from your position as Chairman other than for "Cause" at any time upon an affirmative vote of the majority of the members of the Board.

b. The Company may, by an affirmative vote of the majority of the members of the Board then in office, remove you from your position as Chairman upon written notice to you in the event that you become disabled during your service through any illness, injury, accident or condition of either physical or psychological nature and, as a result, you are unable to perform substantially all of your duties and responsibilities hereunder for an aggregate of ninety (90) days during any three hundred and sixty-five (365) calendar days.

c. The Company may, by an affirmative vote of the majority of the members of the Board then in office, terminate or remove you from your position as Chairman for Cause at any time upon written notice to you setting forth in reasonable detail the nature of such Cause. The following, as determined by the Company in its reasonable judgment, shall constitute "Cause" for termination: (i) your willful failure to perform your material duties and responsibilities to the Company and its Affiliates (including, without limitation, those duties and responsibilities described in Section 1) ; (ii) fraud, embezzlement or other material dishonesty with respect to the Company or any of its Affiliates; or (iii) your conviction of, or plea of nolo contendere to, a felony.

d. You may resign from your position as Chairman at any time upon written notice to the Company

e. The effect of termination under various circumstances shall be:

(i) In the event your service as Chairman is terminated pursuant to this Paragraph 5, but you remain as a member of the Board, then for the remainder of your Term as a Director, the Company will revise your Compensation and provide you (A) cash compensation equal to the then current cash compensation provided to other members of the Company's Board of Directors, (B) revise the number of unvested shares subject to the Time-Based Option granted hereunder to reduce the number of such unvested shares from that point forward to the number of shares then provided to other members of the Company's Board of Directors during the similar period, with no change to the exercise price or vesting schedule (i.e.: the revised number of unvested shares shall be based on the number of months remaining between the termination of your service as Chairman and May, 2001 times 1/29th of the 20,000 shares currently

provided Directors in their Time-Based Option or 1/29th of such other amount then provided to Directors), and (C) all of your compensation under the Consulting Agreement shall continue to be paid in accordance with and subject to the terms of the Consulting Agreement.

(ii) In the event your service as Chairman is terminated pursuant to Paragraphs 5.a, 5.b, or 5.d and then you resign from the Board in the entirety, or are removed from the Board pursuant to the By-Laws of the Company, then (A) the Company shall have no further obligation to you other than for Compensation earned through the date of such resignation, except that (B) all of your compensation under the Consulting Agreement shall continue to be paid in accordance with and subject to the terms of the Consulting Agreement and (C) notwithstanding anything in this Agreement or in the Incentive Plan to the contrary, any shares of Common Stock subject to the Time-Based Option shall remain exercisable for a period of one (1) year from such date.

(iii) In the event your service as Chairman is terminated pursuant to Paragraphs 5.c. and then you resign from the Board in the entirety, or are removed from the Board pursuant to the By-Laws of the Company, then (A) the Company shall have no further obligation to you other than for Compensation earned through the date of such resignation, except that (B) all of your compensation under the Consulting Agreement shall continue to be paid in accordance with and subject to the terms of the Consulting Agreement.

6. Indemnification; Legal Fees. During the Term and thereafter, the Company shall indemnify you to the full extent permitted by law and the by-laws of the Company for all expenses, costs, liabilities and legal fees which you may incur in the discharge of your duties hereunder. In addition, the Company shall pay any reasonable legal fees which you may incur related to the negotiation and consummation of this Agreement, such payments to be made directly to your counsel in accordance with the Company's normal accounting practices upon receipt of a detailed copy of the bill for services rendered from your counsel.

7. No Employment. Execution of this Agreement in no way creates, nor shall this Agreement be interpreted as creating, an employment, agency, partnership or joint venture between you and the Company.

8. Assignment. Neither you nor the Company may make any assignment of this Agreement or any interest herein, by operation of law or otherwise, without the prior written consent of the other; provided, however, that the Company may assign its rights and obligations under this Agreement without your consent to any Person with whom the Company shall hereafter affect a reorganization, consolidation or merger or to whom the Company transfers all or substantially all of its properties or assets. This Agreement shall inure to the benefit of and be binding upon you and the

Company and each of your respective successors, executors, administrators, heirs and permitted assigns.

9. Waiver. Except as otherwise expressly provided in this Agreement, no waiver of any provision hereof shall be effective unless made in writing and signed by the waiving party. The failure of either party to require performance of any term or obligation of this Agreement, or the waiver by either party of any breach of this Agreement, shall not prevent any subsequent enforcement of such term or obligation or be deemed a waiver of any subsequent breach.

10. Severability. If any portion or provision of this Agreement shall to any extent be declared illegal or unenforceable by a court of competent jurisdiction, then the remainder of this Agreement, or the application of such portion or provision in circumstances other than those as to which it is so declared illegal or unenforceable, shall not be affected thereby, and each portion and provision of this Agreement shall be valid and enforceable to the fullest extent permitted by law.

11. Notices. Except as otherwise expressly provided herein, any notices, requests, demands and other communications provided for by this Agreement shall be in writing and shall be effective when delivered in person or deposited in the United States mail, postage prepaid, registered or certified, and addressed to you at your last known address on the books of the Company or, in the case of the Company, at its main office, attention of the President & Chief Executive Officer, with a copy to the Company's Secretary.

12. Captions. The captions and headings in this Agreement are for convenience only and in no way define or describe the scope or content of any provision of this Agreement.

13. Effect on Consulting Agreement. During the Term and notwithstanding any termination, if any, of (a) this Agreement, (b) your service as Chairman, and/or (c) your services as a member of the Board of Directors for any reason whatsoever, or (d) any breach of this Agreement by you, the compensation, terms and conditions of the Consulting Agreement shall continue in full force and effect for the duration of the term of the Consulting Agreement.

14. Entire Agreement. This Agreement sets forth the entire agreement and understanding between you and the Company and supersedes all prior communications, agreements and understandings, written and oral, with respect to the terms and conditions of your position as Chairman of the Board of Directors. This Agreement may not be amended or modified, except by an agreement in writing signed by you and the President & Chief Executive Officer or other specifically authorized representative of the Company.

15. Governing Law. This Agreement shall be governed, construed and enforced in accordance with the laws of Delaware, without regard to the conflict of laws principles thereof.

16. No Conflicting Agreements. You hereby represent to the Company that neither your execution and delivery of this Agreement nor your acceptance of the position of Chairman of the Board of the Company nor your performance under this Agreement will conflict with or result in a breach of any of the terms, conditions or provisions of any agreement to which you are a party or are bound or any order, injunction, judgment or decrees of any court or governmental authority or any arbitration award applicable to you.

17. Compliance with Agreement. The Company's obligations under this Agreement and its obligation to deliver stock under the terms of the stock options granted pursuant to the terms of this Agreement are conditioned on your compliance with the terms and conditions of this Agreement.

If the foregoing is acceptable to you, please sign the enclosed copy of this letter in the space provided below and return it to me, whereupon this letter and such copy will constitute a binding agreement between you and the Company on the basis set forth above as of the date first above written.

Sincerely yours,
CYTOTHERAPEUTICS, INC.

By:

Richard M. Rose, M.D.
President &
Chief Executive Officer

Accepted and Agreed:

- ---
John J. Schwartz

Date:

EXHIBIT 10.83

Scripps Research Institute
License Agreement
98-086

EXHIBIT 10.83

LICENSE AGREEMENT

This License Agreement is entered into and made effective as of this ____day of October, 1998, by and between THE SCRIPPS RESEARCH INSTITUTE, a California nonprofit public benefit corporation ("Scripps") located at 10550 North Torrey Pines Road, La Jolla, California 92037, and STEMCELLS, INC., a California corporation ("Licensee") with offices at 701 George Washington Highway, Lincoln, Rhode Island 02865, a wholly-owned subsidiary of CytoTherapeutics, Inc. ("CTI"), with respect to the facts set forth below.

RECITALS

A. Scripps and Licensee have entered into a Research Funding and Option Agreement effective as of November 14, 1997 (the "Research Agreement"), pursuant to which Licensee agreed to fund certain research conducted in Dr. Nora Sarvetnick's laboratory at Scripps (the "Research Program").

B. Scripps is engaged in fundamental scientific biomedical and biochemical research, including research relating to pancreatic stem and progenitor cells, as more particularly described herein.

C. Licensee is engaged in research and development of stem and progenitor cells for the diagnosis, treatment and prophylaxis of diseases and other conditions in humans and animals.

D. Scripps has disclosed to Licensee certain technology described in that certain invention disclosure, a copy of which is attached hereto as Exhibit A and incorporated herein by reference (the "Invention(s)")

E. Scripps has the exclusive right to grant a license to the technology described in Exhibit A, subject to certain rights of the U.S. Government to use such technology for its own purposes, resulting from the receipt by Scripps of certain funding from the U. S. Government.

F. Scripps desires to grant to Licensee, and Licensee wishes to acquire, an exclusive worldwide right and license to the technology described in the Exhibit A and to certain patent rights and know-how of Scripps with respect thereto, subject to the terms and conditions set forth herein, with a view to developing and marketing products within the Field (as defined below).

AGREEMENT

NOW, THEREFORE, in consideration of the mutual covenants and conditions set forth herein, Scripps and Licensee hereby agree as follows:

1. Definitions. Capitalized terms shall have the meaning set forth below.

1.1 Affiliate. The term "Affiliate" shall mean any entity which directly or indirectly controls, is controlled by or is under common control with Licensee. The term "control" as used herein means the possession of the power to direct or cause direction of the management and the policies of an entity, whether through the ownership of a majority of the outstanding voting securities or by contract or otherwise.

1.2 Confidential Information. The term "Confidential Information" shall mean any and all proprietary or confidential information of Scripps or Licensee which may be exchanged between the parties at any time and from time to time during the term of this Agreement. Information shall not be considered confidential to the extent that it:

(a) Is publicly disclosed through no fault of any party hereto, either before or after it becomes known to the receiving party; or

(b) Was known to the receiving party prior to the date of this Agreement, which knowledge was acquired independently and not from another party hereto (or such party's employees); or

(c) Is subsequently disclosed to the receiving party in good faith by a third party who has a right to make such disclosure; or

(d) Has been published by a third party as a matter of right.

1.3 Field. The term "Field" shall mean [*].

1.4 Licensed Product. The term "Licensed Product" shall mean a product, the manufacture, sale or use of which would but for the license granted herein, infringe a Valid Claim in the country for which such product is sold. Without limiting the foregoing, Licensed Product shall also include a product the manufacture, sale or use of a particular product would but for the license granted herein infringe a Valid Claim in the United States and at least two (2) Major Countries, in such case irrespective of where such product is made, sold or used and irrespective of whether such product is covered by a Valid Claim in the country where sold.

1.5 Major Countries. The term "Major Countries" shall mean France, Germany, Italy and the United Kingdom.

1.6 Net Sales. The term "Net Sales" shall mean the total amount invoiced to third parties on sales of Licensed Products by Licensee, its Affiliates, or Sublicensees, for which royalties are due under Article 3 below, less the following reasonable and customary deductions to the extent applicable to such invoiced amounts: (i) all trade, cash and quantity credits, discounts, refunds or

* This confidential portion has been omitted and filed separately with the Commission

government rebates; (ii) amounts for claims, allowances or credits for returns, retroactive price reductions, or chargebacks; (iii) packaging, handling fees and prepaid freight, sales taxes, duties and other governmental charges (including value added tax); and (iv) provisions for uncollectible accounts determined in accordance with reasonable accounting practices, consistently applied to all products of the selling party; provided, however, that in the case of Patient-Specific Licensed Products, "Net Sales" shall equal [*] of the foregoing amounts (after the deductions described in (i) through (iv) above). For purposes of the foregoing, it is understood that Net Sales shall include only the amount invoiced for materials consisting of Licensed Products (less the foregoing deductions and adjustments) and shall not include charges related to services (other than cell separation and expansion) performed in connection with the sale of such Licensed Products; accordingly, Net Sales shall not include, without limitation, charges for apheresis, reinfusion, surgical procedures, hospital stays or the like. For the removal of doubt, Net Sales shall not include sales by Licensee to its Affiliates for resale, provided that if Licensee sells a Licensed Product to an Affiliate for resale, Net Sales shall include the amounts invoiced by such Affiliate to third parties on the resale of such Licensed Product. In the event that Licensee grants a sublicense hereunder, and receives payments based upon the Sublicensee's sales of Licensed Products, Licensee may upon approval by Scripps, which approval shall not be unreasonably withheld, substitute the definition of "Net Sales," used by the Sublicensee to calculate payments to Licensee in place of the foregoing definition of "Net Sales" for purposes of calculating royalties payable to Scripps on such Sublicensee's sales.

1.7 Patient-Specific Licensed Product. The term "Patient-Specific Licensed Product shall mean a Licensed Product that includes either (i) autologous cells from the patient; or (ii) nonautologous cells that otherwise are not intended for use in all patients (such as Licensed Products that are fetal cells expressing an HLA-type compatible with the particular patient but not optimally compatible with patients who have a different HLA type).

1.8 Scripps Patent Rights. The term "Scripps Patent Rights" shall mean all rights resulting from:

(a) all worldwide patent and patent applications claiming the Scripps Technology described in Exhibit A hereto (the "Existing Patents"); and

(b) all divisions, continuations, continuations-in-part, patents of addition, and substitutions of the Existing Patents, together with all registrations, reissues, reexaminations or extensions of any kind with respect to any of the foregoing patents to the extent the same claim Scripps Technology.

From time to time during the term of this Agreement the parties agree to record and update on Exhibit B all patents and patent applications within the Scripps Patent Rights

In the event that Scripps and Licensee are joint owners of an invention by reason of the fact that personnel of both Scripps and Licensee are joint inventors of such invention, it is understood

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that the Scripps Patent Rights include only Scripps' rights as a joint owner of the patent applications and patents that claim such joint invention.

1.9 Scripps Technology. The term "Scripps Technology" shall mean so much of the technology as is proprietary to Scripps that was developed in performance of the Research Program and in the disclosure provided to Licensee pursuant to Section 3.2 or 3.3 of the Research Agreement, a copy of which is attached as Exhibit A hereto and incorporated herein by reference, together with materials, information and know-how related thereto from the Research Program as described Exhibit A whether or not the same is eligible for protection under the patent laws of the United States or elsewhere, and whether or not any such processes and technology, or information related thereto, would be enforceable as a trade secret or the copying of which would be enjoined or restrained by a court as constituting unfair competition.

1.10 Sublicensee. The term "Sublicensee" shall mean any non-Affiliate third party to whom Licensee has granted the right to manufacture and sell Licensed Products, with respect to Licensed Products made and sold by such third party.

1.11 Valid Claim. The term "Valid Claim" shall mean a claim of an issued and unexpired patent or a claim of a pending patent application within the Scripps Patent Rights which has not been held unpatentable, invalid or unenforceable by a court or other government agency of competent jurisdiction and has not been admitted to be invalid or unenforceable through reissue, reexamination, disclaimer or otherwise; provided, however, that if the holding of such court or agency is later reversed by a court or agency with overriding authority, the claim shall be reinstated as a Valid Claim with respect to Net Sales made after the date of such reversal. Notwithstanding the foregoing provisions of this Section 1. 11, if a claim of a pending patent application within the Scripps Patent Rights has not issued as a claim of an issued patent within the Scripps Patent Rights, within five (5) years after the filing date from which such claim takes priority, such pending claim shall not be a Valid Claim for purposes of this Agreement.

2. License Terms and Conditions.

2.1 Grant of License.

(a) Scripps hereby grants to Licensee an exclusive, worldwide license, including the right to sublicense, to: make, use, sell, import, export or otherwise distribute Licensed Products; practice any method, process or procedure, and otherwise exploit the Scripps Patent Rights; and to have any of the foregoing performed on its behalf by a third party, in each case solely within the Field, subject to the terms of this Agreement.

(b) Scripps hereby grants to Licensee a non-exclusive, worldwide license, including the right to sublicense to and under the Scripps Technology for the purpose of exercising its rights and licenses under the Scripps Patent Rights.

2.2 Royalties. In consideration for the exclusive license granted pursuant to Section 2.1 hereof, Licensee shall pay to Scripps a continuing royalty the following percentages of Net Sales of each Licensed Product by Licensee, its Affiliates and Sublicensees: (i) [*] of Net Sales in Patent Countries and (ii) [*] in Non-Patent Countries. For purposes of calculating royalties due hereunder, a "Patent Country" shall mean, with respect to a particular Licensed Product, a country in which at the time of the sale of such Licensed Product in such country, the manufacture, use or sale of such Licensed Product would infringe a Valid Claim in such country; and a "Non-Patent Country" shall mean, with respect to such Licensed Product, a country which a the time of sale of such Licensed Product in such country is not a Patent Country.

2.3 Milestone Payments. As additional consideration for the exclusive license granted pursuant to Section 2.1 hereof, Licensee agrees to pay to Scripps upon the first occurrence of each milestone specified below for the first Licensed Product to meet such milestone:

	MILESTONES	PAYMENT
1.	First initiation of Phase II Trials for the first Licensed Product.	$[*]
2.	First initiation of Phase III Trials for the first Licensed Product.	$[*]
3.	First receipt of government approval to market and distribute the first Licensed Product in the United States or the first Major Country.	$[*]

For purposes of the foregoing milestones, "Phase II Trials" shall mean that portion of the clinical studies for the FDA submission and approval process which provides for the initial trials of a Licensed Product for the purposes of determining the efficacious therapeutic dose range and evaluating safety in the proposed therapeutic indication as more fully defined in 21 C.F.R. ss. 312.21(b), or a similar clinical study in a country other than the United States; and "Phase III Trials" shall mean that portion of the clinical studies for the FDA submission and approval process which provides for trials of a Licensed Product on sufficient numbers of patients to establish the safety and efficacy of such Licensed Product to support regulatory approval in the proposed application as more fully defined in 21 C.F.R. ss. 3122.21(c), or similar clinical study in a country other than the United States.

2.4 Combination Products.

2.4.1 Definition of Combination Product. As used herein, the term "Combination Product" shall mean a Licensed Product which cannot be manufactured, used or sold without infringing Scripps Patent Rights licensed hereunder in the country where sold which

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is sold with another product, component or service for which no royalty would be due hereunder if sold separately.

2.4.2 Royalty Payable on Combination Products. The royalty payable on Combination Products shall be the royalty rate set forth in Section 2.2 above based on a pro rata portion of Net Sales of Combination Products in accordance with the following formula:

$$X = \frac{A}{A + B}, \text{ where}$$

X = the pro rata portion of Net Sales attributable to Scripps Patent Rights or other Scripps Technology licensed herein (expressed as a percentage), and

A = the fair market value of the Licensed Product component, and

B = the fair market value of all other components (product, component or service) in the Combination Product.

The fair market values described above shall be determined by the parties hereto in good faith. Notwithstanding the foregoing, in the event that there is no separate fair market values of the Licensed Product and such other product(s), component(s) and/or services(s), then the Net Sales shall be as reasonably allocated by Licensee between such Licensed Product and such other product(s), component(s) and/or service(s), based upon their relative importance and proprietary position, subject to the consent of Scripps, which consent shall not be unreasonably withheld.

2.5 Multiple Royalties. If Licensee, its Affiliate or Sublicensee is required to pay a non-Affiliate third party amounts with respect to a Licensed Product under agreements for patent rights or other technologies which Licensee, its Affiliate or Sublicensee, in its reasonable judgment, determines are necessary or desirable to license or acquire with respect to such Licensed Product, Licensee may deduct such amount owing to such non-Affiliate third parties (prior to any reductions) from the royalty owing to Scripps for the sale of such Licensed Product pursuant to Section 2.2 above. Notwithstanding the foregoing provisions of this Section 2.5, in no event shall the royalties due to Scripps pursuant to Section 2.2 above be so reduced to less than fifty percent (50%) of the amount that would otherwise be due Scripps thereunder.

2.6 Quarterly Payments.

2.6.1 Sales by Licensee. With regard to Net Sales made by Licensee or its Affiliates, royalties shall be payable by Licensee quarterly, within sixty (60) days after the end of each calendar quarter, based upon the Net Sales of Licensed Products during such preceding calendar

quarter, commencing with the calendar quarter in which the first commercial sale of any Licensed Product is made.

2.6.2 Sales by Sublicensees. With regard to Net Sales made by Sublicensees of Licensee or its Affiliates, royalties shall be payable by Licensee quarterly, within ninety (90) days after the end of each calendar quarter, based upon the Net Sales of Licensed Products by such Sublicensee during such preceding calendar quarter, commencing with the calendar quarter in which the first commercial sale of any Licensed Product is made by such Sublicensee.

2.7 Term of License. Unless terminated sooner in accordance with the provisions of this Agreement, the term of this license shall expire when the last of the royalty obligations set forth has expired (i.e., until expiration, revocation or invalidation of the last patent or the abandonment of the last application within the Scripps Patent Rights, whichever is later). Notwithstanding the foregoing, if applicable government regulations require a shorter term and/or a shorter term of exclusivity than provided for herein, then the term of this License Agreement shall be so shortened or this License Agreement shall be amended to provide for a non-exclusive license, and, in such event, the parties shall negotiate in good faith to reduce appropriately the royalties payable as set forth under the section heading "Royalties" hereof. Notwithstanding anything herein to the contrary, Licensee's license under Section 2. l(b) with respect to the Scripps Technology shall survive the expiration, (but not an earlier termination, except as provided in Section 8.6 below) of this Agreement.

2.8 Sublicense. Licensee shall have the sole and exclusive right to grant sublicenses to any party with respect to the rights conferred upon Licensee under this Agreement, provided, however, that any such sublicense shall be subject in all respects to the restrictions, exceptions, royalty obligations, reports, termination provisions, and other provisions contained in this Agreement. Wtthout limiting the foregoing, Licensee agrees to provide Scripps a copy of each such sublicense agreement within thirty (30) days of the execution thereof. Licensee shall pay Scripps, or cause its Affiliate or Sublicensee to pay Scripps, the same royalties on all Net Sales of such Affiliate or Sublicensee the same as if said Net Sales had been made by Licensee. Each Affiliate and Sublicensee shall report its Net Sales to Scripps through Licensee, which Net Sales shall be aggregated with any Net Sales of Licensee for purposes of determining the Net Sales upon which royalties are to be paid to Scripps.

2.9 Reports. Licensee shall furnish to Scripps at the same time as each royalty payment is made by Licensee, a detailed written report of Net Sales of the Licensed Products and the royalty due and payable thereon, including a description of any offsets or credits deducted therefrom, on a product-by-product and country-by-country basis, for the calendar quarter upon which the royalty payment is based.

2.10 Records. Licensee shall keep, and cause its Affiliates and Sublicensees to keep, full, complete and proper records and accounts of all sales of Licensed Products in sufficient detail to enable the royalties payable on Net Sales of each Licensed Product to be determined. Scripps shall have the right to appoint an independent certified public accounting firm approved by Licensee, which approval shall not be unreasonably withheld, to audit the records of Licensee, its Affiliates and Sublicensees as necessary to verify the royalties payable pursuant to

this Agreement. Licensee, its Affilliates and Sublicensees shall pay to Scripps an amount equal to any additional royalties to which Scripps is entitled as disclosed by the audit, plus interest thereon at the rate of one and one-half percent (1.5%) per month. Such audit shall be at Scripps' expense; provided, however, that if the audit discloses that Scripps was underpaid royalties with respect to the period covered by the audit by at least five percent (5%), then Licensee, its Affiliates or Sublicensee, as the case may be, shall reimburse Scripps for all reasonable out-of-pocket audit costs. Scripps may exercise its right of audit as to each of Licensee, its Affiliates or Sublicensees no more frequently than once in any calendar year. The accounting firm shall disclose to Scripps only information relating to the accuracy of the royalty payments. Licensee, its Affiliates and Sublicensees shall preserve and maintain all such records required for audit for a period of three (3) years after the calendar quarter to which the record applies.

2.11 Foreign Sales. The remittance of royalties payable on sales outside the United States shall be payable to Scripps in United States Dollar equivalents at the official rate of exchange of the currency of the country from which the royalties are payable, as quoted in the Wall Street Journal for the last business day of the calendar quarter in which the royalties are payable. If the transfer of or the conversion into the United States Dollar equivalents of any such remittance in any such instance is not lawful or possible, the payment of such part of the royalties as is necessary shall be made by the deposit thereof, in the currency of the county where the sale was made on which the royalty was based to the credit and account of Scripps or its nominee in any commercial bank or trust company of Scripps' choice located in that country, prompt written notice of which shall be given by Licensee to Scripps and except as set forth in Section 2.10 above, Licensee shall have no further obligation with respect to such royalties.

2.12 Foreign Taxes. Any tax required to be withheld by Licensee under the laws of any foreign country for the accounts of Scripps shall be promptly paid by Licensee for and on behalf of Scripps to the appropriate governmental authority, and Licensee shall use its best efforts to furnish Scripps with proof of payment of such tax together with official or other appropriate evidence issued by the applicable government authority. Any such tax actually paid on Scripps' behalf shall be deducted from royalty payments due Scripps hereunder.

2.13 Single Payments. The parties hereto acknowledge that the parties may enter into multiple license agreements with respect to technologies arising out of the Research Agreement, including this Agreement (collectively, the "Scripps License Agreements") pursuant to which Licensee will owe royalties and milestone payments. Notwithstanding anything herein to the contrary, with respect to any unit of Licensed Product only a single royalty shall be due to Scripps at the highest applicable rate for such unit regardless if such Licensed Product is covered by more than one Valid Claim or would be a Licensed Product under more than one Scripps License Agreement. (For example, if a product sold by Licensee is a Licensed Product under this Agreement for which Licensee owes Scripps a royalty of [*] of Net Sales and Licensee would otherwise owe Scripps a royalty of [*] of Net Sales of such product under another Scripps License Agreement, Licensee's royalty obligation to Scripps shall be fulfilled by paying Scripps [*] of Net Sales with respect to sales of such License Product.) Likewise, with respect to the milestone payments under Section 2.3 above, once such milestone payment has been paid for a Licensed Product under any Scripps License Agreement then Licensee's obligation to pay such milestone shall be deemed to be fulfilled with respect to all Scripps License Agreement, regardless of whether the product for which such a milestone payment was paid was a "Licensed Product" for purposes of a particular Scripps License Agreement or not. (For example, if a

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Licensee initiates Phase II Trials for a product, which product falls within the definition of "Licensed Product" under this Agreement and pays Scripps the corresponding [*] payment, Licensee shall have no further obligation to pay any amounts to Scripps with respect to any other product under any Scripps License Agreement upon the initiation of Phase II Trials for a Licensed Product whether or not the product for which Licensee initially paid such milestone payment is a Licensed Product for purposes of any other Scripps License Agreement.)

3. Patent Matters.

3.1 Patent Prosecution and Maintenance. From and after the date of this Agreement, the provisions of this Section 3 shall control the prosecution and maintenance of any patent or patent application included within Scripps Patent Rights. Subject to the requirements, limitations and conditions set forth in this Agreement, Scripps shall direct and control (i) the preparation, filing and prosecution of the United States and foreign patent applications within Scripps Patent Rights (including any interferences and foreign oppositions) and (ii) maintain the patents issuing therefrom. Scripps shall select the patent attorney, subject to Licensee's written approval, which approval shall not be unreasonably withheld. Both parties hereto agree that Scripps may, at its sole discretion, utilize Scripps' Office of Patent Counsel in lieu of outside counsel for patent prosecution and maintenance described herein, and the fees and expenses incurred by Scripps with respect to work done by such Office of Patent Counsel shall be paid as set forth below. Licensee shall have full rights of consultation with the patent attorney so selected on all matters relating to Scripps Patent Rights. Scripps shall use its best efforts to implement all reasonable requests made by Licensee with regard to the preparation, filing, prosecution and/or maintenance of the patent applications and/or patents within Scripps Patent Rights.

3.2 Information to Licensee. Scripps agrees to use reasonable efforts to (i) keep Licensee informed as to the filing, prosecution and maintenance of patents and patent applications within the Scripps Patent Rights, (ii) furnish to Licensee copies of documents relevant to any such filing, prosecution and maintenance and (iii) allow Licensee reasonable opportunity to comment on documents filed with any patent office which would affect the Scripps Patent Rights or Licensee' rights hereunder.

3.3 Patent Costs. Licensee acknowledges and agrees that Scripps does not have independent funding to cover patent costs, and that the license granted hereunder is in part in consideration for Licensee's assumption of patent costs and expenses as described herein. Licensee shall pay for all expenses incurred by Scripps pursuant to Section 3.1 hereof. In addition, Licensee connection with Scripps Patent Rights licensed hereunder. Licensee agrees to pay all such past and future patent expenses directly or to reimburse Scripps for the payment of such expenses within sixty (60) days after Licensee receives an itemized invoice therefor. In the event Licensee elects to discontinue payment for the filing, prosecution and/or maintenance of any patent application and/or patent within Scripps Patent Rights, any such patent application or patent shall be excluded from the definition of Scripps Patent Rights and from the scope of the license granted under this Agreement, and all rights relating thereto shall revert to Scripps and may be freely licensed by Scripps. Licensee shall give Scripps at least sixty (60) days' prior written notice of such election. No such notice shall have any effect on Licensee's obligations to pay expenses incurred up to the effective date of such election.

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3.4 Ownership. Subject to any joint or mutual ownership of Licensee by virtue of joint inventorship of inventions covered therein, the patent applications filed and patent applications obtained by Scripps pursuant to Section 3.1 hereof shall be owned solely by Scripps, assigned to Scripps and deemed a part of Scripps Patent Rights.

3.5 Scripps Right to Pursue Patent. If at any time during the term of this Agreement, Licensee's rights with respect to Scripps Patent Rights are terminated, Scripps shall have the right to take whatever action Scripps deems appropriate to obtain or maintain the corresponding patent protection at its own expense. If Scripps pursues patents under this Section 3.5, Licensee agrees to cooperate fully, including by providing, at no charge to Scripps, all appropriate technical data and executing all necessary legal documents.

3.6 Prosecution by Licensee. If Scripps elects not to file, prosecute or maintain any patent application or patent within the Scripps Patent Rights or pay any fee related thereto, in any country Scripps shall promptly notify Licensee of such election, but in no case later than sixty (60) prior to any required action relating to the filing, prosecution or maintenance of such patent application or patent. In such event, if Licensee elects to take over the filing, prosecution and/or maintenance of one or more patents or patent applications within the Scripps Patent Rights, Licensee shall have the right, at its option, to control the filing, prosecution and/or maintenance of any such patent applications or patents within the Scripps Patent Rights at its own expense. In which case Licensee shall keep Scripps reasonably informed on matters regarding such filing, prosecution and maintenance.

3.7 Infringement.

3.7.1 Enforcement. If either party determines that a third party is making, using or selling a product that may infringe the Scripps Patent Rights, that party shall notify the other party in writing.

(a) Licensee shall have the first right (itself or through others), at its sole option, to bring suit to enforce the Scripps Patent Rights, and/or to defend any declaratory judgment action with respect thereto, in each case with respect to the manufacture, sale or use of a product within the Field; provided, however, that Licensee shall keep Scripps reasonably informed as to the defense and/or settlement of such action. Scripps shall have the right to participate in any such action with counsel of its own choice at its own expense.

(b) In the event Licensee elects not to initiate an action to enforce the Scripps Patent Rights against a commercially significant infringement by a third party within the Field, within one (1) year of a request by Scripps to do so, (or within such shorter period which may be required to preserve the legal rights of Scripps under the laws of the relevant government), Scripps may initiate such action at its expense with Licensee' prior written consent, which consent shall not be unreasonably withheld. Licensee shall have the right to participate in any such action with counsel of its own choice at its own expense.

(c) All recoveries received by a party from an action to enforce the Scripps Patent Rights shall be first applied to reimburse the controlling party's and then the non-controlling party's unreimbursed expenses, including without limitation, reasonable attorney's fees and court costs. Any remainder shall, to the extent the same pertains to an infringement of

the Scripps Patent Rights, be divided [*] to Licensee and [*] to Scripps.

3.7.2 Defense. If Licensee, its Affiliate, Sublicensee, distributor or other customer is sued by a third party charging infringement of patent rights that dominate a claim of the Scripps Patent Rights or that cover other Related Material with respect to the manufacture, use, distribution or sale of a Licensed Product, Licensee will promptly notify Scripps. As between the parties to this Agreement, Licensee will be entitled to control the defense in any such action(s) and withhold [*] of the royalties related to such Licensed Product otherwise payable to Scripps and use the withheld royalties to reimburse the legal defense costs, attorneys' fees and liability incurred in such infringement suit(s). Notwithstanding the foregoing, Licensee agrees to withhold only that portion of such royalties as may reasonably be necessary to reimburse amounts in accordance with this Section 3 .7.2. If Licensee is required to pay a royalty to a third party to make and/or sell a Licensed Product as a result of a final judgment or settlement, such amounts may be deducted from the running royalties payable to Scripps hereunder in relation to such Licensed Product; provided that such royalties shall not be so reduced by more than [*]. Subject to the provisions of Section 4.3 below, Licensee agrees to indemnify and hold Scripps harmless from any costs, expenses or liability arising out of all such infringements or charges of infringement.

3.7.3 Cooperation. In any suit, action or other proceeding in connection with enforcement and/or defense of the Scripps Patent Rights, each party hereto agrees to cooperate fully, including without limitation by joining as a party plaintiff and executing such documents as the other party may reasonably request. Without limiting the foregoing, upon the request of and, at the expense of a party controlling any suit, action or other proceeding pursuant to this Article 3, the other party shall make available at reasonable times and under appropriate conditions all relevant personnel, records, papers, information, samples, specimens and other similar materials in such other party's possession.

3.7.4 No Implied Obligations. Except as expressly provided in this Section 3.7, neither party has any obligation to bring or prosecute actions or suits against any third party for patent infringement.

4. Obligations Related to Commercialization.

4.1 Commercial Development Obligation. In order to maintain the license granted hereunder in force, Licensee shall use reasonable efforts and due diligence to develop Scripps Technology and Scripps Patent Rights which are licensed hereunder into commercially viable Licensed Products, as promptly as is reasonably and commercially feasible, and thereafter to produce and sell reasonable quantities of Licensed Products. Licensee shall keep Scripps generally informed as to Licensee's progress in such development, production and sale, including its efforts, if any, to sublicense Scripps Technology and Scripps Patent Rights, and Licensee shall deliver to Scripps an annual written report and such other reports as Scripps may reasonably request. The parties hereto acknowledge and agree that achievement of mutually agreeable milestones shall be evidence of compliance by Licensee with its commercial development obligations hereunder. Notwithstanding the foregoing, if Licensee believes that it cannot, within the exercise of prudent and reasonable business judgment, perform any mutually agreed upon milestones within the time period required therefor, Licensee may request an

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extension of time for the performance date to a date that Licensee believes to be reasonable and prudent and Scripps shall agree to any requested extension which is not more than one (l) year in length from the originally required date and will not unreasonably withhold consent to requests for longer extensions. In the event Scripps has a reasonable basis to believe that Licensee is not using reasonable efforts and due diligence as required hereunder, upon notice by Scripps to Licensee which specifies the basis for such belief, Scripps and Licensee shall negotiate in good faith to attempt to mutually resolve the issue. In the event Scripps and Licensee cannot agree upon any matter related to Licensee's commercial development obligations, the parties agree to utilize arbitration pursuant to Section 10.2 hereof in order to resolve the matter. If the arbitrator determines that Licensee has not complied with its obligations hereunder, and such default is not cured within sixty (60) days after the arbitrator's decision, Scripps may terminate Licensee's rights under this Agreement.

4.2 Governmental Approvals and Marketing of Licensed Products. Licensee shall be responsible for obtaining all necessary governmental approvals for the development, production, distribution, sale and use of any Licensed Product, at Licensee's expense, including, without limitation, any safety studies. Licensee shall have sole responsibility for any warning labels, packaging and instructions as to the use of Licensed Products and for the quality control for any Licensed Product.

4.3 Indemnity. Licensee hereby agrees to indemnify, defend and hold harmless Scripps and any parent, subsidiary or other affiliated entity and their trustees, officers, employees, scientists and agents from and against any liability or expense arising from any product liability claim asserted by any party as to any Licensed Product or any claims arising from the use of any Scripps Patent Rights or Scripps Technology pursuant to this Agreement. Such indemnity and defense obligation shall apply to any product liability or other claims, including without limitation, personal injury, death or property damage, made by employees, subcontractors, sublicensees, or agents of Licensee, as well as any member of the general public. Notwithstanding the foregoing, Licensee's obligation to provide indemnification under this Section 4 3 shall be subject to each party seeking indemnification hereunder (i) promptly notify Licensee in writing of any claim, suit or proceeding with respect to which the party intends to claim such indemnification, (ii) give Licensee sole control of the defense and/or settlement thereof, and (iii) provide Licensee, at Licensee's expense, with reasonable assistance and full information with respect to such claim, suit or proceeding. Licensee shall not settle any claim, suit or proceeding subject to this Section 4.3 or otherwise consent to an adverse judgment in such claim, suit or proceeding if the same materially diminishes the rights or interests of the indemnified party without the express written consent of such party. Licensee shall have no obligation for any claim, suit or proceeding if the party seeking indemnification makes any settlement regarding such claim, suit or proceeding without the prior written consent of Licensee, which consent shall not be unreasonably withheld. Licensee shall use its best efforts to have Scripps and any parent, subsidiary or other affiliated entity and their trustees, officers, employees, scientists and agents named as additional insured parties on any product liability insurance policies maintained by Licensee, its Affiliates and sublicensees applicable to Licensed Products.

4.4 Patent Marking. To the extent required by applicable law, Licensee shall mark all Licensed Products or their containers in accordance with the applicable patent marking laws.

4 5 No Use of Name. Except as required by law, the use of the name "The Scripps Research Institute", " Scripps", or any variation thereof in connection with the advertising or sale of Licensed Products is expressly prohibited.

4.6 U.S. Manufacture. To the extent required by applicable United States laws, if at all, Licensee agrees that Licensed Products will be manufactured in the United States, or its territories, subject to such waivers as may be required, or obtained, if at all, from the United States Department of Health and Human Services, or its designee.

4 7 Foreign Registration. Licensee agrees to register this Agreement with any foreign governmental agency which requires such registration, and Licensee shall pay all costs and legal fees in connection therewith. In addition, Licensee shall assure that all foreign laws affecting this Agreement or the sale of Licensed Products are fully satisfied.

5. Limited Warranty. Scripps hereby represents and warrants that subject to the rights of the United States Government (i) it has sole right and power to enter into this Agreement and grant the rights and licenses granted herein; (ii) Scripps is and shall be the owner of the entire right, title, and interest in and to the Scripps Patent Rights; (iii) Scripps has not previously granted and will not grant any rights in the Scripps Patent Rights that are inconsistent with the rights and licenses granted to Licensee herein; and (iv) to the best of its knowledge, there are no claims of third parties that would call into question the rights of Scripps to grant to Licensee the rights contemplated hereunder. EXCEPT AS PROVIDED IN THIS SECTION 5, NEITHER PARTY MAKES ANY WARRANTIES OR CONDITIONS (EXPRESS, IMPLIED, STATUTORY OR OTHERWISE) WITH RESPECT TO THE SUBJECT MATTER HEREOF. SPECIFICALLY, SCRIPPS MAKES NO OTHER WARRANTIES CONCERNING SCRIPPS PATENT RIGHTS OR SCRIPPS TECHNOLOGY COVERED BY THIS AGREEMENT, INCLUDING WITHOUT LIMITATION, ANY EXPRESS OR IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE AS TO SCRIPPS PATENT RIGHTS, SCRIPPS TECHNOLOGY OR ANY LICENSED PRODUCT. SCRIPPS MAKES NO WARRANTY OR REPRESENTATION AS TO THE VALIDITY OR SCOPE OF SCRIPPS PATENT RIGHTS, OR THAT ANY LICENSED PRODUCT WILL BE FREE FROM AN INFRINGEMENT ON PATENTS OR OTHER INTELLECTUAL PROPERTY RIGHTS OF THIRD PARTIES, OR THAT NO THIRD PARTIES ARE IN ANY WAY INFRINGING SCRIPPS PATENT RIGHTS OR SCRIPPS TECHNOLOGY COVERED BY THIS AGREEMENT.

6. Interests in Intellectual Property Rights.

6.1 Preservation of Title. Scripps shall retain full ownership and title to Scripps Technology, and Scripps Patent Rights licensed hereunder and shall use its reasonable best efforts to preserve and maintain such full ownership and title, subject to Licensee fully performing all of its obligations under this Agreement.

6 2 Rovalty-free License to Improvements. Licensee hereby grants to Scripps a non-exclusive, royalty-free license to any improvement to Scripps Technology developed by Licensee during the term of this Agreement, to use for Scripps own non-cornmercial research purposes or grant to other nonprofit institutions for their non-commercial research purposes.

6.3 Governmental Interest. Licensee and Scripps acknowledge that Scripps has received, and expects to continue to receive, funding from the United States Government in support of Scripps' research activities. Licensee and Scripps acknowledge and agree that their respective rights and obligations pursuant to this Agreement shall be subject to Scripps' obligations and the rights of the United States Government, if any, which arise or result from Scripps' receipt of research support from the United States Government, including without limitation, the grant by Scripps to the United States a non-exclusive, irrevocable, royalty-free license to Scripps Technology and Scripps Patent Rights licensed hereunder for governmental purposes.

6.4 Reservation of Rights. Scripps reserves the right to use for any non-commercial research purposes and the right to allow other nonprofit institutions to use for any non-commercial research purposes any Scripps Technology and Scripps Patent Rights licensed hereunder, without Scripps or such other institutions being obligated to pay Licensee any royalties or other compensation.

7. Confidentiality and Publication.

7.1 Treatment of Confidential Information. The parties agree that during the term of this Agreement and for ten (10) years thereafter, a party receiving Confidential Information of the other party will (i) maintain in confidence such Confidential Information to the same extent such party maintains its own proprietary industrial information, (ii) not disclose such Confidential Information to any third party without prior written consent of the other party and (iii) not use such Confidential Information for any purpose except those permitted by this Agreement.

7.2 Permitted Usage. Notwithstanding the provisions of Section 7.1 above, the receiving party may use or disclose Confidential Information of the disclosing party to the extent necessary to exercise its rights hereunder (including commercialization and/or sublicensing of Scripps Patent Rights and Scripps Technology) or fulfill its obligations and/or duties hereunder and in filing for, prosecuting or maintaining any proprietary rights, prosecuting or defending litigation, complying with applicable governmental regulations and/or submitting information to tax or other governmental authorities; provided that if the receiving party is required by law to make any public disclosures of Confidential Information of the disclosing party, to the extent it may legally do so, it will give reasonable advance notice to the disclosing party of such disclosure and will use its reasonable efforts to secure confidential treatment of Confidential Information prior to its disclosure (whether through protective crders or otherwise).

7.3 Publications. Licensee agrees that Scripps shall have a right to publish in accordance with its general policies and subject to Section 6.2 of the Research Agreement.

7.4 Publicity. Except as otherwise provided herein or required by law, no party shall originate any publication, news release or other public announcement, written or oral, whether in the public press, stockholders' reports, or otherwise, relating to this Agreement or to any sublicense hereunder, or to the performance hereunder or any such agreements, without the prior written approval of the other party, which approval shall not be unreasonably withheld. Scientific publications published in accordance with Section 7.3 of this Agreement shall not be construed as publicity governed by this Section 7.4.

8. Term and Termination.

8.1 Term. Unless terminated sooner in accordance with the terms set forth herein, this Agreement, and the license granted hereunder, shall terminate as provided in Section 2.7 hereof.

8.2 Termination Upon Default. Any one or more of the following events shall constitute an event of default hereunder: (i) the failure of a party to pay any amounts when due hereunder and the expiration of thirty (30) days after receipt of a written notice requesting the payment of such amount; (ii) the failure of a party to perform any material obligation required of its to be performed hereunder, and the failure to cure within sixty (60) days after receipt of notice from the other party specifying in reasonable detail the nature of such default. Upon the occurrence of any event of default, the non-defaulting party may deliver to the defaulting party written notice of intent to terminate, such termination to be effective upon the date set forth in such notice.

Such termination rights shall be in addition to and not in substitution for any other remedies that may be available to the non-defaulting party. Termination pursuant to this Section 8.2 shall not relieve the defaulting party from liability and damages to the other party for breach of this Agreement. Waiver by either party of a single default or a succession of defaults shall not deprive such party of any right to terminate this Agreement arising by reason of any subsequent default.

Notwithstanding the foregoing provisions of this Section 8.2, if the party alleged to be in default of this Agreement disputes in good faith such default within the applicable cure period, the other party's right to terminate shall be stayed until it has been determined in accordance with Section 10 2 below of this Agreement that the party alleged to be in default was actually in default and such defaulting party fails to comply with its obligations hereunder within the applicable cure period.

8 3 Termination Upon Bankruptcy or Insolvency. This Agreement may be terminated by Scripps giving written notice of termination to Licensee upon the filing of bankruptcy or bankruptcy of Licensee or the appointment of a receiver of any of Licensee's assets, or the making by Licensee of any assignment for the benefit of creditors, or the institution of any proceedings against Licensee under any bankruptcy law which proceeding is not dismissed with prejudice within ninety (90) days from its initiation. Termination shall be effective upon the date specified in such notice.

8.4 Termination by Licensee. Any provision herein notwithstanding, Licensee may terminate this Agreement, in its entirety or as to any particular patent or patent application within the Scripps Patent Rights, or as to any particular Licensed Product, at any time by giving Scripps at least ninety (90) days prior written notice. From and after the effective date of a termination under this Section 8 4 with respect to a particular patent or application, such patent(s) and patent application(s) in the particular country shall cease to be within the Scripps Patent Rights for all purposes of this Agreement, and all rights and obligations of Licensee with respect to such patent(s) and patent application(s) shall terminate. From and after the effective date of a termination under this Section 8.3 with respect to a particular Licensed Product, the license

granted under Section 2.1 above shall terminate with respect to such Licensed Product, and the same shall cease to be a Licensed Product for all purposes of this Agreement. Upon a termination of this Agreement in its entirety under this Section 8.4, all rights and obligations of the parties shall terminate, except as provided in Section 8.5 below.

8.5 Rights Upon Expiration. Neither party shall have any further rights or obligations upon the expiration of this Agreement upon its regularly scheduled expiration date with respect to this Agreement, other than the obligation of Licensee to make any and all reports and payments for the final quarter period. Provided, however, that upon such expiration, each party shall be required to continue to abide by its non-use and non-disclosure obligations as described in Section 7.1, and Licensee shall continue to maintain records under Section 2.10 and abide by its obligation to indemnify Scripps as described in Section 4.3 and by its obligations under Section 6.2 hereof.

8.6 Rights Upon Termination.

8.6.1 Accrued Obligations. Termination of this Agreement for any reason shall not release either party hereto from any liability which at the time of such termination has already accrued to the other party.

8.6.2 Inventory. In the event this Agreement is terminated for any reason, Licensee shall provide Scripps with a written inventory of all Licensed Products that Licensee and its Affiliates have in process of manufacture, in use or in stock and Licensee and its Affiliates shall have the right to sell or otherwise dispose of such Licensed Products for a period not to exceed six (6) months from the effective date of such termination, all subject to the payment to Scripps royalties and provision of reports pursuant to this Agreement.

8.6.3 Sublicenses. Upon termination of this Agreement by Scripps for any reason, any sublicense granted by Licensee hereunder shall survive, provided that upon request by Scripps, such Sublicensee promptly agrees in writing to be bound by the applicable terms of this Agreement.

8.6.4 Survival. Sections 2.10,4.3,6.2,7.1 and 10 shall survive any termination of this Agreement. Except as otherwise provided in this Section 8, all rights and obligations of the parties under this Agreement shall terminate upon termination of this Agreement.

9. Assignment: Successors.

9.1 Assignment. Neither this Agreement nor any rights granted hereunder may be assigned or transferred by Licensee except (i) to an Affiliate of Licensee or (ii) to a successor in interest to all or substantially all of the business assets of Licensee, whether by way of a merger, consolidation, sale of all or substantially all of Licensee's assets, change of control or similar transaction, without the prior written consent of Scripps.

9.2 Binding Upon Successors and Assigns. Subject to the limitations on assignment herein, this Agreement shall be binding upon and inure to the benefit of any successors in interest and assigns of Scripps and Licensee. Any such successor or assignee of Licensee's

interest shall expressly assume in writing the performance of all the terms and conditions of this Agreement to be performed by Licensee.

10. General Provisions.

10.1 Independent Contractors. The relationship between Scripps and Licensee is that of independent contractors. Scripps and Licensee are not joint venturers, partners, principal and agent, master and servant, employer or employee, and have no other relationship other than independent contracting parties. Scripps and Licensee shall have no power to bind or obligate each other in any manner, other than as is expressly set forth in this Agreement.

10 2 Arbitration. Any controversy or claim arising out of or relating to this Agreement, or the breach thereof, shall be settled by binding arbitration in accordance with the Commercial Arbitration Rules of the American Arbitration Association ("AAA"), and the procedures set forth below. In the event of any inconsistency between the Rules of AAA and the procedures set forth below, the procedures set forth below shall control. Judgment upon the award rendered by the arbitrators may be enforced in any court having jurisdiction thereof.

10.2.1 Location. The location of the arbitration shall be in the County of San Diego in the State of California.

10.2.2 Selection of Arbitrators. The arbitration shall be conducted by a panel of three neutral arbitrators who are independent and disinterested with respect to the parties, this Agreement, and the outcome of the arbitration. Each party shall appoint one neutral arbitrator, and these two arbitrators so selected by the parties shall then select the third arbitrator. If one party has given written notice to the other party as to the identity of the arbitrator appointed by the party, and the party thereafter makes a written demand on the other party to appoint its designated arbitrator within the next ten days, and the other party fails to appoint its designated arbitrator within ten days after receiving said written demand, then the arbitrator who has already been designated shall appoint the other two arbitrators.

10.2.3 Discovery. Unless the parties mutually agree in writing to some additional and specific pre-hearing discovery, the only pre-hearing discovery shall be (a) reasonably limited production of relevant and non-privileged documents, and (b) the identification of witnesses to be called at the hearing, which identification shall give the witness's name, general qualifications and position, and a brief statement as to the general scope of the testimony to be given by the witness. The arbitrators shall decide any disputes and shall control the process concerning these pre-hearing discovery matters. Pursuant to the Rules of AAA, the parties may subpoena witnesses and documents for presentation at the hearing.

10.2.4 Case Management. Prompt resolution of any dispute is important to both parties; and the parties agree that the arbitration of any dispute shall be conducted expeditiously. The arbitrators are instructed and directed to assume case management initiative and control over the arbitration process (including scheduling of events, pre-hearing discovery and activities, and the conduct of the hearing), in order to complete the arbitration as expeditiously as is reasonably practical for obtaining a just resolution of the dispute.

10 2 5 Remedies. The arbitrators may grant any legal or equitable remedy or relief that the arbitrators deem just and equitable, to the same extent that remedies or relief could be granted by a state or federal court, provided however, that no punitive damages may be awarded. No court action may be maintained seeking punitive damages. The decision of any two of the three arbitrators appointed shall be binding upon the parties.

10.2.6 Expenses. The expenses of the arbitration, including the arbitrators' fees, expert witness fees, and attorney's fees, may be awarded to the prevailing party, in the discretion of the arbitrators, or may be apportioned between the parties in any manner deemed appropriate by the arbitrators. Unless and until the arbitrators decide that one party is to pay for all (or a share) of such expenses, both parties shall share equally in the payment of the arbitrators' fees as and when billed by the arbitrators.

10.2.7 Confidentiality. Except as set forth below, the parties shall keep confidential the fact of the arbitration, the dispute being arbitrated, and the decision of the arbitrators. Notwithstanding the foregoing, the parties may disclose information about the arbitration to persons who have a need to know, such as directors, trustees, management employees, witnesses, experts, investors, attorneys, lenders, insurers, and others who may be directly affected. Additionally, if a party has stock which is publicly traded, the party may make such disclosures as are required by applicable securities laws. Further, if a party is expressly asked by a third party about the dispute or the arbitration, the party may disclose and acknowledge in general and limited terms that there is a dispute with the other party which is being (or has been) arbitrated. Once the arbitration award has become final, if the arbitration award is not promptly satisfied, then these confidentiality provisions shall no longer be applicable.

10.3 Entire Agreement Modification. This Agreement sets forth the entire agreement and understanding between the parties as to the subject matter hereof. There shall be no amendments or modifications to this Agreement, except by a written document which is signed by both parties. It is understood that the Research Agreement is separate and independent from this Agreement and termination of either agreement shall not operate to terminate or otherwise effect the rights and obligations of the parties under the other agreement.

10.4 California Law. This Agreement shall be construed and enforced in accordance with the laws of the State of California.

10. 5 Limitation of Liability. NEITHER PARTY SHALL BE LIABLE TO THE OTHER PARTY OR ANY THIRD PARTY FOR ANY SPECIAL, CONSEQUENTIAL, EXEMPLARY OR INCIDENTAL DAMAGES (INCLUDING LOST OR ANTICIPATED REVENUES OR PROFITS RELATING TO THE SAME), ARISING FROM ANY CLAIM RELATING TO THIS AGREEMENT, WHETHER SUCH CLAIM IS BASED ON CONTRACT, TORT (INCLUDING NEGLIGENCE) OR OTHERWISE, EVEN IF AN AUTHORIZED REPRESENTATIVE OF SUCH PARTY IS ADVISED OF THE POSSIBILITY OR LIKELIHOOD OF SAME.

10.6 No Implied Obligations. Licensee's sole obligation to exploit the Scripps Patent Rights and Scripps Technology is as set forth in Section 4.1. Nothing in this Agreement shall be deemed to require Licensee to otherwise exploit the Scripps Patent Rights or Scripps Technology

nor prevent Licensee from commercializing products similar to or competitive with a Licensed Product.

10.7 Headings. The headings for each article and section in this Agreement have been inserted for convenience of reference only and are not intended to limit or expand on the meaning of the language contained in the particular article or section.

10.8 Severability. Should any one or more of the provisions of this Agreement be held invalid or unenforceable by a court of competent jurisdiction, it shall be considered severed from this Agreement and shall not serve to invalidate the remaining provisions thereof. The parties shall make a good faith effort to replace any invalid or unenforceable provision with a valid and enforceable one such that the objectives contemplated by them when entering this Agreement may be realized.

10.9 No Waiver. Any delay in enforcing a party's rights under this Agreement or any waiver as to a particular default or other matter shall not constitute a waiver of such party's rights to the future enforcement of its rights under this Agreement, excepting only as to an express written and signed waiver as to a particular matter for a particular period of time.

10.10 Name. Whenever there has been an assignment by Licensee as permitted by this Agreement, the term "Licensee" as used in this Agreement shall also include and refer to, if appropriate, such assignee.

10.11 Notices. Any notices required by this Agreement shall be in writing, shall specifically refer to this Agreement and shall be sent by registered or certified airmail, postage prepaid, or by telefax, telex or cable, charges prepaid, or by overnight courier, postage prepaid and shall be forwarded to the respective addresses set forth below unless subsequently changed by written notice to the other party:

For Scripps
The Scripps Research Institute
10550 North Torrey Pines Road, TPC-9
La Jolla, California 92037
Attn: Director, Technology Development
Fax No.: (619) 784-9910

For Licensee:
StemCells, Inc.
701 George Washington Highway
Lincoln, Rhode Island 02865
Attn: Research Director
Fax No.: (401) 333-0684

with a copy to:
CytoTherapeutics, Inc.
701 George Washington Highway
Lincoln, Rhode Island 02865
Attn: General Counsel
Fax No.: (401) 334-9152

Notice shall be deemed delivered upon the earlier of (i) when received, (ii) three (3) days after deposit into the mail, or (iii) the date notice is sent via telefax, telex or cable, (iv) the day immediately following delivery to overnight courier (except Sunday and holidays).

10.12 Compliance with U. S. Laws. Nothing contained in this Agreement shall require or permit Scripps or Licensee to do any act inconsistent with the requirements of any United States law, regulation or executive order as the same may be in effect from time to time.

IN WITNESS WHEREOF, the parties have executed this Agreement by their duly authorized representatives as of the date set forth above.

SCRIPPS:	LICENSEE:
THE SCRIPPS RESEARCH INSTITUTE	STEMCELLS, INC.
By:	By:
- ----------	----------
Title:	Title:
- ----------	----------

EXHIBIT A

DISCLOSURE OF TECHNOLOGY

[*]

* This confidential portion has been omitted and filed separately with the Commission

EXHIBIT B

SCRIPPS PATENT RIGHTS

[*]

* This confidential portion has been omitted and filed separately with the Commission

EXHIBIT 10.84

Scripps Research Institute
License Agreement
98-058

EXHIBIT 10.84

LICENSE AGREEMENT

This License Agreement is entered into and made effective as of this ____day of October, 1998, by and between THE SCRIPPS RESEARCH INSTITUTE, a California nonprofit public benefit corporation ("Scripps") located at 10550 North Torrey Pines Road, La Jolla, California 92037, and STEMCELLS, INC., a California corporation ("Licensee") with offices at 701 George Washington Highway, Lincoln, Rhode Island 02865, a wholly-owned subsidiary of CytoTherapeutics, Inc. ("CTI"), with respect to the facts set forth below.

RECITALS

A. Scripps and Licensee have entered into a Research Funding and Option Agreement effective as of November 14, 1997 (the "Research Agreement"), pursuant to which Licensee agreed to fund certain research conducted in Dr. Nora Sarvetnick's laboratory at Scripps (the "Research Program").

B. Scripps is engaged in fundamental scientific biomedical and biochemical research, including research relating to pancreatic stem and progenitor cells, as more particularly described herein.

C. Licensee is engaged in research and development of stem and progenitor cells for the diagnosis, treatment and prophylaxis of diseases and other conditions in humans and animals.

D. Scripps has disclosed to Licensee certain technology described in that certain invention disclosure, a copy of which is attached hereto as Exhibit A and incorporated herein by reference (the "Invention(s)")

E. Scripps has the exclusive right to grant a license to the technology described in Exhibit A, subject to certain rights of the U.S. Government to use such technology for its own purposes, resulting from the receipt by Scripps of certain funding from the U. S. Government.

F. Scripps desires to grant to Licensee, and Licensee wishes to acquire, an exclusive worldwide right and license to the technology described in the Exhibit A and to certain patent rights and know-how of Scripps with respect thereto, subject to the terms and conditions set forth herein, with a view to developing and marketing products within the Field (as defined below).

AGREEMENT

NOW, THEREFORE, in consideration of the mutual covenants and conditions set forth herein, Scripps and Licensee hereby agree as follows:

1. Definitions. Capitalized terms shall have the meaning set forth below.

1.1 Affiliate. The term "Affiliate" shall mean any entity which directly or indirectly controls, is controlled by or is under common control with Licensee. The term "control" as used herein means the possession of the power to direct or cause direction of the management and the policies of an entity, whether through the ownership of a majority of the outstanding voting securities or by contract or otherwise.

1.2 Confidential Information. The term "Confidential Information" shall mean any and all proprietary or confidential information of Scripps or Licensee which may be exchanged between the parties at any time and from time to time during the term of this Agreement. Information shall not be considered confidential to the extent that it:

(a) Is publicly disclosed through no fault of any party hereto, either before or after it becomes known to the receiving party; or

(b) Was known to the receiving party prior to the date of this Agreement, which knowledge was acquired independently and not from another party hereto (or such party's employees); or

(c) Is subsequently disclosed to the receiving party in good faith by a third party who has a right to make such disclosure; or

(d) Has been published by a third party as a matter of right.

1.3 Field. The term "Field" shall mean [*]

1.4 Licensed Product. The term "Licensed Product" shall mean a product, the manufacture, sale or use of which would but for the license granted herein, infringe a Valid Claim in the country for which such product is sold. Without limiting the foregoing, Licensed Product shall also include a product the manufacture, sale or use of a particular product would but for the license granted herein infringe a Valid Claim in the United States and at least two (2) Major Countries, in such case irrespective of where such product is made, sold or used and irrespective of whether such product is covered by a Valid Claim in the country where sold.

1.5 Major Countries. The term "Major Countries" shall mean France, Germany, Italy and the United Kingdom.

1.6 Net Sales. The term "Net Sales" shall mean the total amount invoiced to third parties on sales of Licensed Products by Licensee, its Affiliates, or Sublicensees, for which royalties are due under Article 3 below, less the following reasonable and customary deductions to the extent applicable to such invoiced amounts: (i) all trade, cash and quantity credits, discounts, refunds or

*This confidential portion has been omitted and filed separately with the Commission

government rebates; (ii) amounts for claims, allowances or credits for returns, retroactive price reductions, or chargebacks; (iii) packaging, handling fees and prepaid freight, sales taxes, duties and other governmental charges (including value added tax); and (iv) provisions for uncollectible accounts determined in accordance with reasonable accounting practices, consistently applied to all products of the selling party; provided, however, that in the case of Patient-Specific Licensed Products, "Net Sales" shall equal [*] of the foregoing amounts (after the deductions described in (i) through (iv) above). For purposes of the foregoing, it is understood that Net Sales shall include only the amount invoiced for materials consisting of Licensed Products (less the foregoing deductions and adjustments) and shall not include charges related to services (other than cell separation and expansion) performed in connection with the sale of such Licensed Products; accordingly, Net Sales shall not include, without limitation, charges for apheresis, reinfusion, surgical procedures, hospital stays or the like. For the removal of doubt, Net Sales shall not include sales by Licensee to its Affiliates for resale, provided that if Licensee sells a Licensed Product to an Affiliate for resale, Net Sales shall include the amounts invoiced by such Affiliate to third parties on the resale of such Licensed Product. In the event that Licensee grants a sublicense hereunder, and receives payments based upon the Sublicensee's sales of Licensed Products, Licensee may upon approval by Scripps, which approval shall not be unreasonably withheld, substitute the definition of "Net Sales," used by the Sublicensee to calculate payments to Licensee in place of the foregoing definition of "Net Sales" for purposes of calculating royalties payable to Scripps on such Sublicensee's sales.

1.7 Patient-Specific Licensed Product. The term "Patient-Specific Licensed Product shall mean a Licensed Product that includes either (i) autologous cells from the patient; or (ii) nonautologous cells that otherwise are not intended for use in all patients (such as Licensed Products that are fetal cells expressing an HLA-type compatible with the particular patient but not optimally compatible with patients who have a different HLA type).

1.8 Scripps Patent Rights. The term "Scripps Patent Rights" shall mean all rights resulting from:

(a) all worldwide patent and patent applications claiming the Scripps Technology described in Exhibit A hereto (the "Existing Patents"); and

(b) all divisions, continuations, continuations-in-part, patents of addition, and substitutions of the Existing Patents, together with all registrations, reissues, reexaminations or extensions of any kind with respect to any of the foregoing patents to the extent the same claim Scripps Technology.

From time to time during the term of this Agreement the parties agree to record and update on Exhibit B all patents and patent applications within the Scripps Patent Rights

In the event that Scripps and Licensee are joint owners of an invention by reason of the fact that personnel of both Scripps and Licensee are joint inventors of such invention, it is understood that the Scripps Patent Rights include only Scripps' rights as a joint owner of the patent applications and patents that claim such joint invention.

*This confidential portion has been omitted and filed separately with the Commission

1.9 Scripps Technology. The term "Scripps Technology" shall mean so much of the technology as is proprietary to Scripps that was developed in performance of the Research Program and in the disclosure provided to Licensee pursuant to Section 3.2 or 3.3 of the Research Agreement, a copy of which is attached as Exhibit A hereto and incorporated herein by reference, together with materials, information and know-how related thereto from the Research Program as described Exhibit A whether or not the same is eligible for protection under the patent laws of the United States or elsewhere, and whether or not any such processes and technology, or information related thereto, would be enforceable as a trade secret or the copying of which would be enjoined or restrained by a court as constituting unfair competition.

1.10 Sublicensee. The term "Sublicensee" shall mean any non-Affiliate third party to whom Licensee has granted the right to manufacture and sell Licensed Products, with respect to Licensed Products made and sold by such third party.

1.11 Valid Claim. The term "Valid Claim" shall mean a claim of an issued and unexpired patent or a claim of a pending patent application within the Scripps Patent Rights which has not been held unpatentable, invalid or unenforceable by a court or other government agency of competent jurisdiction and has not been admitted to be invalid or unenforceable through reissue, reexamination, disclaimer or otherwise; provided, however, that if the holding of such court or agency is later reversed by a court or agency with overriding authority, the claim shall be reinstated as a Valid Claim with respect to Net Sales made after the date of such reversal. Notwithstanding the foregoing provisions of this Section 1. 11, if a claim of a pending patent application within the Scripps Patent Rights has not issued as a claim of an issued patent within the Scripps Patent Rights, within five (5) years after the filing date from which such claim takes priority, such pending claim shall not be a Valid Claim for purposes of this Agreement.

2. License Terms and Conditions.

2.1 Grant of License.

(a) Scripps hereby grants to Licensee an exclusive, worldwide license, including the right to sublicense, to: make, use, sell, import, export or otherwise distribute Licensed Products; practice any method, process or procedure, and otherwise exploit the Scripps Patent Rights; and to have any of the foregoing performed on its behalf by a third party, in each case solely within the Field, subject to the terms of this Agreement.

(b) Scripps hereby grants to Licensee a non-exclusive, worldwide license, including the right to sublicense to and under the Scripps Technology for the purpose of exercising its rights and licenses under the Scripps Patent Rights.

2.2 Royalties. In consideration for the exclusive license granted pursuant to Section 2.1 hereof, Licensee shall pay to Scripps a continuing royalty the following percentages of Net Sales of each Licensed Product by Licensee, its Affiliates and Sublicensees: (i) [*] of Net Sales in Patent Countries and (ii) [*] in Non-Patent Countries. For purposes of calculating royalties due hereunder, a "Patent Country" shall mean, with respect to a particular Licensed Product, a country in which at the time of the sale of such Licensed Product in such country, the manufacture, use or sale of such Licensed Product would infringe a Valid Claim in such country; and a "Non-Patent Country" shall mean, with respect to such Licensed Product, a country which a the time of sale of such Licensed Product in such country is not a Patent Country.

2.3 Milestone Payments. As additional consideration for the exclusive license granted pursuant to Section 2.1 hereof, Licensee agrees to pay to Scripps upon the first occurrence of each milestone specified below for the first Licensed Product to meet such milestone:

	MILESTONES	PAYMENT
1.	First initiation of Phase II Trials for the first Licensed Product.	[*]
2.	First initiation of Phase III Trials for the first Licensed Product.	[*]
3.	First receipt of government approval to market and distribute the first Licensed Product in the United States or the first Major Country.	[*]

For purposes of the foregoing milestones, "Phase II Trials" shall mean that portion of the clinical studies for the FDA submission and approval process which provides for the initial trials of a Licensed Product for the purposes of determining the efficacious therapeutic dose range and evaluating safety in the proposed therapeutic indication as more fully defined in 21 C.F.R. ss. 312.21(b), or a similar clinical study in a country other than the United States; and "Phase III Trials" shall mean that portion of the clinical studies for the FDA submission and approval process which provides for trials of a Licensed Product on sufficient numbers of patients to establish the safety and efficacy of such Licensed Product to support regulatory approval in the proposed application as more fully defined in 21 C.F.R. ss. 3122.21(c), or similar clinical study in a country other than the United States.

2.4 Combination Products.

2.4.1 Definition of Combination Product. As used herein, the term "Combination Product" shall mean a Licensed Product which cannot be manufactured, used or sold without infringing Scripps Patent Rights licensed hereunder in the country where sold which

*This confidential portion has been omitted and filed separately with the Commission

is sold with another product, component or service for which no royalty would be due hereunder if sold separately.

2.4.2 Royalty Payable on Combination Products. The royalty payable on Combination Products shall be the royalty rate set forth in Section 2.2 above based on a pro rata portion of Net Sales of Combination Products in accordance with the following formula:

$$X = \frac{A}{A + B}, \text{ where}$$

X = the pro rata portion of Net Sales attributable to Scripps Patent Rights or other Scripps Technology licensed herein (expressed as a percentage), and

A = the fair market value of the Licensed Product component, and

B = the fair market value of all other components (product, component or service) in the Combination Product.

The fair market values described above shall be determined by the parties hereto in good faith. Notwithstanding the foregoing, in the event that there is no separate fair market values of the Licensed Product and such other product(s), component(s) and/or services(s), then the Net Sales shall be as reasonably allocated by Licensee between such Licensed Product and such other product(s), component(s) and/or service(s), based upon their relative importance and proprietary position, subject to the consent of Scripps, which consent shall not be unreasonably withheld.

2. 5 Multiple Royalties. If Licensee, its Affiliate or Sublicensee is required to pay a non-Affiliate third party amounts with respect to a Licensed Product under agreements for patent rights or other technologies which Licensee, its Affiliate or Sublicensee, in its reasonable judgment, determines are necessary or desirable to license or acquire with respect to such Licensed Product, Licensee may deduct such amount owing to such non-Affiliate third parties (prior to any reductions) from the royalty owing to Scripps for the sale of such Licensed Product pursuant to Section 2.2 above. Notwithstanding the foregoing provisions of this Section 2.5, in no event shall the royalties due to Scripps pursuant to Section 2.2 above be so reduced to less than fifty percent (50%) of the amount that would otherwise be due Scripps thereunder.

2.6 Quarterly Payments.

2.6.1 Sales by Licensee. With regard to Net Sales made by Licensee or its Affiliates, royalties shall be payable by Licensee quarterly, within sixty (60) days after the end of each calendar quarter, based upon the Net Sales of Licensed Products during such preceding calendar quarter, commencing with the calendar quarter in which the first commercial sale of any Licensed Product is made.

2.6.2 Sales by Sublicensees. With regard to Net Sales made by Sublicensees of Licensee or its Affiliates, royalties shall be payable by Licensee quarterly, within ninety (90) days after the end of each calendar quarter, based upon the Net Sales of Licensed Products by

such Sublicensee during such preceding calendar quarter, commencing with the calendar quarter in which the first commercial sale of any Licensed Product is made by such Sublicensee.

2. 7 Term of License. Unless terminated sooner in accordance with the provisions of this Agreement, the term of this license shall expire when the last of the royalty obligations set forth has expired (i.e., until expiration, revocation or invalidation of the last patent or the abandonment of the last application within the Scripps Patent Rights, whichever is later). Notwithstanding the foregoing, if applicable government regulations require a shorter term and/or a shorter term of exclusivity than provided for herein, then the term of this License Agreement shall be so shortened or this License Agreement shall be amended to provide for a non-exclusive license, and, in such event, the parties shall negotiate in good faith to reduce appropriately the royalties payable as set forth under the section heading "Royalties" hereof. Notwithstanding anything herein to the contrary, Licensee's license under Section 2. l(b) with respect to the Scripps Technology shall survive the expiration, (but not an earlier termination, except as provided in Section 8.6 below) of this Agreement.

2.8 Sublicense. Licensee shall have the sole and exclusive right to grant sublicenses to any party with respect to the rights conferred upon Licensee under this Agreement, provided, however, that any such sublicense shall be subject in all respects to the restrictions, exceptions, royalty obligations, reports, termination provisions, and other provisions contained in this Agreement. Wtthout limiting the foregoing, Licensee agrees to provide Scripps a copy of each such sublicense agreement within thirty (30) days of the execution thereof. Licensee shall pay Scripps, or cause its Affiliate or Sublicensee to pay Scripps, the same royalties on all Net Sales of such Affiliate or Sublicensee the same as if said Net Sales had been made by Licensee. Each Affiliate and Sublicensee shall report its Net Sales to Scripps through Licensee, which Net Sales shall be aggregated with any Net Sales of Licensee for purposes of determining the Net Sales upon which royalties are to be paid to Scripps.

2.9 Reports. Licensee shall furnish to Scripps at the same time as each royalty payment is made by Licensee, a detailed written report of Net Sales of the Licensed Products and the royalty due and payable thereon, including a description of any offsets or credits deducted therefrom, on a product-by-product and country-by-country basis, for the calendar quarter upon which the royalty payment is based.

2.10 Records. Licensee shall keep, and cause its Affiliates and Sublicensees to keep, full, complete and proper records and accounts of all sales of Licensed Products in sufficient detail to enable the royalties payable on Net Sales of each Licensed Product to be determined. Scripps shall have the right to appoint an independent certified public accounting firm approved by Licensee, which approval shall not be unreasonably withheld, to audit the records of Licensee, its Affiliates and Sublicensees as necessary to verify the royalties payable pursuant to this Agreement. Licensee, its Affilliates and Sublicensees shall pay to Scripps an amount equal to any additional royalties to which Scripps is entitled as disclosed by the audit, plus interest thereon at the rate of one and one-half percent (1.5%) per month. Such audit shall be at Scripps' expense; provided, however, that if the audit discloses that Scripps was underpaid royalties with respect to the period covered by the audit by at least five percent (5%), then Licensee, its Affiliates or Sublicensee, as the case may be, shall reimburse Scripps for all reasonable out-of-pocket audit costs. Scripps may exercise its right of audit as to each of Licensee, its Affiliates or Sublicensees no more frequently than once in any calendar year. The accounting firm shall

disclose to Scripps only information relating to the accuracy of the royalty payments. Licensee, its Affiliates and Sublicensees shall preserve and maintain all such records required for audit for a period of three (3) years after the calendar quarter to which the record applies.

2.11 Foreign Sales. The remittance of royalties payable on sales outside the United States shall be payable to Scripps in United States Dollar equivalents at the official rate of exchange of the currency of the country from which the royalties are payable, as quoted in the Wall Street Journal for the last business day of the calendar quarter in which the royalties are payable. If the transfer of or the conversion into the United States Dollar equivalents of any such remittance in any such instance is not lawful or possible, the payment of such part of the royalties as is necessary shall be made by the deposit thereof, in the currency of the county where the sale was made on which the royalty was based to the credit and account of Scripps or its nominee in any commercial bank or trust company of Scripps' choice located in that country, prompt written notice of which shall be given by Licensee to Scripps and except as set forth in Section 2.10 above, Licensee shall have no further obligation with respect to such royalties.

2.12 Foreign Taxes. Any tax required to be withheld by Licensee under the laws of any foreign country for the accounts of Scripps shall be promptly paid by Licensee for and on behalf of Scripps to the appropriate governmental authority, and Licensee shall use its best efforts to furnish Scripps with proof of payment of such tax together with official or other appropriate evidence issued by the applicable government authority. Any such tax actually paid on Scripps' behalf shall be deducted from royalty payments due Scripps hereunder.

2.13 Single Payments. The parties hereto acknowledge that the parties may enter into multiple license agreements with respect to technologies arising out of the Research Agreement, including this Agreement (collectively, the "Scripps License Agreements") pursuant to which Licensee will owe royalties and milestone payments. Notwithstanding anything herein to the contrary, with respect to any unit of Licensed Product only a single royalty shall be due to Scripps at the highest applicable rate for such unit regardless if such Licensed Product is covered by more than one Valid Claim or would be a Licensed Product under more than one Scripps License Agreement. (For example, if a product sold by Licensee is a Licensed Product under this Agreement for which Licensee owes Scripps a royalty of [*] of Net Sales and Licensee would otherwise owe Scripps a royalty of [*] of Net Sales of such product under another Scripps License Agreement, Licensee's royalty obligation to Scripps shall be fulfilled by paying Scripps [*] of Net Sales with respect to sales of such License Product.) Likewise, with respect to the milestone payments under Section 2.3 above, once such milestone payment has been paid for a Licensed Product under any Scripps License Agreement then Licensee's obligation to pay such milestone shall be deemed to be fulfilled with respect to all Scripps License Agreement, regardless of whether the product for which such a milestone payment was paid was a "Licensed Product" for purposes of a particular Scripps License Agreement or not. (For example, if a Licensee initiates Phase II Trials for a product, which product falls within the definition of "Licensed Product" under this Agreement and pays Scripps the corresponding [*] payment, Licensee shall have no further obligation to pay any amounts to Scripps with respect to any other product under any Scripps License Agreement upon the initiation of Phase II Trials for a Licensed Product whether or not the product for which Licensee initially paid such milestone payment is a Licensed Product for purposes of any other Scripps License Agreement.)

3. Patent Matters.

*This confidential portion has been omitted and filed separately with the Commission

3.1 Patent Prosecution and Maintenance. From and after the date of this Agreement, the provisions of this Section 3 shall control the prosecution and maintenance of any patent or patent application included within Scripps Patent Rights. Subject to the requirements, limitations and conditions set forth in this Agreement, Scripps shall direct and control (i) the preparation, filing and prosecution of the United States and foreign patent applications within Scripps Patent Rights (including any interferences and foreign oppositions) and (ii) maintain the patents issuing therefrom. Scripps shall select the patent attorney, subject to Licensee's written approval, which approval shall not be unreasonably withheld. Both parties hereto agree that Scripps may, at its sole discretion, utilize Scripps' Office of Patent Counsel in lieu of outside counsel for patent prosecution and maintenance described herein, and the fees and expenses incurred by Scripps with respect to work done by such Office of Patent Counsel shall be paid as set forth below. Licensee shall have full rights of consultation with the patent attorney so selected on all matters relating to Scripps Patent Rights. Scripps shall use its best efforts to implement all reasonable requests made by Licensee with regard to the preparation, filing, prosecution and/or maintenance of the patent applications and/or patents within Scripps Patent Rights.

3.2 Information to Licensee. Scripps agrees to use reasonable efforts to (i) keep Licensee informed as to the filing, prosecution and maintenance of patents and patent applications within the Scripps Patent Rights, (ii) furnish to Licensee copies of documents relevant to any such filing, prosecution and maintenance and (iii) allow Licensee reasonable opportunity to comment on documents filed with any patent office which would affect the Scripps Patent Rights or Licensee' rights hereunder.

3.3 Patent Costs. Licensee acknowledges and agrees that Scripps does not have independent funding to cover patent costs, and that the license granted hereunder is in part in consideration for Licensee's assumption of patent costs and expenses as described herein. Licensee shall pay for all expenses incurred by Scripps pursuant to Section 3.1 hereof. In addition, Licensee connection with Scripps Patent Rights licensed hereunder. Licensee agrees to pay all such past and future patent expenses directly or to reimburse Scripps for the payment of such expenses within sixty (60) days after Licensee receives an itemized invoice therefor. In the event Licensee elects to discontinue payment for the filing, prosecution and/or maintenance of any patent application and/or patent within Scripps Patent Rights, any such patent application or patent shall be excluded from the definition of Scripps Patent Rights and from the scope of the license granted under this Agreement, and all rights relating thereto shall revert to Scripps and may be freely licensed by Scripps. Licensee shall give Scripps at least sixty (60) days' prior written notice of such election. No such notice shall have any effect on Licensee's obligations to pay expenses incurred up to the effective date of such election.

3.4 Ownership. Subject to any joint or mutual ownership of Licensee by virtue of joint inventorship of inventions covered therein, the patent applications filed and patent applications obtained by Scripps pursuant to Section 3.1 hereof shall be owned solely by Scripps, assigned to Scripps and deemed a part of Scripps Patent Rights.

3.5 Scripps Right to Pursue Patent. If at any time during the term of this Agreement, Licensee's rights with respect to Scripps Patent Rights are terminated, Scripps shall have the right to take whatever action Scripps deems appropriate to obtain or maintain the corresponding patent protection at its own expense. If Scripps pursues patents under this Section 3.5, Licensee

agrees to cooperate fully, including by providing, at no charge to Scripps, all appropriate technical data and executing all necessary legal documents.

3.6 Prosecution by Licensee. If Scripps elects not to file, prosecute or maintain any patent application or patent within the Scripps Patent Rights or pay any fee related thereto, in any country Scripps shall promptly notify Licensee of such election, but in no case later than sixty (60) prior to any required action relating to the filing, prosecution or maintenance of such patent application or patent. In such event, if Licensee elects to take over the filing, prosecution and/or maintenance of one or more patents or patent applications within the Scripps Patent Rights, Licensee shall have the right, at its option, to control the filing, prosecution and/or maintenance of any such patent applications or patents within the Scripps Patent Rights at its own expense. In which case Licensee shall keep Scripps reasonably informed on matters regarding such filing, prosecution and maintenance.

3 .7 Infringement.

3 .7.1 Enforcement. If either party determines that a third party is making, using or selling a product that may infringe the Scripps Patent Rights, that party shall notify the other party in writing.

(a) Licensee shall have the first right (itself or through others), at its sole option, to bring suit to enforce the Scripps Patent Rights, and/or to defend any declaratory judgment action with respect thereto, in each case with respect to the manufacture, sale or use of a product within the Field; provided, however, that Licensee shall keep Scripps reasonably informed as to the defense and/or settlement of such action. Scripps shall have the right to participate in any such action with counsel of its own choice at its own expense.

(b) In the event Licensee elects not to initiate an action to enforce the Scripps Patent Rights against a commercially significant infringement by a third party within the Field, within one (1) year of a request by Scripps to do so, (or within such shorter period which may be required to preserve the legal rights of Scripps under the laws of the relevant government), Scripps may initiate such action at its expense with Licensee' prior written consent, which consent shall not be unreasonably withheld. Licensee shall have the right to participate in any such action with counsel of its own choice at its own expense.

(c) All recoveries received by a party from an action to enforce the Scripps Patent Rights shall be first applied to reimburse the controlling party's and then the non-controlling party's unreimbursed expenses, including without limitation, reasonable attorney's fees and court costs. Any remainder shall, to the extent the same pertains to an infringement of the Scripps Patent Rights, be divided [*] to Licensee and [*] to Scripps.

3.7.2 Defense. If Licensee, its Affiliate, Sublicensee, distributor or other customer is sued by a third party charging infringement of patent rights that dominate a claim of the Scripps Patent Rights or that cover other Related Material with respect to the manufacture, use, distribution or sale of a Licensed Product, Licensee will promptly notify Scripps. As between the parties to this Agreement, Licensee will be entitled to control the defense in any such action(s) and withhold [*] of the royalties related to such Licensed Product

*This confidential portion has been omitted and filed separately with the Commission

otherwise payable to Scripps and use the withheld royalties to reimburse the legal defense costs, attorneys' fees and liability incurred in such infringement suit(s). Notwithstanding the foregoing, Licensee agrees to withhold only that portion of such royalties as may reasonably be necessary to reimburse amounts in accordance with this Section 3 .7.2. If Licensee is required to pay a royalty to a third party to make and/or sell a Licensed Product as a result of a final judgment or settlement, such amounts may be deducted from the running royalties payable to Scripps hereunder in relation to such Licensed Product; provided that such royalties shall not be so reduced by more than [*]. Subject to the provisions of Section 4.3 below, Licensee agrees to indemnify and hold Scripps harmless from any costs, expenses or liability arising out of all such infringements or charges of infringement.

3.7.3 Cooperation. In any suit, action or other proceeding in connection with enforcement and/or defense of the Scripps Patent Rights, each party hereto agrees to cooperate fully, including without limitation by joining as a party plaintiff and executing such documents as the other party may reasonably request. Without limiting the foregoing, upon the request of and, at the expense of a party controlling any suit, action or other proceeding pursuant to this Article 3, the other party shall make available at reasonable times and under appropriate conditions all relevant personnel, records, papers, information, samples, specimens and other similar materials in such other party's possession.

3.7.4 No Implied Obligations. Except as expressly provided in this Section 3.7, neither party has any obligation to bring or prosecute actions or suits against any third party for patent infringement.

4. Obligations Related to Commercialization.

4.1 Commercial Development Obligation. In order to maintain the license granted hereunder in force, Licensee shall use reasonable efforts and due diligence to develop Scripps Technology and Scripps Patent Rights which are licensed hereunder into commercially viable Licensed Products, as promptly as is reasonably and commercially feasible, and thereafter to produce and sell reasonable quantities of Licensed Products. Licensee shall keep Scripps generally informed as to Licensee's progress in such development, production and sale, including its efforts, if any, to sublicense Scripps Technology and Scripps Patent Rights, and Licensee shall deliver to Scripps an annual written report and such other reports as Scripps may reasonably request. The parties hereto acknowledge and agree that achievement of mutually agreeable milestones shall be evidence of compliance by Licensee with its commercial development obligations hereunder. Notwithstanding the foregoing, if Licensee believes that it cannot, within the exercise of prudent and reasonable business judgment, perform any mutually agreed upon milestones within the time period required therefor, Licensee may request an extension of time for the performance date to a date that Licensee believes to be reasonable and prudent and Scripps shall agree to any requested extension which is not more than one (l) year in length from the originally required date and will not unreasonably withhold consent to requests for longer extensions. In the event Scripps has a reasonable basis to believe that Licensee is not using reasonable efforts and due diligence as required hereunder, upon notice by Scripps to Licensee which specifies the basis for such belief, Scripps and Licensee shall negotiate in good faith to attempt to mutually resolve the issue. In the event Scripps and Licensee cannot agree upon any matter related to Licensee's commercial development obligations, the parties agree to utilize arbitration pursuant to Section 10.2 hereof in order to resolve the matter. If the arbitrator

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determines that Licensee has not complied with its obligations hereunder, and such default is not cured within sixty (60) days after the arbitrator's decision, Scripps may terminate Licensee's rights under this Agreement.

4.2 Governmental Approvals and Marketing of Licensed Products. Licensee shall be responsible for obtaining all necessary governmental approvals for the development, production, distribution, sale and use of any Licensed Product, at Licensee's expense, including, without limitation, any safety studies. Licensee shall have sole responsibility for any warning labels, packaging and instructions as to the use of Licensed Products and for the quality control for any Licensed Product.

4.3 Indemnity. Licensee hereby agrees to indemnify, defend and hold harmless Scripps and any parent, subsidiary or other affiliated entity and their trustees, officers, employees, scientists and agents from and against any liability or expense arising from any product liability claim asserted by any party as to any Licensed Product or any claims arising from the use of any Scripps Patent Rights or Scripps Technology pursuant to this Agreement. Such indemnity and defense obligation shall apply to any product liability or other claims, including without limitation, personal injury, death or property damage, made by employees, subcontractors, sublicensees, or agents of Licensee, as well as any member of the general public. Notwithstanding the foregoing, Licensee's obligation to provide indemnification under this Section 4 3 shall be subject to each party seeking indemnification hereunder (i) promptly notify Licensee in writing of any claim, suit or proceeding with respect to which the party intends to claim such indemnification, (ii) give Licensee sole control of the defense and/or settlement thereof, and (iii) provide Licensee, at Licensee's expense, with reasonable assistance and full information with respect to such claim, suit or proceeding. Licensee shall not settle any claim, suit or proceeding subject to this Section 4.3 or otherwise consent to an adverse judgment in such claim, suit or proceeding if the same materially diminishes the rights or interests of the indemnified party without the express written consent of such party. Licensee shall have no obligation for any claim, suit or proceeding if the party seeking indemnification makes any settlement regarding such claim, suit or proceeding without the prior written consent of Licensee, which consent shall not be unreasonably withheld. Licensee shall use its best efforts to have Scripps and any parent, subsidiary or other affiliated entity and their trustees, officers, employees, scientists and agents named as additional insured parties on any product liability insurance policies maintained by Licensee, its Affiliates and sublicensees applicable to Licensed Products.

4.4 Patent Marking. To the extent required by applicable law, Licensee shall mark all Licensed Products or their containers in accordance with the applicable patent marking laws.

4 5 No Use of Name. Except as required by law, the use of the name "The Scripps Research Institute", " Scripps", or any variation thereof in connection with the advertising or sale of Licensed Products is expressly prohibited.

4.6 U.S. Manufacture. To the extent required by applicable United States laws, if at all, Licensee agrees that Licensed Products will be manufactured in the United States, or its territories, subject to such waivers as may be required, or obtained, if at all, from the United States Department of Health and Human Services, or its designee.

4 7 Foreign Registration. Licensee agrees to register this Agreement with any foreign governmental agency which requires such registration, and Licensee shall pay all costs and legal fees in connection therewith. In addition, Licensee shall assure that all foreign laws affecting this Agreement or the sale of Licensed Products are fully satisfied.

5 . Limited Warranty. Scripps hereby represents and warrants that subject to the rights of the United States Government (i) it has sole right and power to enter into this Agreement and grant the rights and licenses granted herein; (ii) Scripps is and shall be the owner of the entire right, title, and interest in and to the Scripps Patent Rights; (iii) Scripps has not previously granted and will not grant any rights in the Scripps Patent Rights that are inconsistent with the rights and licenses granted to Licensee herein; and (iv) to the best of its knowledge, there are no claims of third parties that would call into question the rights of Scripps to grant to Licensee the rights contemplated hereunder. EXCEPT AS PROVIDED IN THIS SECTION 5, NEITHER PARTY MAKES ANY WARRANTIES OR CONDITIONS (EXPRESS, IMPLIED, STATUTORY OR OTHERWISE) WITH RESPECT TO THE SUBJECT MATTER HEREOF. SPECIFICALLY, SCRIPPS MAKES NO OTHER WARRANTIES CONCERNING SCRIPPS PATENT RIGHTS OR SCRIPPS TECHNOLOGY COVERED BY THIS AGREEMENT, INCLUDING WITHOUT LIMITATION, ANY EXPRESS OR IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE AS TO SCRIPPS PATENT RIGHTS, SCRIPPS TECHNOLOGY OR ANY LICENSED PRODUCT. SCRIPPS MAKES NO WARRANTY OR REPRESENTATION AS TO THE VALIDITY OR SCOPE OF SCRIPPS PATENT RIGHTS, OR THAT ANY LICENSED PRODUCT WILL BE FREE FROM AN INFRINGEMENT ON PATENTS OR OTHER INTELLECTUAL PROPERTY RIGHTS OF THIRD PARTIES, OR THAT NO THIRD PARTIES ARE IN ANY WAY INFRINGING SCRIPPS PATENT RIGHTS OR SCRIPPS TECHNOLOGY COVERED BY THIS AGREEMENT.

6. Interests in Intellectual Property Rights.

6.1 Preservation of Title. Scripps shall retain full ownership and title to Scripps Technology, and Scripps Patent Rights licensed hereunder and shall use its reasonable best efforts to preserve and maintain such full ownership and title, subject to Licensee fully performing all of its obligations under this Agreement.

6 2 Rovalty-free License to Improvements. Licensee hereby grants to Scripps a non-exclusive, royalty-free license to any improvement to Scripps Technology developed by Licensee during the term of this Agreement, to use for Scripps own non-cornmercial research purposes or grant to other nonprofit institutions for their non-commercial research purposes.

6.3 Governmental Interest. Licensee and Scripps acknowledge that Scripps has received, and expects to continue to receive, funding from the United States Government in support of Scripps' research activities. Licensee and Scripps acknowledge and agree that their respective rights and obligations pursuant to this Agreement shall be subject to Scripps' obligations and the rights of the United States Government, if any, which arise or result from Scripps' receipt of research support from the United States Government, including without limitation, the grant by Scripps to the United States a non-exclusive, irrevocable, royalty-free license to Scripps Technology and Scripps Patent Rights licensed hereunder for governmental purposes.

6.4 Reservation of Rights. Scripps reserves the right to use for any non-commercial research purposes and the right to allow other nonprofit institutions to use for any non-commercial research purposes any Scripps Technology and Scripps Patent Rights licensed hereunder, without Scripps or such other institutions being obligated to pay Licensee any royalties or other compensation.

7. Confidentiality and Publication.

7.1 Treatment of Confidential Information. The parties agree that during the term of this Agreement and for ten (10) years thereafter, a party receiving Confidential Information of the other party will (i) maintain in confidence such Confidential Information to the same extent such party maintains its own proprietary industrial information, (ii) not disclose such Confidential Information to any third party without prior written consent of the other party and (iii) not use such Confidential Information for any purpose except those permitted by this Agreement.

7.2 Permitted Usage. Notwithstanding the provisions of Section 7.1 above, the receiving party may use or disclose Confidential Information of the disclosing party to the extent necessary to exercise its rights hereunder (including commercialization and/or sublicensing of Scripps Patent Rights and Scripps Technology) or fulfill its obligations and/or duties hereunder and in filing for, prosecuting or maintaining any proprietary rights, prosecuting or defending litigation, complying with applicable governmental regulations and/or submitting information to tax or other governmental authorities; provided that if the receiving party is required by law to make any public disclosures of Confidential Information of the disclosing party, to the extent it may legally do so, it will give reasonable advance notice to the disclosing party of such disclosure and will use its reasonable efforts to secure confidential treatment of Confidential Information prior to its disclosure (whether through protective crders or otherwise).

7.3 Publications. Licensee agrees that Scripps shall have a right to publish in accordance with its general policies and subject to Section 6.2 of the Research Agreement.

7.4 Publicity. Except as otherwise provided herein or required by law, no party shall originate any publication, news release or other public announcement, written or oral, whether in the public press, stockholders' reports, or otherwise, relating to this Agreement or to any sublicense hereunder, or to the performance hereunder or any such agreements, without the prior written approval of the other party, which approval shall not be unreasonably withheld. Scientific publications published in accordance with Section 7.3 of this Agreement shall not be construed as publicity governed by this Section 7.4.

8. Term and Termination.

8.1 Term. Unless terminated sooner in accordance with the terms set forth herein, this Agreement, and the license granted hereunder, shall terminate as provided in Section 2.7 hereof.

8.2 Termination Upon Default. Any one or more of the following events shall constitute an event of default hereunder: (i) the failure of a party to pay any amounts when due

hereunder and the expiration of thirty (30) days after receipt of a written notice requesting the payment of such amount; (ii) the failure of a party to perform any material obligation required of its to be performed hereunder, and the failure to cure within sixty (60) days after receipt of notice from the other party specifying in reasonable detail the nature of such default. Upon the occurrence of any event of default, the non-defaulting party may deliver to the defaulting party written notice of intent to terminate, such termination to be effective upon the date set forth in such notice.

Such termination rights shall be in addition to and not in substitution for any other remedies that may be available to the non-defaulting party. Termination pursuant to this Section 8.2 shall not relieve the defaulting party from liability and damages to the other party for breach of this Agreement. Waiver by either party of a single default or a succession of defaults shall not deprive such party of any right to terminate this Agreement arising by reason of any subsequent default.

Notwithstanding the foregoing provisions of this Section 8.2, if the party alleged to be in default of this Agreement disputes in good faith such default within the applicable cure period, the other party's right to terminate shall be stayed until it has been determined in accordance with Section 10 2 below of this Agreement that the party alleged to be in default was actually in default and such defaulting party fails to comply with its obligations hereunder within the applicable cure period.

8 3 Termination Upon Bankruptcy or Insolvency. This Agreement may be terminated by Scripps giving written notice of termination to Licensee upon the filing of bankruptcy or bankruptcy of Licensee or the appointment of a receiver of any of Licensee's assets, or the making by Licensee of any assignment for the benefit of creditors, or the institution of any proceedings against Licensee under any bankruptcy law which proceeding is not dismissed with prejudice within ninety (90) days from its initiation. Termination shall be effective upon the date specified in such notice.

8.4 Termination by Licensee. Any provision herein notwithstanding, Licensee may terminate this Agreement, in its entirety or as to any particular patent or patent application within the Scripps Patent Rights, or as to any particular Licensed Product, at any time by giving Scripps at least ninety (90) days prior written notice. From and after the effective date of a termination under this Section 8 4 with respect to a particular patent or application, such patent(s) and patent application(s) in the particular country shall cease to be within the Scripps Patent Rights for all purposes of this Agreement, and all rights and obligations of Licensee with respect to such patent(s) and patent application(s) shall terminate. From and after the effective date of a termination under this Section 8.3 with respect to a particular Licensed Product, the license granted under Section 2.1 above shall terminate with respect to such Licensed Product, and the same shall cease to be a Licensed Product for all purposes of this Agreement. Upon a termination of this Agreement in its entirety under this Section 8.4, all rights and obligations of the parties shall terminate, except as provided in Section 8.5 below.

8.5 Rights Upon Expiration. Neither party shall have any further rights or obligations upon the expiration of this Agreement upon its regularly scheduled expiration date with respect to this Agreement, other than the obligation of Licensee to make any and all reports and payments for the final quarter period. Provided, however, that upon such expiration, each

party shall be required to continue to abide by its non-use and non-disclosure obligations as described in Section 7.1, and Licensee shall continue to maintain records under Section 2.10 and abide by its obligation to indemnify Scripps as described in Section 4.3 and by its obligations under Section 6.2 hereof.

8.6 Rights Upon Termination.

8.6.1 Accrued Obligations. Termination of this Agreement for any reason shall not release either party hereto from any liability which at the time of such termination has already accrued to the other party.

8.6.2 Inventory. In the event this Agreement is terminated for any reason, Licensee shall provide Scripps with a written inventory of all Licensed Products that Licensee and its Affiliates have in process of manufacture, in use or in stock and Licensee and its Affiliates shall have the right to sell or otherwise dispose of such Licensed Products for a period not to exceed six (6) months from the effective date of such termination, all subject to the payment to Scripps royalties and provision of reports pursuant to this Agreement.

8.6.3 Sublicenses. Upon termination of this Agreement by Scripps for any reason, any sublicense granted by Licensee hereunder shall survive, provided that upon request by Scripps, such Sublicensee promptly agrees in writing to be bound by the applicable terms of this Agreement.

8.6.4 Survival. Sections 2.10,4.3,6.2,7.1 and 10 shall survive any termination of this Agreement. Except as otherwise provided in this Section 8, all rights and obligations of the parties under this Agreement shall terminate upon termination of this Agreement.

9. Assignment: Successors.

9.1 Assignment. Neither this Agreement nor any rights granted hereunder may be assigned or transferred by Licensee except (i) to an Affiliate of Licensee or (ii) to a successor in interest to all or substantially all of the business assets of Licensee, whether by way of a merger, consolidation, sale of all or substantially all of Licensee's assets, change of control or similar transaction, without the prior written consent of Scripps.

9.2 Binding Upon Successors and Assigns. Subject to the limitations on assignment herein, this Agreement shall be binding upon and inure to the benefit of any successors in interest and assigns of Scripps and Licensee. Any such successor or assignee of Licensee's interest shall expressly assume in writing the performance of all the terms and conditions of this Agreement to be performed by Licensee.

10. General Provisions.

10.1 Independent Contractors. The relationship between Scripps and Licensee is that of independent contractors. Scripps and Licensee are not joint venturers, partners, principal and agent, master and servant, employer or employee, and have no other relationship other than independent contracting parties. Scripps and Licensee shall have no power to bind or obligate each other in any manner, other than as is expressly set forth in this Agreement.

10 2 Arbitration. Any controversy or claim arising out of or relating to this Agreement, or the breach thereof, shall be settled by binding arbitration in accordance with the Commercial Arbitration Rules of the American Arbitration Association ("AAA"), and the procedures set forth below. In the event of any inconsistency between the Rules of AAA and the procedures set forth below, the procedures set forth below shall control. Judgment upon the award rendered by the arbitrators may be enforced in any court having jurisdiction thereof.

10.2.1 Location. The location of the arbitration shall be in the County of San Diego in the State of California.

10.2.2 Selection of Arbitrators. The arbitration shall be conducted by a panel of three neutral arbitrators who are independent and disinterested with respect to the parties, this Agreement, and the outcome of the arbitration. Each party shall appoint one neutral arbitrator, and these two arbitrators so selected by the parties shall then select the third arbitrator. If one party has given written notice to the other party as to the identity of the arbitrator appointed by the party, and the party thereafter makes a written demand on the other party to appoint its designated arbitrator within the next ten days, and the other party fails to appoint its designated arbitrator within ten days after receiving said written demand, then the arbitrator who has already been designated shall appoint the other two arbitrators.

10.2.3 Discovery. Unless the parties mutually agree in writing to some additional and specific pre-hearing discovery, the only pre-hearing discovery shall be (a) reasonably limited production of relevant and non-privileged documents, and (b) the identification of witnesses to be called at the hearing, which identification shall give the witness's name, general qualifications and position, and a brief statement as to the general scope of the testimony to be given by the witness. The arbitrators shall decide any disputes and shall control the process concerning these pre-hearing discovery matters. Pursuant to the Rules of AAA, the parties may subpoena witnesses and documents for presentation at the hearing.

10.2.4 Case Management. Prompt resolution of any dispute is important to both parties; and the parties agree that the arbitration of any dispute shall be conducted expeditiously. The arbitrators are instructed and directed to assume case management initiative and control over the arbitration process (including scheduling of events, pre-hearing discovery and activities, and the conduct of the hearing), in order to complete the arbitration as expeditiously as is reasonably practical for obtaining a just resolution of the dispute.

10 2 5 Remedies. The arbitrators may grant any legal or equitable remedy or relief that the arbitrators deem just and equitable, to the same extent that remedies or relief could be granted by a state or federal court, provided however, that no punitive damages may be awarded. No court action may be maintained seeking punitive damages. The decision of any two of the three arbitrators appointed shall be binding upon the parties.

10.2.6 Expenses. The expenses of the arbitration, including the arbitrators' fees, expert witness fees, and attorney's fees, may be awarded to the prevailing party, in the discretion of the arbitrators, or may be apportioned between the parties in any manner deemed appropriate by the arbitrators. Unless and until the arbitrators decide that one party is to pay for all (or a share) of

such expenses, both parties shall share equally in the payment of the arbitrators' fees as and when billed by the arbitrators.

10.2.7 Confidentiality. Except as set forth below, the parties shall keep confidential the fact of the arbitration, the dispute being arbitrated, and the decision of the arbitrators. Notwithstanding the foregoing, the parties may disclose information about the arbitration to persons who have a need to know, such as directors, trustees, management employees, witnesses, experts, investors, attorneys, lenders, insurers, and others who may be directly affected. Additionally, if a party has stock which is publicly traded, the party may make such disclosures as are required by applicable securities laws. Further, if a party is expressly asked by a third party about the dispute or the arbitration, the party may disclose and acknowledge in general and limited terms that there is a dispute with the other party which is being (or has been) arbitrated. Once the arbitration award has become final, if the arbitration award is not promptly satisfied, then these confidentiality provisions shall no longer be applicable.

10.3 Entire Agreement Modification. This Agreement sets forth the entire agreement and understanding between the parties as to the subject matter hereof. There shall be no amendments or modifications to this Agreement, except by a written document which is signed by both parties. It is understood that the Research Agreement is separate and independent from this Agreement and termination of either agreement shall not operate to terminate or otherwise effect the rights and obligations of the parties under the other agreement.

10.4 California Law. This Agreement shall be construed and enforced in accordance with the laws of the State of California.

10. 5 Limitation of Liability. NEITHER PARTY SHALL BE LIABLE TO THE OTHER PARTY OR ANY THIRD PARTY FOR ANY SPECIAL, CONSEQUENTIAL, EXEMPLARY OR INCIDENTAL DAMAGES (INCLUDING LOST OR ANTICIPATED REVENUES OR PROFITS RELATING TO THE SAME), ARISING FROM ANY CLAIM RELATING TO THIS AGREEMENT, WHETHER SUCH CLAIM IS BASED ON CONTRACT, TORT (INCLUDING NEGLIGENCE) OR OTHERWISE, EVEN IF AN AUTHORIZED REPRESENTATIVE OF SUCH PARTY IS ADVISED OF THE POSSIBILITY OR LIKELIHOOD OF SAME.

10.6 No Implied Obligations. Licensee's sole obligation to exploit the Scripps Patent Rights and Scripps Technology is as set forth in Section 4.1. Nothing in this Agreement shall be deemed to require Licensee to otherwise exploit the Scripps Patent Rights or Scripps Technology nor prevent Licensee from commercializing products similar to or competitive with a Licensed Product.

10.7 Headings. The headings for each article and section in this Agreement have been inserted for convenience of reference only and are not intended to limit or expand on the meaning of the language contained in the particular article or section.

10.8 Severability. Should any one or more of the provisions of this Agreement be held invalid or unenforceable by a court of competent jurisdiction, it shall be considered severed from this Agreement and shall not serve to invalidate the remaining provisions thereof. The parties shall make a good faith effort to replace any invalid or unenforceable provision with a

valid and enforceable one such that the objectives contemplated by them when entering this Agreement may be realized.

10.9 No Waiver. Any delay in enforcing a party's rights under this Agreement or any waiver as to a particular default or other matter shall not constitute a waiver of such party's rights to the future enforcement of its rights under this Agreement, excepting only as to an express written and signed waiver as to a particular matter for a particular period of time.

10.10 Name. Whenever there has been an assignment by Licensee as permitted by this Agreement, the term "Licensee" as used in this Agreement shall also include and refer to, if appropriate, such assignee.

10.11 Notices. Any notices required by this Agreement shall be in writing, shall specifically refer to this Agreement and shall be sent by registered or certified airmail, postage prepaid, or by telefax, telex or cable, charges prepaid, or by overnight courier, postage prepaid and shall be forwarded to the respective addresses set forth below unless subsequently changed by written notice to the other party:

For Scripps
The Scripps Research Institute
10550 North Torrey Pines Road, TPC-9
La Jolla, California 92037
Attn: Director, Technology Development
Fax No.: (619) 784-9910

For Licensee:
StemCells, Inc.
701 George Washington Highway
Lincoln, Rhode Island 02865
Attn: Research Director
Fax No.: (401) 333-0684

with a copy to:
CytoTherapeutics, Inc.
701 George Washington Highway
Lincoln, Rhode Island 02865
Attn: General Counsel
Fax No.: (401) 334-9152

Notice shall be deemed delivered upon the earlier of (i) when received, (ii) three (3) days after deposit into the mail, or (iii) the date notice is sent via telefax, telex or cable, (iv) the day immediately following delivery to overnight courier (except Sunday and holidays).

10.12 Compliance with U. S. Laws. Nothing contained in this Agreement shall require or permit Scripps or Licensee to do any act inconsistent with the requirements of any United States law, regulation or executive order as the same may be in effect from time to time.

IN WITNESS WHEREOF, the parties have executed this Agreement by their duly authorized representatives as of the date set forth above.

SCRIPPS:	LICENSEE:
THE SCRIPPS RESEARCH INSTITUTE	STEMCELLS, INC.
By:	By:
- ----------	----------
Title:	Title:
- ----------	----------

EXHIBIT A

DISCLOSURE OF TECHNOLOGY

[*]

*This confidential portion has been omitted and filed separately with the Commission

EXHIBIT B

SCRIPPS PATENT RIGHTS

[To be updated once patent applications are filed]

EXHIBIT 10.85

Scripps Research Institute
License Agreement
98-126

Exhibit 10.85

LICENSE AGREEMENT

This License Agreement is entered into and made effective as of this ____day of November, 1998, by and between THE SCRIPPS RESEARCH INSTITUTE, a California nonprofit public benefit corporation ("Scripps") located at 10550 North Torrey Pines Road, La Jolla, California 92037, and STEMCELLS, INC., a California corporation ("Licensee") with offices at 701 George Washington Highway, Lincoln, Rhode Island 02865, a wholly-owned subsidiary of CytoTherapeutics, Inc. ("CTI"), with respect to the facts set forth below.

RECITALS

A. Scripps and Licensee have entered into a Research Funding and Option Agreement effective as of November 14, 1997 (the "Research Agreement"), pursuant to which Licensee agreed to fund certain research conducted in Dr. Nora Sarvetnick's laboratory at Scripps (the "Research Program").

B. Scripps is engaged in fundamental scientific biomedical and biochemical research, including research relating to pancreatic stem and progenitor cells, as more particularly described herein.

C. Licensee is engaged in research and development of stem and progenitor cells for the diagnosis, treatment and prophylaxis of diseases and other conditions in humans and animals.

D. Scripps has disclosed to Licensee certain technology described in that certain invention disclosure, a copy of which is attached hereto as Exhibit A and incorporated herein by reference (the "Invention(s)")

E. Scripps has the exclusive right to grant a license to the technology described in Exhibit A, subject to certain rights of the U.S. Government to use such technology for its own purposes, resulting from the receipt by Scripps of certain funding from the U. S. Government.

F. Scripps desires to grant to Licensee, and Licensee wishes to acquire, an exclusive worldwide right and license to the technology described in the Exhibit A and to certain patent rights and know-how of Scripps with respect thereto, subject to the terms and conditions set forth herein, with a view to developing and marketing products within the Field (as defined below).

NOW, THEREFORE, in consideration of the mutual covenants and conditions set forth herein, Scripps and Licensee hereby agree as follows:

1. Definitions. Capitalized terms shall have the meaning set forth below.

1.1 Affiliate. The term "Affiliate" shall mean any entity which directly or indirectly controls, is controlled by or is under common control with Licensee. The term "control" as used herein means the possession of the power to direct or cause direction of the management and the policies of an entity, whether through the ownership of a majority of the outstanding voting securities or by contract or otherwise.

1.2 Confidential Information. The term "Confidential Information" shall mean any and all proprietary or confidential information of Scripps or Licensee which may be exchanged between the parties at any time and from time to time during the term of this Agreement. Information shall not be considered confidential to the extent that it:

(a) Is publicly disclosed through no fault of any party hereto, either before or after it becomes known to the receiving party; or

(b) Was known to the receiving party prior to the date of this Agreement, which knowledge was acquired independently and not from another party hereto (or such party's employees); or

(c) Is subsequently disclosed to the receiving party in good faith by a third party who has a right to make such disclosure; or

(d) Has been published by a third party as a matter of right.

1.3 Field. The term "Field" shall mean [*].

1.4 Licensed Product. The term "Licensed Product" shall mean a product, the manufacture, sale or use of which would but for the license granted herein, infringe a Valid Claim in the country for which such product is sold. Without limiting the foregoing, Licensed Product shall also include a product the manufacture, sale or use of a particular product would but for the license granted herein infringe a Valid Claim in the United States and at least two (2) Major Countries, in such case irrespective of where such product is made, sold or used and irrespective of whether such product is covered by a Valid Claim in the country where sold.

1.5 Major Countries. The term "Major Countries" shall mean France, Germany, Italy and the United Kingdom.

* This confidential portion has been omitted and filed separately with the Commission

1.6 Net Sales. The term "Net Sales" shall mean the total amount invoiced to third parties on sales of Licensed Products by Licensee, its Affiliates, or Sublicensees, for which royalties are due under Article 3 below, less the following reasonable and customary deductions to the extent applicable to such invoiced amounts: (i) all trade, cash and quantity credits, discounts, refunds or government rebates; (ii) amounts for claims, allowances or credits for returns, retroactive price reductions, or chargebacks; (iii) packaging, handling fees and prepaid freight, sales taxes, duties and other governmental charges (including value added tax); and (iv) provisions for uncollectible accounts determined in accordance with reasonable accounting practices, consistently applied to all products of the selling party; provided, however, that in the case of Patient-Specific Licensed Products, "Net Sales" shall equal [*] of the foregoing amounts (after the deductions described in (i) through (iv) above). For purposes of the foregoing, it is understood that Net Sales shall include only the amount invoiced for materials consisting of Licensed Products (less the foregoing deductions and adjustments) and shall not include charges related to services (other than cell separation and expansion) performed in connection with the sale of such Licensed Products; accordingly, Net Sales shall not include, without limitation, charges for apheresis, reinfusion, surgical procedures, hospital stays or the like. For the removal of doubt, Net Sales shall not include sales by Licensee to its Affiliates for resale, provided that if Licensee sells a Licensed Product to an Affiliate for resale, Net Sales shall include the amounts invoiced by such Affiliate to third parties on the resale of such Licensed Product. In the event that Licensee grants a sublicense hereunder, and receives payments based upon the Sublicensee's sales of Licensed Products, Licensee may upon approval by Scripps, which approval shall not be unreasonably withheld, substitute the definition of "Net Sales," used by the Sublicensee to calculate payments to Licensee in place of the foregoing definition of "Net Sales" for purposes of calculating royalties payable to Scripps on such Sublicensee's sales.

1.7 Patient-Specific Licensed Product. The term "Patient-Specific Licensed Product shall mean a Licensed Product that includes either (i) autologous cells from the patient; or (ii) nonautologous cells that otherwise are not intended for use in all patients (such as Licensed Products that are fetal cells expressing an HLA-type compatible with the particular patient but not optimally compatible with patients who have a different HLA type).

1.8 Scripps Patent Rights. The term "Scripps Patent Rights" shall mean all rights resulting from:

(a) all worldwide patent and patent applications claiming the Scripps Technology described in Exhibit A hereto (the "Existing Patents"); and

(b) all divisions, continuations, continuations-in-part, patents of addition, and substitutions of the Existing Patents, together with all registrations, reissues, reexaminations or extensions of any kind with respect to any of the foregoing patents to the extent the same claim Scripps Technology.

* This confidential portion has been omitted and filed separately with the Commission

From time to time during the term of this Agreement the parties agree to record and update on Exhibit B all patents and patent applications within the Scripps Patent Rights

In the event that Scripps and Licensee are joint owners of an invention by reason of the fact that personnel of both Scripps and Licensee are joint inventors of such invention, it is understood that the Scripps Patent Rights include only Scripps' rights as a joint owner of the patent applications and patents that claim such joint invention.

1.9 Scripps Technology. The term "Scripps Technology" shall mean so much of the technology as is proprietary to Scripps that was developed in performance of the Research Program and in the disclosure provided to Licensee pursuant to Section 3.2 or 3.3 of the Research Agreement, a copy of which is attached as Exhibit A hereto and incorporated herein by reference, together with materials, information and know-how related thereto from the Research Program as described Exhibit A whether or not the same is eligible for protection under the patent laws of the United States or elsewhere, and whether or not any such processes and technology, or information related thereto, would be enforceable as a trade secret or the copying of which would be enjoined or restrained by a court as constituting unfair competition.

1.10 Sublicensee. The term "Sublicensee" shall mean any non-Affiliate third party to whom Licensee has granted the right to manufacture and sell Licensed Products, with respect to Licensed Products made and sold by such third party.

1.11 Valid Claim. The term "Valid Claim" shall mean a claim of an issued and unexpired patent or a claim of a pending patent application within the Scripps Patent Rights which has not been held unpatentable, invalid or unenforceable by a court or other government agency of competent jurisdiction and has not been admitted to be invalid or unenforceable through reissue, reexamination, disclaimer or otherwise; provided, however, that if the holding of such court or agency is later reversed by a court or agency with overriding authority, the claim shall be reinstated as a Valid Claim with respect to Net Sales made after the date of such reversal. Notwithstanding the foregoing provisions of this Section 1.11, if a claim of a pending patent application within the Scripps Patent Rights has not issued as a claim of an issued patent within the Scripps Patent Rights, within five (5) years after the filing date from which such claim takes priority, such pending claim shall not be a Valid Claim for purposes of this Agreement.

2. License Terms and Conditions.

2.1 Grant of License.

(a) Scripps hereby grants to Licensee an exclusive, worldwide license, including the right to sublicense, to: make, use, sell, import, export or otherwise distribute Licensed Products; practice any method, process or procedure, and otherwise exploit the Scripps Patent Rights; and to have any of the foregoing performed on its

behalf by a third party, in each case solely within the Field, subject to the terms of this Agreement.

(b) Scripps hereby grants to Licensee a non-exclusive, worldwide license, including the right to sublicense to and under the Scripps Technology for the purpose of exercising its rights and licenses under the Scripps Patent Rights.

2.2 Royalties. In consideration for the exclusive license granted pursuant to Section 2.1 hereof, Licensee shall pay to Scripps a continuing royalty the following percentages of Net Sales of each Licensed Product by Licensee, its Affiliates and Sublicensees: (i) [*] of Net Sales in Patent Countries and (ii) [*] in Non-Patent Countries. For purposes of calculating royalties due hereunder, a "Patent Country" shall mean, with respect to a particular Licensed Product, a country in which at the time of the sale of such Licensed Product in such country, the manufacture, use or sale of such Licensed Product would infringe a Valid Claim in such country; and a "Non-Patent Country" shall mean, with respect to such Licensed Product, a country which a the time of sale of such Licensed Product in such country is not a Patent Country.

2.3 Milestone Payments. As additional consideration for the exclusive license granted pursuant to Section 2.1 hereof, Licensee agrees to pay to Scripps upon the first occurrence of each milestone specified below for the first Licensed Product to meet such milestone:

	MILESTONES	PAYMENT
1.	First initiation of Phase II Trials for the first Licensed Product.	[*]
2.	First initiation of Phase III Trials for the first Licensed Product.	[*]
3.	First receipt of government approval to market and distribute the first Licensed Product in the United States or the first Major Country.	[*]

For purposes of the foregoing milestones, "Phase II Trials" shall mean that portion of the clinical studies for the FDA submission and approval process which provides for the initial trials of a Licensed Product for the purposes of determining the efficacious therapeutic dose range and evaluating safety in the proposed therapeutic indication as more fully defined in 21 C.F.R. ss. 312.21(b), or a similar clinical study in a country other than the United States; and "Phase III Trials" shall mean that portion of the clinical studies for the FDA submission and approval process which provides for trials of a Licensed Product on sufficient numbers of patients to establish the safety and efficacy of such Licensed Product to support regulatory approval in the proposed application as

* This confidential portion has been omitted and filed separately with the Commission

more fully defined in 21 C.F.R. ss. 3122.21(c), or similar clinical study in a country other than the United States.

2.4 Combination Products.

2.4.1 Definition of Combination Product. As used herein, the term "Combination Product" shall mean a Licensed Product which cannot be manufactured, used or sold without infringing Scripps Patent Rights licensed hereunder in the country where sold which is sold with another product, component or service for which no royalty would be due hereunder if sold separately.

2.4.2 Royalty Payable on Combination Products. The royalty payable on Combination Products shall be the royalty rate set forth in Section 2.2 above based on a pro rata portion of Net Sales of Combination Products in accordance with the following formula:

$$X = \frac{A}{A + B}$$, where

X = the pro rata portion of Net Sales attributable to Scripps Patent Rights or other Scripps Technology licensed herein (expressed as a percentage), and

A = the fair market value of the Licensed Product component, and

B = the fair market value of all other components (product, component or service) in the Combination Product.

The fair market values described above shall be determined by the parties hereto in good faith. Notwithstanding the foregoing, in the event that there is no separate fair market values of the Licensed Product and such other product(s), component(s) and/or services(s), then the Net Sales shall be as reasonably allocated by Licensee between such Licensed Product and such other product(s), component(s) and/or service(s), based upon their relative importance and proprietary position, subject to the consent of Scripps, which consent shall not be unreasonably withheld.

2. 5 Multiple Royalties. If Licensee, its Affiliate or Sublicensee is required to pay a non-Affiliate third party amounts with respect to a Licensed Product under agreements for patent rights or other technologies which Licensee, its Affiliate or Sublicensee, in its reasonable judgment, determines are necessary or desirable to license or acquire with respect to such Licensed Product, Licensee may deduct such amount owing to such non-Affiliate third parties (prior to any reductions) from the royalty owing to Scripps for the sale of such Licensed Product pursuant to Section 2.2 above. Notwithstanding the foregoing provisions of this Section 2.5, in no event shall the

royalties due to Scripps pursuant to Section 2.2 above be so reduced to less than fifty percent (50%) of the amount that would otherwise be due Scripps thereunder.

2.6 Quarterly Payments.

2.6.1 Sales by Licensee. With regard to Net Sales made by Licensee or its Affiliates, royalties shall be payable by Licensee quarterly, within sixty (60) days after the end of each calendar quarter, based upon the Net Sales of Licensed Products during such preceding calendar quarter, commencing with the calendar quarter in which the first commercial sale of any Licensed Product is made.

2.6.2 Sales by Sublicensees. With regard to Net Sales made by Sublicensees of Licensee or its Affiliates, royalties shall be payable by Licensee quarterly, within ninety (90) days after the end of each calendar quarter, based upon the Net Sales of Licensed Products by such Sublicensee during such preceding calendar quarter, commencing with the calendar quarter in which the first commercial sale of any Licensed Product is made by such Sublicensee.

2. 7 Term of License. Unless terminated sooner in accordance with the provisions of this Agreement, the term of this license shall expire when the last of the royalty obligations set forth has expired (i.e., until expiration, revocation or invalidation of the last patent or the abandonment of the last application within the Scripps Patent Rights, whichever is later). Notwithstanding the foregoing, if applicable government regulations require a shorter term and/or a shorter term of exclusivity than provided for herein, then the term of this License Agreement shall be so shortened or this License Agreement shall be amended to provide for a non-exclusive license, and, in such event, the parties shall negotiate in good faith to reduce appropriately the royalties payable as set forth under the section heading "Royalties" hereof. Notwithstanding anything herein to the contrary, Licensee's license under Section 2.l(b) with respect to the Scripps Technology shall survive the expiration, (but not an earlier termination, except as provided in Section 8.6 below) of this Agreement.

2.8 Sublicense. Licensee shall have the sole and exclusive right to grant sublicenses to any party with respect to the rights conferred upon Licensee under this Agreement, provided, however, that any such sublicense shall be subject in all respects to the restrictions, exceptions, royalty obligations, reports, termination provisions, and other provisions contained in this Agreement. Without limiting the foregoing, Licensee agrees to provide Scripps a copy of each such sublicense agreement within thirty (30) days of the execution thereof. Licensee shall pay Scripps, or cause its Affiliate or Sublicensee to pay Scripps, the same royalties on all Net Sales of such Affiliate or Sublicensee the same as if said Net Sales had been made by Licensee. Each Affiliate and Sublicensee shall report its Net Sales to Scripps through Licensee, which Net Sales shall be aggregated with any Net Sales of Licensee for purposes of determining the Net Sales upon which royalties are to be paid to Scripps.

2.9 Reports. Licensee shall furnish to Scripps at the same time as each royalty payment is made by Licensee, a detailed written report of Net Sales of the Licensed Products and the royalty due and payable thereon, including a description of any offsets or credits deducted therefrom, on a product-by-product and country-by-country basis, for the calendar quarter upon which the royalty payment is based.

2.10 Records. Licensee shall keep, and cause its Affiliates and Sublicensees to keep, full, complete and proper records and accounts of all sales of Licensed Products in sufficient detail to enable the royalties payable on Net Sales of each Licensed Product to be determined. Scripps shall have the right to appoint an independent certified public accounting firm approved by Licensee, which approval shall not be unreasonably withheld, to audit the records of Licensee, its Affiliates and Sublicensees as necessary to verify the royalties payable pursuant to this Agreement. Licensee, its Affiliates and Sublicensees shall pay to Scripps an amount equal to any additional royalties to which Scripps is entitled as disclosed by the audit, plus interest thereon at the rate of one and one-half percent (1.5%) per month. Such audit shall be at Scripps' expense; provided, however, that if the audit discloses that Scripps was underpaid royalties with respect to the period covered by the audit by at least five percent (5%), then Licensee, its Affiliates or Sublicensee, as the case may be, shall reimburse Scripps for all reasonable out-of-pocket audit costs. Scripps may exercise its right of audit as to each of Licensee, its Affiliates or Sublicensees no more frequently than once in any calendar year. The accounting firm shall disclose to Scripps only information relating to the accuracy of the royalty payments. Licensee, its Affiliates and Sublicensees shall preserve and maintain all such records required for audit for a period of three (3) years after the calendar quarter to which the record applies.

2.11 Foreign Sales. The remittance of royalties payable on sales outside the United States shall be payable to Scripps in United States Dollar equivalents at the official rate of exchange of the currency of the country from which the royalties are payable, as quoted in the Wall Street Journal for the last business day of the calendar quarter in which the royalties are payable. If the transfer of or the conversion into the United States Dollar equivalents of any such remittance in any such instance is not lawful or possible, the payment of such part of the royalties as is necessary shall be made by the deposit thereof, in the currency of the county where the sale was made on which the royalty was based to the credit and account of Scripps or its nominee in any commercial bank or trust company of Scripps' choice located in that country, prompt written notice of which shall be given by Licensee to Scripps and except as set forth in Section 2.10 above, Licensee shall have no further obligation with respect to such royalties.

2.12 Foreign Taxes. Any tax required to be withheld by Licensee under the laws of any foreign country for the accounts of Scripps shall be promptly paid by Licensee for and on behalf of Scripps to the appropriate governmental authority, and Licensee shall use its best efforts to furnish Scripps with proof of payment of such tax together with official or other appropriate evidence issued by the applicable government

authority. Any such tax actually paid on Scripps' behalf shall be deducted from royalty payments due Scripps hereunder.

2.13 Single Payments. The parties hereto acknowledge that the parties may enter into multiple license agreements with respect to technologies arising out of the Research Agreement, including this Agreement (collectively, the "Scripps License Agreements") pursuant to which Licensee will owe royalties and milestone payments. Notwithstanding anything herein to the contrary, with respect to any unit of Licensed Product only a single royalty shall be due to Scripps at the highest applicable rate for such unit regardless if such Licensed Product is covered by more than one Valid Claim or would be a Licensed Product under more than one Scripps License Agreement. (For example, if a product sold by Licensee is a Licensed Product under this Agreement for which Licensee owes Scripps a royalty of [*] of Net Sales and Licensee would otherwise owe Scripps a royalty of [*] of Net Sales of such product under another Scripps License Agreement, Licensee's royalty obligation to Scripps shall be fulfilled by paying Scripps [*] of Net Sales with respect to sales of such License Product.) Likewise, with respect to the milestone payments under Section 2.3 above, once such milestone payment has been paid for a Licensed Product under any Scripps License Agreement then Licensee's obligation to pay such milestone shall be deemed to be fulfilled with respect to all Scripps License Agreement, regardless of whether the product for which such a milestone payment was paid was a "Licensed Product" for purposes of a particular Scripps License Agreement or not. (For example, if a Licensee initiates Phase II Trials for a product, which product falls within the definition of "Licensed Product" under this Agreement and pays Scripps the corresponding $[*] payment, Licensee shall have no further obligation to pay any amounts to Scripps with respect to any other product under any Scripps License Agreement upon the initiation of Phase II Trials for a Licensed Product whether or not the product for which Licensee initially paid such milestone payment is a Licensed Product for purposes of any other Scripps License Agreement.)

3. Patent Matters.

3.1 Patent Prosecution and Maintenance. From and after the date of this Agreement, the provisions of this Section 3 shall control the prosecution and maintenance of any patent or patent application included within Scripps Patent Rights. Subject to the requirements, limitations and conditions set forth in this Agreement, Scripps shall direct and control (i) the preparation, filing and prosecution of the United States and foreign patent applications within Scripps Patent Rights (including any interferences and foreign oppositions) and (ii) maintain the patents issuing therefrom. Scripps shall select the patent attorney, subject to Licensee's written approval, which approval shall not be unreasonably withheld. Both parties hereto agree that Scripps may, at its sole discretion, utilize Scripps' Office of Patent Counsel in lieu of outside counsel for patent prosecution and maintenance described herein, and the fees and expenses incurred by Scripps with respect to work done by such Office of Patent Counsel shall be paid as set forth below. Licensee shall have full rights of consultation with the patent attorney so selected on all matters relating to Scripps Patent Rights.

* This confidential portion has been omitted and filed separately with the Commission

Scripps shall use its best efforts to implement all reasonable requests made by Licensee with regard to the preparation, filing, prosecution and/or maintenance of the patent applications and/or patents within Scripps Patent Rights.

3.2 Information to Licensee. Scripps agrees to use reasonable efforts to (i) keep Licensee informed as to the filing, prosecution and maintenance of patents and patent applications within the Scripps Patent Rights, (ii) furnish to Licensee copies of documents relevant to any such filing, prosecution and maintenance and (iii) allow Licensee reasonable opportunity to comment on documents filed with any patent office which would affect the Scripps Patent Rights or Licensee' rights hereunder.

3.3 Patent Costs. Licensee acknowledges and agrees that Scripps does not have independent funding to cover patent costs, and that the license granted hereunder is in part in consideration for Licensee's assumption of patent costs and expenses as described herein. Licensee shall pay for all expenses incurred by Scripps pursuant to Section 3.1 hereof. In addition, Licensee agrees to reimburse Scripps for all patent costs and expenses paid or incurred by Scripps to date in connection with Scripps Patent Rights licensed hereunder. Licensee agrees to pay all such past and future patent expenses directly or to reimburse Scripps for the payment of such expenses within sixty (60) days after Licensee receives an itemized invoice therefor. In the event Licensee elects to discontinue payment for the filing, prosecution and/or maintenance of any patent application and/or patent within Scripps Patent Rights, any such patent application or patent shall be excluded from the definition of Scripps Patent Rights and from the scope of the license granted under this Agreement, and all rights relating thereto shall revert to Scripps and may be freely licensed by Scripps. Licensee shall give Scripps at least sixty (60) days' prior written notice of such election. No such notice shall have any effect on Licensee's obligations to pay expenses incurred up to the effective date of such election.

3.4 Ownership. Subject to any joint or mutual ownership of Licensee by virtue of joint inventorship of inventions covered therein, the patent applications filed and patent applications obtained by Scripps pursuant to Section 3.1 hereof shall be owned solely by Scripps, assigned to Scripps and deemed a part of Scripps Patent Rights.

3.5 Scripps Right to Pursue Patent. If at any time during the term of this Agreement, Licensee's rights with respect to Scripps Patent Rights are terminated, Scripps shall have the right to take whatever action Scripps deems appropriate to obtain or maintain the corresponding patent protection at its own expense. If Scripps pursues patents under this Section 3.5, Licensee agrees to cooperate fully, including by providing, at no charge to Scripps, all appropriate technical data and executing all necessary legal documents.

3.6 Prosecution by Licensee. If Scripps elects not to file, prosecute or maintain any patent application or patent within the Scripps Patent Rights or pay any fee related thereto, in any country Scripps shall promptly notify Licensee of such

election, but in no case later than sixty (60) prior to any required action relating to the filing, prosecution or maintenance of such patent application or patent. In such event, if Licensee elects to take over the filing, prosecution and/or maintenance of one or more patents or patent applications within the Scripps Patent Rights, Licensee shall have the right, at its option, to control the filing, prosecution and/or maintenance of any such patent applications or patents within the Scripps Patent Rights at its own expense. In which case Licensee shall keep Scripps reasonably informed on matters regarding such filing, prosecution and maintenance.

3.7 Infringement.

3 .7.1 Enforcement. If either party determines that a third party is making, using or selling a product that may infringe the Scripps Patent Rights, that party shall notify the other party in writing.

(a) Licensee shall have the first right (itself or through others), at its sole option, to bring suit to enforce the Scripps Patent Rights, and/or to defend any declaratory judgment action with respect thereto, in each case with respect to the manufacture, sale or use of a product within the Field; provided, however, that Licensee shall keep Scripps reasonably informed as to the defense and/or settlement of such action. Scripps shall have the right to participate in any such action with counsel of its own choice at its own expense.

(b) In the event Licensee elects not to initiate an action to enforce the Scripps Patent Rights against a commercially significant infringement by a third party within the Field, within one (1) year of a request by Scripps to do so, (or within such shorter period which may be required to preserve the legal rights of Scripps under the laws of the relevant government), Scripps may initiate such action at its expense with Licensee's prior written consent, which consent shall not be unreasonably withheld. Licensee shall have the right to participate in any such action with counsel of its own choice at its own expense.

(c) All recoveries received by a party from an action to enforce the Scripps Patent Rights shall be first applied to reimburse the controlling party's and then the non-controlling party's unreimbursed expenses, including without limitation, reasonable attorney's fees and court costs. Any remainder shall, to the extent the same pertains to an infringement of the Scripps Patent Rights, be divided [*] to Licensee and [*] to Scripps.

3.7.2 Defense. If Licensee, its Affiliate, Sublicensee, distributor or other customer is sued by a third party charging infringement of patent rights that dominate a claim of the Scripps Patent Rights or that cover other Related Material with respect to the manufacture, use, distribution or sale of a Licensed Product, Licensee will promptly notify Scripps. As between the parties to this Agreement, Licensee will be entitled to control the defense in any such action(s) and withhold [*] of the royalties related to such Licensed Product otherwise payable to Scripps and use the withheld

* This confidential portion has been omitted and filed separately with the Commission

royalties to reimburse the legal defense costs, attorneys' fees and liability incurred in such infringement suit(s). Notwithstanding the foregoing, Licensee agrees to withhold only that portion of such royalties as may reasonably be necessary to reimburse amounts in accordance with this Section 3.7.2. If Licensee is required to pay a royalty to a third party to make and/or sell a Licensed Product as a result of a final judgment or settlement, such amounts may be deducted from the running royalties payable to Scripps hereunder in relation to such Licensed Product; provided that such royalties shall not be so reduced by more than [*]. Subject to the provisions of Section 4.3 below, Licensee agrees to indemnify and hold Scripps harmless from any costs, expenses or liability arising out of all such infringements or charges of infringement.

3.7.3 Cooperation. In any suit, action or other proceeding in connection with enforcement and/or defense of the Scripps Patent Rights, each party hereto agrees to cooperate fully, including without limitation by joining as a party plaintiff and executing such documents as the other party may reasonably request. Without limiting the foregoing, upon the request of and, at the expense of a party controlling any suit, action or other proceeding pursuant to this Article 3, the other party shall make available at reasonable times and under appropriate conditions all relevant personnel, records, papers, information, samples, specimens and other similar materials in such other party's possession.

3.7.4 No Implied Obligations. Except as expressly provided in this Section 3.7, neither party has any obligation to bring or prosecute actions or suits against any third party for patent infringement.

4. Obligations Related to Commercialization.

4.1 Commercial Development Obligation. In order to maintain the license granted hereunder in force, Licensee shall use reasonable efforts and due diligence to develop Scripps Technology and Scripps Patent Rights which are licensed hereunder into commercially viable Licensed Products, as promptly as is reasonably and commercially feasible, and thereafter to produce and sell reasonable quantities of Licensed Products. Licensee shall keep Scripps generally informed as to Licensee's progress in such development, production and sale, including its efforts, if any, to sublicense Scripps Technology and Scripps Patent Rights, and Licensee shall deliver to Scripps an annual written report and such other reports as Scripps may reasonably request. The parties hereto acknowledge and agree that achievement of mutually agreeable milestones shall be evidence of compliance by Licensee with its commercial development obligations hereunder. Notwithstanding the foregoing, if Licensee believes that it cannot, within the exercise of prudent and reasonable business judgment, perform any mutually agreed upon milestones within the time period required therefor, Licensee may request an extension of time for the performance date to a date that Licensee believes to be reasonable and prudent and Scripps shall agree to any requested extension which is not more than one (l) year in length from the originally required date and will not unreasonably withhold consent to requests for longer

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extensions. In the event Scripps has a reasonable basis to believe that Licensee is not using reasonable efforts and due diligence as required hereunder, upon notice by Scripps to Licensee which specifies the basis for such belief, Scripps and Licensee shall negotiate in good faith to attempt to mutually resolve the issue. In the event Scripps and Licensee cannot agree upon any matter related to Licensee's commercial development obligations, the parties agree to utilize arbitration pursuant to Section 10.2 hereof in order to resolve the matter. If the arbitrator determines that Licensee has not complied with its obligations hereunder, and such default is not cured within sixty (60) days after the arbitrator's decision, Scripps may terminate Licensee's rights under this Agreement.

4.2 Governmental Approvals and Marketing of Licensed Products. Licensee shall be responsible for obtaining all necessary governmental approvals for the development, production, distribution, sale and use of any Licensed Product, at Licensee's expense, including, without limitation, any safety studies. Licensee shall have sole responsibility for any warning labels, packaging and instructions as to the use of Licensed Products and for the quality control for any Licensed Product.

4.3 Indemnity. Licensee hereby agrees to indemnify, defend and hold harmless Scripps and any parent, subsidiary or other affiliated entity and their trustees, officers, employees, scientists and agents from and against any liability or expense arising from any product liability claim asserted by any party as to any Licensed Product or any claims arising from the use of any Scripps Patent Rights or Scripps Technology pursuant to this Agreement. Such indemnity and defense obligation shall apply to any product liability or other claims, including without limitation, personal injury, death or property damage, made by employees, subcontractors, sublicensees, or agents of Licensee, as well as any member of the general public. Notwithstanding the foregoing, Licensee's obligation to provide indemnification under this Section 4.3 shall be subject to each party seeking indemnification hereunder (i) promptly notify Licensee in writing of any claim, suit or proceeding with respect to which the party intends to claim such indemnification, (ii) give Licensee sole control of the defense and/or settlement thereof, and (iii) provide Licensee, at Licensee's expense, with reasonable assistance and full information with respect to such claim, suit or proceeding. Licensee shall not settle any claim, suit or proceeding subject to this Section 4.3 or otherwise consent to an adverse judgment in such claim, suit or proceeding if the same materially diminishes the rights or interests of the indemnified party without the express written consent of such party. Licensee shall have no obligation for any claim, suit or proceeding if the party seeking indemnification makes any settlement regarding such claim, suit or proceeding without the prior written consent of Licensee, which consent shall not be unreasonably withheld. Licensee shall use its best efforts to have Scripps and any parent, subsidiary or other affiliated entity and their trustees, officers, employees, scientists and agents named as additional insured parties on any product liability insurance policies maintained by Licensee, its Affiliates and sublicensees applicable to Licensed Products.

4.4 Patent Marking. To the extent required by applicable law, Licensee shall mark all Licensed Products or their containers in accordance with the applicable patent marking laws.

4.5 No Use of Name. Except as required by law, the use of the name "The Scripps Research Institute", " Scripps", or any variation thereof in connection with the advertising or sale of Licensed Products is expressly prohibited.

4.6 U.S. Manufacture. To the extent required by applicable United States laws, if at all, Licensee agrees that Licensed Products will be manufactured in the United States, or its territories, subject to such waivers as may be required, or obtained, if at all, from the United States Department of Health and Human Services, or its designee.

4.7 Foreign Registration. Licensee agrees to register this Agreement with any foreign governmental agency which requires such registration, and Licensee shall pay all costs and legal fees in connection therewith. In addition, Licensee shall assure that all foreign laws affecting this Agreement or the sale of Licensed Products are fully satisfied.

5. Limited Warranty. Scripps hereby represents and warrants that subject to the rights of the United States Government (i) it has sole right and power to enter into this Agreement and grant the rights and licenses granted herein; (ii) Scripps is and shall be the owner of the entire right, title, and interest in and to the Scripps Patent Rights; (iii) Scripps has not previously granted and will not grant any rights in the Scripps Patent Rights that are inconsistent with the rights and licenses granted to Licensee herein; and (iv) to the best of its knowledge, there are no claims of third parties that would call into question the rights of Scripps to grant to Licensee the rights contemplated hereunder. EXCEPT AS PROVIDED IN THIS SECTION 5, NEITHER PARTY MAKES ANY WARRANTIES OR CONDITIONS (EXPRESS, IMPLIED, STATUTORY OR OTHERWISE) WITH RESPECT TO THE SUBJECT MATTER HEREOF. SPECIFICALLY, SCRIPPS MAKES NO OTHER WARRANTIES CONCERNING SCRIPPS PATENT RIGHTS OR SCRIPPS TECHNOLOGY COVERED BY THIS AGREEMENT, INCLUDING WITHOUT LIMITATION, ANY EXPRESS OR IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE AS TO SCRIPPS PATENT RIGHTS, SCRIPPS TECHNOLOGY OR ANY LICENSED PRODUCT. SCRIPPS MAKES NO WARRANTY OR REPRESENTATION AS TO THE VALIDITY OR SCOPE OF SCRIPPS PATENT RIGHTS, OR THAT ANY LICENSED PRODUCT WILL BE FREE FROM AN INFRINGEMENT ON PATENTS OR OTHER INTELLECTUAL PROPERTY RIGHTS OF THIRD PARTIES, OR THAT NO THIRD PARTIES ARE IN ANY WAY INFRINGING SCRIPPS PATENT RIGHTS OR SCRIPPS TECHNOLOGY COVERED BY THIS AGREEMENT.

6. Interests in Intellectual Property Rights.

6.1 Preservation of Title. Scripps shall retain full ownership and title to Scripps Technology, and Scripps Patent Rights licensed hereunder and shall use its reasonable best efforts to preserve and maintain such full ownership and title, subject to Licensee fully performing all of its obligations under this Agreement.

6.2 Royalty-free License to Improvements. Licensee hereby grants to Scripps a non-exclusive, royalty-free license to any improvement to Scripps Technology developed by Licensee during the term of this Agreement, to use for Scripps own non-commercial research purposes or grant to other nonprofit institutions for their non-commercial research purposes.

6.3 Governmental Interest. Licensee and Scripps acknowledge that Scripps has received, and expects to continue to receive, funding from the United States Government in support of Scripps' research activities. Licensee and Scripps acknowledge and agree that their respective rights and obligations pursuant to this Agreement shall be subject to Scripps' obligations and the rights of the United States Government, if any, which arise or result from Scripps' receipt of research support from the United States Government, including without limitation, the grant by Scripps to the United States a non-exclusive, irrevocable, royalty-free license to Scripps Technology and Scripps Patent Rights licensed hereunder for governmental purposes.

6.4 Reservation of Rights. Scripps reserves the right to use for any non-commercial research purposes and the right to allow other nonprofit institutions to use for any non-commercial research purposes any Scripps Technology and Scripps Patent Rights licensed hereunder, without Scripps or such other institutions being obligated to pay Licensee any royalties or other compensation.

7. Confidentiality and Publication.

7.1 Treatment of Confidential Information. The parties agree that during the term of this Agreement and for ten (10) years thereafter, a party receiving Confidential Information of the other party will (i) maintain in confidence such Confidential Information to the same extent such party maintains its own proprietary industrial information, (ii) not disclose such Confidential Information to any third party without prior written consent of the other party and (iii) not use such Confidential Information for any purpose except those permitted by this Agreement.

7.2 Permitted Usage. Notwithstanding the provisions of Section 7.1 above, the receiving party may use or disclose Confidential Information of the disclosing party to the extent necessary to exercise its rights hereunder (including commercialization and/or sublicensing of Scripps Patent Rights and Scripps Technology) or fulfill its obligations and/or duties hereunder and in filing for, prosecuting or maintaining any proprietary rights, prosecuting or defending litigation, complying with applicable governmental regulations and/or submitting information to tax or other governmental authorities; provided that if the receiving party is required by law to make any public disclosures of Confidential Information of the disclosing party, to the extent it may legally do so, it will give reasonable advance notice to the disclosing party of such disclosure and will use its reasonable efforts to secure confidential treatment of Confidential Information prior to its disclosure (whether through protective orders or otherwise).

7.3 Publications. Licensee agrees that Scripps shall have a right to publish in accordance with its general policies and subject to Section 6.2 of the Research Agreement.

7.4 Publicity. Except as otherwise provided herein or required by law, no party shall originate any publication, news release or other public announcement, written or oral, whether in the public press, stockholders' reports, or otherwise, relating to this Agreement or to any sublicense hereunder, or to the performance hereunder or any such agreements, without the prior written approval of the other party, which approval shall not be unreasonably withheld. Scientific publications published in accordance with Section 7.3 of this Agreement shall not be construed as publicity governed by this Section 7.4.

8. Term and Termination.

8.1 Term. Unless terminated sooner in accordance with the terms set forth herein, this Agreement, and the license granted hereunder, shall terminate as provided in Section 2.7 hereof.

8.2 Termination Upon Default. Any one or more of the following events shall constitute an event of default hereunder: (i) the failure of a party to pay any amounts when due hereunder and the expiration of thirty (30) days after receipt of a written notice requesting the payment of such amount; (ii) the failure of a party to perform any material obligation required of its to be performed hereunder, and the failure to cure within sixty (60) days after receipt of notice from the other party specifying in reasonable detail the nature of such default. Upon the occurrence of any event of default, the non-defaulting party may deliver to the defaulting party written notice of intent to terminate, such termination to be effective upon the date set forth in such notice.

Such termination rights shall be in addition to and not in substitution for any other remedies that may be available to the non-defaulting party. Termination pursuant to this Section 8.2 shall not relieve the defaulting party from liability and damages to the other party for breach of this Agreement. Waiver by either party of a single default or a succession of defaults shall not deprive such party of any right to terminate this Agreement arising by reason of any subsequent default.

Notwithstanding the foregoing provisions of this Section 8.2, if the party alleged to be in default of this Agreement disputes in good faith such default within the applicable cure period, the other party's right to terminate shall be stayed until it has been determined in accordance with Section 10.2 below of this Agreement that the party alleged to be in default was actually in default and such defaulting party fails to comply with its obligations hereunder within the applicable cure period.

8.3 Termination Upon Bankruptcy or Insolvency. This Agreement may be terminated by Scripps giving written notice of termination to Licensee upon the filing of

bankruptcy or bankruptcy of Licensee or the appointment of a receiver of any of Licensee's assets, or the making by Licensee of any assignment for the benefit of creditors, or the institution of any proceedings against Licensee under any bankruptcy law which proceeding is not dismissed with prejudice within ninety (90) days from its initiation. Termination shall be effective upon the date specified in such notice.

8.4 Termination by Licensee. Any provision herein notwithstanding, Licensee may terminate this Agreement, in its entirety or as to any particular patent or patent application within the Scripps Patent Rights, or as to any particular Licensed Product, at any time by giving Scripps at least ninety (90) days prior written notice. From and after the effective date of a termination under this Section 8.4 with respect to a particular patent or application, such patent(s) and patent application(s) in the particular country shall cease to be within the Scripps Patent Rights for all purposes of this Agreement, and all rights and obligations of Licensee with respect to such patent(s) and patent application(s) shall terminate. From and after the effective date of a termination under this Section 8.3 with respect to a particular Licensed Product, the license granted under Section 2.1 above shall terminate with respect to such Licensed Product, and the same shall cease to be a Licensed Product for all purposes of this Agreement. Upon a termination of this Agreement in its entirety under this Section 8.4, all rights and obligations of the parties shall terminate, except as provided in Section 8.5 below.

8.5 Rights Upon Expiration. Neither party shall have any further rights or obligations upon the expiration of this Agreement upon its regularly scheduled expiration date with respect to this Agreement, other than the obligation of Licensee to make any and all reports and payments for the final quarter period. Provided, however, that upon such expiration, each party shall be required to continue to abide by its non-use and non-disclosure obligations as described in Section 7.1, and Licensee shall continue to maintain records under Section 2.10 and abide by its obligation to indemnify Scripps as described in Section 4.3 and by its obligations under Section 6.2 hereof.

8.6 Rights Upon Termination.

8.6.1 Accrued Obligations. Termination of this Agreement for any reason shall not release either party hereto from any liability which at the time of such termination has already accrued to the other party.

8.6.2 Inventory. In the event this Agreement is terminated for any reason, Licensee shall provide Scripps with a written inventory of all Licensed Products that Licensee and its Affiliates have in process of manufacture, in use or in stock and Licensee and its Affiliates shall have the right to sell or otherwise dispose of such Licensed Products for a period not to exceed six (6) months from the effective date of such termination, all subject to the payment to Scripps royalties and provision of reports pursuant to this Agreement.

8.6.3 Sublicenses. Upon termination of this Agreement by Scripps for any reason, any sublicense granted by Licensee hereunder shall survive, provided that

upon request by Scripps, such Sublicensee promptly agrees in writing to be bound by the applicable terms of this Agreement.

8.6.4 Survival. Sections 2.10, 4.3, 6.2, 7.1 and 10 shall survive any termination of this Agreement. Except as otherwise provided in this Section 8, all rights and obligations of the parties under this Agreement shall terminate upon termination of this Agreement.

9. Assignment; Successors.

9.1 Assignment. Neither this Agreement nor any rights granted hereunder may be assigned or transferred by Licensee except (i) to an Affiliate of Licensee or (ii) to a successor in interest to all or substantially all of the business assets of Licensee, whether by way of a merger, consolidation, sale of all or substantially all of Licensee's assets, change of control or similar transaction, without the prior written consent of Scripps.

9.2 Binding Upon Successors and Assigns. Subject to the limitations on assignment herein, this Agreement shall be binding upon and inure to the benefit of any successors in interest and assigns of Scripps and Licensee. Any such successor or assignee of Licensee's interest shall expressly assume in writing the performance of all the terms and conditions of this Agreement to be performed by Licensee.

10. General Provisions.

10.1 Independent Contractors. The relationship between Scripps and Licensee is that of independent contractors. Scripps and Licensee are not joint venturers, partners, principal and agent, master and servant, employer or employee, and have no other relationship other than independent contracting parties. Scripps and Licensee shall have no power to bind or obligate each other in any manner, other than as is expressly set forth in this Agreement.

10.2 Arbitration. Any controversy or claim arising out of or relating to this Agreement, or the breach thereof, shall be settled by binding arbitration in accordance with the Commercial Arbitration Rules of the American Arbitration Association ("AAA"), and the procedures set forth below. In the event of any inconsistency between the Rules of AAA and the procedures set forth below, the procedures set forth below shall control. Judgment upon the award rendered by the arbitrators may be enforced in any court having jurisdiction thereof.

10.2.1 Location. The location of the arbitration shall be in the County of San Diego in the State of California.

10.2.2 Selection of Arbitrators. The arbitration shall be conducted by a panel of three neutral arbitrators who are independent and disinterested with respect to the parties, this Agreement, and the outcome of the arbitration. Each party shall appoint one neutral arbitrator, and these two arbitrators so selected by the parties shall then select the third arbitrator. If one party has given written notice to the other party as to the identity of the arbitrator appointed by the party, and the party thereafter makes a written demand on the other party to appoint its designated arbitrator within the next ten days, and the other party fails to appoint its designated arbitrator within ten days after receiving said written demand, then the arbitrator who has already been designated shall appoint the other two arbitrators.

10.2.3 Discovery. Unless the parties mutually agree in writing to some additional and specific pre-hearing discovery, the only pre-hearing discovery shall be (a) reasonably limited production of relevant and non-privileged documents, and (b) the identification of witnesses to be called at the hearing, which identification shall give the witness's name, general qualifications and position, and a brief statement as to the general scope of the testimony to be given by the witness. The arbitrators shall decide any disputes and shall control the process concerning these pre-hearing discovery matters. Pursuant to the Rules of AAA, the parties may subpoena witnesses and documents for presentation at the hearing.

10.2.4 Case Management. Prompt resolution of any dispute is important to both parties; and the parties agree that the arbitration of any dispute shall be conducted expeditiously. The arbitrators are instructed and directed to assume case management initiative and control over the arbitration process (including scheduling of events, pre-hearing discovery and activities, and the conduct of the hearing), in order to complete the arbitration as expeditiously as is reasonably practical for obtaining a just resolution of the dispute.

10.2.5 Remedies. The arbitrators may grant any legal or equitable remedy or relief that the arbitrators deem just and equitable, to the same extent that remedies or relief could be granted by a state or federal court, provided however, that no punitive damages may be awarded. No court action may be maintained seeking punitive damages. The decision of any two of the three arbitrators appointed shall be binding upon the parties.

10.2.6 Expenses. The expenses of the arbitration, including the arbitrators' fees, expert witness fees, and attorney's fees, may be awarded to the prevailing party, in the discretion of the arbitrators, or may be apportioned between the parties in any manner deemed appropriate by the arbitrators. Unless and until the arbitrators decide that one party is to pay for all (or a share) of such expenses, both parties shall share equally in the payment of the arbitrators' fees as and when billed by the arbitrators.

10.2.7 Confidentiality. Except as set forth below, the parties shall keep confidential the fact of the arbitration, the dispute being arbitrated, and the decision of the arbitrators. Notwithstanding the foregoing, the parties may disclose information about the arbitration to persons who have a need to know, such as directors, trustees, management employees, witnesses, experts, investors, attorneys, lenders, insurers, and others who may be directly affected. Additionally, if a party has stock which is publicly traded, the party may make such disclosures as are required by applicable securities laws. Further, if a party is expressly asked by a third party about the dispute or the arbitration, the party may disclose and acknowledge in general and limited terms that there is a dispute with the other party which is being (or has been) arbitrated. Once the arbitration award has become final, if the arbitration award is not promptly satisfied, then these confidentiality provisions shall no longer be applicable.

10.3 Entire Agreement Modification. This Agreement sets forth the entire agreement and understanding between the parties as to the subject matter hereof. There shall be no amendments or modifications to this Agreement, except by a written document which is signed by both parties. It is understood that the Research Agreement is separate and independent from this Agreement and termination of either agreement shall not operate to terminate or otherwise effect the rights and obligations of the parties under the other agreement.

10.4 California Law. This Agreement shall be construed and enforced in accordance with the laws of the State of California.

10. 5 Limitation of Liability. NEITHER PARTY SHALL BE LIABLE TO THE OTHER PARTY OR ANY THIRD PARTY FOR ANY SPECIAL, CONSEQUENTIAL, EXEMPLARY OR INCIDENTAL DAMAGES (INCLUDING LOST OR ANTICIPATED REVENUES OR PROFITS RELATING TO THE SAME), ARISING FROM ANY CLAIM RELATING TO THIS AGREEMENT, WHETHER SUCH CLAIM IS BASED ON CONTRACT, TORT (INCLUDING NEGLIGENCE) OR OTHERWISE, EVEN IF AN AUTHORIZED REPRESENTATIVE OF SUCH PARTY IS ADVISED OF THE POSSIBILITY OR LIKELIHOOD OF SAME.

10.6 No Implied Obligations. Licensee's sole obligation to exploit the Scripps Patent Rights and Scripps Technology is as set forth in Section 4.1. Nothing in this Agreement shall be deemed to require Licensee to otherwise exploit the Scripps Patent Rights or Scripps Technology nor prevent Licensee from commercializing products similar to or competitive with a Licensed Product.

10.7 Headings. The headings for each article and section in this Agreement have been inserted for convenience of reference only and are not intended to limit or expand on the meaning of the language contained in the particular article or section.

10.8 Severability. Should any one or more of the provisions of this Agreement be held invalid or unenforceable by a court of competent jurisdiction, it shall be considered severed from this Agreement and shall not serve to invalidate the remaining provisions thereof. The parties shall make a good faith effort to replace any invalid or unenforceable provision with a valid and enforceable one such that the objectives contemplated by them when entering this Agreement may be realized.

10.9 No Waiver. Any delay in enforcing a party's rights under this Agreement or any waiver as to a particular default or other matter shall not constitute a waiver of such party's rights to the future enforcement of its rights under this Agreement, excepting only as to an express written and signed waiver as to a particular matter for a particular period of time.

10.10 Name. Whenever there has been an assignment by Licensee as permitted by this Agreement, the term "Licensee" as used in this Agreement shall also include and refer to, if appropriate, such assignee.

10.11 Notices. Any notices required by this Agreement shall be in writing, shall specifically refer to this Agreement and shall be sent by registered or certified airmail, postage prepaid, or by telefax, telex or cable, charges prepaid, or by overnight courier, postage prepaid and shall be forwarded to the respective addresses set forth below unless subsequently changed by written notice to the other party:

For Scripps	The Scripps Research Institute 10550 North Torrey Pines Road, TPC-9 La Jolla, California 92037 Attn: Director, Technology Development Fax No.: (619) 784-9910
For Licensee:	StemCells, Inc. 701 George Washington Highway Lincoln, Rhode Island 02865 Attn: Research Director Fax No.: (401) 333-0684
with a copy to:	CytoTherapeutics, Inc. 701 George Washington Highway Lincoln, Rhode Island 02865 Attn: General Counsel Fax No.: (401) 334-9152

Notice shall be deemed delivered upon the earlier of (i) when received, (ii) three (3) days after deposit into the mail, or (iii) the date notice is sent via telefax, telex or cable, (iv) the day immediately following delivery to overnight courier (except Sunday and holidays).

10.12 Compliance with U. S. Laws. Nothing contained in this Agreement shall require or permit Scripps or Licensee to do any act inconsistent with the requirements of any United States law, regulation or executive order as the same may be in effect from time to time.

IN WITNESS WHEREOF, the parties have executed this Agreement by their duly authorized representatives as of the date set forth above.

SCRIPPS:	LICENSEE:
THE SCRIPPS RESEARCH INSTITUTE	STEMCELLS, INC.
By: ----------	By: ----------
Name: ----------	Philip K. Yachmetz
Title: ----------	Senior Vice President

EXHIBIT A

DISCLOSURE OF TECHNOLOGY

[*]

* This confidential portion has been omitted and filed separately with the Commission

EXHIBIT B

SCRIPPS PATENT RIGHTS

[To be updated once patent applications are filed]

EXHIBIT 10.86

BILL YORK
EMPLOYMENT AGREEMENT

Exhibit 10.86

CYTOTHERAPEUTICS, INC.
701 George Washington Highway
Lincoln, RI 02865
401-288-1000

March 20, 1998

Billie M. York, Ph.D.
6532 Castle Pines Road
Fort Worth, TX 76132

Dear Bill:

This letter will confirm our offer to you of employment with CytoTherapeutics, Inc. (the "Company") under the terms and conditions that follow:

1. Position and Duties. As of the date of this letter, you will become an employee of the Company, available to answer questions and provide advice to the Company from your current location or while traveling, as your current schedule permits. As of April 20, 1998, (the "Full-Time Date"), you will be employed by the Company hereunder on a full-time basis as Executive Vice President. As Executive Vice President, you will exert your full-time best efforts to promote and protect the business interests of the Company. Your initial responsibility will be to oversee the Company's efforts to apply our encapsulated cell and stem cell technologies toward possible development of treatments for certain diseases and disorders of the eye and ear. If the Company determines to conduct such efforts through a subsidiary, you shall serve as chief executive officer of such subsidiary. More generally, you shall fulfill such responsibilities as the Company may reasonably determine consistent with your position as an Executive Vice President. You will report directly to the Company's Chief Executive Officer.

2. Salary and Bonus. For all services that you perform for the Company and its Affiliates (as defined in Section 6(g)(ii)), the Company will compensate you during your employment in accordance with this Paragraph 2. For the period between now and the Full-Time Date, you will be paid Two Thousand Dollars ($2,000). Thereafter, your base salary will be at the rate of Two Hundred Thirty Thousand Dollars ($230,000) per year. Your performance and compensation will be reviewed at least annually by the Chief Executive Officer and the Compensation Committee of the Board. In addition to your base salary, you will be eligible, at the end of each calendar year, beginning with calendar 1998, during your employment hereunder, for a bonus of up to twenty percent (20%) of your base salary, the amount of each such bonus being determined by the Board in its discretion on the basis of

your performance hereunder or (if mutually agreed) on the basis of the attainment of specific performance objectives, provided, however, that the Company hereby agrees that, with respect to calendar year 1998, you shall receive the full amount of such bonus ($46,000).

3. Stock Options. Through the Company's 1992 Equity Incentive Plan (the "Incentive Plan"), and subject to the terms and conditions of such Plan, you are hereby granted, as of the date of this letter, an option to acquire 150,000 shares of the common stock of the Company at the fair market value of such shares on the date of this letter, as determined by the Board. Subject to your continued employment by the Company, the Time-Based Option will vest as follows: (i) 37,500 of the shares will vest on the Full-Time Date and (ii) the remaining 112,500 shares shall vest at the rate of 2,344 shares per month (2,332 shares in the final month) on the last day of each month during the ensuing forty-eight months. Except as otherwise expressly provided herein, the Time-Based Option shall be governed by the terms of the Incentive Plan, as in effect from time to time.

4. Relocation and Relocation Allowance. Promptly following the Full-Time Date, you will establish your principal office at the Company's offices in Rhode Island and a temporary residence for yourself within driving distance of such office. When the Company has determined the principal location for the activities you will be managing, you will relocate permanently to such location. The Company will cover all reasonable costs of your temporary housing and related expenses for so long as such principal location is undefined and shall pay you $50,000 for your permanent relocation at the time of such relocation.

5. Benefits. Commencing as of the Full-Time Date, you will be entitled to participate in any and all employee benefit plans from time to time in effect for senior management of the Company generally, except to the extent that such plans are duplicative of benefits otherwise provided to you under this Agreement. Such participation shall be subject to (i) the terms of the applicable plan documents, (ii) generally applicable policies of the Company and (iii) the discretion of the Board and plan administrators, as provided for in or contemplated by such plan. The Company will provide you with a leased automobile and cover the cost of professional memberships to the extent consistent with Company policy for its senior executives. Prior to your permanent relocation to within driving distance of the Company's principal offices, the Company will reimburse you for the cost of one round trip per month to Texas. The Company expects that these trips will, to the extent possible, be scheduled to coincide with Company business. The Company will provide you with four weeks vacation per year. The Company shall reimburse you for all expenses reasonably incurred by you in connection with your performance of your duties hereunder on a basis consistent with Company policies.

6. Confidentiality and Restricted Activities. You agree that some restrictions on your activities during and after employment are necessary to protect the goodwill, Confidential Information and other legitimate interests of the Company:

a. During your employment and for 10 years thereafter, except as required by applicable law or for the proper performance of your duties and responsibilities to the

Company, you shall not use or disclose to any Person any Confidential Information, as defined below. This restriction shall continue to apply for 10 years after your employment terminates, regardless of the reason for such termination.

b. While you are employed by the Company and for a period of one (1) year thereafter, you will not, directly or indirectly, engage in any activity, whether as owner, partner, investor, consultant, employee, agent or otherwise, that is competitive with the business of the Company or its Affiliates, provided, however, that nothing contained in this paragraph shall prohibit you from owning up no more than one percent (1%) of the outstanding stock of any publicly traded company.

c. While you are employed by the Company and for a period of one (1) year thereafter, you will not, directly or indirectly, hire or attempt to hire any employee of the Company or its Affiliates, assist in such hiring by any Person or otherwise solicit, induce or encourage any employee of the Company or any of its Affiliates to terminate his or her relationship with them.

d. You agree that you will not, during your employment with the Company, improperly use or disclose any proprietary information or trade secrets of any former or concurrent employer or other Person with whom you have an agreement or duty to keep in confidence information acquired by you in confidence, if any. You also agree that you will not bring onto Company premises any unpublished document or proprietary information belonging to any such employer or other Person, unless consented to in writing by such employer or other Person.

e. All documents, records, tapes, software and other media of every kind and description relating to the business, present or otherwise, of the Company and its Affiliates and any copies, in whole or in part, thereof (the "Documents"), whether or not prepared by you, shall be the sole and exclusive property of the Company and its Affiliates. You agree to safeguard all Documents and to surrender to the Company at the time your employment terminates, or at such earlier time or times as the Board may specify, all Documents and other property of the Company and its Affiliates (including without limitation, devices and equipment) then in your possession or control.

f. You agree that the Company shall, in addition to any other remedies available to it, be entitled to preliminary and permanent injunctive relief against any breach by you of the covenants contained in this Paragraph 6, without having to post bond. In the event that any provision of this Paragraph 6 shall be determined by a court of competent jurisdiction to be unenforceable by reason of its being extended over too great a time, too large a geographic area or too great a range of activities, it shall be interpreted to extend only over the maximum period of time, geographic area or range of activities as to which it may be enforceable.

g. For purposes of this Agreement:

i. A business shall be deemed to be competitive with the Company or its Affiliates if it engages or proposes to engage in any business activity which is (A) utilizing or seeking to develop technology capable of utilizing the transplantation of cells as a therapeutic agent for the diagnosis, prevention or treatment of human disease, injury or condition or (B) in any field the Company or any of its Affiliates is then pursuing or then has in contemplation or planning.

ii. "Affiliates" means all persons and entities directly or indirectly controlling, controlled by or under common control with the Company, where control may be by management authority, equity interest or otherwise.

iii. "Confidential Information" means any and all information of the Company and its Affiliates that is not generally known by others with whom they compete or do business or with whom they plan to compete or do business and any and all information, publicly known in whole or in part or not, which, if disclosed by the Company or its Affiliates, would assist in competition against them. Confidential Information includes without limitation such information relating to (i) the development, research, testing, production and marketing activities of the Company and its Affiliates, (ii) the products and services of the Company and its Affiliates, (iii) their patents, trade secrets, licenses and intellectual property, patients and clinical trials; (iv) the costs, sources of supply, financial performance and strategic plans of the Company and its Affiliates, (v) the identity and special needs of the customers of the Company and its Affiliates and (vi) the people and organizations with whom the Company and its Affiliates have business relationships and those relationships. Confidential Information also includes information that the Company or any of its Affiliates has received belonging to others with any understanding, express or implied, that it would not be disclosed. Confidential Information does not include, however, information that has become publicly known and generally available other than through a wrongful act by you.

iv. "Person" means an individual, a corporation, an association, a partnership, an estate, a trust and any other entity or organization, other than the Company or any of its Affiliates.

7. Inventions.

a. You hereby represent to the Company and agree that, except as described in Schedule A hereof, you have no invention, original work of authorship, development, improvement or trade secret that was made by you prior to your employment with the Company and which relates to the Company's current or proposed business, products or research and development.

b. You will promptly make full written disclosure to the Company, hold in trust for the Company's sole right and benefit and hereby assign and agree to assign to the Company or its designee all of your right, title and interest in any and all Inventions. As used in this Agreement, "Inventions" means inventions, discoveries, developments, methods, processes, compositions, works, concepts and ideas (whether or not patentable or copyrightable or constituting trade secrets) conceived, made, created, developed or reduced to practice by you (whether alone or with others and whether or not during normal business hours or on or off Company premises) during your employment that relate in any way to the business, products or services of the Company or any of its Affiliates or to any prospective activity of the Company or any of its Affiliates or for which the Confidential Information or the Company's facilities have been utilized. You further acknowledge and agree that all original works of authorship made by you solely or jointly with others within the scope of your employment and eligible for protection by copyright are "works made for hire," as that term is defined in the United States Copyright Act. You agree to keep and maintain adequate and current records of all Inventions made by you solely or jointly with others during your employment with the Company. Such records will be in the form of notes, sketches, drawings or any other format that may be specified by the Company These records will be available to, and remain the sole property of, the Company at all times. You agree to assist the Company or its designee, at the Company's expense, in every proper way, to secure the Company's rights in the Inventions and copyrights, including without limitation disclosure to the Company of all pertinent information and data with respect thereto, the execution of all applications, specifications, oaths, assignments and all other instruments that the Company shall deem necessary or desirable in order to apply for and obtain such rights, and in order to assign and convey to the Company, its successors, designees and nominees the sole and exclusive right, title and interest in and to such Inventions, and any copyrights, patents, or other intellectual property rights relating thereto, both during your employment by the Company and thereafter. In the event that the Company is unable for any reason to secure or to prosecute any patent application with respect to any of such Inventions (including without limitation, renewals, extensions, continuations, divisions or continuations in part thereof), you hereby irrevocably designate and appoint the Company and its duly authorized officers and agents as your agents and attorney-in-fact to act for and in your behalf and instead of you, to execute and file any such application and to do all other lawfully permitted acts to further the prosecution and issuance of patents thereof with the same legal force and effect as if executed by you. You agree that you will assist the Company in the prosecution and enforcement of the Company's rights to the Inventions and copyrightable materials after termination of your employment, at the Company's expense.

8. Termination and Termination Benefits. Your employment with the Company is "at will," which means that either you or the Company may terminate your employment at any time, with or without cause or good reason.

a. The Company may terminate your employment other than for "cause" at any time upon written notice to you and, in that event, the Company will pay you a lump sum amount equal to one year's base salary (determined by reference to your base salary as in effect at the time of such termination), such lump sum amount to be payable within 30 days of such notice of termination.

b. The Company may terminate your employment upon written notice to you in the event that you become disabled during your employment through any illness, injury, accident or condition of either physical or psychological nature and, as a result, you are unable to perform substantially all of your duties and responsibilities hereunder for ninety (90) days during any three hundred and sixty-five (365) calendar days. In that event, the Company will continue to pay you your base salary (i) for a period of six (6) months following such termination or (ii) until you obtain other employment or (iii) until you become eligible for disability income under any disability income plan provided by the Company, whichever of these events shall first occur.

c. The Company may terminate your employment hereunder for cause at any time upon written notice to you setting forth in reasonable detail the nature of such cause. The following, as determined by the Company in its reasonable judgment, shall constitute "cause" for termination: (i) your willful failure to perform your material duties and responsibilities to the Company and its Affiliates (including, without limitation, those duties and responsibilities described in Section 1); (ii) your material breach of Paragraph 6 or Paragraph 7 of this Agreement; (iii) fraud, embezzlement or other material dishonesty with respect to the Company or any of its Affiliates; or (iv) your conviction of, or plea of nolo contendere to, a felony.

d. You may terminate your employment at any time, with or without good reason, upon written notice to the Company. If you decide to terminate your employment without good reason, you agree to give the Company three months' notice of termination. You may terminate your employment hereunder with good reason at any time upon written notice to the Company. The following shall constitute "good reason" for termination: material breach by the Company of any provision of this Agreement, which breach continues for more than thirty (30) business days following receipt by the Company of written notice from you setting forth in reasonable detail the nature of such breach. If you terminate your employment with good reason, the Company will be obligated to you under Paragraph 8.a hereof as if the Company had terminated your employment other than for cause.

e. If you resign without good reason or your employment is terminated by the Company for cause, the Company shall have no further obligation to you other than for base

salary earned through the date of termination. No severance pay or other benefits of any kind will be provided.

9. Withholding. All payments and reimbursements made by the Company under this Agreement shall be reduced by any tax or other amounts required to be withheld by the Company under applicable law.

10. Assignment. Neither you nor the Company may make any assignment of this Agreement or any interest herein, by operation of law or otherwise, without the prior written consent of the other; provided, however, that the Company may assign its rights and obligations under this Agreement without your consent to one of its Affiliates or to any Person with whom the Company shall hereafter affect a reorganization, consolidation or merger or to whom the Company transfers all or substantially all of its properties or assets. This Agreement shall inure to the benefit of and be binding upon you and the Company and each of your respective successors, executors, administrators, heirs and permitted assigns.

11. Waiver. Except as otherwise expressly provided in this Agreement, no waiver of any provision hereof shall be effective unless made in writing and signed by the waiving party. The failure of either party to require performance of any term or obligation of this Agreement, or the waiver by either party of any breach of this Agreement, shall not prevent any subsequent enforcement of such term or obligation or be deemed a waiver of any subsequent breach.

12. Severability. If any portion or provision of this Agreement shall to any extent be declared illegal or unenforceable by a court of competent jurisdiction, then the remainder of this Agreement, or the application of such portion or provision in circumstances other than those as to which it is so declared illegal or unenforceable, shall not be affected thereby, and each portion and provision of this Agreement shall be valid and enforceable to the fullest extent permitted by law.

13. Notices. Except as otherwise expressly provided herein, any notices, requests, demands and other communications provided for by this Agreement shall be in writing and shall be effective when delivered in person or deposited in the United States mail, postage prepaid, registered or certified, and addressed to you at your last known address on the books of the Company or, in the case of the Company, at its main office, attention of the Chairman of the Board.

14. Captions. The captions and headings in this Agreement are for convenience only and in no way define or describe the scope or content of any provision of this Agreement.

15. Entire Agreement. This Agreement sets forth the entire agreement and understanding between you and the Company and supersedes all prior communications, agreements and understandings, written and oral, with respect to the terms and conditions of

your employment. This Agreement may not be amended or modified, except by an agreement in writing signed by you and the Chairman of the Board or other specifically authorized representative of the Company.

16. Governing Law. This Agreement shall be governed, construed and enforced in accordance with the laws of Rhode Island, without regard to the conflict of laws principles thereof.

17. No Conflicting Agreements. You hereby represent to the Company that neither your execution and delivery of this Agreement nor your acceptance of employment with the Company nor your performance under this Agreement will conflict with or result in a breach of any of the terms, conditions or provisions of any agreement to which you are a party or are bound or any order, injunction, judgment or decrees of any court or governmental authority or any arbitration award applicable to you.

18. Compliance with Agreement. The Company's obligations under this Agreement and its obligation to deliver stock under the terms of the stock options granted pursuant to the terms of this Agreement (or otherwise granted you during the course of your employment) are conditioned on your compliance with the terms and conditions of this Agreement and the accuracy of the representations made to the Company by you herein.

If the foregoing is acceptable to you, please sign the enclosed copy of this letter in the space provided below and return it to me, whereupon this letter and such copy will constitute a binding agreement between you and the Company on the basis set forth above as of the date first above written.

Sincerely yours,
CYTOTHERAPEUTICS, INC.

By:

Richard M. Rose, M.D.
Chairman

Accepted and agreed:

Billie M. York, Ph.D.

Date:

Schedule A

Prior Inventions

[See attached list]

Exhibit 21

SUBSIDIARIES OF CYTOTHERAPEUTICS, INC.

Name	Jurisdiction of Incorporation
StemCells, Inc.	California

Exhibit 23.1

Consent of Independent Auditors

We consent to the incorporation by reference in the Registration Statement (Form S-8 No. 33-49524 and 333-29335) pertaining to the 1998 Incentive Stock Plan, 1992 Equity Incentive Plan, 1992 Employee Stock Purchase Plan and 1992 Stock Option Plan for Non-Employee Directors, in the Registration Statement (Form S-8 No. 333-10773) pertaining to the 1992 Equity Incentive Plan, in the Registration Statement (Form S-8 No. 333-37313) pertaining to the 1996 StemCells, Inc. Stock Option Plan and the 1997 CytoTherapeutics, Inc. StemCells Research Stock Option Plan and in the Registration Statements (Form S-3 No. 33-68900 and No. 333-91228) of CytoTherapeutics, Inc. and in the related Prospectuses of our report dated February 12, 1999, with respect to the consolidated financial statements and schedule included in the Annual Report (Form 10-K) of CytoTherapeutics, Inc. for the year ended December 31, 1998.

Ernst & Young LLP

Boston, Massachusetts
March 29, 1999

YEAR	
	DEC-31-1998
	DEC-31-1998
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	9,520,939
	0
	0
	0
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	0
	8,803,163
	0
	0
	22,261,288
	0
	472,400
	(12,627,830)
	0
	(12,627,830)
	0
	0
	0
	(12,637,830)
	(.69)
	(.69)

EXHIBIT 99

CAUTIONARY FACTORS RELEVANT TO FORWARD-LOOKING INFORMATION

CYTOTHERAPEUTICS, INC. (THE "COMPANY") WISHES TO CAUTION READERS THAT THE FOLLOWING IMPORTANT FACTORS, AMONG OTHERS, IN SOME CASES HAVE AFFECTED AND IN THE FUTURE COULD AFFECT THE COMPANY'S RESULTS AND COULD CAUSE ACTUAL RESULTS AND THE NEEDS AND FINANCIAL CONDITION OF THE COMPANY TO VARY MATERIALLY FROM FORWARD-LOOKING STATEMENTS MADE BY THE COMPANY ON THE BASIS OF MANAGEMENT'S CURRENT EXPECTATIONS. THE BUSINESS IN WHICH THE COMPANY IS ENGAGED IS DEPENDENT ON UNPROVEN TECHNOLOGY, RAPIDLY CHANGING, EXTREMELY COMPETITIVE AND INVOLVES A HIGH DEGREE OF RISK, AND ACCURACY WITH RESPECT TO FORWARD-LOOKING STATEMENTS IS DIFFICULT.

DEPENDENCE ON ASTRA AND RESULTS OF PHASE IIB CLINICAL TRIAL. The Company's ability to continue development of its encapsulated-cell therapy products is dependent on the willingness of Astra AB to continue to support further development of the Company's encapsulated-cell product for the treatment of chronic pain. While Astra increased its support for this program during 1998 and the first half of 1999 in order to facilitate completion of the Phase IIB clinical trial for this product, Astra has the right to terminate the agreement providing for its support for this product at any time. The Company expects that the results from the Phase IIB clinical trial for this product will be available about mid-1999. The Company expects Astra to make a decision on continued support for the Company's chronic pain program based in substantial part on Astra's review of the results of this trial. Should Astra determine to terminate the program or seek to reduce its support for the program or to otherwise adversely modify the terms of the Company's relationship with Astra, any such action would have a material, adverse effect on the Company's liquidity and capital resources and would likely result in the Company's inability to continue to fund further development of its proposed encapsulated-cell products.

NEED TO OBTAIN CORPORATE PARTNER OR PARTNERS TO SUPPORT STEM CELL DEVELOPMENT EFFORTS. The Company's ability to continue to fund the development of its neural and other stem cell technologies will be dependent on the Company's ability to reach appropriate partnering arrangements providing support for the Company's discovery and development efforts. While the Company has engaged, and expects to continue to engage, in discussions regarding such arrangements, the Company has not reached any agreement regarding any such arrangements and there can be no assurance that the Company will be able to obtain any such agreement.

LACK OF LIQUIDITY AND CAPITAL RESOURCES. The Company has limited liquidity and capital resources and must obtain significant additional capital resources in order to sustain its product development efforts. The Company's ability to obtain additional capital will be substantially dependent on Astra's decision regarding continuation of support for the Company's chronic pain product and the Company's ability to obtain partnering support for its stem cell technology. The Company's liquidity and capital resources will be adversely affected to the extent that the Company is required to redeem common stock of the Company held by Genentech, Inc. under the terms of the Company's partnering agreement with Genentech regarding possible development of an encapsulated-cell product for the treatment of Parkinson's disease, which was terminated by Genentech in May 1998. Under this agreement, if upon termination of the agreement the $8.3 million received by the Company from the sale of the Company's Common Stock to Genentech at the commencement of the agreement exceeds by more than $1 million the funds expended by the Company in developing the proposed Parkinson's product, the Company is obligated to repurchase from Genentech for cash consideration shares of the Company's common stock having a value equal to the amount of the overfunding, at the same per share price originally paid by Genentech ($10.01 per share). Genentech has requested that the Company redeem shares of the Common Stock having an aggregate value of at least $3.1 million. The Company is negotiating with Genentech regarding the terms and amount of such redemption (which the Company currently expects may be approximately $3.1 million).

EARLY STAGE DEVELOPMENT; HISTORY OF OPERATING LOSSES - Substantially all of the Company's revenues to date have been derived, and for the foreseeable future substantially all of the Company's revenues will be derived, from collaborative agreements, research grants and income earned on invested funds. The Company will incur substantial operating losses in the future as the Company conducts its research, development, clinical trial and manufacturing activities. There can be no assurance that the Company will achieve revenues from product sales or become profitable.

FUTURE CAPITAL NEEDS; UNCERTAINTY OF ADDITIONAL FUNDING - The development of the Company's products will require the commitment of substantial resources to conduct the time-consuming research, preclinical development and clinical trials that are necessary for regulatory approvals and to establish production and marketing capabilities, if such approvals are obtained. The Company will need to raise substantial additional funds to continue its product development efforts and intends to seek such additional funds through partnership, collaborative or other arrangements with corporate sponsors, public or private equity or debt financings, or from other sources. Future cash requirements may vary from projections based on changes in the Company's research and development programs, progress in preclinical and clinical testing, the Company's ability to enter into, and perform successfully under, collaborative agreements, competitive and technological advances, the need to obtain proprietary rights owned by third parties, facilities requirements, changes in regulations and other factors. Lack of necessary funds may require

the Company to delay, reduce or eliminate some or all of its research and product development programs or to license its potential products or technologies to third parties. No assurance can be given that funding will be available when needed, if at all, or on terms acceptable to the Company.

UNCERTAINTIES OF CLINICAL DEVELOPMENT AND NEW MODE OF THERAPY - None of the Company's proposed products has been approved for commercial sale or entered Phase III clinical trials. Even if the Company's proposed products appear to be promising at an early stage of research or development such products may later prove to be ineffective, have adverse side effects, fail to receive necessary regulatory approvals, be difficult or uneconomical to manufacture or market on a commercial scale, be adversely affected by government price controls or limitations on reimbursement, be precluded from commercialization by proprietary rights of third parties, by regulatory restrictions, or be subject to significant competition from other products. There can be no assurance that the Company will be able to demonstrate, as required, that its implants, on a consistent basis and on a commercial scale, among other things: (i) successfully isolate transplanted cells from the recipient's immune system; (ii) remain biocompatible with the tissue into which they are implanted, including, for certain implants, brain tissue; (iii) adequately maintain the viability of cells contained within the membrane for a sufficiently long time to be efficacious and commercially viable; (iv) safely permit the therapeutic substances produced by the cells within the membrane to pass through the membrane unto the patient in controlled doses for extended periods; and (v) are sufficiently durable for the intended indication. While clinicians have generally had little difficulty in retrieving the Company's implants, there have been cases where the implant broke on attempted explant. The Company has changed its implantation procedure and its implants and is continuing a program of developing stronger implants. In addition, the viability of implanted

encapsulated cells varies depending of the cell type, the implantation location and other factors. Lack of viability could restrict certain of the Company's programs to indications where long-term delivery of the therapeutics substances is not required. There can also be no assurance that the products that may be generated in the Company's stem cell programs will: (i) survive and persist in the desired locations, (ii) provide the therapeutic benefits intended, (iii) properly differentiate and integrate into existing tissue in the desired manner, or (iv) not cause tumors or other side effects.

There has been increasing regulatory concern about the risks of cell transplantation. Certain of these concerns have focused on the use of cells derived from cows (such as are used in the Company's pain program) and cells from primates and pigs. The United Kingdom has adopted a moratorium on all xenotransplantation pending further research and discussion; the EC Commission has introduced a ban on the use of "high-risk material" from cattle and sheep in the Member States of the European Union in the manufacture of pharmaceuticals. In addition, the FDA has proposed guidelines that impose significant constraints on the conduct of clinical trials utilizing xenotransplantion and are likely to significantly affect the cost of producing the Company's products using non-human cells; such costs could make the Company's products cost more to produce than the Company receives for their production. Furthermore, the FDA has published a "Proposed Approach to Regulation of Cellular and Tissue-Based Products" which relates to the use of human cells. The Company cannot presently determine the effects of such actions or what other actions might be taken. Restrictions on the testing or use of cells, whether human or non-human, as human therapeutics, could adversely affect the Company's product development programs and the Company itself and could prevent the Company from producing and/or selling products or make the cost of production by the Company prohibitively high. See "Government Regulation."

DEPENDENCE ON OUTSIDE PARTIES - The Company's strategy for the research, development, commercialization and marketing of its products contemplates that the Company will enter into various arrangements with corporate sponsors, pharmaceutical companies, universities, research groups and others. There is no assurance that the Company will be able to maintain its existing arrangements or to enter into any additional arrangements on terms acceptable to the Company, or successfully perform its obligations under its existing or any additional arrangements. If any of the Company's collaborators terminates its relationship with the Company or fails to perform its obligations in a timely manner, the development or commercialization of the Company's product candidate or research program under such collaborative agreement may be adversely affected. Moreover, as noted above, the Company is particularly dependent on its pain program partner, Astra AB.

NEED FOR AND UNCERTAINTY OF OBTAINING PATENT PROTECTION - Patent protection for products such as those the Company proposes to develop is highly uncertain and involves complex factual and evolving legal questions. No assurance can be given that any patents issued or licensed to the Company will not be challenged, invalidated or circumvented, or that the rights granted under such patents will provide competitive advantages to the Company. On the other hand, it is important for the Company to obtain patent protection. This is particularly true in the case of the Company's stem cell technology where the first person or entity to discover and patent a particular stem or progenitor cell may effectively block all others, meaning that it will be critically important to the Company's stem cell development efforts for the Company or its collaborators to be the first to discover any stem cell which the Company is seeking to discover. Failure to be the first to make such a discovery would likely force the Company to terminate or substantially modify its efforts directed toward the discovery of the discovered stem cell, and would likely have a substantial adverse effect on the Company.

EXISTENCE OF THIRD PARTY PATENTS AND PROPRIETARY RIGHTS; NEED TO OBTAIN LICENSE - A number of pharmaceutical, biotechnology and other companies, universities and research institutions have filed patent applications or have been issued patents relating to cell therapy and encapsulation and other technologies potentially relevant to or required by the Company's expected products. The Company cannot predict which, if any, of such applications will issue as patents or the claims that might be allowed. The Company is aware that a number of entities have filed applications relating to stem and/or progenitor cells. The Company is also aware of a number of third-party patent applications and patents relating to cell encapsulation or claiming use of genetically modified cells to treat disease, disorder or injury. In particular, the Company is aware of a third-party U.S. patent which relates the use of cells for alleviating chronic pain in humans and of two issued U. S. patents claiming certain methods for treating defective, diseased or damaged cells in the mammalian

CNS by grafting genetically modified cells. The Company cannot predict the effect of existing patent applications and patents on future unencapsulated products. In addition, the Company is aware of third-party patents and patent applications claiming rights to the neurotrophic factors (such as CNTF, NT 4/5, Neurturin, and CT-1) which the Company hopes to deliver with its technology, and to the production of these factors through the use of genetically modified cells. The Company expects to use genetically modified cells to produce these factors for use in its encapsulated products and expects that it may wish to genetically modify its stem/progenitor cells. The Company may also be required to seek licenses in regard to other cell lines, the techniques used in creating, obtaining or maintaining such cell lines, the materials used in the manufacture of its implants or otherwise. There can be no assurance that the Company will be able to establish collaborative arrangements or obtain licenses to the foregoing technology or to other necessary or desirable technology on acceptable terms, if at all, or that the patents underlying any such licenses will be valid and enforceable. See "Patents, Proprietary Rights and Licenses" in the Company's Annual Report on Form 10-K.

GOVERNMENT REGULATION - The Company's research, preclinical development and clinical trials, as well as the manufacturing and marketing of its potential products, are subject to extensive regulation by governmental authorities in the United States and other countries. The process of obtaining FDA and other required regulatory approvals is lengthy, expensive and uncertain. There can be no assurance that the Company or its collaborators will be able to obtain the necessary approvals to commence or continue clinical testing or to manufacture or market its potential products in anticipated time frames, if at all. In addition, several legislative proposals have been made to reform the FDA. If such proposals are enacted they may result in significant changes in the regulatory environment the Company faces. These changes could result in different, more costly or more time consuming approval requirements for the Company's products, in the dilution of FDA resources available to review the Company's products, or in other unpredictable consequences. See "Government Regulation" in the Company's Annual Report on Form 10-K.

SOURCES OF CELLS AND OTHER MATERIALS - The Company's potential products require genetically engineered cell lines or living cells harvested from animal or human sources. There can be no assurance that the Company will successfully identify or develop sources of the cells required for its potential products and obtain such cells in quantities sufficient to satisfy the commercial requirements of its potential products. These supply limitations may apply, in particular, to primary cells that must be drawn directly from animal or human sources, such as the bovine adrenal chromaffin cells currently used in the Company's product for the treatment of pain. As an alternative to primary cells, the Company is developing products based on the use of genetically altered cells. Intellectual property rights to important genetic constructs used in developing such cells, including the constructs used to develop cells producing neurotrophic factors, are or may be claimed by one or more companies, which could prevent the Company from using such cells. In addition, many suppliers of materials used by the Company in its media, implants, and other components have restricted the use of such materials for implantation into humans; if the Company cannot obtain the necessary materials for its implants, the Company would be adversely affected.

MANUFACTURING UNCERTAINTIES - The Company's pilot manufacturing plant, may not have sufficient capacity to permit the Company to produce all the products for all of the clinical trials it anticipates developing. In addition, the Company has not developed the capability to commercially manufacture any of its proposed products and is unaware of any other company that has manufactured any membrane-encapsulated cell product on a commercial scale. There can be no assurance that the Company will be able to develop the capability of manufacturing any of its proposed products at a cost or in the quantities necessary to make a commercially viable product, if at all.

COMPETITION - Competitors of the Company are numerous and include major pharmaceutical and chemical companies, biotechnology companies, universities and other research institutions. Currently, several of these competitors market and sell therapeutic products for the treatment of chronic pain, Parkinson's disease and other CNS conditions. In addition, most of the Company's competitors have substantially greater capital resources, experience in obtaining regulatory approvals and, in the case of commercial entities,

experience in manufacturing and marketing pharmaceutical products, than the Company. A number of other companies are attempting to develop methods of delivering therapeutic substances within or across the blood brain barrier. There can be no assurance that the Company's competitors will not succeed in developing technologies and products that are more effective than those being developed by the Company or that would render the Company's technology and products obsolete or non-competitive. See "Competition" in the Company's Annual Report on Form 10-K.

DEPENDENCE ON KEY PERSONNEL - The Company is highly dependent on the principal members of its management and scientific staff and certain of its outside consultants. Loss of the services of any of these individuals could have a material adverse effect on the Company's operations. In addition, the Company's operations are dependent upon its ability to attract and retain additional qualified scientific and management personnel. There can be no assurance the Company will be able to attract and retain such personnel on acceptable terms given the competition among pharmaceutical, biotechnology and health care companies, universities and research institutions for experienced personnel.

REIMBURSEMENT AND HEALTH CARE REFORM - In both domestic and foreign markets, sales of the Company's potential products will depend in part upon the availability and amounts of reimbursement from third-party health care payor organizations, including government agencies, private health care insurers and other health care payors such as health maintenance organizations and self-insured employee plans. There is considerable pressure to reduce the cost of therapeutic products. There can be no assurance that reimbursement will be provided by such payors at all or without substantial delay, or, if such reimbursement is provided, that the approved reimbursement amounts will provide sufficient funds to enable the Company to sell its products on a profitable basis. See "Reimbursement and Health Cost Control" in the Company's Annual Report on Form 10-K.