UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
WASHINGTON, D.C. 20549

FORM 10-Q

QUARTERLY REPORT UNDER SECTION 13 OR 15(d) OF
THE SECURITIES EXCHANGE ACT OF 1934

FOR THE QUARTER ENDED:	0-19871
MARCH 31, 1999	COMMISSION FILE NUMBER

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 including zip code)

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

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 twelve months (or for such shorter periods 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

At April 30, 1999, there were 18,459,364 shares of Common Stock, $.01 par value, issued and outstanding. There were no issued and outstanding shares of Preferred Stock.

CYTOTHERAPEUTICS, INC.

INDEX

PART I - ITEM 1 - FINANCIAL STATEMENTS

CYTOTHERAPEUTICS, INC.

CONDENSED CONSOLIDATED BALANCE SHEETS

	March 31, 1999 (unaudited)	December 31, 1998 (footnote 1)
ASSETS		
Current assets:		
Cash and cash equivalents	$ 3,875,229	$ 7,864,788
Marketable securities	9,865,706	9,520,939
Receivables from collaborative agreement	203,538	206,609
Other current assets	628,503	841,674
Total current assets	14,572,976	18,434,010
Property, plant and equipment, net	7,946,806	8,356,009
Other assets	6,074,190	6,075,663
Total assets	$ 28,593,972	$ 32,865,682
LIABILITIES AND STOCKHOLDERS' EQUITY		
Current liabilities:		
Accounts payable and accrued expenses	$ 1,970,764	$ 1,730,741
Deferred revenue	0	2,500,000
Current maturities of capitalized lease obligations	317,083	317,083
Current maturities of long term debt	1,250,000	1,000,000
Total current liabilities	3,537,847	5,547,824
Capitalized lease obligations, less current maturities	3,182,917	3,261,667
Long term debt, less current maturities	0	500,000
Deferred rent	278,341	222,673
Redeemable stock	5,248,610	5,248,610
Common stock to be issued	187,500	187,500
Stockholders' equity		
Common stock	178,570	178,003
Additional paid in capital	123,007,742	122,861,606
Deferred compensation	(1,418,232)	(1,472,919)
Accumulated deficit	(105,596,779)	(103,664,084)
Unrealized loss on marketable securities	(12,544)	(5,198)
Accumulated other comprehensive (loss)	(105,609,323)	(103,669,282)
Total stockholders' equity	16,158,757	17,897,408
Total liabilities and stockholders' equity	$ 28,593,972	$ 32,866,682

See accompanying notes to condensed consolidated financial statements.

CYTOTHERAPEUTICS, INC.

CONDENSED CONSOLIDATED STATEMENTS OF OPERATIONS

(unaudited)	THREE MONTHS ENDED MARCH 31, 1999	1998
Revenue from collaborative arrangements	$ 2,501,035	$ 1,842,975
Operating expenses:		
Research and development	3,566,557	4,499,662
General and administrative	995,459	1,147,006
	4,562,016	5,646,668
Loss from operations	(2,060,981)	(3,803,693)
Other income (expense):		
Investment income	222,111	393,974
Interest expense	(93,825)	(108,818)
	128,286	285,156
Net loss	$ (1,932,695)	$ (3,518,537)
Basic and diluted net loss per share	$ (0.10)	$ (0.19)
Shares used in computing basic and diluted net loss per share	18,452,297	18,184,474

See accompanying notes to condensed consolidated financial statements.

CYTOTHERAPEUTICS, INC.

CONDENSED CONSOLIDATED STATEMENTS OF CASH FLOWS

(unaudited)	THREE MONTHS ENDED MARCH 31, 1999	1998
Cash flows from operating activities:		
Net loss	$ (1,932,695)	$ (3,518,537)
Adjustments to reconcile net loss to net cash used for operating activities:		
Depreciation and amortization	580,556	525,620
Compensation expense relating to the grant of stock options	134,963	61,686
Changes in operating assets and liabilities	(1,967,157)	(1,459,414)
Net cash used in operating activities	(3,184,333)	(4,390,645)
Cash flows from investing activities:		
Proceeds from sale of marketable securities	3,192,039	10,056,212
Purchases of marketable securities	(3,544,276)	(6,716,668)
Purchase of property, plant and equipment	(41,624)	(267,583)
Acquisition of other assets	(149,043)	(153,858)
Net cash provided by (used in) investing activities	(542,904)	2,918,103
Cash flows from financing activities:		
Proceeds from the exercise of stock options	66,428	156,558
Principal payments under capitalized lease obligations and mortgage payable	(328,750)	(241,000)
Net cash used in financing activities	(262,322)	(84,442)
Decrease in cash and cash equivalents	(3,989,559)	(1,556,984)
Cash and cash equivalents, January 1	7,864,788	15,941,701
Cash and cash equivalents, March 31	$ 3,875,229	$ 14,384,717

See accompanying notes to condensed consolidated financial statements.

NOTES TO CONDENSED CONSOLIDATED FINANCIAL STATEMENTS (UNAUDITED)
MARCH 31, 1999 AND 1998

NOTE 1. BASIS OF PRESENTATION

The accompanying, unaudited, condensed consolidated financial statements have been prepared by the Company in accordance with generally accepted accounting principles for interim financial information and with the instructions to Form 10-Q and Article 10 of Regulation S-X. Accordingly, they do not include all of the information and footnotes required by generally accepted accounting principles for complete financial statements. In the opinion of management, the accompanying financial statements include all adjustments, consisting of normal recurring accruals considered necessary for a fair presentation of the financial position, results of operations and cash flows for the periods presented. Results of operations for the three months ended March 31, 1999 are not necessarily indicative of the results that may be expected for the entire fiscal year ending December 31, 1999.

The balance sheet at December 31, 1998 has been derived from the audited financial statements at that date but does not include all of the information and footnotes required by generally accepted accounting principles for complete financial statements.

For further information, refer to the audited financial statements and footnotes thereto as of December 31, 1998 included in the Company's Annual Report to Stockholders and the Annual Report on Form 10-K filed with the Securities and Exchange Commission.

NOTE 2. 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.

NOTE 3. ADOPTION OF NEW ACCOUNTING PRONOUNCEMENT

As of January 1, 1998, the Company adopted Statement 130, REPORTING COMPREHENSIVE INCOME. Statement 130 establishes new rules for 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 which prior to adoption were reported separately in shareholders' equity to be included in other comprehensive income.

During the first three months of 1999 and 1998, total comprehensive loss amounted to $1,940,000 and $3,514,000, respectively.

NOTE 4. REDEEMABLE STOCK

See Management's Discussion and Analysis of Financial Condition and Results of Operations regarding the Genentech Inc., resolution and the impact on the Company's liquidity and capital resources.

NOTE 5. SUBSEQUENT EVENTS

On April 28, 1999, the Company announced that Patrick Aebischer, M.D., Ph.D., resigned from the Board of Directors. Dr. Aebischer joined CytoTherapeutics' Board in January 1996. He is a scientific founder of CytoTherapeutics, a co-inventor of the Company's encapsulated cell technology and currently the Chairman of the Board of Modex Therapeutiques SA, a partially owned subsidiary of CytoTherapeutics. Dr. Aebischer resigned his position on the Board due to differences with CytoTherapeutics' management and Board of Directors over the management and future direction of the Company.

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

The following discussion of the financial condition and results of operations of the Company for the three months ended March 31, 1999 and 1998 should be read in conjunction with the accompanying unaudited condensed consolidated financial statements and the related footnotes thereto.

The statements contained in this report, other than statements of historical fact, constitute forward-looking statements. Such statements include, without limitation, all statements as to expectation or belief and statements as to the Company's future results of operations, the progress of the Company's product development and clinical programs, the need for, and timing of, additional capital and capital expenditures, partnering prospects, the need for additional intellectual property rights, effects of regulations, 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 Astra AB determining not to continue support for the Company's encapsulated cell program, failure to obtain a corporate partner or partners to support the Company's stem cell programs, negotiations with Genentech, Inc., risks of delays in research, development and clinical testing programs, obsolescence of the Company's technology, lack of available funding, competition from third parties, intellectual property rights of third parties, failure of the Company's collaborators to perform, regulatory constraints, litigation 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.

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 has not commercialized any product and in order for the Company to commercialize any product the Company must, among other things, substantially increase its research and development expenditures 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. There can be no assurance that such financing or partnering revenues will be available when needed or on terms acceptable to the Company. 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, nonrecurring licensing payments.

RESULTS OF OPERATIONS
THREE MONTHS ENDED MARCH 31, 1999 AND 1998

For the quarters ended March 31, 1999 and 1998, revenues from collaborative agreements totaled $2,501,000 and $1,843,000, respectively. This 36% increase in funding is primarily due to an increase in revenues from a Development, Marketing and License Agreement with Astra AB, which was signed in March 1995.

Research and development expenses totaled $3,567,000 for the three months ended March 31, 1999, compared with $4,500,000 for the same period in 1998. The decrease of $933,000, or 21%, from 1998 to 1999 was primarily attributable to a reduction in spending on research agreements and a reduction in research and development personnel expenses.

General and administrative expenses were $995,000 for the three months ended March 31, 1999, compared with $1,147,000 for the same period in 1998. The decrease of $152,000, or 13%, from 1998 to 1999 was primarily attributable to a reduction in recruiting and relocation expenses.

Interest income for the three months ended March 31, 1999 and 1998 was $222,000 and $394,000, respectively. The decrease in interest income in 1999 is attributable to the lower average investment balances, $15,515,000 vs. $26,696,000 in the first quarter of 1999 and 1998, respectively.

Interest expense was $94,000 for the three months ended March 31, 1999, compared with $109,000 for the same period in 1998. The decrease from 1999 to 1998 was attributable to lower outstanding debt and capital lease balances in 1999 compared to 1998.

Net loss for the three months ended March 31, 1999 was $1,933,000, or $0.10 per share, as compared to net loss of $3,519,000, or $0.19 per share, for the comparable period in 1998. The decrease in net loss of $1,586,000, or 45%, from 1998 to 1999 is primarily attributable to a reduction in research and development spending and a 43% increase in research funding from Astra AB.

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 $13,741,000 at March 31, 1999. 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 relationship with corporate partners.

In March 1995, the Company signed a collaborative research and development agreement with Astra AB for the development and marketing of certain 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 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 originally expected to receive annual payments of $5 million to $7 million from Astra, which was to approximate the research and development costs incurred by the Company under the plan. Subject to the successful development of such products 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 and use. Astra has the exclusive worldwide right to market products covered by the agreement. Until the later of either the expiration of all patents included in the licensed technology or a specified fixed 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 had the right to terminate the original agreement since 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.

The current Phase II pain trial completed patient enrollment in March 1999, and efficacy data from the trial is 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 and the results of ongoing negotiations with Astra with respect to the structure and funding level for the collaboration beyond the current Phase II trial. Astra has indicated that, unless it decides to continue the collaborative development program, no additional funding will be forthcoming in the second half of 1999. Should Astra discontinue funding for the Company's development of encapsulated-cell products to treat pain, or reduce funding for such products or otherwise adversely modify the terms of the

collaborative agreement with the Company, any such action would 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. 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 will 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 March 31, 1999. The loan required interest payments only 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. The current balance on this credit facility as of March 31, 1999 was $1.25 million. The loan agreement requires that, among other covenants, the Company maintain at all times unrestricted liquidity in an amount equal to or in excess of $15 million. The Company was in violation of this covenant as of March 31, 1999, and accordingly has classified the entire debt as current. On May 6, 1999, the lender granted a waiver of the loan covenant violation in exchange for the Company making a payment to the lender to reduce the outstanding principal balance to $750,000 and agreeing to make the final payment under the loan facility by February 1, 2000. The lender has also reduced the requirement to maintain unrestricted liquidity to an amount equal to or in excess of $10 million.

The Company has limited liquidity and capital resources and must obtain significant additional capital resources in order to sustain its product development efforts. 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. 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. 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 market conditions, interest rates and, more specifically, on the Company's progress in its exploratory, preclinical and clinical development programs. 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.

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 outlicense 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 system 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.

PART II - ITEM 1

LEGAL PROCEEDINGS

None.

PART II - ITEM 6

EXHIBITS AND REPORTS ON FORM 8-K

(a) EXHIBITS

Exhibit 27 - Financial Data Schedule
Exhibit 99 - Cautionary Factors Relevant to Forward-Looking-Information.

(b) REPORTS ON FORM 8-K

None.

SIGNATURE

Pursuant to the requirements of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned thereunto duly authorized.

CYTOTHERAPEUTICS, INC.

(Name of Registrant)

MAY 13, 1999
- ---
(Date)

/s/ PHILIP K. YACHMETZ

Acting Chief Financial Officer
(principal financial officer and
principal accounting officer)

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JAN-01-1999
MAR-31-1999
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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 xenotransplantation 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.