CYTOGEN CORP
Form 10-K
March 30, 2001

CONFORMED COPY

SECURITIES AND EXCHANGE COMMISSION
Washington, DC 20549

FORM 10-K

FOR ANNUAL AND TRANSITION REPORTS
PURSUANT TO SECTIONS 13 OR 15(d) OF THE
SECURITIES EXCHANGE ACT OF 1934

(Mark One)

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

For the fiscal year ended December 31, 2000

OR

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

For the transition period from _____ to _____

Commission File Number 000-14879

CYTOGEN CORPORATION

(Exact Name of Registrant as Specified in Its Charter)

Delaware	22-2322400
(State or Other Jurisdiction of Incorporation or Organization)	(I.R.S. Employer Identification No.)

600 College Road East, CN5308, Princeton New Jersey	08540-5308
(Address of Principal Executive Offices)	(Zip Code)

Registrant's telephone number, including area code (609) 750-8200

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

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

Common Stock, $0.01 par value

(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. |_|

The aggregate market value of the registrant's voting shares of Common Stock held by non-affiliates of the registrant on March 1, 2001, based on $3.69 per share, the last reported sale price on the NASDAQ National Market on that date, was $282 million.

The number of shares of Common Stock, $.01 par value, of the registrant outstanding as of March 1, 2001 was 77,380,205 shares.

The following documents are incorporated by reference into the Annual Report on Form 10-K: Portions of the registrant's definitive Proxy Statement for its 2001 Annual Meeting of Stockholders are incorporated by reference into Part III of this Report.

TABLE OF CONTENTS

PART I

Item 1. Business

Business

Overview

Cytogen is an established biopharmaceutical company with two principal lines of business, proteomics and oncology. We are extending our expertise in antibodies and molecular recognition to the development of new products and a proteomics-driven drug discovery platform. We have established a pipeline of product candidates based upon our proprietary antibody and our exclusively licensed prostate specific membrane antigen, or PSMA, technologies. We are also developing a proprietary protein pathway database as a drug discovery and development tool for the pharmaceutical and biotechnology industries.

Our cancer management business currently is comprised of four marketed products, each of which has been approved by the United States Food and Drug Administration (the "FDA"): ProstaScint(R), a monoclonal antibody-based imaging agent used to image the extent and spread of prostate cancer; BrachySeed(TM), a second generation radioactive implant for the treatment of localized prostate cancer; OncoScint(R) CR/OV, another monoclonal antibody-based imaging agent used for the detection of colorectal and ovarian cancer; and Quadramet(R), a cancer therapeutic agent marketed for the relief of cancer-related bone pain. We are evolving our cancer pipeline by exploiting PSMA, which we exclusively licensed from Memorial Sloan-Kettering Cancer Center. PSMA is a unique membrane-bound antigen highly expressed in prostate cancer cells and in the neovasculature of a variety of other solid tumors, including breast, lung and colon. We are developing our PSMA technology as part of our approach to offering a full range of prostate cancer management products and services throughout the progression of the disease, including gene-based immunotherapy vaccines, antibody-delivered therapeutic compounds and novel assays for detection of primary and recurrent prostate cancer. We also plan to apply our PSMA technology, including therapeutics and in vitro diagnostics, toward other types of cancer based upon our experience in prostate cancer, although we cannot be certain such technology will be commercializable in such areas. Our in vivo immunotherapeutic development program is being conducted in collaboration with Progenics Pharmaceuticals, Inc.

We also acquired rights to two product candidates pursuant to marketing, license and supply agreements that we entered into in 2000. Under such agreements, we acquired exclusive United States marketing rights to Combidex(R), a magnetic resonance imaging contrast agent for the detection of lymph node metastases and exclusive United States marketing rights to imaging agent Code 7228 for oncology applications, as well as an option with respect to other applications under certain circumstances. Combidex has received an approvable letter from the FDA for the detection of lymph node metastases. We cannot assure you, however, that the licensor of Combidex and Code 7228 will receive approval from the FDA to market Combidex or Code 7228 in the United States.

Proteomics is the study of the expression, interaction and function of proteins. Genomics is the study and identification of an organism's genetic makeup. While genomics provides important information regarding genetic makeup, it does not directly provide information regarding protein interactions and thus protein function. However, genomics data can prove useful in proteomics research as a source of obtaining complete protein sequences of ligands we have identified. Public availability of this genomics information allows for effective integration in our database of public and proprietary information. We recognized in our past research that the key to understanding or developing the means to intervene in diseases was primarily based on understanding protein interactions rather than only through the use or study of genomics. We undertook this approach on our own initiative and with our own funds. Our proteomics program, under development by our subsidiary, AxCell Biosciences Corporation, is focused on the identification of protein interaction and signaling pathways within cells

as relating to disease processes and identification of novel drug targets.

We utilize our proprietary proteomics technology to map selective protein-protein interactions and to develop a database, called ProChart(TM) (formerly called the Inter-Functional Proteomic Database, or IFP Database) which includes data relating to protein signaling pathways linked to a variety of other bioinformatic data. ProChart is designed to permit customers to integrate existing databases, both public and proprietary, with our proprietary data to create a "virtual laboratory" on the computer desktop of researchers involved in drug discovery. We believe this database has significant potential commercial value to the pharmaceutical and biotechnology industries as a means of drug target identification, validation, screen development and lead compound optimization faster and cheaper than with current methodologies. These proprietary technologies are designed to provide a platform from which we can quickly and cost-effectively determine protein-protein interactions and build

pathways of intracellular signaling data. ProChart also offers a consolidated platform to enable statistical and mathematical modeling of complex protein pathways.

The Company was incorporated in Delaware on March 3, 1980 under the name Hybridex, Inc. and changed its name to Cytogen Corporation on April 1, 1980. The Company's executive offices are located at 600 College Road East, Princeton, New Jersey 08540 and its telephone number is 609-750-8200.

PROTEOMICS

We are developing a proprietary protein pathway database called ProChart, as a discovery and development tool for subscribers in the pharmaceutical and biotechnology industries. Our bioinformatics platform is designed to identify drug targets through the application of our novel, innovative and rapid techniques for deriving intracellular protein pathway data. We are designing ProChart, with our marketing partner InforMax, Inc. (NASDAQ: INMX), to permit use of the Internet to integrate our proprietary information with a customer's proprietary data and other information, including public genomics data.

Our technology may potentially shorten the drug discovery process by providing efficacy and potential toxicity information while utilizing existing high-throughput screening instrumentation. We believe that using ProChart may permit pharmaceutical and biotechnology companies to validate protein targets for drug discovery faster and cheaper than with current methodologies. In addition, we believe that the development of the database will lead to the identification of novel proteins that we may develop exclusively or with partners. We plan to offer customers multi-year subscriptions to ProChart. We also plan to chart increasingly greater portions of the proteome and add these results to ProChart. Additionally, we will price our ProChart database product in relation to the amount and quality of information that ProChart provides, thus allowing us to potentially increase our price structure as the database grows.

Drug discovery

The traditional drug discovery process involves testing or screening compounds in disease models. Researchers often engage in the process with little knowledge of the intracellular processes underlying the disease or the specific drug target within the cell. Thus, companies must screen a very large number of arbitrarily selected compounds to obtain a desired change in a disease model. While this approach sometimes produces drugs successfully, we believe it has the following limitations:

- inefficiency: it is capital intensive and time consuming in identifying and validating targets;

- low productivity: it yields relatively few new drug candidates;

- lack of information: it provides little information about the intracellular processes or targets, to guide target selection and subsequent drug development; and

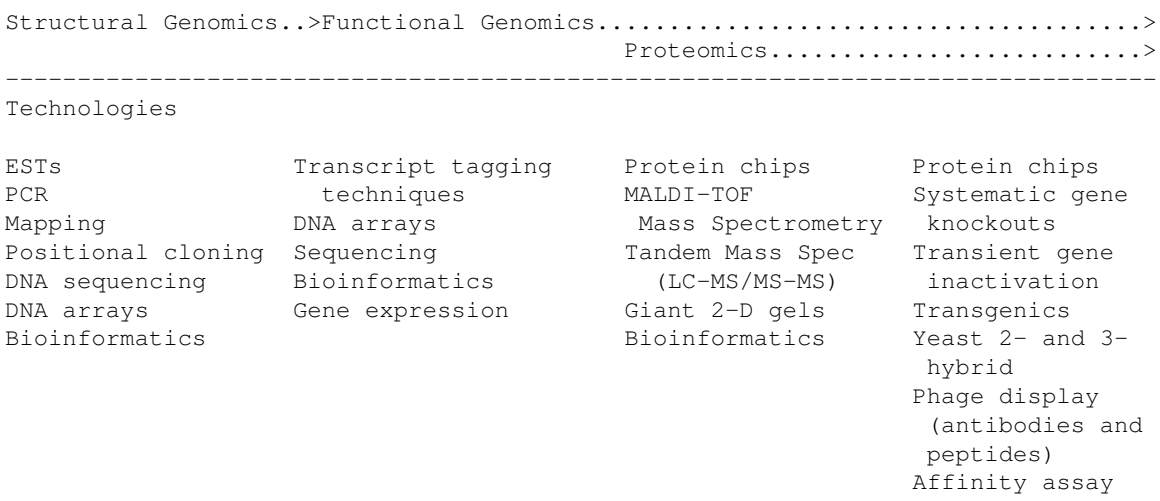
- risk of side effects: it often results in drug candidates with a risk of serious side effects.

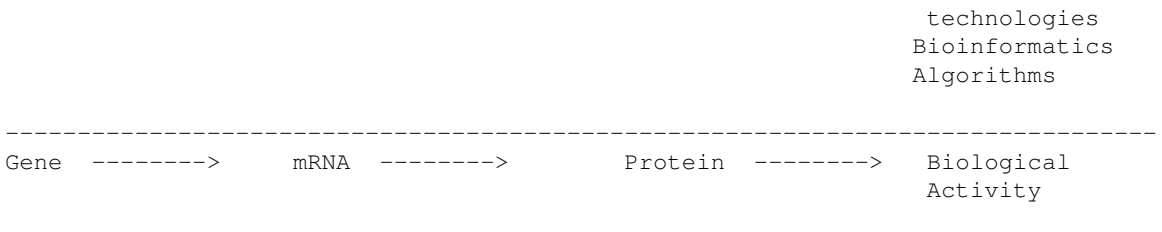
In an effort to overcome some of the difficulties associated with traditional drug discovery, scientists have turned to genomics as a means of better understanding the roots of disease. Scientists believed that a comprehensive knowledge of an organism's genetic makeup would lead to more efficient drug discovery. While useful, DNA sequence analysis alone does not lead efficiently to new target identification, because one cannot easily infer the functions of gene products, or proteins, and protein pathways from DNA sequence.

Proteomic technologies offer significant opportunities to improve the drug discovery process. By focusing on protein activity levels, or expression levels, researchers are able to learn more about the role proteins play in causing and treating disease. Proteomics also aids in deciphering the mechanisms of disease and increasing both the opportunity to develop drugs with reduced side effects and an increased probability of clinical trial success. We believe proteomics has the potential to increase substantially the number of drug targets and thereby the number of novel new drugs.

The current environment

The drive to understand basic biological mechanisms has led to two distinct, yet related, approaches to the study of molecular biology, genomics and proteomics. Genomics is the study and identification of an organism's genetic makeup. Proteomics is the study of protein expression and protein interaction within cells.





As seen above, drug discovery research is in a transition from emphasis on structural genomics, to functional genomics, to structural proteomics and finally to functional proteomics.

The two main components of genomics research are structural and functional. The structural effort is comprised of identifying gene sequences and identifying gene variants. This research has primarily been approached through the use of DNA sequencing, gene mapping and positional cloning. Identification of gene sequence does not lead directly to targets for drug discovery but does give information that is useful to functional genomics and proteomics. Identification of gene variants can lead to targets for drug discovery, but for the most part they lead to pathways associated with disease. Some of the protein components of those pathways are the ultimate targets for drug discovery.

The functional study of genomics consists primarily of gene expression. The genes expressed in normal and diseased tissue differ, and gene expression techniques can comprehensively distinguish between the two. Gene expression has been studied using gel-based and chip-based technologies. Although the genes expressed lead to potential targets in the proteins for which they code, there are several limitations to consider:

- there may be no correlation between gene expression and protein production;

- interactions between proteins cannot be predicted; and

- gene expression cannot account for changes to the protein once the protein has been created.

Due to these limitations, gene expression provides a limited explanation of the biological function of proteins within cells.

Proteomics research efforts can also be categorized as structural and functional. Structural proteomics, or protein expression, measures the number and types of proteins existent in normal and diseased cells. Two-dimensional gel electrophoresis and mass spectrometry are the primary tools used in protein expression analysis. This approach is useful in defining the structure of proteins in a cell. Some of these proteins may be targets for drug discovery. However, the role of the protein in the disease is still not defined.

Functional proteomics is the study of proteins' biological activities. An important function of proteins is the transmission of biological signals using intricate pathways populated by proteins which interact with one another. Understanding the role proteins play in these signaling pathways allows a better understanding of their function in cellular behavior. Aberrations in the interaction of proteins with one another are at the heart of the molecular basis of many diseases. We believe analysis of protein pathways will identify those proteins that play a role in causing or preventing disease. Our proteomics business is focused upon this area.

The most widely used method for studying protein interactions is the yeast two-hybrid system. We believe that this method has numerous limitations. We have developed a different and proprietary approach to the study of functional proteomics.

The two-hybrid system	Our system
The rate of the throughput of the yeast two-hybrid system has been improved; however, the methodology does not reach the throughput of our technology.	We expect to measure in excess of 15,000 interactions per day and anticipate making significant progress in mapping the signaling pathways in the human proteome in the next 4 years.
The results of the yeast two-hybrid method may be misleading, because the interactions determined using this method are cells.	Results are passed through a series bioinformatic filters, such as affinity and tissue expression, to better determine biologically significant interactions.
Researchers must possess knowledge about a protein's role in a signaling pathway prior to using this system.	Knowledge of a protein's role in a signaling pathway is determined through the application of our system.

We believe our approach to detecting protein pathways has the following additional distinct advantages compared to the yeast two-hybrid system: simplicity, higher throughput data generation, direct protein interaction measurement, fewer false positives, rapid formatting of high-throughput screening assays and identification of specific ligands, which provide a starting point for rational drug design.

DRUG DISCOVERY AND DEVELOPMENT PROCESS

Early Discovery.....		Compound Discovery and Development.....				
Target* Identification	Target* Validation	Screen* Development	Primary Screening	Secondary Screening	Lead* Compound Optimization	Pre-clinical Studies

*OUR TECHNOLOGY IS AIMED AT ACCELERATING FOUR STEPS IN THE DRUG DISCOVERY AND DEVELOPMENT PROCESS.

We believe that target identification may be facilitated by the use of ProChart. We anticipate that ProChart will allow identification of disease-related alterations in protein pathways by comparing protein pathways in cells and tissues associated with a disease model with pathways in normal tissue. We

believe that this technology will enable researchers to more efficiently identify potential drug targets.

We also develop high-throughput screens for drug development in cases where targets are proprietary to us. Customers may license these targets and receive the components necessary for a high-throughput screen.

Finally, we believe that we can accelerate lead compound optimization through the supply of related protein-component family members, or protein arrays. We believe that these protein arrays contain the proteins with which a researcher can test a lead compound for cross-protein interaction. Such cross-protein interactions may also represent the side effects which the lead compound might invoke. We believe that modifications of the structure of the lead compound followed by further testing with the target array will lead to more efficient lead compound optimization.

Background

Our core proteomics technology is based on an understanding of the principles of the binding, or molecular recognition, of antibodies to antigens. Through a sponsored research program at the University of North Carolina at Chapel Hill, coupled with our internal research, we studied the interactions between peptide ligands and proteins. This research led to a better understanding of protein-protein interactions, and ultimately to proprietary methods for identifying and quantifying such interactions. We have a portfolio of patents and patent applications based on inventions generated both internally and at the University of North Carolina at Chapel Hill, relating to methods for identification of proteins which interact in cellular pathways, and the compositions of such proteins. Certain patents and patent applications filed on behalf of the University of North Carolina at Chapel Hill are the subject of a worldwide, exclusive license to us. We established AxCell Biosciences Corporation as a subsidiary to harness the commercial potential of this proprietary platform technology in the area of proteomics.

Our technology

We have developed several integrated, high-throughput technologies designed to determine protein pathways quickly and cost effectively. The identification of protein pathways is a critical step in drug discovery.

[GRAPHIC OF TECHNOLOGY FLOW CHART OMITTED]

As part of functional signaling pathways, protein interaction is mediated through binding of a ligand sequence on one protein and a domain on another, similar to the relationship between a lock and a key. Domains are functional recognition sites on proteins where the actual interaction occurs with another protein. Ligands are the regions of the other proteins that interact with the domains. In the human proteome, domains are classified in families such as WW or PDZ.

As seen in the above illustration, we identify domain-ligand interactions through the use of proprietary phage display libraries. The process begins with a domain from a known protein family such as WW. A library of peptides, which are short sequences of amino acids (the building blocks of proteins), is exposed to this domain to identify those peptides that act as ligands and have binding affinity to the domain (Step 1).

We then use these ligands as probes to find other proteins that contain a domain which exhibits an affinity to the ligands. This technique identifies the complete family of domains that interacts with a set of ligands (Step 2). Once a set of ligands and domains are identified, we measure the strength of affinity between each domain and ligand (Step 3). These steps are repeated with all signaling domains and their corresponding ligands. This approach allows us to create the database of ligand-domain binding interactions and thus establish a functional relationship between the set of ligands and domains (Step 4).

Using this database and computational methods, or bioinformatics, we define the rules of interaction between domains and ligands. Using bioinformatic analyses, each interacting protein can be identified, and through ligand-domain pairing biological pathways can be constructed (Step 5). These biological pathways are analogous to a circuit diagram of intracellular communication.

Analyses of the aberrations in the interaction of proteins with one another can then be studied to identify those proteins that play a role in causing or preventing disease and can be targeted for drug development (Step 6).

Proprietary algorithm development

Through the use of our platform technologies described above and the data generated with them, we plan to develop proprietary modeling and characterization algorithms. ProChart will contain comprehensive protein interaction and pathway data that we believe will allow the modeling and characterization of ligands using connections to the corresponding domains. We also plan to develop pathway models using the data in ProChart. These models will be made available as tools within ProChart to our subscription customers.

Our proteomics products

ProChart

We intend to offer our proprietary proteomics technology to pharmaceutical and biotech companies through the following products and services:

ProChart is designed to offer customers the opportunity to evaluate many proteins at once by overlaying protein pathway data with other bioinformatic information in a rational and user friendly format. We believe that users will be able to visualize and correlate protein pathway data with all sequence, expression, tissue distribution, structural and bibliographic information that exists for that particular protein and pathway. ProChart can also be used to generate protein pathway information according to a customer's needs or interests. The end result is that companies can evaluate a large number of targets and rationally select a subset with which they can advance to experimentation. This database is also designed to allow a researcher to define the best point for intervention in a protein pathway to maximize beneficial pharmacological effects while minimizing potential toxicity.

As an example of the above described usages, AxCell's bioinformatics staff compared publicly available single nucleotide polymorphisms (SNPs) information (single base pair changes in DNA) from the Human Genome Project to ProChart to determine if such changes translate into functional changes, or differences in the way proteins bind with one another. Such aberrations in protein pathways reflect the molecular basis of many diseases, and may lead to discovery of new drug targets. This may also allow AxCell to develop proprietary targets or license targets as an additional way to commercialize its proteomics technology.

Novel Protein Targets

We view proteins by their modular building blocks or domains. Every signaling protein can be defined by its domain composition and this composition can be compared to known proteins to determine if a protein represents a novel composition of matter. The figure below gives an example of a known protein, which consists of two domain 1s and one domain 2. Also shown are several novel proteins, such as Novel 2, which is made up of five domain Cs. Since we are measuring domain-ligand interactions, we not only define the protein but have knowledge of the protein's function. This method of defining proteins has been used by us in a composition of matter patent covering novel WW-domain-containing proteins.

MODULAR VIEW OF PROTEINS

Known Protein	Domain 1 -- Domain 2 -- Domain 1--
Novel 1	--Domain A -- Domain A -- Domain B -- Domain B
Novel 2	- Domain C -- Domain C -- Domain C -- Domain C -- Domain C
Novel 3	--- Domain B -- Domain B -- Domain B -- Domain B -- Domain B

In the course of identifying pathways to create ProChart, we anticipate discovering and, where appropriate, filing patent applications on novel proteins. We believe that some of these proprietary proteins will be important biological targets. In these instances, we will offer those targets to our customers for licensing fees, milestone payments and royalty payments.

Protein Arrays

We plan to sell defined sets of known protein families, or protein arrays, for use in lead optimization. The signaling proteins in ProChart are organized based on their domains. Domains are interaction modules, or defined structural recognition regions on proteins, which are the sites of specific interaction between one protein and another. These domains are the parts of signaling proteins where a drug may interact and alter a pathway. There are estimated to be 60 to 80 domain families in signaling pathways. Each family may have 100 to 300 members. Customers who identify potential targets in ProChart based on a specific interaction involving a particular domain will need that physical protein for screening. They will also need the other family members which have that domain in common. The relative degrees of binding to these other family members represent the toxicity and possible side effects of a drug candidate.

In the course of generating data for ProChart, we completed mapping the protein interactions for the known proteins of the WW domain family. This represents the first family of protein domains for which an entire target array has been mapped. This array may be useful in developing optimized drugs for diseases is which the WW family has been implicated such as hypertension, muscular dystrophy and certain immunodeficiencies.

We plan to chart the entire human proteome of intracellular protein signaling pathways. Our existing robotics systems are designed to permit generation of approximately 15,000 data points per day. We anticipate making significant progress in mapping the signaling pathways in the human proteome in the next four years. We intend to sell multi-year subscriptions to pharmaceutical and

biotechnology companies, pricing the product according to market receptivity and the nature and quantity of information it contains.

Marketing

We previously established a collaboration with InforMax, Inc., a publicly held bioinformatics provider. InforMax is a leader in the development of bioinformatics software for accelerated drug discovery and has a proven track record in software development. We are jointly designing an interface for ProChart with InforMax that will be integrated with InforMax's GenoMax (TM) product. GenoMax is a bioinformatics system that offers high-speed analysis of both public and proprietary genetic databases within the security of a corporate firewall. This system is designed to allow the subscriber to evaluate data in ProChart, while accessing other public and private databases. We are also developing an application programming interface for ProChart, to permit integration with other bioinformatics platforms, including those developed by the customers themselves. By taking advantage of an existing bioinformatic platform, we plan to concentrate our efforts on the development of tools specific to protein pathway data. InforMax will also lead in marketing ProChart. InforMax has developed a Protein-Protein Interaction (PPI) module for the GenoMax enterprise bioinformational system, a modular platform of advanced analysis programs for genomic and proteomic applications, and successfully integrated ProChart.

We plan to market ProChart as multi-year subscriptions allowing access to ProChart inside the customers' corporate firewall. This subscription delivery is facilitated using InforMax's GenoMax product into which ProChart has been successfully integrated. These subscriptions may include collaborative bioinformatics research projects to analyze specific pathways as requested by a customer. Such collaborations would typically provide additional revenues, and could also include milestone payments and royalty-based revenues from any products emerging from the collaborative research and developed by our partner.

Our proteomics patents and proprietary rights position

Overall, our patent strategy has focused on composition and use of the proteins and peptides which we are discovering, thus avoiding the uncertainty and controversy associated with the patenting of genes. We believe such composition and use claims should be important because we believe it is likely that proteins rather than genes will be the targets for new drugs.

We will market our protein targets under arrangements that we anticipate would include licensing fees, milestone payments and royalty payments as our customers develop products based on these targets. We plan to market protein arrays under a license for use and, where possible, obtain commitments for milestone payments and royalty-based payments if the arrays contain novel protein targets proprietary to us.

We intend to pursue aggressively patent protection for novel synthetic peptides and novel naturally occurring polypeptides that we identify as binding to ligands of interest, as well as for products and methods relating to the use of these polypeptides and their respective genes as possible drug targets in screening assays. We also intend to seek patent protection for methods and products relating to our data analysis procedures.

Among our patents are two issued U.S. patents relating to peptides that bind to certain molecules expressed on cancer cells. We also co-own with the University of North Carolina at Chapel Hill an issued U.S. patent covering certain polypeptides that contain a WW domain.

We are the exclusive licensee of certain patents and patent applications owned by the University of North Carolina at Chapel Hill, covering parts of the proteomics technology. These include seven issued U.S. patents relating to our phage display libraries, methods of using phage display libraries to identify peptides that bind to a target molecule of interest, as well as peptides that bind to certain molecules.

Competition

We are subject to significant and increasing competition in the field of proteomics. Many companies compete in the overall effort to understand the complex flow from gene sequence, to transcription into messenger riboneucleic acid, to protein expression and finally to biological activity. In addition, most major pharmaceutical and biotechnology companies have some level of internal activity and high interest in these areas.

The technology for analyzing the functions of proteins in a disease setting, and for mapping interactions between proteins, is relatively new. This technology is evolving rapidly and developments by competitors, including potential customers, could make our technology obsolete. A number of companies compete with our approach to analyzing the proteome, and others compete with our technology for identification of novel proteins and use of proteins for possible drug targets.

Of the several approaches used commercially to analyze the proteome, the main direct competitor with our technology is the yeast two-hybrid system. Three companies, Myriad Genetics, Inc. (NASDAQ: MYGN), CuraGen Corporation (NASDAQ: CRGN) and Hybrigenics Inc. use this method to perform large-scale cataloguing of protein-protein interactions.

Strategic alliances

InforMax, Inc.

In September 1999, AxCell and InforMax, Inc. concluded an agreement to market ProChart as part of an enterprise bioinformatics solution to the pharmaceutical and biotechnology industries. The three year agreement also provides for technology development by InforMax to link our database to InforMax's GenoMax, a new generation of molecular biology and genetics software. In February 2001, AxCell and InforMax announced the development of the Protein-Protein Interaction (PPI) module for the GenoMax enterprise bioinformatics system and successfully integrated ProChart, AxCell's growing database of human protein interactions. AxCell has developed technology that provides both qualitative and quantitative information about a wide range of protein-protein interactions. The integration of ProChart with GenoMax was demonstrated publicly for the first time at the CHI Genome Tri-Conference in San Francisco, CA, in March of 2001.

Compaq Computer Corporation

In December 1999, AxCell entered into a developer partnership with Compaq Computer Corporation. This development program will be facilitated by Compaq's proven Alpha architecture, high performance 64-bit systems that deliver speed and scalability advantages. Under the agreement, Compaq has provided us with hardware for the development of our proteomics database. In December 2000, AxCell furthered its strategic relationship with Compaq, adding additional hardware provided by Compaq to continue the development of ProChart. Due to increasing laboratory data output, AxCell's computing requirements have more than doubled and Compaq's AlphaServer cluster technology facilitated the required expansion.

University of North Carolina

We sponsored research at, and are the exclusive licensee of certain patent and patent applications and technology owned by the University of North Carolina at Chapel Hill, covering the creation of long peptides that may fold to form three-dimensional functional structures, and of libraries composed of these peptides. The technology covered by this collaboration has been utilized, with other technology we developed, in our proteomics program.

Other Initiatives

We previously announced an intention to enter into a proteomics collaboration with the Institute for Systems Biology. These collaborative efforts are still in the preliminary phases.

We executed a Materials Transfer Agreement with the Fred Hutchinson Cancer Research Center pursuant to which AxCell obtained the Center's prostate cancer related cDNA libraries for research purposes.

Our scientific plan to investigate potential synergies between AxCell's technology and Molecular Staging, Inc.'s ("MSI") Rolling Circle Amplification Technology has been postponed. AxCell will continue to explore opportunities for scientific collaboration with MSI going forward.

ONCOLOGY

Background

Cancer encompasses a large number of discrete diseases that afflict many different parts of the human body. The diversity of cancer diseases and their overall prevalence creates a large need for new and improved treatments. Cancer is the second leading cause of death in the United States, accounting for one of every four deaths in the United States. According to the American Cancer Society, about 1,220,100 new cancer cases were expected to be diagnosed in 2000. Since 1990, approximately 13 million new cancer cases have been diagnosed. The National Institute of Health estimates overall annual direct medical costs for cancer at over $100 billion. Treatment of breast, lung and prostate cancers account for over half of these direct medical costs. This market is not saturated and novel treatments often enjoy premium pricing and rapid market acceptance. Fundamentals of the oncology market that are particularly encouraging include:

- accelerated approval procedures adopted by the FDA to shorten the development process and review time for cancer drugs;

- in-licensing opportunities created by a trend among large pharmaceutical companies to concentrate on products with larger market potential than most anticancer drugs;

- favorable pricing and reimbursement for oncology drugs; and

- a highly concentrated population of oncology healthcare professionals which we believe allows a smaller sales force to be effective.

We develop, commercialize and market products to improve the diagnosis and treatment of cancer. We were founded based upon our knowledge of monoclonal antibodies. Our research efforts in this area led to our marketed products. In the development of our current products, we also developed expertise in molecular recognition and in linking radioisotopes to carriers, including antibodies, for diagnostic and therapeutic purposes. We also developed expertise

with nuclear imaging, including training of technicians and physicians, utilized for diagnostic purposes. We have applied this knowledge primarily in the field of prostate cancer, and for imaging/diagnostic agents for colorectal and ovarian cancers. Our historical knowledge led to research programs, both internally and in collaborations with academic and scientific institutions, in which we gained additional knowledge about antibodies, proteins, identification and synthesis of novel proteins, and antigens located by those compounds. We plan to apply our research and development experience, coupled with our proprietary technology rights, to build an oncology business for an integrated approach in the intervention and progression of disease. We now have an established in-house sales force, consisting of experienced salespersons and technical representatives. We intend to use this sales force to sell current products and any products which we develop or acquire.

Product	Indication	Status	Development/Mark
ProstaScint	Monoclonal antibody diagnostic imaging agent for staging the spread of prostate cancer	Approved and marketed in the United States. Regulatory approval pending in Canada	Cytogen (United Sta Canada)
BrachySeed(TM)	Treatment of localized tumors such as tumors of the neck, lung, pancreas, breast, uterus and prostate	Iodine approved and marketed in the United States Palladium to be submitted for approval in second quarter of 2001	Cytogen (United Sta
OncoScint CR/OV	Monoclonal antibody diagnostic imaging agent for spread of colorectal and ovarian cancer	Approved for sale in eleven European countries and Canada. Approved in the United States	Cytogen (United Sta Canada)
Quadramet	Relief of bone pain from cancer spread to the bone from primary tumor	Approved in the United States and Canada	Berlex (United Stat Cytogen (Canada)
	Treatment of Refractory Rheumatoid Arthritis	Evaluating Phase I results	Berlex (United Stat Cytogen has marketi in Canada, Europe, certain other count
	Treatment of disease progression by use of Quadramet, prior to onset of pain	Phase III	Berlex (United Stat Cytogen (Canada)

PSMA Development	In vivo immunotherapeutic product for cancer vaccine utilizing gene and protein-based therapy	Pre-clinical development	Progenics/Cytogen L
	Prostate cancer antibody-based therapy	Pre-clinical development	Progenics/Cytogen L
	In vitro diagnostic tests for prostate cancer	Development of a trial assay	Cytogen to market
	Ex vivo dendritic cell processing Inc.	Phase I/II clinical trials	Northwest Biotherap

Pipeline--PSMA technology

Prostate specific membrane antigen, or PSMA, is a transmembrane protein that can be used as an important marker associated with prostate cancer. PSMA has also been found to be present in new blood vessel formation associated with other major solid tumors. It is overexpressed in primary prostate cancer, but it is expressed most highly in the more aggressive forms of prostate cancer, including those that do not express prostate specific antigen, or PSA, and those that do not respond to hormone therapy. When PSMA was compared to various PSA tests, the presence of PSMA was a more accurate guide of the extent of cancer. However, there are currently no commercially available assays for PSMA. Memorial Sloan-Kettering Cancer Center identified PSMA using a monoclonal antibody

supplied by us. A patent entitled "Prostate Specific Membrane Antigen" was issued to Sloan-Kettering Institute for Cancer Research, an affiliate of Memorial Sloan-Kettering Cancer Center, and we have the exclusive worldwide license covering this technology. Subsequently, the antibody for PSMA was the basis of our FDA-approved ProstaScint imaging product. We believe that technology utilizing PSMA can yield novel products for the treatment and diagnosis of cancer because of the unique characteristics of this antigen.

In 1999, Cytogen entered into a joint venture with Progenics Pharmaceuticals, Inc. ("Progenics") to develop in vivo immunotherapeutic products utilizing PSMA. The first of these product candidates is a therapeutic prostate cancer vaccine utilizing the PSMA gene and a vector delivery system and the PSMA protein as a basis of immune stimulation. We are also developing through this venture an antibody-based immunotherapy for prostate cancer. We believe that these product candidates, if successfully developed, could play an important role in the treatment of prostate cancer. We believe there are significant unmet needs for treatment and monitoring of this disease. In addition, we intend to evaluate the utility of these therapies, as an anti-angiogenesis approach, in other cancers where PSMA is expressed e.g., breast, colon, etc.

The joint venture is owned equally by Progenics and us. We have exclusively licensed to the joint venture certain immunotherapeutic applications of our PSMA patents and know-how. Progenics will fund up to $3 million of pre-clinical development costs of the program, which we anticipate will be adequate to fund the project through the pre-clinical stage. We and Progenics will share costs of the program in excess of the initial $3 million for clinical development. We have certain North American marketing rights to products developed by the venture and a right of first negotiation with respect to marketing activities in

any territory outside North America. We anticipate marketing any products developed upon approval by the FDA or requisite foreign regulatory bodies, as applicable. If approved, we anticipate marketing these products with our own sales force and will be reimbursed by the joint venture for these costs. We will split the remaining revenues equally with Progenics on any products developed by the venture. In connection with the licensing of the PSMA technology to the joint venture, we will receive $2 million in payments, of which $1 million was received during 1999 and $500,000 during 2000, and the balance will be received by the end of 2001. We have exclusively licensed in vivo immunotherapy rights to PSMA to this joint venture.

We licensed PSMA through our subsidiary, Prostagen, Inc., to Northwest Biotherapeutics, Inc., for development of in vitro dendritic cell processing immunotherapy to prostate cancer. Prostagen also licensed exclusive PSMA manufacturing rights for immunotherapy to Northwest Clinicals, LLC, a corporation formed and co-owned by Northwest Biotherapeutics and Prostagen. In 2000, we executed a new sublicense agreement with Northwest Biotherapetics Inc. clarifying their rights to make and use PSMA for ex vivo prostate cancer immunotherapy. The license agreement with Northwest Clinicals, LLC was terminated and the manufacturing rights thereunder returned to Cytogen except for those granted under the newly-executed license with respect to ex vivo immunotherapy. Our joint venture agreement with Progenics required that we reacquire our PSMA manufacturing rights by June 15, 2000, or the following would occur: (i) Progenics will acquire co-exclusive marketing rights with us; (ii) we will be obligated to contribute up to an additional $500,000 to the joint venture to fund research and development; and (iii) Progenics' research and development expense obligation will be reduced to $2.5 million. We and Progenics are reviewing the timing and nature of actions taken regarding these manufacturing rights in order to determine the parties' prospective rights and obligations under the joint venture agreement.

We obtained exclusive, world-wide licenses from Molecular Staging, Inc. for technology to be used in developing in vitro diagnostic tests using both PSMA and PSA. Molecular Staging's Rolling Circle Amplification Technology is a novel, patented process that creates new diagnostic opportunities. Rolling Circle Amplification Technology is a highly sensitive, quantitative and efficient amplification method that allows the user to detect the presence of target molecules in a wide array of testing formats. It offers a practical method that allows solid phase recognition and detection of target molecules either directly, on a cell or on a biochip. Our initial goal is to deploy Molecular Staging's technology in a new diagnostic kit for managing prostate cancer based on detection of PSA and PSMA. We anticipate initiating a clinical trial of the PSA assay and determining proof of concept for the PSMA test next year. We also plan to deploy such assays for diagnosis of other tumors where PSMA is found in associated neovasculature.

Market potential

Diagnostic Screening Tests

The measurement of prostate specific antigen, or PSA, levels in the circulation is the only in vitro test approved for the diagnosis, monitoring and screening of prostate cancer in the United States. The American Cancer Society, American College of Radiology and American Urologic Association have recommended PSA for use in screening of asymptomatic men, in combination with a digital rectal examination. However, in 1997, the American College of Physicians concluded that there was no evidence of benefit from routine screening using PSA and

recommended against regular screening using this test. The American Urologic Association, which supports screening tests for eligible men over 50 years of age, claims that PSA and digital rectal examination screening increases the rate of early cancer diagnosis from 30% to 40% for those not screened to 70% to 85% for those screened with PSA. Even though a PSA test combined with a digital rectal exam increases the chances of detection, the method generates a high number of false positives that often lead to unnecessary biopsies. We believe new and more accurate tests based on PSA and PSMA may offer higher specificity and prognostic information in diagnosing primary and recurrent prostate cancer.

An estimated 23.8 million PSA tests were performed in 1998 yielding a market value of $286 million. It is expected that this market will reach nearly $400 million in 2001 according to the 1999 Medical Data International Report. Current estimates of the world-wide market are $400-600 million with approximately 60 million men being screened for PSA levels in the United States. In addition, over one million biopsies are performed annually in the United States to confirm the presence of prostate cancer following a screening. Furthermore, the correlation of PSA values and prostatic biopsy results has failed to achieve a level of predictability which avoids unnecessary biopsies. Our goal is to develop an ultra-sensitive PSA test utilizing novel amplification technologies, initially targeted for the recurrent disease setting.

A serum test for PSMA, representing a novel marker associated with more aggressive disease, is anticipated to provide more relevant prognostic value and improve the accuracy of evaluating prostate cancer. We anticipate providing both tests together on a new diagnostic chip.

Immunotherapy/Vaccines

We are developing, as part of our collaboration with Progenics, immunotherapeutics for treatment of prostate cancer. We believe immunotherapy is a particularly attractive alternative for the treatment of advanced prostate cancer and for prevention of recurrent disease by eliminating metastases. Because PSMA has been identified as a unique antigen linked to prostate cancer, it may serve as an excellent immunotherapy target.

As part of our joint venture with Progenics, we are developing both vaccine and antibody-based immunotherapies directed to PSMA. Additionally, antibody-based applications may also include radio labeled or toxic-conjugated agents.

We believe that there are approximately one million men annually in the United States who are at risk for recurrent disease and/or have advanced prostate cancer. We estimate that the potential market for a vaccine or antibody-based treatment is greater than $500 million annually in the United States.

Our approved products

We have four marketed products, each of which has been approved by the FDA: ProstaScint, used as an imaging agent in the diagnosis of the extent and spread of prostate cancer; BrachySeed, a second generation radioactive implant for prostate cancer therapy; OncoScint CR/OV, marketed as a diagnostic imaging agent for colorectal and ovarian cancer; and Quadramet, used for relief of bone pain from cancer that has spread to the bone from the primary tumor.

Cancer diagnostic imaging products

Our cancer diagnostic products, ProstaScint and OncoScint CR/OV, are murine-based monoclonal antibody-based imaging agents for prostate, colorectal and ovarian cancers. These products utilize our proprietary targeted delivery system, employing whole monoclonal antibodies, which directs the radioisotope Indium/111/ to malignant tumor sites. A radioisotope is an element which, because of nuclear instability, undergoes radioactive decay and emits radiation.

The imaging products are supplied to hospitals, diagnostic imaging centers and radiopharmacies.

During an imaging procedure, the radiolabeled monoclonal antibody product is administered intravenously into the patient. The antibody travels through the bloodstream and binds to specific antigens expressed by the tumors being studied. The radioactivity from the isotope that has been attached to the antibody can be detected from outside the body by a gamma camera. Gamma cameras are universally found in all nuclear medicine departments. The image captured by the camera identifies the existence, location and extent of the radio-labeled pharmaceutical thus identifying the sites of tumor. Based on clinical studies conducted to date by physicians on our behalf, the imaging agents may provide new and useful information not available from other diagnostic modalities regarding the existence, location and extent of a specific disease throughout the body. We believe that this information has the potential to affect the way physicians manage their patients' individual treatments.

ProstaScint

ProstaScint is a diagnostic monoclonal antibody linked to Indium/111/ which specifically targets PSMA. Due to the selective expression of PSMA, the ProstaScint imaging procedure can detect the extent and spread of prostate cancer in the body. ProstaScint is approved by the FDA for marketing in two clinical settings: as a diagnostic imaging agent in newly diagnosed patients with biopsy-proven prostate cancer thought to be clinically localized after standard diagnostic evaluation and who are at high risk for spread of their disease to pelvic lymph nodes and for use in post-prostatectomy patients in whom there is a high suspicion that the cancer has recurred.

According to the American Cancer Society, nearly 200,000 American men were diagnosed with prostate cancer in 2000, of whom approximately 11% are at high risk for metastatic spread of their disease. In addition, estimates indicate that in 2000, 40,000 to 60,000 patients previously treated for prostate cancer developed symptoms of recurrent cancer which had not yet progressed to the point of skeletal involvement. We believe that there are approximately 60,000 to 70,000 patients with prostate cancer in the United States who are candidates, based on current indications, to receive a ProstaScint scan each year. We believe that the potential market for ProstaScint is over $60 million in the United States.

When deciding on an initial course of therapy for diagnosed prostate cancer, physicians must first determine the extent of disease in the patient. The accuracy of this information is vital in deciding upon an appropriate course of therapy. Prior to the availability of ProstaScint, determining whether newly diagnosed disease was limited to the prostate or had spread beyond the gland was based upon statistical inference from the biopsy appearance of the tumor and the patient's serum level of PSA. Conventional imaging methods such as CT or MRI are all relatively insensitive because they rely on identifying significant changes to normal anatomic structure to indicate the presence of disease. The ProstaScint disease scan images are based upon expression of the PSMA molecule and, therefore, can identify disease not readily detectable with conventional procedures.

In the United States, following initial therapy, prostate cancer patients are monitored to ascertain changes in the level of PSA. In this setting, a rise in PSA is evidence of recurrence of the patient's prostate cancer. Knowledge of the extent and location of disease recurrence is important in choosing the most appropriate form of treatment. The National Comprehensive Cancer Network (NCCN), a consortium of leading cancer hospitals, in 2000 included ProstaScint in its

Practice Guidelines for Prostate Cancer. These guidelines are published to serve as the practice standard for the oncology community.

We also believe that ProstaScint may be useful for imaging the extent of prostate cancer within the prostate gland. ProstaScint guided therapy may be useful to help guide specific treatments such as prostate brachytherapy or highly targeted external beam radiation. Brachytherapy is a treatment which implants radiation sources into the site of the tumor; while external beam radiation utilizes a beam of radiation directed at the cancer from a source outside the body. We estimate that approximately half of newly diagnosed prostate cancer patients will undergo a form of radiation treatment. The current generation of imaging technologies enables physicians to view ProstaScint scans incorporated with conventional imaging modalities. We believe these technologies will create greater acceptance of ProstaScint. There are no other agents approved for the imaging and diagnosis of prostate cancer.

OncoScint CR/OV

OncoScint CR/OV is approved by the FDA for single use with other appropriate, commercially available diagnostic tests, to locate malignancies outside the liver in patients with known colorectal or ovarian cancer. OncoScint CR/OV is also approved for sale in eleven European countries and Canada. However, this product has not yet been widely adopted by physicians for patients with these conditions. We market OncoScint CR/OV in the United States directly through our own sales force. The market for OncoScint CR/OV for colorectal cancer diagnosis has been negatively affected by positron emission tomography, or "PET", scans. The sensitivity of the PET scan in colon cancer appears to be similar or higher

than the OncoScint CR/OV scan. Consequently, we are deemphasizing the marketing of OncoScint CR/OV for colorectal cancer and focusing on its use in recurrent ovarian cancer which impacts approximately 16,800 women annually.

Cancer therapeutic products

Quadramet

Quadramet, a cancer therapeutic agent, is approved by the FDA for the relief of pain in patients with metastatic bone lesions that image on conventional bone scan, a routinely performed nuclear medicine procedure. Quadramet consists of a radioactive isotope, Samarium/153/, which emits beta radiation, and a chelating agent, EDTMP, which targets the drug to sites of new bone formation.

Once tumors have metastasized to the skeleton, they continue to grow and cause destruction of the adjacent bone. This erosion of bone stimulates new bone formation which encircles the metastatic tumor. By targeting these areas of bone formation, Quadramet delivers site-specific radiation which may result in significant pain reduction.

According to American Cancer Society and National Cancer Institute statistics, approximately 600,000 new cases of cancer that typically metastasize to bone occurred in the United States in 1997. We believe that over 200,000 patients each year will suffer from bone pain that is severe enough to require intervention. Based on this information, we believe that the potential market for Quadramet is approximately $80 million in the United States based on 20% of this patient population.

Quadramet has many characteristics which we believe are advantageous for the treatment of cancer bone pain, including early onset of pain relief, lasting up to four months with a single injection; predictability of recovery from bone

marrow toxicity; ease of administration and length of pain relief. In addition, due to its pharmacokinetic properties, the radioactive plasma half-life is only five to six hours. Quadramet is administered as a single intravenous injection on an outpatient basis and directly targets sites of new bone formation which include those areas in the skeleton that have been invaded by metastatic tumors. Quadramet exhibits high and very selective uptake in bone with little or no detectable accumulation in soft tissue.

Berlex has initiated a Phase III B clinical trial to evaluate the extension of the use of Quadramet to patients whose bone metastases can be visualized on conventional bone scan, but who are not yet experiencing pain from these metastases. We believe earlier use in the care of cancer patients could expand the potential market for Quadramet significantly. Our continuation of these trials will depend upon their progress and success of the trial, and on decisions by our marketing partner Berlex to continue to fund the trial. If this trial is successful, we plan to seek expansion of the FDA approved indication of Quadramet for this therapeutic use in delaying progression of the onset of pain. Realization of the full market potential of Quadramet is dependent on realizing this expanded indication.

Current competitive treatments for severe bone cancer pain include narcotic analgesics, external beam radiation therapy, Metastron and Novantrone.

The first non-cancer use of Quadramet under investigation is the treatment of patients with refractory rheumatoid arthritis. We believe Quadramet can target the diseased joints and provide a high but localized dose of radiation to the area which may relieve the symptoms of refractory rheumatoid arthritis. We are determining how to proceed with this possible use based upon analyzing the data from a recently completed Phase I dose escalation study.

BrachySeed

Of the nearly 200,000 men diagnosed with prostate cancer in 2000, approximately 60% to 70% will have localized disease (cancer confined to the prostate gland). The most common treatment options for localized disease are prostatectomy, the surgical removal of the prostate, or brachytherapy, the implantation of small radioactive pellets or "seeds" into the prostate. Approximately 100 seeds are implanted during a brachytherapy procedure.

BrachySeed is a unique, second generation radioactive brachytherapy implant developed by Draxis Health, Inc. and its subsidiary, Draximage, Inc. ("Draxis") and marketed in the United States by Cytogen. BrachySeed's unique, single-weld design brings a new level of accuracy, precision and safety to sealed source implant surgery. Each BrachySeed is robotically manufactured and undergoes six separate quality control checks to ensure uniformity.

While brachytherapy has been available since the 1970s, it has only started to gain prominence and greater acceptance within recent years, coinciding with the development of advanced technologies to aid seed placement. Brachytherapy is the fastest growing treatment for localized prostate cancer and offers a number of

potential benefits compared to alternative treatments such as prostatectomy, including rapid patient recovery, lower costs and reduced incidence of complications such as impotency and incontinence. Given this improved side-effect profile, the market for brachytherapy seeds has grown by 95% over the last three years. According to the 1999 Medical Data International Report, by 2003, it is estimated that approximately half of all newly diagnosed prostate cancer patients will opt for brachytherapy, while radical prostatectomies will be performed on less than 15% of patients. Independent estimates place the

current brachytherapy market at $220 million in the United States and growing by approximately $100-200 million in three to four years.

Later this year or early next year, Draxis plans to supply Cytogen with a second-generation palladium-based seed. The more energetic radiation from palladium is thought to be suitable for certain aggressive forms of prostate cancer.

Oncology Product Sales, Marketing and Distribution

We currently employ a dedicated field sales force targeting approximately 10,000 healthcare professionals. The primary objective of the sales force is to promote our products to urologists, radiation oncologists and nuclear medicine physicians. Within this field force are technical specialists who assist in the training of nuclear medicine technologists and nuclear medicine physicians, and qualify nuclear imaging centers to conduct ProstaScint imaging. We depend on our own sales force for the sale and marketing of ProstaScint, BrachySeed and OncoScint CR/OV products and on Berlex for United States sales, marketing and distribution of Quadramet. Distribution of ProstaScint and OncoScint CR/OV is handled by outside contractors and Berlex and DuPont handle the distribution of Quadramet. We are the exclusive United States distributor for BrachySeed.

During 2000, the Company terminated its co-marketing arrangement with the Bard Urological Division of CR Bard Company, Inc. ("Bard"). Historically, ProstaScint has been marketed under a co-marketing arrangement with the urological division of Bard, a marketer of a broad range of urology products. In 1999, we reached an agreement with Bard to phase out the co-marketing agreement so that we could undertake direct marketing responsibility for the product. We took this step because of our view that a highly trained and dedicated internal sales force will be able to market our high technology products most effectively and to build a marketing capability for possible future products. The transition was completed by mid-year 2000.

ProstaScint is a technique-dependent product that requires a high degree of proficiency in nuclear imaging technology in order to interpret the scan. We have established a network of accredited nuclear medicine imaging centers through our PIE, or Partners In Excellence Program. Each PIE site receives rigorous training, undergoes proficiency testing and is subject to ongoing quality assurance protocols. As of December 31, 2000, there were over 350 PIE sites, including a majority of the National Cancer Institute-designated Comprehensive Cancer Centers. ProstaScint may only be used at PIE sites. We plan to add PIE sites on a selective basis in order to ensure that new sites are adequately qualified and committed to a minimum number of scans for maintaining a high level of competence. At the present time, we bear partial expense of the qualification of each site.

In 1999, we reacquired rights to our ProstaScint and OncoScint CR/OV products in Canada, which were to be marketed by Faulding (Canada), Inc. We did not pay for the return of these rights. OncoScint CR/OV is approved by the Canadian Health Care Branch and ProstaScint is under expedited review with approval expected by the second half of 2001. We believe these products may be marketed to major cancer centers in Canada and will not require a significant level of resources. However, we cannot be certain that ProstaScint will be approved in Canada, that these products will be reimbursable under the Canadian health care system or reimbursed on favorable economic terms, or that they will be accepted by physicians.

In June 2000, we filed applications for regulatory approval for ProstaScint in Europe. We received a review of our application in November 2000 and we will be submitting a response thereto by the end of the second quarter of 2001. We are currently assessing the viability of European marketing of ProstaScint.

Since May 1994, we have been the sole marketer of OncoScint CR/OV in the United States. In 1996, we entered into a distribution agreement with CIS biointernational, granting to CIS biointernational the exclusive right to distribute and sell OncoScint CR/OV worldwide, except for in the United States and Canada. This Agreement was terminated effective in March 2001 by mutual agreement of the parties.

In October 1998, we entered into an exclusive agreement with Berlex Laboratories, Inc. for the marketing of Quadramet, after terminating our previous marketing relationship with the DuPont Merck radiopharmaceutical division. Berlex re-launched Quadramet in March 1999. Berlex maintains a sales

force that targets its sales efforts on the oncological community. Pursuant to our agreement with Berlex, we are entitled to royalty payments based on net sales of the Quadramet product and milestone payments based upon sales levels achieved.

During the first year of launch, Quadramet was marketed principally to the nuclear medicine community, which administers the treatment to patients. However, the treatment is more typically prescribed by caregiving physicians, including medical oncologists, radiation oncologists and urologists. We believe that successful commercialization of Quadramet will depend upon marketing to these referring physicians.

We plan to market Quadramet in Canada. We paid no costs to obtain these marketing rights. We are evaluating whether to market Quadramet directly in Canada or through a marketing partner.

We have no significant foreign revenues. Although we plan to sell our products internationally, we cannot assure you that the products will be accepted by the foreign medical community or regulators or that we will be able to sell at adequate prices. We will incur expenses if we sell our products in foreign countries, and if our products do not generate adequate revenues we may not be able to recover these expenses.

Strategic Alliances and License Agreements

Draxis Health, Inc.

In December 2000, we entered into a Product Manufacturing and Supply Agreement and a License and Distribution Agreement with Draxis to, among other things, market and distribute BrachySeed implants for prostate cancer therapy in the United States. Under the agreement, Draxis will supply radioactive iodine and palladium seeds to us in exchange for royalties on sales and certain milestone payments. The FDA granted marketing approval for BrachySeed in September 2000. We launched the radioactive iodine BrachySeed in the United States in January 2001. We cannot be certain, however, of the market acceptance of the product or whether this product will significantly increase our revenues.

Advanced Magnetics, Inc.

In August 2000, Cytogen and Advanced Magnetics, Inc. mutually terminated a previously negotiated agreement pursuant to which Cytogen was to acquire Advanced Magnetics. Instead, the two companies entered into marketing, licensing and supply agreements (the "AVM Agreements"). Under the AVM Agreements, the Company acquired exclusive United States rights to two product candidates, Combidex and imaging agent Code 7228 for oncology applications. Combidex, a MRI contrast agent for the detection of lymph node metastases, recently received an

approvable letter subject to certain conditions by the FDA, following a priority review. Code 7228 is being developed for oncology and magnetic resonance angiography applications and is expected to enter Phase II clinical development during this year. The Company has rights to Code 7228 for oncology applications only. There can be no assurance that Advanced Magnetics will receive FDA approval to market Combidex or Code 7228 in the United States.

Progenics Pharmaceuticals, Inc.

In 1999, we entered into a joint venture with Progenics Pharmaceuticals, Inc. to develop products utilizing our PSMA technology. The first of these products, currently under development, is a therapeutic prostate cancer vaccine utilizing a gene-based approach. Our current plans are that this approach, if successful in pre-clinical development, should proceed to clinical trials in 2002. We cannot, however, assure you that pre-clinical development will be successful or that any products will proceed to clinical trials. We are also developing through this venture antibody based immunotherapy for prostate cancer. We believe that these drugs, if successfully developed, could play an important role in the treatment or prevention of advanced prostate cancer and other cancers where PSMA is expressed (e.g. breast, colon, etc.).

The Dow Chemical Company

In March 1993, we obtained an exclusive license from The Dow Chemical Company to North American rights to use Quadramet as a therapeutic radiopharmaceutical for metabolic bone disease or tumor regression for cancer caused by metastatic or primary cancer in bone in humans, and for the treatment of disease characterized by osteoblastic response in humans. In November 1998, Dow also extended our exclusive rights for use of Quadramet in treating advanced rheumatoid arthritis to Europe, Japan and other countries in addition to North America.

Memorial Sloan-Kettering Cancer Center

In 1993, we began a development program with Memorial Sloan-Kettering Cancer Center involving PSMA and our proprietary monoclonal antibody. In November 1996, we exercised an option for and obtained an exclusive worldwide license to this technology.

Molecular Staging, Inc.

We obtained an exclusive, world-wide license from privately held Molecular Staging, Inc. for technology to be used in developing in vitro diagnostic tests utilizing PSMA and PSA. We anticipate initiating a clinical trial of the PSA assay and determining proof of concept for the PSMA test next year.

Elan Corp. plc

We entered into a license agreement granting Elan worldwide rights to a group of peptides and associated technology for orally administered drugs that are transported across the gastrointestinal epithelium, as well as rights to other orally delivered drugs derived from the research program. Elan is responsible for the further development and commercialization of this technology. We are entitled to royalties from sales of any product developed and commercialized based on this technology.

PRODUCT CONTRIBUTION TO REVENUES

Our currently marketed products and other sources of income constitute a single business segment. ProstaScint and Quadramet account for a significant percentage

of our product-related revenues. For the years ended December 31, 2000, 1999 and 1998, revenues related to ProstaScint accounted for approximately 66%, 57% and 32%, respectively, of our total revenues while revenues related to Quadramet accounted for approximately 19%, 9% and 17%, respectively, of our total revenues.

RESEARCH AND DEVELOPMENT

Our research and development expenditures include projects we conducted and payments we made to customer sponsored research programs, which for the past three years have been immaterial. Our expenses for research and development activities, including customer sponsored programs, were:

- 2000 -- $7.0 million
- 1999 -- $3.8 million
- 1998 -- $10.0 million

We intend to pursue research and development activities having commercial potential and to review all of our programs to determine whether possible market opportunities, near and longer term, provide an adequate return to justify the commitment of human and economic resources to their initiation or continuation. We incurred a significant increase in our research and development expenditures during 2000 for development of proteomics technology, for development of assays utilizing PSMA for diagnostics, and for our share of expenses for the development with Progenics Pharmaceuticals, Inc. of immunotherapies for prostate and other cancers and the acquisition of Combidex and Code 7228.

COMPETITION

The biotechnology and pharmaceutical industries are subject to intense competition, including competition from large pharmaceutical companies, biotechnology companies and other companies, universities and research institutions. Our existing therapeutic products compete with the products of a wide variety of other firms, including firms that provide products used in more traditional treatments or therapies, such as external beam radiation, chemotherapy agents and narcotic analgesics. In addition, our existing and potential competitors may be able to develop technologies that are as effective as, or more effective than those offered by us, which would render our products noncompetitive or obsolete. Moreover, many of our existing and potential competitors have substantially greater financial, marketing, sales, manufacturing, distribution and technological resources than we do. Our existing and potential competitors may be in the process of seeking FDA or foreign regulatory approval for their respective products or may also enjoy substantial

advantages over us in terms of research and development expertise, experience in conducting clinical trials, experience in regulatory matters, manufacturing efficiency, name recognition, sales and marketing expertise and distribution channels. The Company believes that competition for its products is based upon several factors, including product efficacy, safety, cost-effectiveness, ease of use, availability, price, patent position and effective product promotion.

We expect competition to intensify in the fields in which we are involved as technical advances in such fields are made and become more widely known. We cannot assure you, however, that we or our collaborative partners will be able to develop our products successfully or that we will obtain patents to provide protection against competitors. Moreover, we cannot assure you that our competitors will not succeed in developing therapeutic products that circumvent

our products or that these competitors will not succeed in developing technologies or products that are more effective than those developed by us. Notably, Nycomed-Amersham, a company with substantially greater resources than those of the Company, is dominant in brachytherapy. In addition, many of these companies may have more experience in establishing third-party reimbursement for their products. Accordingly, we cannot assure you that we will be able to compete effectively against existing or potential competitors or that competition will not have a material adverse effect on our business, financial condition and results of operations.

MANUFACTURING

Our products must be manufactured in compliance with regulatory requirements and at commercially acceptable costs. ProstaScint and OncoScint CR/OV are manufactured at a current good manufacturing practices, or cGMP, compliant manufacturing facility in Princeton, New Jersey which is operated by Bard BioPharma L.P., a subsidiary of Purdue BioPharma ("Purdue"). We have access to the facility for continued manufacture of these products until January 2002. An Establishment License Application for the facility was approved by the FDA for the manufacture of ProstaScint in October 1996 and for OncoScint CR/OV in December 1992. Purdue's facility is subject to routine inspections by the FDA to assure compliance with current Good Manufacturing Practices. As a result of an inspection held in April through May of 1999, Cytogen received an FDA Warning Letter which identified a number of deviations from FDA requirements and required their correction. We have adopted corrective measures for each of the concerns identified and in January 2000 we received a letter from the FDA informing us that our corrective actions appeared to be adequate. A subsequent inspection in July 2000 reaffirmed this corrective action program. We expect that this facility will allow us to meet our projected production requirements for ProstaScint and OncoScint CR/OV in the short term. We do not anticipate, however, that this arrangement will be continued after January 2002.

In July 2000, the Company entered into a Development and Manufacturing Agreement with DSM Biologics Company B.V. ("DSM"), pursuant to which DSM will conduct certain development activities with respect to ProstaScint for testing and evaluation purposes which Cytogen intends would replace the arrangement with Purdue, with respect to ProstaScint and OncoScint CR/OV, prior to January 2002. Under the terms of such agreement, and subject to the regulatory approvals for the manufacturing of ProstaScint, the parties are obligated to negotiate in good faith a long term supply agreement. Notwithstanding the parties' obligations to perform under the agreement or to negotiate a supply agreement in good faith, the Company cannot be certain that DSM will satisfactorily perform its obligations thereunder or that the parties will be able to negotiate a supply agreement on commercially satisfactory terms, if at all. The failure by the Company to negotiate a supply agreement on commercially reasonable terms will have a material adverse effect on the Company's business, financial condition and results of operations.

Any new manufacturing arrangement will be subject to FDA oversight, and qualification of a new manufacturer with the FDA could take a significant amount of time. Any failure to obtain such regulatory approvals will have a material adverse effect on the Company's business, financial condition and results of operations.

Raw materials and suppliers

The active raw materials used for the manufacture of our products include antibodies. OncoScint CR/OV uses a monoclonal antibody which is being supplied in commercial quantities by a single contract manufacturer, Lonza Biologics. We anticipate that our existing supply will be able to meet our needs for commercial quantities of monoclonal antibody for the foreseeable future in the United States.

We currently have arrangements necessary for the production of the monoclonal antibody for ProstaScint.

Quadramet is manufactured by DuPont pursuant to an agreement with both Berlex and Cytogen. Some components of Quadramet, particularly Samarium153 and EDTMP, are provided to DuPont by outside suppliers. DuPont obtains its requirements for Samarium153 from one supplier. Alternative sources for these components may not

be readily available. If DuPont cannot obtain sufficient quantities of the components on commercially reasonable terms, or in a timely manner, it would be unable to manufacture Quadramet on a timely and cost-effective basis which could have a material adverse effect on our business, financial condition and results of operations.

Pursuant to the terms of our Product Manufacturing and Supply Agreement with Draxis, we rely on Draxis as the sole supplier of BrachySeed, a second-generation radioactive pellet used in the treatment of prostate cancer. If Draxis fails or is unable to perform under such agreement, we could experience a material adverse effect on our business, financial condition and results of operations.

PATENTS AND PROPRIETARY RIGHTS

Consistent with industry practice, we have a policy of using patent and trade secret protection to preserve our right to exploit the results of our research and development activities and, to the extent it may be necessary or advisable, to exclude others from appropriating our proprietary technology.

Our policy is to aggressively protect our proprietary technology by selectively seeking patent protection in a worldwide program. In addition to the United States, we file patent applications in Canada, major European countries, Japan and additional foreign countries on a selective basis to protect inventions important to the development of our business. We believe that the countries in which we have obtained and are seeking patent coverage for our proprietary technology represent the major focus of the pharmaceutical industry in which we and certain of our licensees will market our respective products.

We hold 39 current United States patents and 40 current foreign patents. We have filed and currently have pending a number of additional United States and foreign patent applications, relating to certain aspects of our technology for diagnostic and therapeutic products, and the methods for their production and use. We intend to file patent applications with respect to subsequent developments and improvements, when we believe such protection is in our best interest.

We are the exclusive licensee of certain patents and patent applications owned by the University of North Carolina at Chapel Hill, covering parts of the proteomics technology. These include seven issued United States patents relating to our phage display libraries, methods of using phage display libraries to identify peptides that bind to a target molecule of interest, as well as peptides that bind to certain molecules. We hold an exclusive license under certain patents and patent applications held by the Memorial Sloan-Kettering Institute covering PSMA. We are the exclusive licensee of certain United States patents and applications held by Dow covering Quadramet.

Among our patents are two issued United States patents relating to peptides that bind to certain molecules expressed on cancer cells. We also co-own with the University of North Carolina at Chapel Hill an issued United States patent covering certain polypeptides that contain a WW domain.

We may be entitled under certain circumstances to seek extension of the terms of our patents.

We also rely upon, and intend to continue to rely upon, trade secrets, unpatented proprietary know-how and continuing technological innovation to develop and maintain our competitive position. We typically enter into confidentiality agreements with our licensees and any scientific consultants, and each of our employees has entered into agreements requiring that they forbear from disclosing confidential information, and in some cases assign to us all rights in any inventions made while in our employ. We believe that our valuable proprietary information is protected to the fullest extent practicable; however, we cannot assure you that:

- additional patents will be issued to us in any or all appropriate jurisdictions;

- litigation will not be commenced seeking to challenge our patent protection or that challenges will not be successful;

- our processes or products do not or will not infringe upon the patents of third parties; or

- the scope of patents issued will successfully prevent third parties from developing similar and competitive products.

The technology applicable to our products is developing rapidly. A substantial number of patents have been issued to other biotechnology companies. In addition, competitors have filed applications for, or have been issued, patents

and may obtain additional patents and proprietary rights relating to products or processes that are competitive with ours. In addition, others may have filed patent applications and may have been issued patents to products and to technologies potentially useful to us or necessary to commercialize our products or to achieve our business goals. We cannot assure you that we will be able to obtain licenses of patents on acceptable terms.

We cannot predict how any patent litigation will affect our efforts to develop, manufacture or market our products.

We are defendants in litigation filed against us in the United States Federal Court for the District of New Jersey with respect to claims that our ProstaScint product infringes a third-party patent. See Item 3. Legal Proceedings.

GOVERNMENT REGULATION AND PRODUCT TESTING

The development, manufacture and sale of medical products utilizing our technology are governed by a variety of statutes and regulations in the United States and by comparable laws and agency regulations in most foreign countries.

The Food, Drug and Cosmetic Act requires that our products be manufactured in FDA registered facilities subject to inspection. The manufacturer must be in compliance with current Good Manufacturing Practice (cGMP) which imposes certain procedural and documentation requirements upon us and our manufacturing partners with respect to manufacturing and quality control activities. Noncompliance with cGMP can result in, among other things, fines, injunctions, civil penalties, recalls or seizures of products, total or partial suspension of production, failure of the government to grant premarket clearance or premarket approval for drugs, withdrawal of marketing approvals and criminal prosecution. Any failure by us or our manufacturing partners to comply with the requirements of cGMP

could have a material adverse effect on our business, financial condition and results of operations.

Diagnostic and therapeutic products in the United States are regulated by the Food Drug and Cosmetic Act and the Public Health Service Act, and by FDA rules and regulations promulgated thereunder. These laws and regulations require carefully controlled research and testing of products, government notification, review and/or approval prior to marketing the products, inspection and/or licensing of manufacturing and production facilities, adherence to cGMP, compliance with product specifications, labeling, and other applicable regulations.

Medical products that we develop or intend to market are subject to substantial governmental regulation and may be classified as new drugs or biologics under the Food Drug and Cosmetic Act. The FDA and similar health authorities in most other countries must approve or license the diagnostic and therapeutic products before they can be commercially marketed. In order to obtain FDA approval, an applicant must submit, as relevant for the particular product, proof of safety, purity, potency and efficacy. In most cases this proof entails extensive pre-clinical, clinical and laboratory studies. Both the studies and the preparation and prosecution of those applications by the FDA are expensive and time consuming, and each may take several years to complete. Difficulties or unanticipated costs may be encountered by us or our licensees in their respective efforts to secure necessary governmental approval or licenses, which could delay or preclude us or our licensees from marketing their products. Limited indications for use or other conditions could also be placed on any approvals that could restrict the commercial applications of products. With respect to patented products or technologies, delays imposed by the government approval process may materially reduce the period during which we will have the exclusive right to exploit them, because patent protection lasts only for a limited time, beginning on the date the patent is first granted in the case of United States patent applications filed prior to June 6, 1995, and when the patent application is first filed in the case of patent applications filed in the United States after June 6, 1995, and applications filed in the European Economic Community. We intend to seek to maximize the useful life of our patents under the Patent Term Restoration Act of 1984 in the United States and under similar laws if available in other countries.

The majority of our diagnostic and therapeutic products will likely be classified as new drugs or biologics and will be evaluated in a series of in vitro, non-clinical and human clinical testing. Typically, clinical testing is performed in three phases to further evaluate the safety and efficacy of the drug. In Phase I, a product is tested in a small number of patients primarily for safety at one or more dosages. Phase II evaluates, in addition to safety, the efficacy of the product against particular diseases in a patient population that is generally somewhat larger than Phase I. Clinical trials of certain diagnostic and cancer therapeutic agents frequently combine Phase I and Phase II into a single Phase I/II study. In Phase III, the product is evaluated in a larger patient population sufficient to generate data to support a claim of safety and efficacy within the meaning of the Food Drug and Cosmetic Act. Permission by the FDA must be obtained before clinical testing can be initiated within the United States. This permission is obtained by submission of an Investigational New Drug application which typically includes the results of in vitro and non-clinical testing and any previous human testing done elsewhere. The FDA has 30 days to review the information submitted and makes a final decision whether to permit clinical testing with the drug or biologic. However,

this process can take longer if the FDA raises questions or asks for additional information regarding the Investigational New Drug application. A similar procedure applies to medical device and diagnostic products.

After completion of in vitro, non-clinical and clinical testing, authorization to market a drug or biologic must be granted by FDA. The FDA grants permission to market through the review and approval of either a New Drug Application for drugs or a Biologic License Application for biologics. These applications provide detailed information on the results of the safety and efficacy of the drug conducted both in animals and humans. Additionally, information is submitted describing the facilities and procedures for manufacturing the drug or biologic.

The Prescription Drug User Fee Act and subsequently, the Food and Drug Administration Modernization Act of 1997 have established application review times for both New Drug Applications and Biologic License Applications. For the majority of new drugs and biologics, FDA is to review and make a recommendation for approval within 12 months. For drugs and biologics designated as "priority," the review time is six months. This review process, however, can and frequently does exceed these targets.

Once a drug or biologic is approved, we are required to maintain approval status of the products by providing certain updated safety and efficacy information at specified intervals. Additionally, we are required to meet other requirements specified by the Food Drug and Cosmetic Act including but not limited to the manufacture of products, labeling and promotional materials and the maintenance of other records and reports. Failure to comply with these requirements or the occurrence of unanticipated safety effects from the products during commercial marketing, could lead to the need for product recall, or FDA initiated action, which could delay further marketing until the products are brought into compliance. Similar laws and regulations apply in most foreign countries where these products are likely to be marketed.

Orphan Drug Act

The Orphan Drug Act is intended to provide incentives to manufacturers to develop and market drugs for rare diseases or conditions affecting fewer than 200,000 persons in the United States at the time of application for orphan drug designation. A drug that receives orphan drug designation and is the first product to receive FDA marketing approval for a particular indication is entitled to orphan drug status, a seven-year exclusive marketing period in the United States for that indication. Clinical testing requirements for orphan drugs are the same as those for products that have not received orphan drug designation. OncoScint CR/OV has received an orphan drug designation for the detection of ovarian carcinoma. Under the Orphan Drug Act, the FDA cannot approve any application by another party to market an identical product for treatment of an identical indication unless the party has a license from the holder of orphan drug status, or the holder of orphan drug status is unable to assure an adequate supply of the drug. However, a drug that is considered by FDA to be different from a particular orphan drug is not barred from sale in the United States during the seven-year exclusive marketing period even if it receives marketing approval for the same product claim.

Other regulations

In addition to regulations enforced by FDA, we are also subject to regulation under the state and local authorities and other federal statutes and agencies including the Occupational Safety and Health Act, the Environmental Protection Act, the Toxic Substances Control Act, the Resource Conservation and Recovery Act and the Nuclear Regulatory Commission.

Foreign regulatory approval

The regulatory approval process in Europe has changed over the past few years. There are two regulatory approval processes in Europe for products developed by

us. Beginning in 1995, the centralized procedure became mandatory for all biotechnology products. Under this regulatory scheme, the application is reviewed by two scientific project leaders referred to as the rapporteur and co-rapporteur, respectively. Their roles are to prepare assessment reports of safety and efficacy and for recommending the approval for full European Union marketing.

The second regulatory scheme, referred to as the Mutual Recognition Procedure, is a process whereby a product's national registration in one member state within the European Union may be "mutually recognized" by other member states within the European Union.

Substantial requirements, comparable in many respects to those imposed under the Food Drug and Cosmetic Act, will have to be met before commercial sale is permissible in most countries. There can be no assurance, however, as to whether

or when governmental approvals, other than those already obtained, will be obtained or as to the terms or scope of those approvals.

HEALTH CARE REIMBURSEMENT

Our business, financial condition and results of operations will continue to be affected by the efforts of governments and third-party payors to contain or reduce the costs of healthcare through various means. There have been, and we expect that there will continue to be, federal and state proposals to implement government control of pricing and profitability of therapeutic and diagnostic imaging agents. In addition, an increasing emphasis on managed care has and will continue to increase the pressure on pricing of these products. While we cannot predict whether legislative or regulatory proposals will be adopted or the effects proposals or managed care efforts may have on our business, the announcement of proposals and the adoption of proposals or efforts could have a material adverse effect on our business, financial condition and results of operations. Further, to the extent proposals or efforts have a material adverse effect on other companies that are our prospective corporate partners, our ability to establish strategic alliances may be materially and adversely affected. In certain foreign markets, the pricing and profitability of our products generally are subject to government controls.

Sales of our products depend in part on the availability of reimbursement to the consumer from third-party payors, including Medicare, Medicaid, and private health insurance plans. Third-party payors are increasingly challenging the prices charged for medical products and services. To the extent we succeed in bringing products to market, we cannot assure you that these products will be considered cost-effective and that reimbursement to consumers will be available or sufficient to allow us to sell our products on a competitive basis. Reimbursement by a third-party payor may depend on a number of factors, including the payor's determination that our products are clinically useful and cost-effective, medically necessary and not experimental or investigational. Since reimbursement approval is required from each payor individually, seeking approvals can be a time consuming and costly process which could require us to provide supporting scientific, clinical and cost-effectiveness data for the use of our products to each payor separately. If we or our collaborators are unable to secure adequate third party reimbursement for our products, there would be material adverse effect on its business, financial condition and results of operations.

CUSTOMERS

During the year ended December 31, 2000, we received 52% of our total product

related, license and contract revenues from three customers, Berlex Laboratories, Inc. (22%) and the radiopharmacy chains of Mallinckrodt Medical, Inc. (19%) and Syncor International Corporation (11%).

EMPLOYEES

As of March 1, 2001, we employed 82 persons, 77 of which are employed full-time and 5 part-time. Of such 82 persons, 28 were in our proteomics subsidiary, Axcell, 4 in regulatory, 4 in clinical activities, 18 in administration and management, and 28 in marketing and sales. We believe that we have been successful in attracting skilled and experienced employees. None of our employees is covered by a collective bargaining agreement. All of our employees have executed confidentiality agreements. We consider relations with our employees to be excellent.

ADDITIONAL FACTORS THAT MAY AFFECT FUTURE RESULTS

Investing in the Company's Common Stock involves a high degree of risk. You should carefully consider the following risks together with the other information included or incorporated by reference in this Annual Report on Form 10-K in your decision as to whether to invest in our Common Stock. If any of the following risks or uncertainties actually occur, the Company's business, financial condition and operating results could be significantly and adversely affected. If that happens, the price of the Company's Common Stock could decline, and you could lose all or part of your investment.

We Have A History Of Operating Losses And An Accumulated Deficit And Expect To Incur Losses In The Future.

We have a history of operating losses since our inception. We had a net loss of $27.3 million during the year ended December 31, 2000 which included one-time, non-cash charges of $13.1 million for the acquisition of product candidate rights and $4.3 million for the cumulative effect of accounting change following the adoption of Securities and Exchange Commission Staff Accounting Bulletin No. 101. We had net income of $729,000 during the year ended December 31, 1999 which included certain non-operating gains and we had net losses of $13.2 million during the year ended December 31, 1998. The Company had an accumulated deficit of $328.6 million as of December 31, 2000. In order to develop and commercialize

our technologies, particularly our proteomics program and our prostate specific membrane antigen, or PSMA, technology, and expand our oncology products, we expect to incur significant increases in our expenses over the next several years. As a result, we may need to generate significant additional revenue to become profitable.

Our ability to generate and sustain significant additional revenues or achieve profitability will depend upon the factors discussed elsewhere in this "Risk Factors" Section, as well as numerous other factors outside of our control, including:

- development of competing products that are more effective or less costly than ours;
- our ability to develop and commercialize our own products and technologies; and
- our ability to achieve increased sales for our existing products and sales for any new products.

As a result, we may never be able to generate or sustain significant additional

revenue or achieve profitability.

We Are Heavily Dependent On Market Acceptance Of BrachySeed, ProstaScint And Quadramet For Near-Term Revenues.

ProstaScint and Quadramet are expected to account for a significant percentage of our product-related revenues in the near future. For the year ended December 31, 2000, revenues from ProstaScint and Quadramet accounted for approximately 95% of our product related revenues.

Because these products contribute the majority of our product-related revenues, our business, financial condition and results of operations depend on their acceptance as safe, effective and cost-efficient alternatives to other available treatment and diagnostic protocols by the medical community, including:

- health care providers, such as hospitals and physicians; and

- third-party payors, including Medicare, Medicaid, private insurance carriers and health maintenance organizations.

Our customers, including technologists and physicians, must successfully complete our Partners in Excellence Program, or PIE Program, a proprietary training program designed to promote the correct acquisition and interpretation of ProstaScint images. This product is technique dependent and requires a learning commitment on the part of users. We cannot assure you that additional physicians will make this commitment or otherwise accept this product as part of their treatment practices.

Berlex Laboratories, Inc. markets Quadramet in the United States through an agreement with us entered into in October 1998. We cannot assure you that Berlex will be able to successfully market Quadramet or that this agreement will result in significant revenues for us. We recently obtained marketing rights to Quadramet in Canada, but have not yet implemented a selling program. We cannot assure you that Quadramet can be marketed effectively in Canada, or that it will contribute significantly to our revenues.

We cannot assure you that Quadramet will be approved for additional indications, due to uncertainty as to efficacy or safety for other purposes, regulatory obstacles and physician preferences for existing or competing practices.

Accordingly, we cannot assure you that ProstaScint, BrachySeed or Quadramet will achieve market acceptance on a timely basis, or at all. If ProstaScint, BrachySeed or Quadramet do not achieve broader market acceptance, we may not be able to generate sufficient revenue to become profitable.

Our Proteomics Program Is At An Early Stage Of Development.

We have developed and intend to continue to develop a proteomics program. This technology involves new approaches to drug research and development and remains commercially unproven. Our technology and development focus is primarily directed toward offering an infrastructure to companies for the development of drugs to treat a variety of complex human diseases. There is limited understanding generally relating to the role of proteins in diseases, and few products based on protein interaction discoveries have been developed and commercialized. Even if our proteomics program is successful in identifying and validating biological targets, there is no certainty that we or our customers will be able to develop or commercialize products to improve human health.

We have developed and intend to continue to develop a proteomics program. This technology involves new approaches to drug research and development and remains

commercially unproven. Our technology and development focus is primarily directed toward offering an infrastructure to companies for the development of drugs to treat a variety of complex human diseases. There is limited understanding generally relating to the role of proteins in diseases, and few products based on protein interaction discoveries have been developed and commercialized. Even if our proteomics program is successful in identifying and validating biological targets, there is no certainty that we or our customers will be able to develop or commercialize products to improve human health.

Our technology program for proteomics is still in the early stages of development. We may not be able to populate our ProChart with information that is useful to potential customers in a timely manner. Even if we complete and develop successfully our proteomics technology, the technology may not be accepted by, or be useful to, our potential customers.

In addition, the success of our proteomics technology will depend upon our ability to use software tools to generate data that relates protein signaling pathways to a variety of other bioinformatic data. Because of the complexity of this data, we may not be able to detect and remedy any design defects or software errors in its existing or future technologies, including databases.

We may not be successful in addressing or mitigating these risks and uncertainties, and, if it is not, our business could be significantly and adversely affected.

There Is A Limited Market For Our Potential Proteomics Products

Due to the specialized nature and anticipated cost of our proteomics technology and services, there are a limited number of pharmaceutical and biotechnology companies that are potential customers. In addition, demand for our proteomics technology and services is limited because:

- our potential customers may decide to conduct in-house research rather than subscribe to our ProChart database;

- our competitors may offer similar services at competitive prices;

- our may not be able to service satisfactorily the needs of our potential or actual customers;

- others may publicly disclose or patent proprietary information contained in our ProChart (including information related to protein signaling pathways or target candidates) or relating to prostate antigens or antibodies; and

- technological innovations may be discovered that are more advanced than those used by or available to us.

We may not be successful in addressing or mitigating these risks and uncertainties, and, if we are not, our business could be significantly and adversely affected.

We Experienced Fluctuating Results Of Operations.

Our results of operations have fluctuated on an annual and quarterly basis and may fluctuate significantly from period to period in the future, due to, among other factors:

- variations in revenue from sales of and royalties from our products;

- timing of regulatory approvals and other regulatory announcements relating to our products;

- variations in our marketing, manufacturing and distribution channels;

- timing of the acquisition and successful integration of complementary products and technologies;

- timing of new product announcements and introductions by us and our competitors; and

- product obsolescence resulting from new product introductions by us or our competitors.

Many of these factors are outside our control. Due to one or more of these factors, our results of operations may fall below the expectations of securities analysts and investors in one or more future quarters. If this happens, the market price of our Common Stock could decline.

We May Need To Raise Additional Capital Which May Not Be Available.

We have incurred negative cash flows from operations since inception. We expended, and will need to continue to expend, substantial funds to complete our planned product development efforts, including its proteomics and PSMA programs. Our future capital requirements and the adequacy of our available funds depend on many factors, including:

- successful commercialization of our products;

- acquisition of complementary products and technologies;

- magnitude, scope and results of our product development efforts;

- progress of preclinical studies and clinical trials;

- progress toward regulatory approval for our products;

- costs of filing, prosecuting, defending and enforcing patent claims and other intellectual property rights;

- competing technological and market developments; and

- expansion of strategic alliances for the sale, marketing and distribution of our products.

We may raise additional capital through public or private equity offerings, debt financings or additional collaborations and licensing arrangements. Additional financing may not be available to us when needed, or, if available, we may not be able to obtain financing on terms favorable to us or our stockholders. If we raise additional capital by issuing equity securities, the issuance will result in ownership dilution to our stockholders. If we raise additional funds through collaborations and licensing arrangements, we may be required to relinquish rights to certain of our technologies or product candidates or to grant licenses on unfavorable terms. If we relinquish rights or grant licenses on unfavorable terms, we may not be able to develop or market products in a manner that is profitable to us. If adequate funds are not available, we may not be able to conduct research activities, preclinical studies, clinical trials or other activities relating to the successful commercialization of our products on a timely basis, if at all, with the result that our business could be significantly and adversely affected.

Our Products, Generally, Are In The Early Stages Of Development And

Commercialization And We May Never Achieve The Revenue Goals Set Forth in Our Business Plan.

We began operations in 1980 and have been engaged primarily in research directed toward the development, commercialization and marketing of products to improve diagnosis and treatment of cancer and other diseases. In December 1992, we introduced for commercial use our OncoScint imaging agent. In October 1996, we introduced for commercial use our ProstaScint imaging agent. In March 1997, we introduced for commercial use our Quadramet therapeutic product. These products have not yet achieved significant commercial success. In 1998, we undertook a restructuring to focus on the development of our PSMA and proteomics technologies as well as the marketing of these existing products.

Our PSMA and proteomics technologies are still in the early stages of development. We have only recently begun to incorporate our proteomics technology into commercialized products. We may be unable to continue to successfully develop or commercialize these products and technologies.

Our business is therefore subject to the risks inherent in the development of an early stage biopharmaceutical business enterprise, such as the need:

- to obtain sufficient capital to support the expenses of developing our technology and commercializing our products;

- to ensure that our products are safe and effective;

- to obtain regulatory approval for the use and sale of our products;

- to manufacture our products in sufficient quantities and at a reasonable cost;

- to develop a sufficient market for our products; and

- to attract and retain qualified management, sales, technical and scientific staff.

The problems frequently encountered using new technologies and operating in a competitive environment also may affect our business. If we fail to properly address these risks and attain our business objectives, our business could be significantly and adversely affected.

Our PSMA Product Development Program Is Novel And, Consequently, Inherently Risky.

We are subject to the risks of failure inherent in the development of product candidates based on new technologies, including our PSMA technology. These risks include the possibility that:

- the technologies we use will not be effective;

- our product candidates will be unsafe;

- our product candidates will fail to receive the necessary regulatory approvals;

- the product candidates will be hard to manufacture on a large scale or will be uneconomical to market; and

- we will not successfully overcome technological challenges presented by its potential new products.

Our objectives include developing our PSMA technology into novel cancer therapeutics, including a cancer vaccine. To our knowledge, no cancer therapeutic vaccine has been demonstrated effective or approved for marketing. Our other research and development programs involve similarly novel approaches to human therapeutics. Consequently, there is no precedent for the successful commercialization of therapeutic products based on our PSMA technologies. We cannot assure you that any products will be successfully developed from our PSMA technology. If we fail to develop such products for the reasons set forth above or for any other reason, our business could be significantly and adversely affected.

All of Our Potential Oncology Products Will Be Subject To The Risks Of Failure Inherent In The Development Of Diagnostic Or Therapeutic Products Based On New Technologies.

Product development for cancer treatment involves a high degree of risk. We cannot assure you that the product candidates we develop, pursue or offer will prove to be safe and effective, will receive the necessary regulatory approvals, will not be precluded by proprietary rights of third parties or will ultimately achieve market acceptance. These product candidates will require substantial additional investment, laboratory development, clinical testing and regulatory approvals prior to their commercialization. We cannot assure you that we will not experience difficulties that could delay or prevent the successful development, introduction and marketing of new products.

Before we obtain regulatory approvals for the commercial sale of any of our products under development, we must demonstrate through preclinical studies and clinical trials that the product is safe and efficacious for use in each target indication. The results from preclinical studies and early clinical trials may not be predictive of results that will be obtained in large-scale testing. We cannot assure you that our clinical trials will demonstrate the safety and efficacy of any products or will result in marketable products. A number of companies in the biotechnology industry have suffered significant setbacks in advanced clinical trials, even after promising results in earlier trials. Clinical trials or marketing of any potential diagnostic or therapeutic products may expose us to liability claims for the use of these diagnostic or therapeutic products. We may not be able to maintain product liability insurance or sufficient coverage may not be available at a reasonable cost. In addition, as we develop diagnostic or therapeutic products internally, we will have to make significant investments in diagnostic or therapeutic product development, marketing, sales and regulatory compliance resources. We will also have to establish or contract for the manufacture of products, including supplies of drugs used in clinical trials, under the current Good Manufacturing Practices of the FDA. We also cannot assure you that product issues will not arise following successful clinical trials and FDA approval.

The rate of completion of clinical trials also depends on the rate of patient enrollment. Patient enrollment depends on many factors, including the size of the patient population, the nature of the protocol, the proximity of patients to clinical sites and the eligibility criteria for the study. Delays in planned patient enrollment may result in increased costs and delays, which could have a harmful effect on our ability to develop the products in our pipeline. If we are unable to develop and commercialize products on a timely basis or at all, our business could be significantly and adversely affected.

Competition In Our Field Is Intense And Likely To Increase.

We face, and will continue to face, intense competition from one or more of the following entities:

- pharmaceutical companies;
- biotechnology companies;
- bioinformatics companies;
- diagnostic companies;
- academic and research institutions; and
- government agencies.

All of our lines of business are subject to significant competition from organizations that are pursuing technologies and products that are the same as or similar to our technology and products. Many of the organizations competing with us have greater capital resources, research and development staffs and facilities and marketing capabilities.

Before we recover development expenses for our products and technologies, the products or technologies may become obsolete as a result of technological developments by us or others. Our products could also be made obsolete by new technologies which are less expensive or more effective. We may not be able to make the enhancements to our technology necessary to compete successfully with newly emerging technologies and failure to do so could significantly and adversely affect its business.

We Rely Heavily On Our Collaborative Partners.

Our success depends in significant part upon the success of our collaborative partners. We have entered into the following agreements for the sale, marketing, distribution and manufacture of our products, product candidates and technologies:

- license from The Dow Chemical Company relating to the Quadramet technology;
- sub-license and marketing agreement with Berlex Laboratories, Inc. relating to the Quadramet technology which we licensed from The Dow Chemical Company;
- agreement for manufacture of Quadramet by The DuPont Pharmaceuticals Company (formerly the radiopharmaceuticals division of The DuPont Merck Company);
- marketing and platform development agreement with InforMax, Inc. related to our proteomics program;
- joint venture with Progenics Pharmaceuticals for the development of PSMA for in vivo immunotherapy for prostate and other cancers;
- licensing agreement with Molecular Staging for technology to be used in developing in vitro diagnostic tests using PSMA and prostate specific antigen, or PSA;
- marketing and distribution agreement with Draxis Health, Inc. and its subsidiary, Draximage, Inc. to market and distribute BrachySeed; and

- marketing, license and supply agreements with Advanced Magnetics, Inc. related to our oncology product line for products currently subject to

regulatory approval.

Because our collaborative partners are responsible for certain of our sales, marketing, manufacturing and distribution activities, these activities are outside our direct control. We cannot assure you that our partners will perform their obligations under these agreements with it. In the event that our collaborative partners do not successfully market and sell our products or breach their obligations under our agreements, our products may not be commercially successful, any success may be delayed and new product development could be inhibited with the result that our business could be significantly and adversely affected.

Our Business Could Be Harmed If Our Collaborative Arrangements Expire Or Are Terminated Early.

We cannot assure you that we will be able to maintain our existing collaborative arrangements. If they expire or are terminated, we cannot assure you that they will be renewed or that new arrangements will be available on acceptable terms, if at all. In addition, we cannot assure you that any new arrangements or renewals of existing arrangements will be successful, that the parties to any new or renewed agreements will perform adequately or that any former or potential collaborators will not compete with us.

We cannot assure you that our existing or future collaborations will lead to the development of product candidates or technologies with commercial potential, that we will be able to obtain proprietary rights or licenses for proprietary rights for our product candidates or technologies developed in connection with these arrangements or that we will be able to ensure the confidentiality of proprietary rights and information developed in such arrangements or prevent the public disclosure thereof.

The Termination Of One Or More License Agreements That Are Important In The Manufacture Of Our Current Products And New Product Research And Development Activities Would Harm Our Business.

We are a party to license agreements under which we have rights to use technologies owned by other companies in the manufacture of our products and in our proprietary research, development and testing processes. We are the exclusive licensee of certain patents and patent applications held by the University of North Carolina at Chapel Hill covering part of the technology used in the proteomics program and of certain patents and patent applications held by the Memorial Sloan-Kettering Institute covering PSMA. We depend upon the enforceability of our license with The Dow Chemical Company with respect to Quadramet. If the licenses were terminated, we may not be able to find suitable alternatives to this technology on a timely basis or on reasonable terms, if at all. The loss of the right to use these technologies that we have licensed would significantly and adversely affect our business.

We Have Limited Sales, Marketing And Distribution Capabilities For Our Products.

We have only recently established a sales force and have limited internal sales, marketing and distribution capabilities for its products. We depend on Berlex Laboratories, Inc. for the sale, marketing and distribution of Quadramet in the United States. In locations outside the United States, we have not established a selling presence. If we are unable to establish and maintain significant sales, marketing and distribution efforts, either internally or through arrangements with third parties, our business may be significantly and adversely affected.

There Are Risks Associated With The Manufacture And Supply Of Our Products.

If we are to be successful, our products will have to be manufactured through third-party manufacturers in compliance with regulatory requirements and at

costs acceptable to us. We cannot assure you that we will be able to arrange for the manufacture of our products on commercially reasonable terms. If we are unable to successfully arrange for the manufacture of our products and product candidates, we will not be able to successfully commercialize our products and our business will be significantly and adversely affected.

ProstaScint and OncoScint CR/OV are manufactured at a cGMP compliant manufacturing facility operated by Purdue. We have access to the facility for continued manufacturing of these products until January 2002. We expect that this facility will allow us to meet our projected production requirements for ProstaScint and OncoScint CR/OV in the short term. We entered into a Development and Manufacturing Agreement with DSM which we intend would replace the arrangement with Purdue with respect to ProtaScint and OncoScint CR/OV prior to January 2002. Notwithstanding the parties obligations to perform under the agreement with DSM or to negotiate a supply agreement in good faith, the Company cannot be certain that DSM will satisfactorily perform its obligations thereunder or that the parties will be able to negotiate a supply agreement on

commercially reasonable terms, if at all. The failure by the Company to negotiate a long term supply agreement on commercially reasonable terms will have a material adverse effect on the Company's business, financial condition and results of operations.

Quadramet is manufactured by DuPont pursuant to an agreement with both Berlex and Cytogen. Some components of Quadramet, particularly Samarium153 and EDTMP, are provided to DuPont by outside suppliers. Due to radioactive decay, Samarium153 must be produced on a weekly basis. DuPont obtains its requirements for Samarium153 from one supplier. Alternative sources for these components may not be readily available. If DuPont cannot obtain sufficient quantities of the components on commercially reasonable terms, or in a timely manner, it would be unable to manufacture Quadramet on a timely and cost-effective basis which could have a material adverse effect on our business, financial condition and results of operations.

We rely on Draxis as the sole supplier of BrachySeed. If Draxis fails to or is unable to timely supply BrachySeed, we could experience a material adverse effect on our business, financial condition and results of operations.

We and our third-party manufacturers are required to adhere to United States Food & Drug Administration regulations setting forth requirements for current Good Manufacturing Practices, or cGMP, and similar regulations in other countries, which include extensive testing, control and documentation requirements. Ongoing compliance with cGMP, labeling and other applicable regulatory requirements are monitored through periodic inspections and market surveillance by state and federal agencies, including the FDA, and by comparable agencies in other countries. Failure of our third-party manufacturers or us to comply with applicable regulations could result in sanctions being imposed on us, including fines, injunctions, civil penalties, failure of the government to grant premarket clearance or premarket approval of drugs, delays, suspension or withdrawal of approvals, seizures or recalls of products, operating restrictions and criminal prosecutions any of which could significantly and adversely affect our business.

Failure Of Consumers To Obtain Adequate Reimbursement From Third-Party Payors Could Limit Market Acceptance And Affect Pricing Of Our Products.

Our business, financial condition and results of operations will continue to be affected by the efforts of governments and other third-party payors to contain or reduce the costs of healthcare. There have been, and we expect that there

will continue to be, a number of federal and state proposals to implement government control of pricing and profitability of therapeutic and diagnostic imaging agents such as our products. In addition, an emphasis on managed care increases possible pressure on pricing of these products. While we cannot predict whether these legislative or regulatory proposals will be adopted, or the effects these proposals or managed care efforts may have on our business, the announcement of these proposals and the adoption of these proposals or efforts could affect our stock price or our business. Further, to the extent these proposals or efforts have an adverse effect on other companies that are our prospective corporate partners, our ability to establish necessary strategic alliances may be harmed.

Sales of our products depend in part on reimbursement to the consumer from third-party payors, including Medicare, Medicaid and private health insurance plans. Third-party payors are increasingly challenging the prices charged for medical products and services. We cannot assure you that our products will be considered cost-effective and that reimbursement to consumers will continue to be available, or will be sufficient to allow us to sell our products on a competitive basis. Approval of our products for reimbursement by a third-party payor may depend on a number of factors, including the payor's determination that our products are clinically useful and cost-effective, medically necessary and not experimental or investigational. Reimbursement is determined by each payor individually and in specific cases. The reimbursement process can be time consuming. If we cannot secure adequate third-party reimbursement for our products, our business could be significantly and adversely affected.

If We Are Unable To Comply With Applicable Governmental Regulations, It May Not Be Able To Continue Our Operations.

Any products tested, manufactured or distributed by us or on our behalf pursuant to FDA clearances or approvals are subject to pervasive and continuing regulation by numerous regulatory authorities, including primarily the FDA. We may be slow to adapt, or we may never adapt to changes in existing requirements or adoption of new requirements or policies. Our failure to comply with regulatory requirements could subject us to enforcement action, including product seizures, recalls, withdrawal of clearances or approvals, restrictions on or injunctions against marketing our products based on its technology, and civil and criminal penalties. We cannot assure you that it will not be required to incur significant costs to comply with laws and regulations in the future or that laws or regulations will not create an unsustainable burden on our business.

Numerous federal, state and local governmental authorities, principally the FDA, and similar regulatory agencies in other countries, regulate the preclinical testing, clinical trials, manufacture and promotion of any compounds or agents we or our collaborative partners develop, and the manufacturing and marketing of any resulting drugs. The drug development and regulatory approval process is lengthy, expensive, uncertain and subject to delays.

The regulatory risks we face also include the following:

- any compound or agent we or our collaborative partners develop must receive regulatory agency approval before it may be marketed as a drug in a particular country;

- the regulatory process, which includes preclinical testing and clinical trials of each compound or agent in order to establish its safety and efficacy, varies from country to country, can take many years and requires the expenditure of substantial resources;

- in all circumstances, approval of the use of previously unapproved radioisotopes in certain of our products requires approval of either the Nuclear Regulatory Commission or equivalent state regulatory agencies. A radioisotope is an unstable form of an element which undergoes radioactive decay, thereby emitting radiation which may be used, for example, to image or destroy harmful growths or tissue. We cannot assure you that such approvals will be obtained on a timely basis, or at all;

- data obtained from preclinical and clinical activities are susceptible to varying interpretations which could delay, limit or prevent regulatory agency approval; and

- delays or rejections may be encountered based upon changes in regulatory agency policy during the period of drug development and/or the period of review of any application for regulatory agency approval. These delays could adversely affect the marketing of any products we or our collaborative partners develop, impose costly procedures upon our activities, diminish any competitive advantages we or our collaborative partners may attain and adversely affect its ability to receive royalties.

We cannot assure you that, even after this time and expenditure, regulatory agency approvals will be obtained for any compound or agent developed by or in collaboration with it. Moreover, regulatory agency approval for a drug or agent may entail limitations on the indicated uses that could limit the potential market for any such drug. Furthermore, if and when such approval is obtained, the marketing, manufacture, labeling, storage and record keeping related to our products would remain subject to extensive regulatory requirements. Discovery of previously unknown problems with a drug, its manufacture or its manufacturer may result in restrictions on such drug, manufacture or manufacturer, including withdrawal of the drug from the market. Failure to comply with regulatory requirements could result in fines, suspension of regulatory approvals, operating restrictions and criminal prosecution.

The United States Food, Drug and Cosmetics Act requires (i) that our products be manufactured in FDA registered facilities subject to inspection, and (ii) that we comply with cGMP, which imposes certain procedural and documentation requirements upon us and our manufacturing partners with respect to manufacturing and quality assurance activities. If we or our manufacturing partners do not comply with cGMP we may be subject to sanctions, including fines, injunctions, civil penalties, recalls or seizures of products, total or partial suspension of production, failure of the government to grant premarket clearance or premarket approval for drugs, withdrawal of marketing approvals and criminal prosecution.

We Depend On Attracting And Retaining Key Personnel.

We are highly dependent on the principal members of our management and scientific staff. The loss of their services might significantly delay or prevent the achievement of development or strategic objectives. Our success depends on our ability to retain key employees and to attract additional qualified employees. Competition for personnel is intense, and we cannot assure you that we will be able to retain existing personnel or attract and retain additional highly qualified employees in the future.

We have an employee retention agreement with our President and Chief Executive Officer, H. Joseph Reiser, Ph.D., which provides for vesting of stock options for the purchase of shares of Cytogen's Common Stock based on continued employment and on the achievement of performance objectives defined by the board of directors. We do not have similar retention agreements with its other key

personnel. If we are unable to hire and retain personnel in key positions, our business could be significantly and adversely affected unless qualified replacements can be found.

Our Business Exposes Us To Potential Liability Claims That May Exceed Our Financial Resources, Including Our Insurance Coverage, And May Lead To The Curtailment Or Termination Of Our Operations.

Our business is subject to product liability risks inherent in the testing, manufacturing and marketing of our products. We cannot assure you that product liability claims will not be asserted against us, our collaborators or our licensees. While we currently maintain product liability insurance in amounts we believe are adequate, we cannot assure you that such coverage will be adequate to protect us against future product liability claims or that product liability insurance will be available to us in the future on commercially reasonable terms, if at all. Furthermore, we cannot assure you that we will be able to avoid significant product liability claims and adverse publicity. If liability claims against us exceeds our financial resources we may have to curtail or terminate our operations.

Our Business Involves Environmental Risks That May Result In Liability.

We are subject to a variety of local, state and federal government regulations relating to storage, discharge, handling, emission, generation, manufacture and disposal of toxic, infectious or other hazardous substances used to manufacture our products. If we fail to comply with these regulations, it could be liable for damages, penalties or other forms of censure and our business could be significantly and adversely affected.

Protection Of Our Intellectual Property Is Difficult To Obtain.

Our business and competitive positions are dependent upon our ability to protect our proprietary technology. Because of the substantial length of time and expense associated with development of new products, we, like the rest of the biopharmaceutical industry, place considerable importance on obtaining and maintaining patent and trade secret protection for new technologies, products and processes. We have filed patent applications for our technology for diagnostic and therapeutic products and the methods for its production and use.

The patent positions of pharmaceutical, biopharmaceutical and biotechnology companies, including us, are generally uncertain and involve complex legal and factual questions. Our patent applications may not protect our technologies and products because, among other things:

- there is no guarantee that any of our pending patent applications will result in issued patents;
- we may develop additional proprietary technologies that are not patentable;
- there is no guarantee that any patents issued to us, our collaborators or our licensors will provide a basis for a commercially viable product;
- there is no guarantee that any patents issued to us or our collaborators will provide us with any competitive advantage;
- there is no guarantee that any patents issued to us or our collaborators will not be challenged, circumvented or invalidated by third parties; and

- there is no guarantee that any patents previously issued to others or issued in the future will not have an adverse effect on our ability to do business.

In addition, patent law in the technology fields in which we operate is uncertain and still evolving, and we cannot assure you as to the degree of protection that will be afforded any patents we are issued or license from others. Furthermore, we cannot assure you that others will not independently develop similar or alternative technologies, duplicate any of our technologies, or, if patents are issued to us, design around the patented technologies developed by us. In addition, we could incur substantial costs in litigation if it is required to defend itself in patent suits by third parties or if it initiates such suits. We cannot assure you that, if challenged by others in litigation, the patents we have been issued, or which have been assigned or have been licensed from others will not be found invalid. We cannot assure you that our activities would not infringe patents owned by others. Defense and prosecution of patent matters can be expensive and time-consuming and, regardless of whether the outcome is favorable to us, can result in the diversion of substantial financial, managerial and other resources. An adverse outcome could:

- subject us to significant liability to third parties;

- require us to cease any related research and development activities and product sales; or

- require us to obtain licenses from third parties.

We cannot assure you that any licenses required under any such third-party patents or proprietary rights would be made available on commercially reasonable terms, if at all. Moreover, the laws of certain countries may not protect our proprietary rights to the same extent as the laws of the United States. We cannot predict whether us or our competitors' pending patent applications will result in the issuance of valid patents which may significantly and adversely affect our business.

We Cannot Be Certain That Our Security Measures Protect Our Unpatented Proprietary Technology.

We also rely upon trade secret protection for some of our confidential and proprietary information that is not subject matter for which patent protection is available. To help protect our rights, we require all employees, consultants, advisors and collaborators to enter into confidentiality agreements that require disclosure, and in most cases, assignment to us, of their ideas, developments, discoveries and inventions, and that prohibit the disclosure of confidential information to anyone outside Cytogen. We cannot assure you, however, that these agreements will provide adequate protection for our trade secrets, know-how or other proprietary information or prevent any unauthorized use or disclosure.

We Are Currently Subject To Patent Litigation.

We are a defendant in litigation filed against us in the United States Federal Court for the District of New Jersey by M. David Goldenberg and Immunomedics, Inc. This lawsuit was filed on March 16, 2000. The litigation claims that our ProstaScint product infringes a patent purportedly owned by Dr. Goldenberg and licensed to Immunomedics. The patent sought to be enforced in the litigation has now expired. As a result, the claim, even if successful, would not result in a bar of the continued sale of ProstaScint or affect any other of our products or

technology. However, given the uncertainty associated with litigation, we cannot give any assurance that the litigation will not result in a material expenditure to us.

If We Make Any Acquisitions, We Will Incur A Variety Of Costs And May Never Realize The Anticipated Benefits.

If appropriate opportunities become available, we may attempt to acquire businesses, technologies, services or products that it believes are a strategic fit with our business. We currently have no commitments or agreements with respect to any acquisitions. If, however, we do undertake any transaction of this sort, the process of integrating an acquired business, technology, service or product may result in operating difficulties and expenditures and may absorb significant management attention that would otherwise be available for ongoing development of our business. Moreover, we may never realize the anticipated benefits of any acquisition. Future acquisitions could result in potentially dilutive issuances of equity securities, the incurrence of debt, contingent liabilities and amortization expenses related to goodwill and other intangible assets. These factors could adversely affect our results of operations and financial condition, which could cause a decline in the market price of our Common Stock.

Our Stock Price Has Been And May Continue To Be Volatile, And Your Investment In Our Stock Could Decline In Value.

The market prices for securities of biotechnology and pharmaceutical companies have historically been highly volatile, and the market has from time to time experienced significant price and volume fluctuations that are unrelated to the operating performance of particular companies. The market price of our Common Stock has fluctuated over a wide range and may continue to fluctuate for various reasons, including, but not limited to, announcements concerning our competitors or us regarding:

- results of clinical trials;
- technological innovations or new commercial products;
- changes in governmental regulation or the status of our regulatory approvals or applications;
- changes in earnings;
- changes in health care policies and practices;
- developments or disputes concerning proprietary rights;

- litigation or public concern as to safety of the our potential products; and
- changes in general market conditions.

We Have Adopted Various Anti-Takeover Provisions Which May Affect The Market Price Of Our Common Stock.

Our Board of Directors has the authority, without further action by the holders of Common Stock, to issue from time to time, up to 5,400,000 shares of preferred stock in one or more classes or series, and to fix the rights and preferences of the preferred stock. Pursuant to these provisions, we have implemented a stockholder rights plan by which one preferred stock purchase right is attached

to each share of Common Stock, as a means to deter coercive takeover tactics and to prevent an acquirer from gaining control of us without some mechanism to secure a fair price for all of our stockholders if an acquisition was completed. These rights will be exercisable if a person or group acquires beneficial ownership of 20% or more of our Common Stock and can be made exercisable by action of our board of directors if a person or group commences a tender offer which would result in such person or group beneficially owning 20% or more of our Common Stock. Each right will entitle the holder to buy one one-thousandth of a share of a new series of our junior participating preferred stock for $20. If any person or group becomes the beneficial owner of 20% or more of our Common Stock (with certain limited exceptions), then each right not owned by the 20% stockholder will entitle its holder to purchase, at the right's then current exercise price, common shares having a market value of twice the exercise price. In addition, if after any person has become a 20% stockholder, we are involved in a merger or other business combination transaction with another person, each right will entitle its holder (other than the 20% stockholder) to purchase, at the right's then current exercise price, common shares of the acquiring company having a value of twice the right's then current exercise price.

We are subject to provisions of Delaware corporate law which, subject to certain exceptions, will prohibit us from engaging in any "business combination" with a person who, together with affiliates and associates, owns 15% or more of our Common Stock for a period of three years following the date that the person came to own 15% or more of our Common Stock unless the business combination is approved in a prescribed manner.

These provisions of the stockholder rights plan, our certificate of incorporation, and of Delaware law may have the effect of delaying, deterring or preventing a change in control of Cytogen, may discourage bids for our Common Stock at a premium over market price and may adversely affect the market price, and the voting and other rights of the holders, of our Common Stock.

A Large Number Of Our Shares Are Eligible For Future Sale Which May Adversely Impact The Market Price Of Our Common Stock.

A large number of shares of Common Stock already outstanding, or issuable upon exercise of options and warrants, are eligible for resale, which may adversely affect the market price of the Common Stock. As of March 1, 2001, we had 77,380,205 shares of Common Stock outstanding. An additional 4,983,263 shares of Common Stock are issuable upon the exercise of outstanding stock options and warrants. Substantially all of such shares subject to outstanding options will, when issued upon exercise thereof, be available for immediate resale in the public market pursuant to currently effective registration statements under the Securities Act of 1933 (the "Securities Act"), as amended, or pursuant to Rule 701 promulgated thereunder.

In connection with our acquisition of Prostagen, Inc. in June 1999, we issued 2,050,000 unregistered shares of our Common Stock, to the then stockholders of Prostagen, which shares may be sold from time to time pursuant to Rule 144 under the Securities Act. Such stockholders also have certain piggyback registration rights with respect to these shares of Common Stock. An additional 950,000 shares may be issued as contingent payments upon the happening of certain events.

Berlex Laboratories, Inc. exercised its registration rights with respect to 1,000,000 shares of Common Stock and the Company is contractually obligated to register these shares. A registration statement with respect to these shares was filed on April 11, 2000 and declared effective April 27, 2000. Such registration statement also covered 86,394 shares of Common Stock issuable to consultants upon exercise of warrants.

In addition, on March 28, 2000, we filed with the Securities and Exchange

Commission a shelf registration statement on Form S-3 which initially covered six million (6,000,000) shares of our Common Stock. 1,500,000 of such registered shares were issued to Advanced Magnetics, Inc. in connection with the parties entering into a License and Marketing Agreement in August 2000. An additional 500,000 shares, also registered on this Form S-3 Registration Statement, are currently being held in escrow and may be released to Advanced Magnetics in the future in accordance with the terms of such License and Marketing Agreement. In addition, 902,601 of such shares have been issued to Acqua Wellington North

American Equities Fund, Ltd. ("Acqua Wellington"). Also, on October 9, 2000, we entered into an equity financing facility pursuant to which we may issue up to $70,000,000 in shares of our Common Stock to Acqua Wellington from time to time prior to June 9, 2002, which shares would be sold at a small discount to market price, as determined prior to each such sale, and registered under such registration statement. As of March 1, 2001, 1,276,557 shares have been issued therewith.

Availability of a significant number of additional shares could depress the price of the Company's Common Stock.

Because We Do Not Intend to Pay Any Cash Dividends On Our Shares of Common Stock, Our Stockholders Will Not Be Able to Receive a Return on Their Shares Unless They Sell Them.

We have never paid or declared any cash dividends on our Common Stock or other securities and intend to retain any future earnings to finance the development and expansion of our business. We do not anticipate paying any cash dividends on our Common Stock in the foreseeable future. Unless we pay dividends, our stockholders will not be able to receive a return on their shares unless they sell them.

Item 2. Properties

We currently lease approximately 20,000 square feet of administrative space in Princeton, New Jersey. The lease on this space expires in August 2002. We intend to remain in Princeton, New Jersey for the foreseeable future.

We also lease approximately 9,000 square feet of laboratory and office space in Newtown, Pennsylvania which is occupied by our AxCell Biosciences subsidiary, under a lease expiring in 2004. In February 2001, the Company expanded the Axcell facility by amending the lease to include approximately an additional 5,000 square feet, which additional lease space will expire in July 2006.

We own substantially all of the equipment used in our laboratories and offices. We believe our facilities are adequate for our operations at present.

Item 3. Legal Proceedings

On March 17, 2000, we were served with a complaint filed against us in the United States Federal Court for the District of New Jersey by M. David Goldenberg ("Goldenberg") and Immunomedics, Inc. The litigation claims that our ProstaScint product infringes a patent purportedly owned by Goldenberg and licensed to Immunomedics. We believe that ProstaScint does not infringe this patent, and that the patent is invalid and unenforceable. In addition, we have certain rights to indemnification against litigation and litigation expenses from the inventor of technology used in ProstaScint, which may be offset against royalty payments on sales of ProstaScint. In addition, the patent sought to be enforced in the litigation has now expired; as a result, the claim even if successful would not result in an injunction barring the continued sale of

ProstaScint or affect any other of our products or technology. However, given the uncertainty associated with litigation, we cannot give any assurance that the litigation could not result in a material expenditure to us.

Item 4. Submission of Matters to a Vote of Security Holders

None.

PART II

Item 5. Market for the Company's Common Equity and Related Stockholder Matters

Cytogen's Common Stock is traded on the NASDAQ National Market (the "NNM") under the trading symbol "CYTO."

The table below sets forth the high and low bid information for Cytogen's Common Stock for each of the calendar quarters indicated, as reported on the NNM. Such quotations reflect inter-dealer prices, without retail mark-up, mark-down or commission and may not represent actual transactions.

1999	High	Low
First Quarter	1.47	0.81
Second Quarter	1.97	0.88
Third Quarter	2.22	1.38
Fourth Quarter	3.22	1.38
2000		
First Quarter	21.69	2.63
Second Quarter	10.56	2.00
Third Quarter	11.31	5.50
Fourth Quarter	7.13	1.00

As of March 1, 2001, there were approximately 4,319 holders of record of the Common Stock and there were approximately 54,054 beneficial holders of the Common Stock.

Cytogen has never paid any cash dividends on its Common Stock and does not anticipate paying any cash dividends on its Common Stock in the foreseeable future. The Company currently intends to retain any future earnings to fund the development and growth of its business. Any future determination to pay dividends will be at the discretion of the Company's board of directors.

The following information relates to all securities of the Company sold by the Company during the year ended December 31, 2000 which were not registered under the Securities Act as of the date of issuance:

1. On July 10, 2000, the Company issued options to purchase 300,000 shares of the Company's Common Stock to Lawrence Hoffman, the Company's Vice President and Chief Financial Officer, pursuant to the terms of a Non-Qualified Stock Option Agreement by and between the Company and Mr. Hoffman (the "Hoffman Agreement"). Such options are exercisable at $10.141 per share, expire on July 10, 2010 and vest at a rate of 33.3% per year beginning July 10, 2001.

The Hoffman Agreement was consummated as an incentive for and upon the commencement of Mr. Hoffman's employment with the Company.

Such 300,000 shares of Common Stock were subsequently registered on a Registration Statement on Form S-8 (File No. 333-48454) (the "Registration Statement on Form S-8"), filed with the Commission on October 23, 2000.

2. On July 11, 2000, the Board of Directors of the Company revised the terms of a Non-Qualified Stock Option Agreement by and between the Company and H. Joseph Reiser, the Company's President and Chief Executive Officer, which agreement was initially executed on August 24, 1998, with respect to options to purchase 2,050,000 shares of the Company's Common Stock (the "Reiser Agreement"). Such options are exercisable at $1.0937 per share, expire on August 24, 2008, and vest according to the following schedule:

Option Amount	Vesting Date
100,000	November 17, 1998
150,000	May 18, 2000
300,000	August 24, 2000
75,000	November 22, 2000
150,000	May 15, 2001
150,000	May 18, 2001
300,000	August 24, 2001
75,000	November 22, 2001
150,000	May 15, 2002
150,000	May 18, 2002
75,000	November 22, 2002
150,000	May 15, 2003
225,000	Subject to additional approval of the Board of Directors

The Reiser Agreement was consummated as an incentive for and upon the commencement of Mr. Reiser's employment with the Company.

Such 2,050,000 shares of Common Stock were subsequently registered on the Registration Statement on Form S-8.

No underwriter was employed by the Company in connection with the issuance and sale of the securities described above. The Company claims that the issuance and sale of all of the foregoing securities were exempt from registration under either (i) Section 4(2) of the Securities Act as transactions not involving any public offering, or (ii) Rule 701 under the Securities Act as transactions made pursuant to a written compensatory benefit plan or pursuant to a written contract relating to compensation. Appropriate legends have been or will be affixed to the stock certificates issued in such transactions. All recipients had adequate access to information about the Company.

Item 6. Selected Financial Data

The following selected financial information has been derived from the consolidated financial statements of the Company for each of the five years in

the period ended December 31, 2000, which have been audited by Arthur Andersen LLP, the Company's independent public accountants. The selected financial data set forth below should be read in conjunction with the consolidated financial statements, including the notes thereto, "Management's Discussion and Analysis of Financial Condition and Results of Operations" and other information provided elsewhere in this report.

	Year Ended December			
	2000	1999	1998	
Statements of Operations Data:	(All amounts in thousands, except			
Revenues:				
Product sales	$ 7,424	$ 6,971	$ 8,976	$
Royalties	2,004	1,060	1,664	
License and contract	1,024	3,171	9,239	
Total revenues	10,452	11,202	19,879	
Operating Expenses:				
Cost of product and contract manufacturing revenues (1)	4,414	4,111	12,284	
Research and development	6,957	3,849	9,967	
Acquisition of marketing and technology rights (2)	13,241	1,214	--	
Selling and marketing	6,126	4,210	5,103	
General and administrative	4,934	3,501	7,420	
Equity loss in Targon subsidiary	--	--	1,020	
Total operating expenses	35,672	16,885	35,794	--
Operating loss	(25,220)	(5,683)	(15,915)	(
Gain on sale of laboratory and manufacturing facilities	--	3,298	--	
Gain on sale of Targon subsidiary	--	--	2,833	
Other income (expense)	611	412	(70)	
Loss before income taxes and cumulative effect of accounting change	(24,609)	(1,973)	(13,152)	
Income tax benefit	(1,625)	(2,702)	--	
Income (loss) before cumulative effect of accounting change	(22,984)	729	(13,152)	
Cumulative effect of accounting change (3)	(4,314)	--	--	
Net income (loss)	(27,298)	729	(13,152)	
Dividends, including deemed dividends on preferred stock	--	--	(119)	
Net income (loss) to common stockholders	$(27,298)	$ 729	$(13,271)	$

Net income (loss) per common share:				
Basic and diluted net income (loss) before cumulative effect of accounting change	$ (0.31)	$ 0.01	$ (0.24)	$
Cumulative effect of accounting change (3)	(0.06)	--	--	
Basic and diluted net income (loss)	$ (0.37)	$ 0.01	$ (0.24)	$
Weighted average common shares outstanding:				
Basic	73,337	67,179	56,419	
Diluted	73,337	68,187	56,419	
Pro forma amounts assuming accounting change is applied retroactively:				
Net loss to common stockholders	$(22,984)	$ (484)	$(16,373)	$
Basic and diluted net loss per common share	$ (0.31)	$ (0.01)	$ (0.29)	$

Consolidated Balance Sheet Data:	December 31, 2000	1999	1998
			(in thousands)
Cash, short-term investments and restricted cash	$ 11,993	$ 12,394	$ 3,015
Total assets	20,416	18,605	10,900
Long-term debt	2,374	2,416	2,223
Accumulated deficit	(328,581)	(301,283)	(302,012)
Stockholders' equity	7,218	10,549	443

(1) Prior to 1997, product sales were minimal and no revenues were derived from contract manufacturing, therefore, cost of product sales was immaterial and was included in research and development expenses.

(2) In August 2000, the Company licensed product rights from Advanced Magnetics, Inc. In June 1999, the Company acquired Prostagen, Inc.

(3) In 2000, the Company recorded a non-cash charge for the cumulative effect related to the adoption of SEC Staff Accounting Bulletin No. 101. See Note 1 of the Consolidated Financial Statements.

Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations

The following discussion contains historical information as well as forward looking statements that involve a number of risks and uncertainties. Generally, forward looking statements can be identified by the use of phrases like "believe", "expect", "anticipate", "plan", "may", "will", "could", "estimate", "potential", "opportunity" and "project" and similar terms. The Company's actual

results could differ materially from the Company's historical results of operations and those discussed in the forward looking statements. Factors that could cause actual results to differ materially, include, but are not limited to those identified under the caption "Additional Factors That May Affect Future Results", provided elsewhere in this report. Stockholders are cautioned not to put undue reliance on any forward looking statement.

Cautionary Statement

In addition to the risks discussed under the caption referred to above, among other factors that could cause actual results to differ materially from expected results are the following: (i) the Company's ability to access the capital markets in the near term and in the future for continued funding of existing projects and for the pursuit of new projects; (ii) the ability to attract and retain personnel needed for business operations and strategic plans; (iii) the timing and results of clinical studies, and regulatory approvals; (iv) market acceptance of the Company's products, including programs designed to facilitate use of the products, such as the Partners in Excellence or PIE Program; (v) demonstration over time of the efficacy and safety of the Company's products; (vi) the degree of competition from existing or new products; (vii) the decision by the majority of public and private insurance carriers on whether to reimburse patients for the Company's products; (viii) the profitability of its products; (ix) the ability to attract, and the ultimate success of, strategic partnering arrangements, collaborations, and acquisition candidates; (x) the ability of the Company and its partners to identify new products as a result of those collaborations that are capable of achieving FDA approval, that are cost-effective alternatives to existing products and that are ultimately accepted by the key users of the product; (xi) the success of the Company in obtaining marketing approvals for its products in Canada and Europe; (xii) the ability of the Company to protect its proprietary technology, trade secrets or know-how under the patent and other intellectual property laws of the United States and other countries; and (xiii) the ability of Advanced Magnetics to satisfy the conditions specified by the FDA regarding approval to market Combidex in the United States.

The following discussion and analysis should be read in conjunction with the Financial Statements and related notes thereto contained elsewhere herein, as well as from time to time the Company's other filings with the Securities and Exchange Commission.

Significant Events in 2000

During 2000, the Company terminated the co-marketing arrangement with Bard Urological Division of the C.R. Bard Company, Inc. ("Bard") to assume sole responsibility for the marketing and sales of the Company's ProstaScint product. The Company has expanded its sales force and believes that a highly trained and dedicated internal sales force will be able to most effectively market the Company's product and build capability for future products. The Company, however, has limited experience in direct selling and can not give any assurance as to the impact on sales by assuming selling efforts itself.

In August 2000, the Company broadened its oncology presence and strengthened its position in the area of cancer staging and detection and therapy by entering into marketing, license and supply agreements with Advanced Magnetics, Inc. ("AVM"). Under the terms of the AVM agreements, the Company acquired exclusive U.S. marketing rights to two product candidates, Combidex and imaging agent Code 7228 for oncology applications. Combidex, a MRI contrast agent for the detection of lymph node metastases received an approvable letter from the FDA, subject to certain conditions, following a priority review. Code 7228 is being developed for oncology and magnetic resonance angiography applications and is expected to enter Phase II clinical development in 2001. There can be no assurance that the Company will receive FDA approval to market Combidex or Code 7228 in the United

States.

In addition, the Company in-licensed BrachySeed, an FDA approved radioactive implant for prostate cancer therapy, from Draximage Inc. in December 2000. The Company plans to utilize its oncology sales force to market the radioactive iodine BrachySeed product which was launched in January 2001. There can be no assurance however, as to the market acceptance of the product or whether this product will significantly increase the revenues of the Company.

Recently, the Company's subsidiary AxCell BioSciences ("AxCell") achieved a significant milestone by successfully mapping all the interactions of the known proteins found in the WW protein domain family, one of the estimated 60 to 80 protein domain families in the human body. AxCell expects to launch its ProChart database product with its marketing partner, InforMax Inc., in the second quarter of 2001. There can be no assurance, however, as to the market acceptance of the product or whether this product will significantly increase the revenues of the Company.

RESULTS OF OPERATIONS

Years ended December 31, 2000, 1999 and 1998

Revenues

Total revenues were $10.5 million in 2000, $11.2 million in 1999 and $19.9 million in 1998. The decrease in 2000 and 1999 from 1998 was primarily due to lower product related revenues, the phasing out of contract manufacturing services during 1999 and lower license and research revenues. Product related revenues, including product sales and royalty revenues, accounted for 90%, 72% and 54% of revenues in 2000, 1999 and 1998, respectively. License and contract revenues accounted for the remainder of revenues.

Product related revenues were $9.4 million, $8.0 million and $10.6 million in 2000, 1999 and 1998, respectively. ProstaScint accounted for 73%, 79% and 60% of the product related revenues in 2000, 1999 and 1998, respectively, while Quadramet royalties and sales accounted for 21%, 13% and 31% of product related revenues in 2000, 1999 and 1998, respectively. Sales from ProstaScint were $6.9 million, $6.4 million and $6.4 million in 2000, 1999 and 1998, respectively. Beginning in July 2000, the Company assumed sole responsibility for selling and marketing ProstaScint from Bard, its former co-marketing partner. The Company took this step because it believes that a highly trained and dedicated internal sales force will be able to market its products most effectively. The Company cannot be certain, however, as to the effect on sales of ProstaScint as a result of this action. The Company plans to utilize Cytogen's oncology sales and marketing organization for the launch of BrachySeed and later Combidex, subject to the receipt of final marketing approval of Combidex by FDA.

Royalties and sales from Quadramet were $2.0 million, $1.1 million and $3.3 million in 2000, 1999 and 1998, respectively. From the time of product launch in 1997 through June 1998, Cytogen recorded royalty revenues for Quadramet based on minimum contractual payments, which were in excess of actual sales. Subsequent to June 1998, the minimum royalty arrangement was discontinued and Cytogen recorded product revenues from Quadramet based on actual sales. Beginning in 1999, Quadramet royalties are based on net sales of Quadramet by Berlex Laboratories Inc. ("Berlex"), Cytogen's marketing partner for Quadramet. Berlex relaunched the product in March 1999. Although Cytogen believes that Berlex is an advantageous marketing partner, there can be no assurance that Quadramet will, following the re-launch of the product, achieve market acceptance on a timely basis or result in significant revenues for Cytogen.

Other product revenues include sales from OncoScint CR/OV which were $512,000, $620,000 and $872,000 in 2000, 1999 and 1998, respectively. The Company sells OncoScint CR/OV for diagnostic use in ovarian and colorectal cancer. The market for OncoScint CR/OV for colorectal cancer diagnostic has been negatively affected by positron emission tomography or "PET" scans which has been shown the same or higher sensitivity than OncoScint CR/OV. In 1998, other product revenues included $51,000 from autologous lymphocyte therapy ("ALT") treatments for metastatic renal cell carcinoma. Due to the discontinuance of the program in September 1998, the Company received no additional revenues from ALT treatments.

During 2000, the Company adopted U.S. Securities and Exchange Commission Staff Accounting Bulletin No. 101 "Revenue Recognition in Financial Statements" ("SAB 101") which requires up-front, non-refundable license fees to be deferred and recognized over the performance period. The cumulative effect of adopting SAB 101 resulted in a one-time, non-cash charge of $4.3 million or $0.06 per share in 2000, which reflects the deferral of an up-front license fee received from Berlelx, net of associated costs, related to the licensing of Quadramet recognized in 1998 and a license fee for certain applications of PSMA to a joint venture formed by Cytogen and Progenics recognized in 1999. Previously, the Company had recognized up-front license fees when the Company had no obligations to return the fees under any circumstances. Under SAB 101 these payments are recorded as deferred revenue to be recognized over the remaining term of the related agreements. In 2000, the Company recognized $859,000 of license revenue that was included in the cumulative effect adjustment as of January 1, 2000. The Company's 1999 and 1998 results have not been restated to apply SAB 101 retroactively.

License revenues for 2000, 1999 and 1998 were $859,000, $2.0 million and $7.2 million, respectively. License revenues have fluctuated in the past and may fluctuate in the future. In 1999, the Company recorded $1.8 million for the licensing of certain applications of PSMA to a joint venture formed by Cytogen and Progenics Pharmaceuticals Inc. In 1998, the Company recorded a $7.1 million up-front licensing payment from Berlex for the marketing and manufacturing rights of Quadramet. Had the Company been subject to SAB 101 prior to 2000, license revenue would have been $834,000 and $143,000 in 1999 and 1998, respectively.

Revenues from contract manufacturing and research revenues were $165,000, $1.2 million and $2.0 million in 2000, 1999 and 1998, respectively. Revenues from contract manufacturing were $604,000 and $1.7 million in 1999 and 1998, respectively. The Company phased out contract manufacturing services during 1999.

Operating Expenses

Total operating expenses were $35.7 million, $16.9 million and $35.8 million in 2000, 1999 and 1998, respectively. The 2000 increase from 1999 is due primarily to the acquisition of marketing and technology rights to Combidex and Code 7228 from AVM, increased development efforts related to the proteomics program at AxCell and PSMA technologies, and the expansion of in-house sales force. The 1999 decrease from 1998 was the result of savings from the implementation of the Company's restructuring plan. The plan, implemented in 1998 and completed in 1999, included the sale of the manufacturing facility which eliminated excess capacity and reduced the cost of manufacturing the Company's products, closure of Cellcor, a subsidiary, corporate downsizing, the termination of product development efforts through Targon, a subsidiary, and termination and curtailing of certain basic research and clinical programs. The 2000 operating expenditures included $13.2 million charge related to the acquisition of the marketing and technology rights to Combidex and Code 7228, of which $13.1 million was non-cash as the Company issued its Common Stock as consideration. The 1999 operating expenditures included a $1.2 million non-cash charge for the acquisition of

exclusive technology rights for immunotherapy to PSMA from Prostagen Inc. ("Prostagen"). The 1998 operating expenses included $1.4 million of restructuring costs associated with the closure of Cellcor and corporate downsizing, $539,000 in costs related to the implementation of the Company's turn-around plan, $4.0 million for a Quadramet manufacturing commitment and $995,000 for manufacturing and distribution of Quadramet.

Costs of product and contract manufacturing revenues were $4.4 million, $4.1 million and $12.3 million in 2000, 1999 and 1998, respectively. The 2000 increase from 1999 was due to increased product manufacturing costs. The 1999 decrease from 1998 was due to decreased manufacturing costs associated with decreased contract manufacturing activities in 1999 and lower manufacturing costs for Cytogen products as a result of the sale of the manufacturing facility. The 1999 decrease compared to 1998 is also due to the 1998 costs associated with a one-time charge of $4.0 million for a Quadramet manufacturing commitment and $995,000 for the manufacturing and distribution of Quadramet (see Note 9 to the Consolidated Financial Statements).

Research and development expenses were $7.0 million in 2000, $3.8 million in 1999 and $10.0 million in 1998. These expenses principally reflect product development efforts and support for various ongoing clinical trials. The 2000 increase from 1999 was due to increased funding for the proteomics program at AxCell, the product development efforts related to the PSMA technologies and costs associated with certain manufacturing development by DSM Biologics Company B.V. ("DSM") with respect to ProstaScint (see Note 2 to the Consolidated Financial Statements). The Company anticipates that funding for AxCell will continue to increase. The 1999 decrease from 1998 is due to the curtailing of certain of the Company's product development efforts including the closure of Cellcor, the termination of basic research programs and the scale back of various clinical programs.

Acquisition of marketing and technology rights of $13.2 million in 2000 represents a non-cash charge of $13.1 million related to the acquisition of certain rights to product candidates Combidex and Code 7228 from AVM (see Note 3 to the Consolidated Financial Statements). In 1999, the acquisition of technology rights was $1.2 million and represents a non-cash charge related to the acquisition of Prostagen (see Note 5 to the Consolidated Financial Statements).

Equity losses in Targon subsidiary was $1.0 million in 1998. The Company sold Targon in 1998.

Selling and marketing expenses were $6.1 million, $4.2 million and $5.1 million in 2000, 1999 and 1998, respectively. The 2000 increase from 1999 and 1998 is due to the expansion of the Company's in-house sales force and pre-launch marketing costs associated with the January 2001 launch of BrachySeed prostate cancer product. Cytogen assumed sole responsibility for the selling and marketing of ProstaScint in July 2000. The 1999 and 1998 marketing expenses reflect efforts to establish and maintain the Partners in Excellence ("PIE") program.

General and administrative expenses were $4.9 million, $3.5 million and $7.4 million in 2000, 1999 and 1998, respectively. The 2000 increase from 1999 is due to expenses related to the termination of the proposed merger with AVM, stock based compensation for a key employee, additional staffing and related costs. The 1999 decrease from 1998 is due to various cost containing efforts in the Company's restructuring plan implemented in 1999 and 1998 such as the closure of Cellcor and corporate downsizing. The 1999 decrease from 1998 is also due to the 1998 restructuring costs of $1.9 million including severance and implementation

of a turn-around plan.

Gain on sale of laboratory and manufacturing facilities
The Company recorded a gain of $3.3 million during 1999 resulting from a sale of certain of the Company's laboratory and manufacturing facilities to Purdue Bio Pharma for net proceeds of $3.6 million in January 1999.

Gain on sale of Targon subsidiary was $2.8 million in 1998 as a result of the sale of Cytogen's ownership interest in Targon to Elan Corporation, plc ("Elan") (see Note 7 to the Consolidated Financial Statements).

Interest Income/Expense
Interest income was $774,000, $441,000 and $582,000 for 2000, 1999 and 1998, respectively. The 2000 increase from 1999 is due to higher average cash balances during 2000. The 1999 decrease from 1998 is due primarily to interest income realized from the $10.0 million note from Targon payable to Cytogen. The note was canceled as a result of the sale of Targon to Elan in August 1998 (see Note 7 to the Consolidated Financial Statements).

Interest expense was $163,000, $29,000 and $652,000 in 2000, 1999 and 1998, respectively. The 2000 increase from 1999 is due to interest related to a convertible promissory note with Elan (see Note 7 to the Consolidated Financial Statements) and finance charges related to various equipment leases. The 1999 decrease from 1998 was due to the cancellation and satisfaction of liabilities associated with Elan and Knoll Pharmaceuticals Company ("Knoll"). The $10.0 million note due to Elan was cancelled as a result of the sale of Targon to Elan in August 1998. The Company paid the balance of the obligation to Knoll in December 1998.

Income tax benefit
During 2000 and 1999, the Company sold New Jersey State net operating loss carryforwards and research and development credits which resulted in the recognition of a $1.6 million and $2.7 million tax benefit, respectively. Under the current legislation, the Company may be able to sell a minimum $977,000 of the remaining approved $3.7 million of tax benefits in 2001. The actual amount of tax credits the Company may sell will depend upon the allocation among qualifying companies of an annual pool established by the State of New Jersey.

Net Income/Loss
Net loss to Common Stockholders was $27.3 million in 2000 compared to a net income of $729,000 in 1999 and a net loss of $13.3 million in 1998. Net loss per common share in 2000 was $0.37 based on weighted average common shares outstanding of 73.3 million. The 2000 net loss included $4.3 million or $0.06 per share for the cumulative effect of accounting change as a result of the adoption of SAB 101. The basic and diluted net income per common share in 1999 was $0.01 based on weighted average common shares outstanding of 67.2 million for basic and 68.2 million for diluted. The net loss per common share in 1998 is $0.24 based on 56.4 million average common shares outstanding.

LIQUIDITY AND CAPITAL RESOURCES

The Company's cash, cash equivalents and short-term investments were $12.0 million as of December 31, 2000, compared to $12.4 million as of December 31, 1999. The cash used for operating activities in 2000 was $9.0 million compared to $3.9 million in the same period of 1999. The increase in cash used for operating activities in 2000 was primarily due to continued investment in the proteomics business at AxCell Biosciences, pre-launch marketing costs associated with the January 2001 launch of BrachySeed prostate cancer product, increased marketing and sales efforts for the Company's existing products and various expenses related to the termination of the proposed merger with AVM.

Historically, the Company's primary sources of cash have been proceeds from the issuance and sale of its stock through public offerings and private placements, product related revenues, revenues from contract manufacturing and research services, fees paid under license agreements and interest earned on cash and short-term investments. In February 2000, the Company received $1.0 million from Berlex Laboratories for the exercise of a warrant to purchase 1,000,000 shares of Cytogen's Common Stock at $1.00 per share. In addition, during 2000 the Company sold approximately 1.7 million additional shares of Cytogen Common Stock for total proceeds of $3.5 million at an average price of $2.12 per share upon the exercises of employee stock options and other warrants.

In September 2000, the Company sold to Acqua Wellington 902,601 registered shares of Cytogen Common Stock at an aggregate price of $6.0 million or $6.647 per share. In October 2000, the Company entered into an equity financing facility with Acqua Wellington for up to $70 million of Common Stock. Under the terms of the agreement, over the next 20 months, Cytogen may, at its discretion, sell additional shares of its Common Stock to Acqua Wellington at a small discount to the market price to be determined before each sale provided the Threshold Price, as defined therein, for the Company's stock is at least $4.00 per share. The financing facility is not subject to any minimum takedown requirements, nor did the Company pay any financing fees or other compensation in connection with this transaction. Pursuant to this facility, in February 2001, the Company sold to Acqua Wellington 1,276,557 shares of its Common Stock at an aggregate price of $6.5 million or $5.092 per share.

In January 2001, the Company received cash of $1.6 million relating to the December 2000 sale of New Jersey State net operating losses and research and development credits. Under the current legislation, the Company may be able to sell a minimum $977,000 of the remaining approved $3.7 million of tax benefits in 2001. The actual amount of tax credits the Company may sell will depend upon the allocation among qualifying companies of an annual pool established by the State of New Jersey

In connection with the licensing of PSMA technology to a joint venture between Cytogen and Progenics, the Company will receive $500,000 on December 31, 2001 (see Note 6 to the Consolidated Financial Statements).

The Company's capital and operating requirements may change depending upon various factors, including: (i) whether the Company and its strategic partners achieve success in manufacturing, marketing and commercialization of its products; (ii) the amount of resources which the Company devotes to clinical evaluations and the expansion of marketing and sales capabilities; (iii) results of clinical trials and research and development activities; and (iv) competitive and technological developments, in particular the Company may expend funds for development of its proteomics and PSMA technologies.

The Company's financial objectives are to meet its capital and operating requirements through revenues from existing products and licensing arrangements. To achieve its strategic objectives, the Company may enter into research and development partnerships and acquire, in-license and develop other technologies, products or services. Certain of these strategies may require payments by the Company in either cash or stock in addition to the costs associated with developing and marketing a product or technology. However, the Company believes that, if successful, such strategies may increase long-term revenues. There can be no assurance as to the success of such strategies or that resulting funds will be sufficient to meet cash requirements until product revenues are sufficient to cover operating expenses. To fund these strategic and operating activities, the Company may sell equity and debt securities as market conditions permit or enter into credit facilities.

The Company has incurred negative cash flows from operations since its inception, and has expended, and expects to continue to expend in the future, substantial funds to implement its planned product development efforts, including acquisition of products and complementary technologies, research and development, clinical studies and regulatory activities, and to further its marketing and sales programs. The Company expects that its existing capital resources together with the Acqua Wellington equity line should be adequate to fund the Company's operations for the foreseeable future. The Company cannot be certain that it will not consume a significant amount of its currently available resources and reasonably expects that it will have additional requirements for debt or equity capital, irrespective of whether and when it reaches profitability, for further development of products, product and technology acquisition costs, and working capital.

The Company's future capital requirements and the adequacy of available funds will depend on numerous factors, including the successful commercialization of its products, the costs associated with the acquisition of complementary products and technologies, progress in its product development efforts, the magnitude and scope of such efforts, progress with clinical trials, progress with regulatory affairs activities, the cost of filing, prosecuting, defending and enforcing patent claims and other intellectual property rights, competing technological and market developments, and the expansion of strategic alliances for the sales, marketing, manufacturing and distribution of its products. To the extent that the currently available funds and revenues are insufficient to meet current or planned operating requirements, the Company will be required to obtain additional funds through equity or debt financing, strategic alliances with corporate partners and others, or through other sources. Based on the Company's historical ability to raise capital and current market conditions, the Company believes other financing alternatives are available. There can be no assurance that the financing commitments described above or other financial alternatives will be available when needed or at terms commercially acceptable to the Company. If adequate funds are not available, the Company may be required to delay, further scale back or eliminate certain aspects of its operations or attempt to obtain funds through arrangements with collaborative partners or

others that may require the Company to relinquish rights to certain of its technologies, product candidates, products or potential markets. If adequate funds are not available, the Company's business, financial condition and results of operations will be materially and adversely affected.

Recently Enacted Accounting Pronouncements

In June 1998, the Financial Accounting Standards Board issued SFAS No. 133, "Accounting for Derivative Instruments and Hedging Activities." SFAS No. 133, as amended by SFAS No. 137, "Accounting for Derivative Instruments and Hedging Activities - Deferral of the Effective Date of FASB Statement No. 133 - an amendment of FASB Statement No. 133", which was adopted by us on January 1, 2001, provides a comprehensive and consistent standard for the recognition and measurement of derivatives and hedging activities. As we do not currently hold derivative instruments or engage in hedging activities, the adoption of this pronouncement is not expected to have any impact on our financial position or results of operations for the year 2001.

Item 7a. Quantitative and Qualitative Disclosures About Market Risk

The Company does not have operations subject to risks of foreign currency

fluctuations, nor does it use derivative financial instruments in its operations or investment portfolio. The Company does not have exposure to market risks associated with changes in interest rates, as it has no variable interest rate debt outstanding. The Company does not believe it has any other material exposure to market risks associated with interest rates.

Item 8. Financial Statements and Supplementary Data

The response to Item 8 is submitted as a separate section of this Form 10-K.

Item 9. Changes in and Disagreements with Accountants on Accounting and Financial Disclosure

None.

PART 111

Item 10. Directors and Executive Officers of the Company.

The information relating to the Company's directors, nominees for election as directors and executive officers under the headings "Election of Directors", "Executive Officers" and "Compliance with Section 16(a) of the Exchange Act" in the Company's definitive proxy statement for the 2001 Annual Meeting of Stockholders is incorporated herein by reference to such proxy statement.

Item 11. Executive Compensation.

The discussion under the heading "Executive Compensation" in the Company's definitive proxy statement for the 2001 Annual Meeting of Stockholders is incorporated herein by reference to such proxy statement.

Item 12. Security Ownership of Certain Beneficial Owners and Management.

The discussion under the heading "Security Ownership of Certain Beneficial Owners and Management" in the Company's definitive proxy statement for the 2001 Annual Meeting of Stockholders is incorporated herein by reference to such proxy statement.

Item 13. Certain Relationships and Related Transactions.

The discussion under the heading "Certain Relationships and Related Transactions" in the Company's definitive proxy statement for the 2001 Annual Meeting of Stockholders is incorporated herein by reference to such proxy statement.

PART IV

Item 14. Exhibits, Financial Statement Schedules and Reports on Form 8-K.

(a) Documents filed as a part of the Report:

(1) and (2)

The response to this portion of Item 14 is submitted as a separate section of this Form 10-K.

(3) Exhibits --

Exhibit No.

3.1 - Restated Certificate of Incorporation of Cytogen Corporation, as amended. Filed as an exhibit to Form 10-Q Quarterly Report for the quarter ended June 30, 2000 and incorporated herein by reference.

3.2 - By-Laws of Cytogen Corporation, as amended. Filed as an exhibit to Form 10-Q Quarterly Report for the quarter ended June 30, 1999 and incorporated herein by reference.

4.1 - Amended and Restated Rights Agreement, dated as of October 19, 1998 between Cytogen Corporation and Chase Mellon Shareholder Services, L.L.C., as Rights Agent. The Amended and Restated Rights Agreement includes the Form of Certificate of Designations of Series C Junior Preferred Stock as Exhibit A, the form of Rights Certificate as Exhibit B and the Summary of Rights as Exhibit C. Filed as an exhibit to Form 10-Q Quarterly Report for the quarter ended September 30, 1998 and incorporated herein by reference.

10.1 - Lease Agreement, dated as of March 16, 1987, by and between Peregrine Investment Partners I, as lessor, and Cytogen Corporation, as lessee. Filed as an exhibit to Form 10-K Annual Report for Year Ended January 2, 1988 and incorporated herein by reference.

10.2. - Amendment, dated as of October 16, 1987, to Lease Agreement between Peregrine Investment Partners I and Cytogen Corporation. Filed as an exhibit to Form S-8 Registration Statement (No. 33-30595) and incorporated herein by reference.

10.3 - 1989 Employee Stock Option Plan. Filed as an exhibit to Form S-8 Registration Statement (No. 33-30595) and incorporated herein by reference.+

10.4.1 - 1988 Stock Option Plan for Non-Employee Directors. Filed as an exhibit to Form S-8 Registration Statement (No. 33-30595) and incorporated herein by reference.+

10.4.2 - Amendment to the Cytogen Corporation 1988 Stock Option Plan for Non-Employee Directors dated May 22, 1996. Filed as an exhibit to Form 10-Q Quarterly Report for the quarter ended June 30, 1996 and incorporated herein by reference.+

10.5 - Standard Form of Indemnification Agreement entered into between Cytogen Corporation and its officers, directors, and consultants. Filed as an exhibit to Amendment No. 1 to Form S-1 Registration Statement (No. 33-31280) and incorporated herein by reference.+

10.6 - 1989 Stock Option Policy for Outside Consultants. Filed as an exhibit to Amendment No. 1 to Form S-1 Registration Statement (No. 33-31280) and incorporated herein by reference.+

10.7.1 - License Agreement dated as of March 31, 1993 between Cytogen Corporation and The Dow Chemical Company. Filed as an exhibit to Form 10-Q/A-1 Amendment to Quarterly Report for the quarter ended July 3, 1993 and incorporated herein by reference.*

10.7.2 - Amendment of the License Agreement between Cytogen Corporation and The Dow Chemical Company dated September 5, 1995. Filed as an exhibit to Form 10-Q Quarterly Report for the quarter ended March 31, 1996 and incorporated herein by reference.*

10.7.3 - Second Amendment to the License Agreement between Cytogen Corporation and The Dow Chemical Company dated May 20, 1996. Filed as an exhibit to Form 10-Q/A-1 Amendment to Quarterly Report for the quarter ended June 30, 1996 and incorporated herein by reference.*

10.8 - 1992 Cytogen Corporation Employee Stock Option Plan II, as amended. Filed as an exhibit to Form S-4 Registration Statement (No. 33-88612) and incorporated herein by reference.+

10.9 - License Agreement, dated March 10, 1993, between Cytogen Corporation and The University of North Carolina at Chapel Hill, as amended. Filed as an exhibit to Form 10-K Annual Report for the year ended December 31, 1994 and incorporated herein by reference.*

10.10 - Option and License Agreement, dated July 1, 1993, between Cytogen Corporation and Sloan-Kettering Institute for Cancer Research. Filed as an exhibit to Form 10-K Annual Report for the year ended December 31, 1994 and incorporated herein by reference.*

10.11.1- Cytogen Corporation 1995 Stock Option Plan. Filed as an exhibit to Form 10-K Annual Report for the year ended December 31, 1995 and incorporated herein by reference.

10.11.2- Amendment No. 1 to the Cytogen Corporation 1995 Stock Option Plan dated May 22, 1996. Filed as an exhibit to Form 10-Q Quarterly Report for the quarter ended June 30, 1996 and incorporated herein by reference.+

10.12 - Horosziewicz - Cytogen Agreement, dated April 20, 1989, between Cytogen Corporation and Julius S. Horosziewicz, M.D., DMSe. Filed as an exhibit to Form 10-K Annual Report for the year ended December 31, 1995 and incorporated herein by reference.*

10.13 - Marketing and Co-Promotion Agreement between Cytogen Corporation and C.R. Bard, Inc. effective August 1, 1996. Filed as an exhibit to Form 10-Q Quarterly Report for the quarter ended September 30, 1996 and incorporated herein by reference.*

10.14 - Severance Agreement effective as of March 26, 1996 between Cytogen Corporation and John D. Rodwell, Ph.D. Filed as an exhibit to Form 10-K Annual Report for the year ended December 31, 1996 and incorporated herein by reference. +

10.15 - Cytogen Corporation Employee Stock Purchase Plan. Filed as an exhibit to Form S-8 Registration Statement (No. 333-27673) and incorporated herein by reference. +

10.16 - License Agreement between Targon Corporation and Elan Corporation, plc dated July 21, 1997. Filed as an exhibit to Form 10Q Quarterly Report for the quarter ended June 30, 1997 and incorporated herein by reference.*

10.17 - Employment Agreement effective as of December 23, 1996 between Cytogen Corporation and Dr. Graham S. May. Filed as an exhibit to Form 10-K/A-1 Amendment to Annual Report for the Year Ended December 31, 1997 and incorporated herein by reference.+

10.18 - Convertible Promissory Note dated as of August 12, 1998 between Cytogen Corporation and Elan International Services, Ltd. Filed as an exhibit to Form 10-Q Quarterly Report for the quarter ended June 30, 1998 and incorporated herein by reference.

10.19 - Employment agreement effective as of August 20, 1998 between Cytogen Corporation and H. Joseph Reiser. Filed as an exhibit to Form 10-Q Quarterly Report for the quarter ended September 30, 1998 and incorporated herein by reference.+

10.20 - License Agreement by and between Berlex Laboratories, Inc. and Cytogen Corporation dated as of October 28, 1998. Filed as an exhibit to Form 10-Q/A-1 Amendment to Quarterly Report for the quarter ended September 30, 1998 and incorporated herein by reference.

10.21 - Manufacturing Space Agreement between Bard BioPharma L.P. and Cytogen Corporation dated as of January 7, 1999. Filed as an exhibit to Form S-1/A-1 Amendment to Registration Statement and incorporated herein by reference.

10.22 - Employment Agreement effective as of June 10, 1997 between Cytogen Corporation and Donald F. Crane, Jr. Filed as an exhibit to Form 10-K Annual Report for the year ended December 31, 1999 and incorporated herein by reference.+

10.23 - The 1999 Cytogen Corporation Non-Employee Directors Stock Option Plan. Filed as an exhibit to Form 10-Q Quarterly Report for the quarter ended June 30, 1999 and incorporated herein by reference.+

10.24 - Strategic Alliance Agreement between AxCell Biosciences Corporation and InforMax, Inc. dated as of September 15, 1999. Filed as an exhibit to Form 10-K Annual Report for the year ended December 31, 1999 and incorporated herein by reference.*

10.25 - AxCell Biosciences Corporation Employee Stock Option Plan. Filed as an exhibit to Form 10-K Annual Report for the year ended December 31, 1999 and incorporated herein by reference.+

10.26 - Master Loan and Security Agreement No. S7600 among Cytogen Corporation, AxCell Biosciences Corporation and Finova Capital Corporation dated December 30, 1999. Filed as an exhibit to Form 10-K Annual Report for the year ended December 31, 1999 and incorporated herein by reference.

10.27 - Amendment No. 1 to Marketing and Co-Promotion Agreement effective as of January 1, 2000 by and between Cytogen Corporation and C.R. Bard, Inc. Filed as an exhibit to the Company's Quarterly Report on Form 10-Q for the quarter ended June 30, 2000 and incorporated herein by reference.

10.28 - License and Marketing Agreement by and between Cytogen Corporation and Advanced Magnetics, Inc. dated August 25, 2000. Filed as an exhibit to the Company's Quarterly Report on Form 10-Q for the quarter ended September 30, 2000 and incorporated by reference herein.*

10.29 - Development and Manufacturing Agreement by and between Cytogen Corporation and DSM Biologics Company B.V. dated July 12, 2000. Filed as an exhibit to the Company's Quarterly Report on Form 10-Q for the quarter ended September 30, 2000 and incorporated by reference herein.*

10.30 - Common Stock Purchase Agreement, dated September 29, 2000, by and between Cytogen Corporation and Acqua Wellington North American Equities Fund, Ltd. filed as an exhibit to the Company's Current Report on Form 8-K, filed with the Commission on October 5, 2000 and incorporated herein by reference.

10.31 - Common Stock Purchase Agreement, dated October 4, 2000, by and between Cytogen Corporation and Acqua Wellington North American Equities Fund, Ltd. filed as an exhibit to the Company's Current Report on Form 8-K, filed with the Commission on October 12, 2000 and incorporated herein by reference.

10.32 - Written Compensatory Agreement by and between Cytogen Corporation and H. Joseph Reiser dated August 24, 1998, as revised on July 11, 2000. Filed as an exhibit to the Company's Registration Statement on Form S-8 (File No. 333-48454), filed with the Commission on October 23, 2000, and incorporated herein by reference.+

10.33 - Written Compensatory Agreement by and between Cytogen Corporation and Lawrence Hoffman dated July 10, 2000. Filed as an exhibit to the Company's Registration Statement on Form S-8 (File No. 333-48454), filed with the Commission on October 23, 2000, and incorporated herein by reference.+

10.34 - Product Manufacturing and Supply Agreement by and between Cytogen Corporation and Draximage Inc. dated December 5, 2000. Filed as an exhibit to the Company's Annual Report on Form 10-K for the year ended December 31, 2000. Filed herewith.**

10.35 - License and Distribution Agreement by and between Cytogen Corporation and Draximage Inc. dated December 5, 2000. Filed as an exhibit to the Company's Annual Report on Form 10-K for the year ended December 31, 2000. Filed herewith.**

21 - Subsidiaries of Cytogen Corporation. Filed herewith.

23 - Consent of Arthur Andersen LLP. Filed herewith.

+ Management contract or compensatory plan or arrangement.

* Cytogen Corporation has received confidential treatment of certain provisions contained in this exhibit pursuant to an order issued by the Securities and Exchange Commission. The copy filed as an exhibit omits the information subject to the confidentiality grant.

**Cytogen Corporation has requested confidential treatment of certain provisions contained in this exhibit. The copy filed as an exhibit omits the information subject to the confidential request.

(b) Reports on Form 8-K:

The Company filed two Reports on Form 8-K during the quarter ended December 31, 2000. On October 5, 2000, the Company filed a Report on Form 8-K relating to the issuance and sale of 902,601 shares of the Company's Common Stock to Acqua Wellington North American Equities Fund, Ltd. ("Acqua Wellington") for an aggregate purchase price of $6.0 million.

On October 12, 2000, the Company filed a Report on Form 8-K relating to the execution by the Company and Acqua Wellington of an equity financing facility whereby the Company may, at its sole discretion and from time to time over a 20 month period beginning in October 2000, sell up to $70 million in registered shares of the Company's Common Stock to Acqua Wellington at a small discount to market price, as determined prior to each such sale.

(c) Exhibits:

The Exhibits filed with this Form 10-K are listed above in response to Item 14(a)(3).

(d) Financial Statement Schedules:

None.

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 its behalf by the undersigned, thereunto duly authorized on the 30th day of March 2001.

Cytogen Corporation

By: /s/ H. Joseph Reiser

H. Joseph Reiser, President and Chief Executive Officer

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	Title	Date

/s/ H. Joseph Reiser H. Joseph Reiser	Chief Executive Officer and President (Principal Executive Officer), and Director	March 30, 200
/s/ Lawrence R. Hoffman Lawrence R. Hoffman	Vice President & Chief Financial Officer (Principal Financial and Accounting Officer)	March 30, 200
/s/ John E. Bagalay, Jr. John E. Bagalay, Jr.	Director	March 30, 200
/s/ Stephen K. Carter Stephen K. Carter	Director	March 30, 200
/s/ James A. Grigsby James A. Grigsby	Director and Chairman of the Board	March 22, 200
/s/ Robert F. Hendrickson Robert F. Hendrickson	Director	March 30, 200
/s/ Kevin G. Lokay Kevin G. Lokay	Director	March 30, 200
/s/ S. Leslie Misrock S. Leslie Misrock	Director	March 30, 200

Form 10-K Item 14(a)(1) and (2)

Cytogen CORPORATION AND SUBSIDIARIES

(1) Index to Consolidated Financial Statements

The following consolidated financial statements of Cytogen Corporation and Subsidiaries together with the related notes and report of Arthur Andersen LLP, independent public accountants.

REPORT OF INDEPENDENT PUBLIC ACCOUNTANTS

To Cytogen Corporation:

We have audited the accompanying consolidated balance sheets of Cytogen Corporation (a Delaware Corporation) and Subsidiaries as of December 31, 2000 and 1999, and the related consolidated statements of operations, stockholders' equity and cash flows for each of the three years in the period ended December 31, 2000. These financial statements are the responsibility of the Company's management. Our responsibility is to express an opinion on these financial statements based on our audits.

We conducted our audits in accordance with auditing standards generally accepted in the United States. 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 financial statements referred to above present fairly, in all material respects, the financial position of Cytogen Corporation and Subsidiaries as of December 31, 2000 and 1999 and the results of their operations and their cash flows for each of the three years in the period ended December 31, 2000 in conformity with accounting principles generally accepted in the United States.

As explained in Note 1 to the consolidated financial statements, effective January 1, 2000, the Company changed its method of accounting for revenue recognition.

ARTHUR ANDERSEN LLP

Philadelphia, Pennsylvania
February 1, 2001

CYTOGEN CORPORATION AND SUBSIDIARIES
CONSOLIDATED BALANCE SHEETS
(All amounts in thousands, except share data)

	December 31,	
	2000	1
ASSETS:		
Current Assets:		
Cash and cash equivalents	$ 11,993	$ 1
Short-term investments	--	
Receivable on income tax benefit sold	1,625	
Accounts receivable, net	1,841	
Inventories	883	
Other current assets	377	
Total current assets	16,719	1
Property and Equipment, net	2,193	
Other Assets	1,504	
	$ 20,416	$ 1
LIABILITIES AND STOCKHOLDERS' EQUITY:		
Current Liabilities:		
Current portion of long-term debt	$ 151	$
Accounts payable and accrued liabilities	7,218	
Deferred revenue	859	
Total current liabilities	8,228	
Long-Term Debt	2,374	
Deferred Revenue	2,596	
Commitments and Contingencies (Note 20)		
Stockholders' Equity:		
Preferred stock, $.01 par value, 5,400,000 shares authorized - Series C Junior Participating Preferred Stock, $.01 par value, 200,000 shares authorized, none issued and outstanding	--	
Common stock, $.01 par value, 250,000,000 shares authorized, 75,594,000 and 70,527,000 shares issued and outstanding at December 31, 2000 and 1999, respectively	756	
Additional paid-in capital	335,938	31
Deferred compensation	(895)	
Accumulated deficit	(328,581)	(30
Total stockholders' equity	7,218	1
	$ 20,416	$ 1

The accompanying notes are an integral part of these statements.

CYTOGEN CORPORATION AND SUBSIDIARIES
CONSOLIDATED STATEMENTS OF OPERATIONS
(All amounts in thousands, except per share data)

	Year Ended December	
	2000	1999
Revenues:		
Product related:		
ProstaScint	$ 6,912	$ 6,351
Quadramet	--	--
Others	512	620
Total product sales	7,424	6,971
Quadramet royalties	2,004	1,060
Total product related	9,428	8,031
License and contract	1,024	3,171
Total revenues	10,452	11,202
Operating Expenses:		
Cost of product and contract manufacturing revenues	4,414	4,111
Research and development	6,957	3,849
Acquisition of marketing and technology rights	13,241	1,214
Selling and marketing	6,126	4,210
General and administrative	4,934	3,501
Equity loss in Targon subsidiary	--	--
Total operating expenses	35,672	16,885
Operating loss	(25,220)	(5,683)
Gain on sale of laboratory and manufacturing facilities	--	3,298
Gain on sale of Targon subsidiary	--	--
Interest income	774	441
Interest expense	(163)	(29)
Loss before income taxes and cumulative effect of accounting change	(24,609)	(1,973)
Income tax benefit	(1,625)	(2,702)
Income (loss) before cumulative effect of accounting change	(22,984)	729
Cumulative effect of accounting change (Note 1)	(4,314)	--

Net income (loss)	(27,298)	729
Dividends on preferred stock	--	--
Net income (loss) to common stockholders	$(27,298)	$ 729
Net income (loss) per common share:		
Basic and diluted net income (loss) before cumulative effect of accounting change	$ (0.31)	$ 0.01
Cumulative effect of accounting change	(0.06)	--
Basic and diluted net income (loss)	$ (0.37)	$ 0.01
Weighted average common shares outstanding:		
Basic	73,337	67,179
Diluted	73,337	68,187

The accompanying notes are an integral part of these statements.

CYTOGEN CORPORATION AND SUBSIDIARIES
CONSOLIDATED STATEMENTS OF STOCKHOLDERS' EQUITY
(All amounts in thousands, except share data)

	Common Stock	Additional Paid-in Capital	Deferred Compen-sation	A mu De
Balance, December 31, 1997	$ 512	$ 298,212	$ --	$(2
Sale of 3,403,011 shares of common stock	34	2,583	--	
Dividends on series B preferred stock	--	--	--	
Issuance of 7,377,054 shares of common stock upon conversion of series B preferred stock and accumulated dividends	73	55	--	
Sale of warrants to purchase 1,000,000 shares of common stock	--	855	--	
Modification of existing warrants to purchase 260,000 shares of common stock	--	131	--	
Net loss	--	--	--	(
Balance, December 31, 1998	619	301,836	--	(3
Issuance of 2,050,000 shares of common stock in connection with the acquisition of Prostagen Inc.	21	1,824	--	
Sale of 6,527,002 shares of common stock	65	7,244	--	
Issuance of options and warrants to purchase shares of common stock	--	221	--	
Deferred compensation related to stock options	--	84	(84)	

Amortization of deferred compensation	--	--	2	
Net income	--	--	--	
Balance, December 31, 1999	705	311,209	(82)	(3
Sale of 3,567,771 shares of common stock	36	10,342	--	
Issuance of 1,500,000 shares of common stock in connection with the acquisition of product candidates marketing rights	15	13,064	--	
Issuance of options to purchase shares of common stock	--	261	--	
Deferred compensation related to stock options	--	1,062	(1,062)	
Amortization of deferred compensation	--	--	249	
Net loss	--	--	--	(
Balance, December 31, 2000	$ 756	$ 335,938	$ (895)	$(3

The accompanying notes are an integral part of these statements.

CORPORATION AND SUBSIDIARIES
CONSOLIDATED STATEMENTS OF CASH FLOWS
(All amounts in thousands)

	Year Ended Decembe	
	2000	1999
Cash Flows From Operating Activities:		
Net income (loss)	$(27,298)	$ 729
Adjustments to reconcile net income (loss) to net cash used in operating activities:		
Acquisition of marketing and technology rights	13,079	1,214
Cumulative effect of accounting change	4,314	--
Depreciation and amortization	1,027	1,051
Imputed interest	29	87
Warrant, stock and stock option grants	261	221
Stock based compensation	249	2
Amortization of deferred revenue	(859)	--
Write down of property and equipment	--	79
Gain on sale of laboratory and manufacturing facilities	--	(3,298)
Gain on sale of other property and equipment	(148)	(54)
Gain on sale of Targon subsidiary	--	--
Equity loss in Targon subsidiary	--	--
Changes in assets and liabilities:		
Accounts receivable, net	397	(715)
Inventories	(198)	(435)

Other assets	(1,631)	(97)
Accounts payable and accrued liabilities	1,740	(2,661)
Total adjustments	18,260	(4,606)
Net cash used in operating activities	(9,038)	(3,877)
Cash Flows From Investing Activities:		
Net cash acquired from Prostagen, Inc. (see Note 5)	--	550
Net proceeds from sale of laboratory and manufacturing facilities	--	3,584
Net proceeds from sale of other property and equipment	148	714
(Increase) decrease in short-term investments	1,593	(1,593)
Purchases of property and equipment	(1,209)	(523)
Purchase of product right (see Note 4)	(500)	--
Proceeds from sale of Targon subsidiary	--	--
Net cash provided by investing activities	32	2,732
Cash Flows From Financing Activities:		
Proceeds from issuance of common stock	10,378	9,809
Proceeds from issuance of notes payable	--	--
Proceeds from issuance of warrants	--	--
Payments of long-term liabilities	(180)	(878)
Dividends on series B preferred stock	--	--
Net cash provided by financing activities	10,198	8,931
Net increase (decrease) in cash and cash equivalents	1,192	7,786
Cash and cash equivalents, beginning of year	10,801	3,015
Cash and cash equivalents, end of year	$ 11,993	$ 10,801

The accompanying notes are an integral part of these statements.

CYTOGEN CORPORATION AND SUBSIDIARIES
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

1. SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES

Business

Cytogen Corporation ("Cytogen" or "the Company" which includes the Company and its subsidiaries) is a biopharmaceutical company with two principal lines of business, proteomics and oncology. The Company is extending its expertise in antibodies and molecular recognition to the development of new products and a proteomics-driven drug discovery platform. The Company has established a pipeline of product candidates based upon its proprietary antibody and prostate

specific membrane antigen, or PSMA, technologies. Through its subsidiary, AxCell Biosciences Corporation, the Company is also developing a proprietary protein pathway database called ProChart as a discovery and development tool for subscribers in the pharmaceutical, biotechnology and agricultural industries.

Cytogen's cancer management business currently comprises four marketed FDA-approved products: ProstaScint, used to image the extent and spread of prostate cancer; Quadramet, marketed for the relief of cancer- related bone pain, OncoScint CR/OV, marketed as a diagnostic imaging agent for colorectal and ovarian cancer, and BrachySeed, implants for prostate cancer therapy. The Company also in-licensed two product candidates, Combidex and Code 7228, two magnetic resonance imaging agents for oncology applications. The Company is extending its cancer pipeline by developing PSMA, which Cytogen exclusively licensed from Memorial Sloan-Kettering Cancer Center. PSMA is a unique antigen highly expressed in prostate cancer cells and in the neovasculature of a variety of other solid tumors, including breast, lung and colon. The Company is developing its PSMA technology as part of its approach to offering a full range of prostate cancer management products and services throughout the progression of the disease, including gene-based immunotherapy vaccines, antibody-delivered therapeutic compounds and novel assays for detection of primary prostate cancer. Cytogen also plans to apply its PSMA technology, including therapeutics and in vitro diagnostics, toward other types of cancer based upon the Company's experience in prostate cancer. The Company's in vivo immunotherapeutic development program is being conducted in collaboration with Progenics Pharmaceuticals, Inc.

Basis of Consolidation

The consolidated financial statements include the accounts of Cytogen and its subsidiaries, AxCell Biosciences Corporation ("AxCell"), and Prostagen Inc. ("Prostagen"). Intercompany balances and transactions have been eliminated in consolidation. During 1998, the financial statements also included the investment results of Targon Corporation ("Targon"), which were accounted for on the equity method (see Investment in Targon Subsidiary). The Company sold Targon in the third quarter of 1998.

Use of Estimates

The preparation of financial statements in conformity with accounting principles generally accepted in the United States requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and disclosure of contingent assets and liabilities at the date of the financial statements and the reported amounts of revenues and expenses during the reporting period. Actual results could differ from those estimates.

Statements of Cash Flows

Cash and cash equivalents include cash on hand, cash in banks and all highly liquid investments with maturity of three months or less at the time of purchase. Cash paid for interest expense was $99,000, $44,000 and $500,000 in 2000, 1999 and 1998, respectively. During 2000 and 1999, the Company purchased $49,000 and $223,000, respectively, of equipment under various capital leases.

Short-Term Investments

At December 1999, the Company's short-term investments are classified as available for sale and are carried at fair value based on quoted market prices.

CYTOGEN CORPORATION AND SUBSIDIARIES
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (continued)

Receivables

At December 31, 2000 and 1999, accounts receivable were net of an allowance for doubtful accounts of $35,000 and $83,000, respectively. The Company charged to expense $10,000 as a provision for doubtful accounts in 1999. At December 31, 2000, approximately $457,000 of the Company's accounts receivable balance was due from Progenics Pharmaceuticals, Inc. ("Progenics") to be paid by December 31, 2001, as compared to $870,000 at December 31, 1999 (see Note 6).

At December 31, 2000, the Company had a $1.6 million receivable due from Public Service Electric and Gas Company relating to a sale of New Jersey state operating loss carryforwards and research and development credits. The Company received the proceeds from the sale in January 2001.

Inventory

The Company's inventory is primarily related to ProstaScint and OncoScint CR/OV. Inventory is stated at the lower of cost or market using the first-in, first-out method and consisted of the following:

	December 31,	
	2000	1999
Raw materials	$718,000	$529,000
Work-in process	59,000	28,000
Finished goods	106,000	128,000
	$883,000	$685,000

Property and Equipment

Property and equipment are stated at cost, net of depreciation. Leasehold improvements are amortized on a straight-line basis over the lease period or the estimated useful life, whichever is shorter. Equipment and furniture are depreciated on a straight-line basis over three to five years. Expenditures for repairs and maintenance are charged to expense as incurred. Property and equipment consisted of the following:

	December 31,	
	2000	1999
Leasehold improvements	$3,211,000	$3,196,000
Equipment and furniture	5,668,000	4,764,000
	8,879,000	7,960,000

Less - accumulated depreciation and amortization.....	(6,686,000)	(5,963,000)
	$2,193,000	$1,997,000

In January 1999, the Company sold certain of its laboratory and manufacturing facilities to Bard BioPharma L.P., a subsidiary of Purdue Pharma L.P. ("Purdue"), for $3.6 million, net of approximately $300,000 of transaction costs. Cytogen also signed a three-year agreement under which two of Cytogen's products, ProstaScint and OncoScint CR/OV, will continue to be manufactured at its former facility. As a result of the sale, the Company recognized a gain of approximately $3.3 million during the first quarter of 1999.

Investment in Targon Subsidiary

In March 1998, Cytogen's ownership interest in Targon decreased from 99.75% to 49.875% (see Note 7). As a result, the Company began accounting for its investment in Targon using the equity method. Under the equity method, the Company recognized 100% of Targon's losses through March 31, 1998 in its consolidated statement of operations as "Equity Loss in Targon Subsidiary," with a corresponding reduction in the carrying amount of its investment. The Company did not recognize Targon's losses after March 31, 1998 based on the completion of the sale of Targon in August 1998.

In August 1998 the Company sold its remaining ownership interest in Targon to Elan Corporation, plc ("Elan") for $2.0 million (see Note 7). As a result, the Company recorded a gain of approximately $2.8 million in 1998.

Other Assets

In October 1999, the Company sold its undeveloped land in Ewing, New Jersey for net proceeds of $714,000. As a result of the sale the Company recognized a gain of approximately $54,000. During 1998 the Company charged to expense $240,000 to write down the carrying value of the land to its estimated market value.

Revenue Recognition

Product related revenues include product sales by Cytogen to its customers and Quadramet royalties. Product sales are recognized upon shipment of the finished goods. Royalties are recognized as revenue when earned. From the time of Quadramet's launch in 1997 to June 1998, Cytogen recorded Quadramet royalty revenues from DuPont Pharmaceuticals Company ("DuPont") based on minimum contractual payments, which were in excess of actual Quadramet sales. Pursuant to an agreement between Cytogen and DuPont in June 1998, the minimum royalty arrangement was discontinued and Cytogen reclaimed the marketing rights to Quadramet. Subsequent to June 1998, Cytogen recorded product revenues from Quadramet based on actual sales. Starting in 1999, Quadramet royalties are based on sales of Quadramet by Berlex Laboratories Inc. ("Berlex"), Cytogen's marketing partner for Quadramet (see Note 8).

License and contract revenues include milestone payments and fees under collaborative agreements with third parties, revenues from contract manufacturing and research services, and revenues from other miscellaneous sources. In 2000, the Company discontinued contract manufacturing services,

concurrent with the sale of the manufacturing and laboratory facilities (see Property and Equipment above) and therefore received no revenue from this source in 2000.

During 2000, the Company adopted U.S. Securities and Exchange Commission Staff Accounting Bulletin No. 101 "Revenue Recognition in Financial Statements" ("SAB 101") which requires up-front, non-refundable license fees to be deferred and recognized over the performance period. The cumulative effect of adopting SAB 101 resulted in a one-time, non-cash charge of $4.3 million or $0.06 per share, which reflects the deferral of an up-front license fee received from Berlex, net of associated costs, related to the licensing of Quadramet recognized in October 1998 (see Note 8) and a license fee for certain applications of PSMA to a joint venture formed by Cytogen and Progenics recognized in June 1999 (see Note 6). Previously, the Company had recognized up-front license fees when the Company had no obligations to return the fees under any circumstances. Under SAB 101 these payments are recorded as deferred revenue to be recognized over the remaining term of the related agreements. For the year ended December 31, 2000, the Company recognized $859,000 in revenue that was included in the cumulative effect adjustment as of January 1, 2000.

Prior year financial statements have not been restated to apply SAB 101 retroactively; however the following pro forma amounts show the net loss to common stockholders and net loss per share assuming the Company had retroactively applied SAB 101 to the prior years:

	Year Ended Decemb	
	2000	1999
Net income (loss) to common stockholders, as reported	$(27,298,000)	$ 729,000
Net income (loss) per common share, as reported	$ (0.37)	$ 0.01
Pro forma net loss to common stockholders	$(22,984,000)	$ (484,000)
Pro forma net loss per common stock	$ (0.31)	$ (0.01)

Cost of Product and Contract Manufacturing Revenues

In June 1998, the Company paid DuPont $995,000 for manufacturing and distributing Quadramet as a result of Cytogen's reacquiring the marketing rights of Quadramet. In addition, the Company recorded a $4.0 million charge for securing a long-term manufacturing commitment for Quadramet from DuPont (see Note 9). Beginning in 1999, pursuant to the marketing agreement with Berlex (see Note 8), there is no manufacturing and distribution costs related to Quadramet. In addition, in 1999 the Company began phasing out the contract manufacturing

services to third parties which resulted in lower costs associated with these services and incurred no further costs in 2000.

Research and Development

Research and development expenditures consist of projects conducted by the Company and payments made to sponsored research programs and consultants. All research and development costs are charged to expense as incurred. Research and development expenditures for customer sponsored programs were $45,000, $194,000 and $228,000 in 2000, 1999 and 1998, respectively.

Patent Costs

Patent costs are charged to expense as incurred.

Net Income (Loss) Per Share

Basic net income (loss) per common share is based upon the weighted average common shares outstanding during each period. Diluted net income per common share is based upon the weighted average common shares outstanding and common stock equivalents which represent the incremental common shares that would have been outstanding under certain employee stock options and warrants, upon assumed exercise of dilutive stock options and warrants. Diluted net loss per share for 2000 and 1998 is the same as basic net loss per share, as the inclusion of common stock equivalents would be antidilutive (see Note 16).

2. DSM BIOLOGICS COMPANY B.V.

In July 2000, the Company entered into a Development and Manufacturing Agreement with DSM Biologics Company B.V. ("DSM"), pursuant to which DSM will conduct certain development activities with respect to ProstaScint, including the delivery of a limited number of batches of ProstaScint for testing and evaluation purposes. Under the terms of such agreement, and subject to the satisfactory performance thereof by DSM and the achievement of certain regulatory approvals for the manufacturing of ProstaScint, the parties are obligated to negotiate in good faith a long term supply agreement. Notwithstanding the parties' obligations to perform under the agreement or to negotiate a supply agreement in good faith, the Company cannot be certain that DSM will satisfactorily perform its obligations thereunder or that the parties will be able to negotiate a supply agreement on commercially satisfactory terms, if at all. Alternatively, the Company has the option, but not the obligation, to enter into certain licensing arrangements with DSM on terms and conditions to be agreed upon by the parties. In 2000, the Company recorded $559,000 of development expenses related to this agreement.

3. ADVANCED MAGNETICS, INC.

In August 2000, the Company and Advanced Magnetics, Inc. ("Advanced Magnetics"), a developer of novel diagnostic pharmaceuticals for use in magnetic resonance imaging (MRI), entered into marketing, license and supply agreements ("AVM Agreements"). Under the AVM Agreements, Cytogen acquired certain rights to Advanced Magnetics' product candidates: Combidex(R), MRI contrast agent for the detection of lymph node metastases and imaging agent Code 7228 for oncology applications. Advanced Magnetics will be responsible for all costs associated

with the clinical development, supply and manufacture of Combidex and Code 7228 and will receive royalties based upon product sales.

In exchange for the future marketing rights to Combidex and Code 7228, Cytogen issued 1.5 million shares of its Common Stock to Advanced Magnetics at closing and may issue an additional 500,000 shares, which are currently in escrow, subject to the achievement of certain milestones. Since the Advanced Magnetics' product candidates have not yet received FDA approval, the Company recorded a $13.2 million charge in the accompanying consolidated statements of operations for the acquisition of marketing and technology rights, of which $13.1 million was non-cash and represented the fair value of the 1.5 million shares of Common Stock issued. There can be no assurance that Advanced Magnetics will receive FDA approval to market Combidex or Code 7228 in the United States.

4. DRAXIMAGE INC.

In December 2000, the Company entered into a Product Manufacturing and Supply Agreement with Draximage Inc. ("Draximage") to market and distribute BrachySeed(TM) implants for prostate cancer therapy in the U.S. Under the terms of the agreement, Draximage will supply radioactive iodine and palladium seeds to Cytogen in exchange for royalties on sales and certain milestone payments. Cytogen paid Draximage $500,000 upon execution of the contract which has been recorded as other assets in the accompanying consolidated balance sheet and will be amortized over the ten year term of the Draximage agreement. Pursuant to the agreement, Cytogen will pay Draximage $500,000 and $1.0 million upon the first sale of the radioisotope Iodine-125 BrachySeeds and the palladium-103 BrachySeeds, respectively. Other payments are due Draximage upon the achievement of certain other milestones. The Company launched the radioactive iodine BrachySeed in the U.S. in January 2001.

5. ACQUISITION OF PROSTAGEN, INC.

On June 15, 1999, Cytogen reacquired the rights for immunotherapy to its PSMA technology by acquiring 100% of the outstanding capital stock of Prostagen, Inc. ("Prostagen") for 2,050,000 shares of Cytogen Common Stock, plus transaction costs. The acquisition was accounted for using the purchase method of accounting, whereby the purchase price was allocated to the assets acquired and liabilities assumed from Prostagen based on the respective estimated fair values at the acquisition date. The excess of the purchase price over the fair value of the net tangible assets of approximately $1.2 million was assigned to acquire technology rights and has been recorded as a non-cash charge to operations in the accompanying financial statements. Acquired technology rights reflects the value of the PSMA technology development projects underway at the time of the Prostagen acquisition. The Company may issue up to an additional 450,000 shares of Cytogen Common Stock upon the satisfactory termination of lease obligations assumed in the Prostagen acquisition.

The Company had sublicensed PSMA to Prostagen for prostate cancer immunotherapy in 1996. In connection with the acquisition, Cytogen acquired approximately $550,000 in cash, a minority ownership in Northwest Biotherapeutics, Inc., which is developing PSMA for cell therapy, and a contract with Velos, Inc. for marketing a cancer patient software management program for hospitals and health care payors. In addition, the Company may issue up to an additional $4.0 million worth of Cytogen Common Stock if certain milestones are achieved in the PSMA development program. The Company may also issue up to 500,000 shares of Cytogen Common Stock upon beneficial resolution of other contractual arrangements entered into by Prostagen.

6. PROGENICS PHARMACEUTICALS, INC. JOINT VENTURE

On June 15, 1999, Cytogen entered into a joint venture with Progenics Pharmaceuticals, Inc. ("Progenics") to develop vaccine and antibody-based

immunotherapeutic products utilizing Cytogen's proprietary PSMA technology. The joint venture will be owned equally by Cytogen and Progenics. Progenics will fund up to $3.0 million of development costs of the program. After that point, the Company and Progenics will equally share the future costs of the program. Cytogen has the exclusive North American marketing rights on products developed by the joint venture. In connection with the licensing of the PSMA technology to the joint venture, Cytogen will receive $2.0 million in payments of which $1.5 million was received to date, with the balance to be paid in December

2001. During the second quarter of 1999, Cytogen recorded approximately $1.8 million in license fee revenue based on the net present value of the future payments (using a discount rate of 10%). In connection with the adoption of SAB 101, effective January 1, 2000 (see Note 1), the Company deferred approximately $1.5 million of this previously recognized license fee and recognized $599,000 of the deferred revenue as license and contract revenue in 2000. The remaining $874,000 of deferred revenue will be recognized on a straight-line basis through June 2002, the estimated term of the development program.

7. SALE OF TARGON CORPORATION

Targon was established in September 1996 pursuant to agreements between Cytogen and Elan, and was a majority-owned (99.75%) subsidiary of Cytogen. In March 1998, Elan exchanged its shares of the Company's Series A Convertible and Exchangeable Preferred Stock for 50% of Cytogen's interest in Targon. In August 1998, Cytogen sold its remaining 49.875% interest in Targon to Elan for $2.0 million (see Note 1). As a result of the sale, a warrant to purchase up to 1,000,000 shares of Cytogen Common Stock previously granted to Elan and all notes among Cytogen, Elan and Targon were cancelled. In addition, in August 1998, Cytogen received $2.0 million from Elan in exchange for a convertible promissory note (see Note 13). The Company recognized a gain of approximately $2.8 million in 1998 on the Targon transaction.

8. BERLEX LABORATORIES

In October 1998, Cytogen entered into an exclusive license and marketing agreement ("Berlex Agreement") with Berlex for the manufacture and sale of Quadramet. Under the terms of the Berlex Agreement, Cytogen received a one-time license fee of $8.0 million in 1998, of which $4.0 million was paid to DuPont to secure a long-term manufacturing commitment for Quadramet. Berlex also pays Cytogen royalties on net sales of Quadramet, as well as milestone payments based on achievement of certain sales levels. Quadramet was re-launched by Berlex in the first quarter of 1999.

In connection with the Berlex Agreement, Cytogen granted Berlex a warrant to purchase 1,000,000 shares of Cytogen Common Stock at an exercise price of $1.002 per share. Using the Black-Scholes option pricing model, the estimated value of the warrant was calculated at $855,000, and was recorded as a reduction of the one-time license fee revenue recorded in 1998, with a corresponding increase in stockholders' equity.

In connection with the adoption of SAB 101 effective January 1, 2000 (see Note 1), the Company deferred $2.8 million of the previously recognized $4.0 million net fee received from Berlex and recognized $260,000 of this deferred revenue as license and contract revenue in 2000. The remaining $2.6 million of deferred revenue will be recognized on a straight-line basis through November 2010, the

product patent life of Quadramet.

9. THE DUPONT PHARMACEUTICAL COMPANY

Pursuant to the terms of an agreement between Cytogen and DuPont, Cytogen received from DuPont Quadramet royalty revenues of $1.7 million in 1998, based on minimum contractual payments which were in excess of actual sales. In June 1998, the agreement was amended and the minimum royalty arrangement was discontinued. In 1998, Cytogen terminated its marketing agreement with DuPont and recorded as a charge to Costs of Product and Contract Manufacturing payments to DuPont of $4.0 million for securing a long-term manufacturing commitment for Quadramet from DuPont and $995,000 for manufacturing and distributing Quadramet in 1998.

10. THE DOW CHEMICAL COMPANY

In 1993, Cytogen acquired from The Dow Chemical Company ("Dow") an exclusive license for the treatment of osteoblastic bone metastases in the U.S. for Quadramet. This license was amended in 1995 and 1998 to expand the territory to include Canada, Latin America, Europe and Japan, in 1996 to expand the field to include all osteoblastic diseases and in 1998 to include rheumatoid arthritis. The agreement also requires the Company to pay Dow royalties based on a percentage of net sales of Quadramet, or a guaranteed contractual minimum payments, whichever is greater, and future payments upon achievement of certain milestones. The Company recorded $802,000, $500,000 and $375,000, in royalty expense for 2000, 1999 and 1998, respectively. Future annual minimum royalties due to Dow are $750,000 in 2001 and $1.0 million per year thereafter through 2012.

11. REVENUES FROM MAJOR CUSTOMERS

Revenues from major customers (greater than 10%) as a percentage of total revenues were as follows:

	Year Ended December 31,		
	2000	1999	1998
Berlex (see Note 8)	22%	9%	36%
Progenics Pharmaceuticals, Inc. (see Note 6)	6	16	-
Mallinckrodt Medical Inc.	19	16	8
Medi-Physics	7	15	10
Syncor International Corporation	11	10	5

Mallinckrodt Medical Inc., Medi-Physics and Syncor International Corporation are chains of radiopharmacies, which distribute ProstaScint and OncoScint CR/OV kits.

Revenues from Berlex and Progenics in 2000 include the recognition of deferred revenue following the adoption of SAB 101.

12. ACCOUNTS PAYABLE AND ACCRUED LIABILITIES

	December 31,

	2000	1999
Accounts payable	$2,700,000	$1,785,000
Accrued payroll and related expenses	1,791,000	1,309,000
Accrued research contracts and materials	218,000	236,000
Accrued commission and royalties	205,000	404,000
Accrued professional and legal	755,000	422,000
Facility payable	1,125,000	689,000
Other accruals	424,000	633,000
	$7,218,000	$5,478,000

13. LONG-TERM DEBT

	December 31,	
	2000	1999
Due to Elan	$2,280,000	$2,200,000
Capital lease obligations	245,000	378,000
	2,525,000	2,578,000
Less: Current portion	(151,000)	(162,000)
	$2,374,000	$2,416,000

In August 1998, Cytogen received $2.0 million from Elan in exchange for a convertible promissory note. The note is convertible into shares of Cytogen Common Stock at $2.80 per share, subject to adjustments, and matures in seven years. The note bears annual interest of 7%, compounded semi-annually, however, such interest is not payable in cash but will be added to the principal for the first 24 months; thereafter, interest is payable in cash. In 2000 and 1999, the Company recorded $141,000 and $146,000, respectively, in interest expense on this note.

The Company leases certain equipment under capital lease obligations, which will expire on various dates through 2003. Property and equipment leased under non-cancellable capital leases have a net book value of $362,000 at December 31, 2000. Payments to be made under capital lease obligations (including total interest of $40,000) are $183,000 in 2001, $97,000 in 2002 and $5,000 in 2003.

14. COMMON STOCK

In December 1998, the Company sold to the State of Wisconsin Investment Board

3,333,334 shares of Cytogen Common Stock at an aggregate price of $2.5 million, or $0.75 per share.

In January 1999, the Company sold 2,666,667 shares of Cytogen Common Stock to a subsidiary of The Hillman Company for an aggregate price of $2.0 million, or $0.75 per share. Also in January, the Company exercised a put right granted to Cytogen under a $12.0 million equity line agreement with an institutional investor, for the sale of 475,342 shares of Common Stock at an aggregate price of $500,000, or $1.0519 per share.

In August 1999, the Company sold to the State of Wisconsin Investment Board 3,105,590 shares of Cytogen Common Stock at an aggregate price of $5.0 million, or $1.61 per share.

In 2000, the Company sold 1.0 million shares of Cytogen Common Stock to Berlex Laboratories ("Berlex") for $1.0 million or $1.00 per share upon an exercise of a warrant (see Note 8), and approximately 1.7 million additional shares of Cytogen Common Stock for total proceeds of $3.5 million at an average price of $2.12 per share upon the exercises of employee stock options and other warrants.

In September 2000, the Company sold to Acqua Wellington North American Equities Fund, Ltd. ("Acqua Wellington") 902,601 registered shares of Cytogen Common Stock at an aggregate price of $6.0 million or $6.647 per share. In October 2000, the Company entered into an equity financing facility with Acqua Wellington for up to $70 million of Common Stock. Under the terms of the agreement, over the next 20 months, Cytogen may, at its discretion, sell additional shares of its Common Stock to Acqua Wellington at a small discount to the market price to be determined before each sale provided the Threshold Price, as defined therein, for the Company's stock is at least $4.00 per share. The financing facility is not subject to any minimum takedown requirements, nor did the Company pay any financing fees or other compensation in connection with this transaction.

15. CONVERTIBLE PREFERRED STOCK

In December 1997, Cytogen issued 750 shares of Series B Preferred Stock ("Series B") for an aggregate price of $7.5 million. The Series B carried a dividend rate of 6% which was payable in cash or Common Stock at the option of Cytogen. In 1998, all of the outstanding Series B was converted into 7,377,054 shares of Cytogen Common Stock including $128,000 of accrued dividends.

16. STOCK OPTIONS

The Company has various stock option plans that provide for the issuance of incentive and non-qualified stock options to employees, non-employee directors and outside consultants, for which an aggregate of 7,352,635 shares of Common Stock have been reserved. The persons to whom options may be granted and the number, type, and terms of the options vary among the plans. Options are granted with an exercise term of 10 years and generally become exercisable in installments over periods of up to 5 years at an exercise price determined either by the plan or equal to the fair market value of the Common Stock at the date of grant. Under certain circumstances, vesting may accelerate. In January 1998, the Company cancelled unexercised stock option grants to purchase 671,555 shares ranging in price from $3.687 to $16.50 per share and issued stock option grants to purchase 537,244 shares at $1.95 per share which equaled fair market value at the date of grant. This repricing was not available to officers, directors, executives and consultants of the Company. Activity under these plans was as follows:

CYTOGEN CORPORATION AND SUBSIDIARIES
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (continued)

	Number of Shares	Price Range Per Share	Aggregate Exercise Price
Balance at December 31, 1997	3,825,460	$2.06 - 17.00	$ 19,541,738
Granted	4,535,920	0.70 - 2.13	6,388,644
Cancelled	(2,319,085)	1.36 - 17.00	(10,480,467)
Balance at December 31, 1998	6,042,295	0.70 - 16.63	15,449,915
Granted	536,155	0.95 - 2.67	1,068,223
Exercised	(231,842)	0.81 - 2.69	(306,507)
Cancelled	(1,266,609)	0.80 - 8.06	(5,963,368)
Balance at December 31, 1999	5,079,999	0.70 - 16.63	10,248,263
Granted	1,340,500	2.47 - 16.94	8,530,540
Exercised	(1,343,439)	0.83 - 16.63	(3,210,282)
Cancelled	(380,766)	0.95 - 16.94	(1,024,568)
Balance at December 31, 2000	4,696,294	$0.70 - 16.94	$ 14,543,953

The following table summarizes information about stock options at December 31, 2000:

	Outstanding St					Wei
	Exercisable Stock Options					
Range of Exercise Prices	Outstanding Shares	Weighted-Average Remaining Contractual Life	Weighted-Average Exercise Price	Exercisable Shares		
$ 0.70 - 1.83	2,440,265	7.6	$1.10	945,948		
1.84 - 3.67	1,126,029	8.0	2.49	375,678		
3.68 - 5.50	197,500	5.2	5.04	172,650		
5.51 - 7.33	343,000	7.7	5.92	91,800		
7.34 - 9.17	55,500	5.5	7.80	39,200		
9.17 - 11.00	503,000	9.5	10.14	-		
14.66 - 16.50	15,000	0.9	15.69	15,000		
16.50 - 16.94	16,000	3.7	16.61	12,000		

$ 0.70 - 16.94	4,696,294	7.8	$3.10	1,652,276

At December 31, 2000, options to purchase 1,652,276 shares of Common Stock were exercisable and 1,520,069 shares of Common Stock were available for issuance under approved plans of additional options that may be granted under the plans.

Included in the above tables is an option granted to a key employee in 1998 to purchase 2,250,000 shares of Cytogen Common Stock at an exercise price of $1.0937 per share, of which, the vesting of 1,350,000 shares ("Performance Options") are subject to the completion of certain performance based milestones as determined by the Board of Directors (the "Board"). During 2000 and 1999, the Board approved the commencement of vesting for 225,000 and 675,000 of the Performance Options, respectively, upon the achievement of certain milestones. In 2000 and 1999, the Company recorded $1.1 million and $84,000, respectively, of deferred compensation related to the vesting of the Performance Options, which represents the fair market value of Cytogen's Common Stock in excess of the exercise price of the option on the date, which the Board determined the performance milestones had been met. Deferred compensation is being amortized over the three-year vesting period of the Performance Options.

The Company adopted an employee stock purchase plan under which eligible employees may elect to purchase shares of Common Stock at the lower of 85% of fair market value as of the first trading day of each quarterly participation period, or as of the last trading day of each quarterly participation period. In 2000, 1999 and 1998, employees purchased 32,385, 29,209 and 54,023 shares, respectively, for aggregate proceeds of $80,000, $29,000 and $41,000, respectively. The Company has reserved 368,366 shares for future issuance under its employee stock purchase plan.

The Company applies Accounting Principle Board Opinion No. 25, "Accounting for Stock Issued to Employees," and the related interpretations in accounting for its stock options to employees. The Company follows the disclosure requirement of Statement of Financial Accounting Standards ("SFAS") No. 123, "Accounting for Stock-Based Compensation". Had compensation cost of the Company's stock options to employees been determined under SFAS No. 123, the Company's net loss would have been increased to the following pro forma amounts:

	Year Ended Dec	
	2000	1999
Net income (loss) to common stockholders, as reported	$(27,298,000)	$729,00
Pro forma net loss to common stockholders	$(30,689,000)	$(1,103,00
Basic and diluted net income (loss) per common share, as reported	$(0.37)	$0.0
Basic and diluted pro forma net loss per common share	$(0.42)	$(0.0

The weighted average fair value per option of the options granted under the

stock option plans during 2000, 1999 and 1998 is estimated as $5.40, $1.29 and $0.92, respectively, on the date of grant using the Black-Scholes pricing model with the following assumptions for 2000, 1999 and 1998: dividend yield of zero, volatility of 120.39%, 87.99% and 78.42%, respectively, risk-free interest rate of 5.98%, 5.85% and 5.37%, respectively, and an expected life of 5 years. The average fair value per option ascribed to the employee stock purchase plan during 2000, 1999 and 1998 is estimated at $1.35, $0.40 and $0.65, respectively, on the date of grant using the Black-Scholes option pricing model with the following assumptions for 2000, 1999 and 1998: divided yield of zero, volatility of 109.83%, 111.48% and 84.75%, respectively, risk free interest rate of 5.52%, 4.46% and 4.88%, respectively, and expected life of three months. Because the SFAS No. 123 method of accounting is not required to be applied to options granted prior to January 1, 1995, the resulting pro forma compensation charge may not be representative of that to be expected in future years.

17. RELATED PARTY TRANSACTION

Consulting services have been provided to the Company under an agreement with the Chairman of the Board of Directors related to time spent in that function on Company matters. Fees and expenses under this agreement were $54,000, $136,000 and $172,000 in 2000, 1999 and 1998, respectively.

18. PENSION PLAN

The Company maintains a defined contribution pension plan. The contribution is determined by the Board of Directors each year and is based upon a percentage of gross wages of eligible employees. The plan provides for vesting over four years, with credit given for prior service. The Company also makes contributions under a 401(k) plan in amounts, which match up to 50% of the salary deferred by the participants. Matching is capped at 6% of deferred salaries. Total pension expense was $40,000, $182,000 and $310,000 for 2000, 1999 and 1998, respectively.

19. INCOME TAXES

As of December 31, 2000, Cytogen had federal net operating loss carryforwards of approximately $220 million. The Company also had federal and state research and development tax credit carryforwards of approximately $6.5 million. These net operating loss and credit carryforwards will expire through 2020. In addition, certain operating loss and credit carryforwards began to expire in 1995.

The Tax Reform Act of 1986 contains provisions that limit the utilization of net operating loss and tax credit carryforwards if there has been an "ownership change". Such an "ownership change", as described in Section 382 of the Internal Revenue Code may limit the Company's utilization of its net operating loss and tax credit carryforwards.

Deferred income taxes reflect the net tax effect of temporary differences between the carrying amounts of assets and liabilities for financial reporting purposes and the amount used for income tax purposes. Based upon the Company's loss history, a valuation allowance for deferred tax assets has been provided:

	2000	1999
Deferred tax assets:		
Net operating loss carryforwards	$ 74,800,000	$ 63,700,000
Capitalized research and development expenses	15,800,000	17,400,000
Research and development credit	6,800,000	6,500,000
Acquisition of in-process technology	800,000	1,200,000
Other, net	5,800,000	6,400,000
Total deferred tax assets	104,000,000	95,200,000
Valuation allowance for deferred tax assets	(104,000,000)	(95,200,000)
Net deferred tax assets	$ -	$ -

In 1995, Cytogen acquired CytoRad and Cellcor, both of which had net operating loss carryforwards. Due to Section 382 limitations, approximately $10 million of CytoRad and $12.0 million of Cellcor carryforwards may be available to offset future taxable income. A 100% valuation allowance was established on the acquisition dates as realization of these tax assets is uncertain.

During 2000 and 1999, the Company sold New Jersey state operating loss carryforwards and research and development credits, which resulted in the recognition of a $1.6 million and $2.7 million tax benefit, respectively.

20. COMMITMENTS AND CONTINGENCIES

The Company leases its facilities and certain equipment under non-cancellable operating leases that expire at various times through 2004. Rent expense incurred on these leases was $1.3 million, $998,000 and $1.6 million in 2000, 1999 and 1998, respectively. Minimum future obligations under the operating leases are $2.4 million as of December 31, 2000 and will be paid as follows: $1.4 million in 2001, $495,000 in 2002, $213,000 in 2003, and $209,000 in 2004.

The Company is obligated to make minimum future payments under research and development contracts that expire at various times. As of December 31, 2000, the minimum future payments under contracts are $530,000 in 2001 and $130,000 each year from 2002 and thereafter. In addition, the Company is obligated to pay royalties on revenues from commercial product sales including certain guaranteed minimum payments.

21. CONSOLIDATED QUARTERLY FINANCIAL DATA - UNAUDITED

The following table provides quarterly data for the years ended December 31, 2000 and 1999.

Three Months Ended

	March 31, 2000	June 30, 2000	Sept. 30, 2000
	(amounts in thousands except per shar		
Total revenues	$ 2,643	$ 2,435	$ 2,733
Total operating expenses	4,500	4,951	19,340
Operating loss	(1,857)	(2,516)	(16,607)
Other income, net	111	144	158
Loss before income taxes and cumulative effect of accounting change	(1,746)	(2,372)	(16,449)
Income tax benefit	--	--	--
Loss before cumulative effect of accounting change	(1,746)	(2,372)	(16,449)
Cumulative effect of accounting change	(4,314)	--	--
Net loss	$ (6,060)	$ (2,372)	$(16,449)
Net loss per share:			
Basic and diluted net loss before cumulative effect of accounting change	$ (0.02)	$ (0.03)	$ (0.22)
Cumulative effect of accounting change	(0.06)	--	--
Basic and diluted net loss	$ (0.08)	$ (0.03)	$ (0.22)
Weighted average common shares outstanding	71,630	72,779	73,632

Amounts for each of the first three quarters of 2000 have been restated to give effect for the implementation of SAB 101 in the fourth quarter retroactively to January 1, 2000. The impact of the change resulted in an increase in total revenues and corresponding decrease in loss before cumulative effect of a change in accounting principle of $215,000 for each of the quarters ended September 30, June 30, and March 31 as compared to amounts previously reported in Form 10-Q filed with the SEC.

	Three Months Ended			
	March 31, 1999	June 30, 1999	Sept. 30, 1999	
	(amounts in thousands except per share d			
Total revenues	$ 2,324	$ 4,450	$ 2,346	$
Total operating expenses	4,018	5,428	3,649	
Operating loss	(1,694)	(978)	(1,303)	
Gain on sale of laboratory and manufacturing facilities	3,298	--	--	
Other income, net	53	14	71	
Income (loss) before income taxes	1,657	(964)	(1,232)	
Income tax benefit	--	--	--	
Net income (loss)	$ 1,657	$ (964)	$ (1,232)	$
Basic and diluted net income (loss) per share	$ 0.03	$ (0.01)	$ (0.02)	$
Weighted average common share outstanding				
Basic	64,192	65,632	68,757	
Diluted	64,496	65,632	68,757	