NEOSE TECHNOLOGIES INC
Form 10-K
March 29, 2002

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SECURITIES AND EXCHANGE COMMISSION
Washington, D.C. 20549

FORM 10-K

(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, 2001 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 0-27718

NEOSE TECHNOLOGIES, INC.
(Exact name of registrant as specified in its charter)

Delaware	13-3549286
(State or other jurisdiction of incorporation or organization)	(I.R.S. Employer Identificatio

102 Witmer Road Horsham, Pennsylvania	19044
(Address of principal executive offices)	(Zip Code)

Registrant's telephone number, including area code: (215) 441-5890

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

None	None
(Title of each class)	(Name of each exchange on which registered)

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

Preferred Share Purchase Rights
(Title of class)

Common Stock, par value $.01 per share
(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 the definitive proxy statement incorporated by reference in Part III of this Annual Report on Form 10-K or any amendment to this Annual Report on Form 10-K.[ ]

As of March 25, 2002, the aggregate market value of the Common Stock held by non-affiliates of the registrant was approximately $290,084,000 based on the last sale price of the Common Stock as reported by the The Nasdaq Stock Market. This calculation excludes 4,472,706 shares held by directors, executive officers, and a holder of more than 10% of the registrant's Common Stock.

As of March 25, 2002, there were 14,145,407 shares of the registrant's Common Stock outstanding.

DOCUMENTS INCORPORATED BY REFERENCE

The registrant's definitive proxy statement to be filed in connection with solicitation of proxies for its Annual Meeting of Stockholders to be held on June 25, 2002, is incorporated by reference into Part III of this Annual Report on Form 10-K.

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NEOSE, GlycoAdvance, GlycoTherapeutics, and GlycoActives are trademarks of Neose Technologies, Inc. This Form 10-K also includes trademarks and trade names of other companies.

PART I

ITEM 1. BUSINESS.

Forward-Looking Statements

Some of the statements in this Annual Report on Form 10-K and the Exhibits contain forward-looking statements within Section 21E of the Securities Exchange Act of 1934. When used in this Form 10-K and the Exhibits, the words "anticipate," "believe," "estimate," "may," "expect," "intend," and similar expressions are generally intended to identify forward-looking statements. These forward-looking statements include, among others, the statements in Management's Discussion and Analysis of Financial Condition and Results of Operations about our:

- expectations for increases in operating expenses;
- expectations for increases in research and development, and marketing, general and administrative expenses in order to develop products, manufacture commercial quantities of products and commercialize our technology;
- expectations for the development, manufacturing, and approval of new products, including our own proprietary products;
- expectations for incurring additional capital expenditures to expand our manufacturing capabilities;
- expectations for generating revenue or becoming profitable on a sustained basis;
- ability to enter into additional collaboration agreements and the ability of our existing collaboration partners to commercialize products incorporating our technologies;

- estimate of the sufficiency of our existing cash and cash equivalents and investments to finance our operating and capital requirements;
- expected losses; and
- expectations for future capital requirements.

Our actual results could differ materially from those results expressed in, or implied by, these forward-looking statements. Potential risks and uncertainties that could affect our actual results include the following:

- our ability to commercialize any products or technologies;
- our ability to maintain our existing collaborative arrangements and enter into new collaborative arrangements;
- our ability to develop commercial-scale manufacturing facilities;
- our ability to protect our proprietary products, know-how, and manufacturing processes;
- unanticipated cash requirements to support current operations or research and development;
- the timing and extent of funding requirements for the activities of our joint venture with McNeil Nutritionals;
- our ability to attract and retain key personnel; and
- general economic conditions.

These and other risks and uncertainties that could affect our actual results are discussed in greater detail in this Annual Report on Form 10-K. Although we believe that the expectations reflected in the forward-looking statements are reasonable, we cannot guarantee future results, events, levels of activity, performance, or achievements. We do not assume responsibility for the accuracy and completeness of the forward-looking statements.

We do not undertake any duty to update after the date of this Annual Report on Form 10-K any of the forward-looking statements in this report to conform them to actual results.

RISK FACTORS

You should carefully consider the risks and uncertainties described below. If any of the following occur, our business, financial condition, or operating results could be materially harmed. This could cause the trading price of our common stock to decline, and you may lose all or part of your investment.

Risks Related to Our Business

We have not yet commercialized any products or technologies, and we may never become profitable.

We have not yet commercialized any products or technologies and we may never be able to do so. Since we began operations in 1990, we have not generated any revenues, except for interest income and revenues from collaborative agreements and investments. Even if we or our collaborators commercialize one or more of our technologies or any products that incorporate our technologies, we may not become profitable. Our ability to achieve profitability is dependent on

a number of factors, including our ability to complete our development efforts and enter into collaborative agreements with others to incorporate our technologies into their products or develop and commercialize our own products. Furthermore, our ability to achieve profitability is dependent upon the willingness and ability of our collaborators to incorporate successfully our technologies into, obtain regulatory approval for, and commercialize successfully their product candidates or our ability to commercialize our own product candidates.

We have a history of losses, and we may incur continued losses for some time.

We have incurred losses each year, including net losses of approximately $13.3 million for the year ended December 31, 1999, approximately $8.5 million for the year ended December 31, 2000, and approximately $13.3 million for the year ended December 31, 2001. Given our planned level of operating expenses, we may continue to incur losses for some time. As of December 31, 2001, we had an accumulated deficit of approximately $81.6 million. To date, we have derived substantially all of our revenue from corporate collaborations, license agreements, and investments. We expect that substantially all of our revenue for the foreseeable future will result from these sources and from the licensing of our technologies. We also expect to spend significant amounts to expand research and development efforts, expand manufacturing scale-up activities, begin sales and marketing activities, and to fund research and development of drug candidates we develop internally. Because our operating expenses will increase significantly in the near term, we will need to generate significant additional revenue to achieve profitability. In order to generate revenue, we must continue to develop technologies from which we can derive revenue either ourselves or through existing and future collaborations. We may continue to incur substantial losses even if our revenues increase. As a result, we cannot predict the extent of future losses or the time required for us to achieve profitability, if at all.

We have a joint venture with McNeil Nutritionals, a subsidiary of Johnson & Johnson. The joint venture has incurred losses since its inception, and we expect the joint venture to incur additional losses for some time as it explores establishing a manufacturing arrangement with a third party.

If we fail to obtain necessary funds for our operations, we will be unable to maintain and improve our technology position.

To date, we have funded our operations primarily through revenues from corporate collaborations, public and private placements of equity securities, capital equipment and leasehold financing, gains from the sale of investments, and interest earned on investments. We believe that our existing cash and short-term investments, expected revenue from collaborations and license arrangements, anticipated financing of capital expenditures, and interest income should be sufficient to meet our operating and capital requirements through at least 2003. However, our present and future capital requirements depend on many factors, including:

- the level of research and development investment required to maintain and improve our technology position;
- our ability to enter into new agreements with collaborators or to extend the terms of our existing collaborations, and the terms of any agreement of this type;

- our success rate or that of our collaborators in discovery efforts associated with milestones and royalties;
- the timing, willingness, and ability of our collaborators to commercialize products incorporating our technologies, which commercialization would result in milestone payments and in royalties;
- costs of recruiting and retaining qualified personnel;
- costs of filing, prosecuting, defending, and enforcing patent claims and other intellectual property rights;
- our need or decision to acquire or license complementary technologies or new drug targets; and
- changes in product candidate development plans needed to address any difficulties in clinical studies or in commercialization.

If additional funds are required to operate our business, these funds may not be available on terms that we find favorable, if at all. We may raise these funds through public or private equity offerings, debt financings, credit facilities, or through corporate collaborations and licensing arrangements.

If we raise additional capital by issuing equity securities, our existing stockholders' percentage ownership will be reduced and they may experience substantial dilution. Any equity securities issued may also provide for rights, preferences, or privileges senior to holders of our common stock. If we raise additional funds by issuing debt securities, these debt securities would have rights, preferences, and privileges senior to holders of our common stock, and the terms of the debt securities issued could impose significant restrictions on our operations. If we enter into a credit facility, the agreement may require us to maintain compliance with financial covenants and restrict our ability to incur additional debt, pay dividends, make redemptions or repurchases of capital stock, make loans, investments or capital expenditures, or engage in other activities. If we raise additional funds through collaborations and licensing arrangements, we may be required to relinquish some rights to our technologies or drug candidates, or grant licenses on terms that are not favorable to us. If adequate funds are not available or are not available on acceptable terms, our ability to fund our operations, take advantage of opportunities, develop products or technologies, or otherwise respond to competitive pressures could be significantly delayed or limited, and we may need to downsize or halt our operations.

Our technologies may prove to be ineffective, or it may be years, if ever, before they lead to commercial products.

Our technologies involve new and unproven approaches. We are developing manufacturing processes based on our enzymatic glycosylation technology platform. We intend to use these processes to manufacture enzymes and sugar nucleotides for use by our potential GlycoAdvance(TM) customers, as well as for our own use in manufacturing complex carbohydrates for our GlycoAdvance, GlycoTherapeutics(TM), and GlycoActives(TM) programs. Any evaluation of our business and prospects must be made in light of the risks and unexpected expenses and difficulties frequently encountered by companies in an early stage of development in a new market. For us, these risks include:

- we have limited experience in manufacturing enzymes, sugar nucleotides, and complex carbohydrates on a commercial scale;
- we may incur unexpected costs, and the costs associated with manufacturing commercial quantities of these compounds may make commercialization unprofitable;
- we may fail to overcome the difficulties posed in manufacturing these compounds, or complete successfully all the other activities required to commercialize any enzyme, sugar nucleotide, or complex carbohydrate;

- we may encounter difficulties in locating sufficient sources and supplies necessary for our business; and
- we may face obstacles and difficulties unknown to us today.

We may find that our technologies fail to remodel therapeutic glycoproteins to include the proper human sugars. We may also find that our technologies do not significantly enhance yield improvement, improve the pharmacokinetic properties of glycoproteins, or are not scaleable in commercial production processes. Any of these

would result in limiting our ability to enter into additional collaborative agreements or obtain revenues under existing agreements.

We do not expect that we will make commercially available any product candidates we develop internally or license from third parties for at least five years, if at all. We may not succeed in our research and product development efforts, and we may not be able to launch any successfully commercialized products. Further, after commercial introduction of a new product, discovery of problems through adverse event reporting could result in restrictions on the product, including recall or withdrawal from the market and, in certain cases, civil or criminal penalties resulting from actions by regulatory authorities or damage from product liability judgments.

Many of these risks are described in more detail elsewhere in this "Risk Factors" section. Our business could be seriously harmed by adverse developments in any of these areas.

Our success depends on collaborative relationships, and our failure to enter into new, or successfully manage our existing and future, collaborations and license arrangements could prevent us from commercializing our technologies.

In the near term, we intend to rely substantially on collaborative partners to commercialize our broad technology platform. This strategy entails many risks, including:

- we may be unsuccessful in entering into collaborative agreements for the development and commercialization of products incorporating our technologies;
- we may not be successful in adapting our technologies to the needs of our collaborative partners;
- our collaborators may not be successful in or remain committed to developing or commercializing products incorporating our technologies;
- our collaborators may decide to attempt to develop proprietary alternatives to our technologies;
- we cannot be sure that our collaborators will share our perspective on the relative value of our technologies;
- we cannot be sure that our collaborators will commit sufficient resources to incorporating our technologies into their products;
- the use of our technologies may not advance as rapidly as it might if we retained complete control of all research, development, regulatory, and commercialization decisions;
- none of these collaborators is contractually obligated to introduce or promote products incorporating our technologies,

nor are any of them contractually required to achieve any specific production schedule;

- our collaborative agreements are generally terminable by our partners on short notice;
- continued consolidation in our target markets may also limit our ability to enter into collaboration agreements, or may result in terminations of existing collaborations.

Any of our present or future collaborators may breach or terminate their agreements with us or otherwise fail to conduct their collaborative activities successfully and in a timely manner. In addition, we may dispute the application of payment provisions under any of our collaboration agreements. If we fail to enter into or maintain collaborative agreements, or if any of these events occurs, we may not be able to commercialize our technologies.

GlycoAdvance. In December 2001, we entered into a research, development, and license agreement with Wyeth Pharmaceuticals, a division of Wyeth, for the use of our GlycoAdvance technology to develop an improved production system for Wyeth's biopharmaceutical compound, recombinant PSGL-Ig. The compound is currently being evaluated in Phase II clinical trials in patients being treated for heart attack. Wyeth is evaluating the use of GlycoAdvance in the production of rPSGL-Ig for Phase III clinical trials and commercial launch. Wyeth may not obtain regulatory approval for rPSGL-Ig, Wyeth may choose not to commercialize rPSGL-Ig, Wyeth may choose not to use GlycoAdvance services or products to commercialize rPSGL-Ig, or we may not succeed in developing an improved production system for rPSGL-Ig.

Regardless of the success of our technologies, the success of GlycoAdvance will be dependent on the priorities and actions of Wyeth and any future collaborative partners, including their success in obtaining regulatory approval for, and commercial acceptance of, any products incorporating our technologies.

GlycoTherapeutics(TM). We have existing collaborative agreements for GlycoTherapeutics with Progenics Pharmaceuticals, Inc. and Neuronyx, Inc.

Our agreement with Progenics involves the development of proprietary technologies that enable the manufacture of two gangliosides for use as the active pharmaceutical ingredients in two cancer vaccines being developed by Progenics. On May 15, 2001, Progenics announced the initiation of a Phase III clinical trial with the most advanced of these vaccines to prevent the relapse of malignant melanoma. Under the terms of the agreement, Progenics has the right to negotiate with us for the supply of the gangliosides. The agreement does not provide for future payments unless we reach an agreement with Progenics. Even if we reach an agreement with Progenics on terms for supplying the gangliosides, and we successfully complete development of these processes and fulfill all of our obligations under the agreement, Progenics may not obtain regulatory approval to market either of these vaccines. Further, even if Progenics obtains regulatory approval to market either of these vaccines, we cannot be sure that Progenics will enter into a manufacturing contract with us, that the terms of a future contract with Progenics will be favorable to us, or that either vaccine will be commercially successful.

Under our agreement with Neuronyx, we are collaborating in the research of compounds for the treatment of Parkinson's disease and other neurological

diseases. Even if the research identifies potential target compounds, both parties must agree to pursue development of the target compounds. If development proceeds, we would be responsible for the synthesis and manufacturing scale-up of target compounds, using our proprietary technologies for carbohydrate synthesis. We may be unable to complete this development successfully. Even if we successfully complete development of these processes and fulfill all of our obligations under the agreement, Neuronyx may not obtain regulatory approval to market any products. Further, even if Neuronyx obtains regulatory approval to market any of these products, we cannot be sure that any of the products will be commercially successful.

GlycoActives(TM). We have collaborative agreements with McNeil Nutritionals and Wyeth Nutrition, a business unit of Wyeth Pharmaceuticals.

The success of our joint venture with McNeil Nutritionals is dependent upon the joint venture's ability to develop, manufacture, sell, and market successfully complex carbohydrates, all of which are in early stages.

Under our agreement with Wyeth Nutrition, we are responsible for developing a large-scale manufacturing process for a potential ingredient in infant formula. We may be unable to complete this development successfully, or be successful in commercial scale-up of these processes. Even if we successfully develop a process and fulfill all of our obligations under the agreement, Wyeth may fail to obtain regulatory approval to market the ingredient. Even if Wyeth obtains regulatory approval for the ingredient, Wyeth may elect not to add the ingredient to any of its products.

If our collaborators fail to develop and commercialize products incorporating our technologies, we will fail to realize potential revenues.

Our future revenue will depend in part on the realization of milestone payments and royalties, if any, triggered by our collaborators' successful commercialization and development of products incorporating our technologies. The agreements with our collaborators do not obligate them to develop or commercialize lead compounds identified or manufactured through the use of our technologies. Our future revenues will therefore depend not only on our and our collaborators' achievement of development objectives, but also on each collaborator's own financial, competitive, marketing and strategic considerations, such as the relative advantages of other companies' products, including relevant patent and proprietary positions. If a collaborator fails to develop or commercialize a compound using our technologies, or if a compound that a collaborator develops is determined to be unsafe or of no therapeutic benefit, we will not receive any future milestone payments or royalties for that compound.

We have limited commercial manufacturing capability and experience, and we may be unable to manufacture the compounds required to commercialize our technologies.

Commercialization of our technologies requires the manufacture of enzymes, sugar nucleotides, and complex carbohydrates. We intend to manufacture enzymes and sugar nucleotides for use by our potential GlycoAdvance customers, as well as for our own use in manufacturing complex carbohydrates for our GlycoAdvance, GlycoTherapeutics, and GlycoActives programs. Our success depends on our ability to manufacture these compounds on a commercial scale and in accordance with current Good Manufacturing Practices, or cGMP, prescribed by the

United States Food and Drug Administration, or FDA. Our existing facility is not adequate for large-scale, commercial manufacturing. Therefore, we will need to develop commercial-scale manufacturing facilities meeting cGMP, or depend on our collaborators, licensees, or contract manufacturers.

We intend to expand our manufacturing capacity. This expansion will require significant additional funds and personnel, and compliance with applicable regulations. We intend to pursue this expansion without any assurance that we will receive an adequate return on our investment. We may be unable to design, build, or operate the required facilities. In addition to the normal scale-up risks associated with any manufacturing process, we may face unanticipated problems unique to manufacture of enzymes, sugar nucleotides, or complex carbohydrates. If we are unable to develop commercial-scale manufacturing capacity, we would seek collaborators, licensees, or contract manufacturers to manufacture the compounds necessary to commercialize our technologies. We may not be able to find parties willing to manufacture these compounds at acceptable prices.

Any manufacturing facility must adhere to the FDA's regulations on cGMP, which are enforced by the FDA through its facilities inspection program. The manufacture of product at these facilities will be subject to strict quality control, testing, and record keeping requirements, and continuing obligations regarding the submission of safety reports and other post-market information. Ultimately, we or our contract manufacturers may not meet these requirements.

If we encounter delays or difficulties in connection with manufacturing, commercialization of our technologies could be delayed, or we could breach our obligations under our collaborative agreements.

The failure to obtain or maintain adequate patents, and other intellectual property protection, could impact our ability to compete effectively.

Our success will depend in part on our ability to obtain commercially valuable patent claims and to protect our intellectual property. Our patent position is generally uncertain and involves complex legal and factual questions. Legal standards relating to the validity and scope of claims in our technology field are still evolving. Therefore, the degree of future protection for our proprietary rights is uncertain. The risks and uncertainties that we face with respect to our patents and other proprietary rights include the following:

- the pending patent applications we have filed or to which we have exclusive rights may not result in issued patents or may take longer than we expect to result in issued patents;
- the claims of any patents that are issued may not provide meaningful protection;
- we may not be able to develop additional proprietary technologies that are patentable;
- the patents licensed or issued to us or our customers may not provide a competitive advantage;
- other companies may challenge patents licensed or issued to us or our customers;
- other companies may independently develop similar or alternative technologies, or duplicate our technologies; and
- other companies may design around technologies we have licensed or developed.

We may incur substantial costs in asserting any patent rights and in defending suits against us relating to intellectual property rights. Such disputes could substantially delay our product development or commercialization activities. The United States Patent and Trademark Office or a private party could institute an interference proceeding relating to our patents or our patent

applications. An adverse decision in any such proceeding could result in the loss of our intellectual property rights.

In addition to patents and patent applications, we depend upon trade secrets and proprietary know-how to protect our proprietary technology. We require all employees, consultants, advisors, and collaborators to enter into confidentiality agreements that prohibit the disclosure of confidential information to any other parties. We require that our employees and consultants disclose and assign to us their ideas, developments, discoveries, and inventions. These agreements may not, however, provide adequate protection for our trade secrets, know-how, or other proprietary information in the event of any unauthorized use or disclosure.

International patent protection is uncertain.

Patent law outside the United States is uncertain, and is currently undergoing review and revision in many countries. Further, the laws of some foreign countries may not protect our intellectual property rights to the same extent as U.S. laws. We may participate in opposition proceedings to determine the validity of our or our competitors' foreign patents, which could result in substantial costs and diversion of our efforts. Finally, some of our patent protection in the United States is not available to us in foreign countries due to the laws of those countries.

We may have to develop or license alternative technologies if we are unable to maintain or obtain key technology from third parties.

We have licensed patents and patent applications from a number of institutions. Some of our proprietary rights have been licensed to us under agreements that have performance requirements or other contingencies. The failure to comply with these provisions could lead to termination or modifications of our rights to these licenses. Additionally, we may need to obtain additional licenses to patents or other proprietary rights from other parties to facilitate development of our proprietary technology base. If our existing licenses are terminated or we are unable to obtain such licenses, or obtain such licenses on what we consider to be acceptable terms, our ability to perform our obligations under our collaborative agreement and research and development efforts may be delayed while we seek to develop or license alternative technologies.

We are exposed to intense competition from many sources.

Our potential competitors include both public and private pharmaceutical, chemical, biotechnology, food, and consumer product companies. Compared to us, many of these companies have more:

- financial, scientific, and technical resources;
- manufacturing and marketing capabilities;
- experience conducting preclinical studies and clinical trials of new products; and
- experience in obtaining regulatory approvals for products.

Competitors may succeed in developing products and technology that are more effective and less costly than we may develop, or that would render our technology or products, or both, obsolete or noncompetitive. For example, potential customers may develop other ways to achieve the benefits of our

technology. Competitors also may prove to be more successful in the manufacturing and marketing of products. If we are successful in developing our own drug candidates or versions of drugs that are no longer patented, we will compete with other drug manufacturers for market share. If we are unable to compete against our competitors, our commercial opportunities will be diminished.

We operate in an environment of rapid technological change, and we may fall behind our competitors.

Our business is characterized by extensive research efforts and rapid technological progress. New developments in molecular biology, medicinal chemistry, and other fields of biology and chemistry are expected to continue at a rapid pace in both industry and academia. Research and discoveries by others may render some or all of our programs noncompetitive or obsolete. For example, some companies are producing by enzymatic and other means a limited variety of complex carbohydrates. Although we do not believe any of these companies currently has the ability to manufacture a wide variety of human carbohydrate products in quantities sufficient for commercialization, any of these companies may develop technologies superior to our technologies. In addition, some companies are investigating novel methods of chemical synthesis, sometimes with enzymatic steps, to produce commercial quantities

of complex carbohydrates. These and other efforts by potential competitors may be successful, or other methods of carbohydrate synthesis that compete with our technologies may be developed.

We may be unable to retain key employees or recruit additional qualified personnel.

Because of the specialized scientific nature of our business, we are highly dependent upon qualified scientific, technical, and managerial personnel. There is intense competition for qualified personnel in our business. Therefore, we may not be able to attract and retain the qualified personnel necessary for the development of our business. The loss of the services of existing personnel, as well as the failure to recruit additional key scientific, technical, and managerial personnel in a timely manner, would harm our research and development programs or our manufacturing capabilities.

We may be exposed to product liability and related risks.

The use in humans of compounds incorporating our technologies can result in product liability claims. Product liability claims can be expensive to defend, and may result in large settlements of claims or judgments against us. Even if a product liability claim is not successful, the adverse publicity, time, and expense involved in defending such a claim may interfere with our business. We may not be able to obtain insurance coverage at a reasonable cost or in sufficient amounts to protect us against losses.

Risks Related to Government Approvals

We are subject to extensive government regulation, and we or our collaborators may not obtain necessary regulatory approvals.

The research, development, manufacture, marketing, and sale of product candidates manufactured using our technologies are subject to significant, but

varying, degrees of regulation by a number of government authorities in the United States and other countries.

Regulation of Pharmaceutical Products

Pharmaceutical product candidates manufactured using our technology must undergo an extensive regulatory approval process before commercialization. This process is regulated by the FDA and by comparable agencies in other countries. Product candidates incorporating our technology are regulated in the United States in accordance with the federal Food, Drug and Cosmetic Act, the Public Health Service Act, and other laws. If a product candidate is regulated as a biologic, the FDA Center for Biologics Evaluation and Research, or CBER, will require the submission and approval of a Biologic License Application, or BLA, before commercial marketing. The BLA process generally requires:

- expensive and time-consuming preclinical studies and clinical trials to establish the safety, potency, purity, and effectiveness of each compound to be submitted with the FDA;
- compliance with FDA good laboratory, clinical, and manufacturing practices during testing and manufacturing; and
- continued FDA oversight of product and promotion after marketing approval is obtained.

It may be many years, if ever, until regulatory approval is obtained, and regulatory oversight continues after marketing approval for the product candidate is received.

Each manufacturer of drugs or biologics must be registered with the FDA and pass an inspection by the FDA prior to approval to manufacture products for commercial distribution. Failure to pass the inspection results in not receiving approval to market products. A collaborator's use of our technologies in the manufacture of a product candidate will require submission of Drug Master Files with CBER. If we or our collaborators fail to comply with all applicable regulatory requirements, the following delays or regulatory action could result:

- warning letters;
- fines;
- product recalls or seizures;
- operating restrictions;
- refusal of the FDA to complete review of pending market approval applications or supplements to approval applications;
- withdrawal of previously approved product approvals;
- civil penalties; and
- criminal prosecution.

We have not submitted, and we may never submit, any pharmaceutical product candidates for marketing approval to the FDA, or any other regulatory authority. In addition, no collaborator has submitted, and may never submit, any product candidate incorporating our technologies for marketing approval to the FDA, or any other regulatory authority.

If any product candidate manufactured using our technology is submitted for regulatory approval, it may not receive either the approvals necessary for commercialization, the desired labeling claims, or coverage or adequate levels of reimbursement under federal, state, or private healthcare insurance providers. Any delay in receiving, or failure to receive, these approvals would

adversely affect our ability to generate product revenues or royalties. Even if all requisite approvals were granted, these approvals may entail commercially unacceptable limitations on the labeling claims. In addition, once an approval is granted, both a marketed drug or compound and the manufacturer are subject to continual review and inspection. Later discovery of previously unknown problems with a product or manufacturer may result in restrictions or regulatory action against the product or manufacturer, including withdrawal of the product from the market. Additional governmental regulations may delay or alter regulatory approval of any product candidate manufactured using our technology. We cannot predict the impact of adverse governmental action that might arise from future legislative and administrative action.

Regulation of Foods and Food Ingredients

We expect that any products of our joint venture with McNeil Nutritionals will be regulated as food ingredients. Foods and food ingredients are subject to the provisions of the federal Food, Drug and Cosmetic Act. Food ingredients are broadly defined as any substances that may become a component, or otherwise affect the characteristics, of food. Food ingredients and ingredients used in animal feed are regulated either as substances generally recognized as safe, or GRAS, or as food additives.

Food ingredients that are GRAS are excluded from the definition of food additives. The FDA has affirmed by regulation a number of substances as GRAS, although it is not required that a substance be affirmed as GRAS by regulation of the FDA in order to be GRAS. A manufacturer may self-affirm a substance as GRAS by making an independent determination that qualified experts would generally agree that the substance is GRAS for a particular use. If the FDA disagrees with a determination, the manufacturer must complete the food additive petition process for the substance to be approved by the FDA. Affirmation of GRAS status either by the manufacturer or regulation of the FDA would allow the manufacturer to market and sell the additive or the food containing the additive. Furthermore, a manufacturer's decision to rely on an independent determination may limit the marketability of that manufacturer's products to food manufacturers, many of whom require confirmation of GRAS status from the FDA before they will purchase substances for use in foods from third parties.

Food ingredients that are not GRAS are regulated as food additives. All new food additives require FDA approval prior to commercialization. Information supporting the safety of a food additive is submitted to the FDA in the form of a food additive petition. The food additive petition process is generally expensive and lengthy. Commercialization of the food additive, if permitted by the FDA, often occurs several years after the petition is submitted to the FDA. The petition must establish with reasonable certainty that the food additive is safe for its intended use at the level specified in the petition. The petition is required to contain reports of safety investigations of the food additive and details regarding its physical, chemical, and biological properties. Product safety studies submitted to the FDA are typically conducted in accordance with FDA good laboratory practices requirements. If a

food additive petition is submitted, the FDA may choose to reject the petition or deny any desired labeling claims. Furthermore, the FDA may require the establishment of regulations that necessitate costly and time-consuming compliance procedures.

Regulation of Infant Formula Additives

We are collaborating with Wyeth Nutrition to develop a bioactive carbohydrate as a potential nutritional additive to infant formula. The manufacture, composition, and labeling of infant formulas are subject to the provisions of the United States Infant Formula Act. Prior to commercializing any potential infant formula additive, an infant formula manufacturer must demonstrate that its potential additive:

- is GRAS by previous regulation of the FDA, or is self-affirmed as GRAS by the infant formula manufacturer; or
- is the subject of an approved food additive petition.

Under the United States Infant Formula Act, infant formula manufacturers are required to notify the FDA of any intent to revise, add, or substitute any protein, fat, or carbohydrate in infant formula ninety days prior to the intended date of commercial distribution. During that ninety-day period, the FDA may request additional information, or deny marketing rights for the new formula. Wyeth is responsible for all regulatory activities relating to the infant formula additive. They have not yet made, and may never make, any filings with the FDA to propose inclusion of an infant formula additive manufactured using our technology. Furthermore, Wyeth may fail to self-affirm GRAS status of the potential infant formula additive, impairing their efforts to commercialize the infant formula additive.

Wyeth may market infant formula containing the additive in foreign countries. Infant formula regulatory requirements vary widely from country to country, and may be more or less stringent than the FDA requirements. The time required to obtain clearances, if required, in foreign countries may be longer or shorter than that required in the United States.

The use of hazardous materials in our operations may subject us to an environmental claim or liability.

Our research and development processes involve the controlled use of hazardous materials, chemicals, and radioactive compounds. The risk of accidental injury or contamination from these materials cannot be entirely eliminated. We do not maintain a separate insurance policy for these types of risks. In the event of an accident or environmental discharge, we may be held liable for any resulting damages, and any liability could exceed our resources. We are subject to federal, state, and local laws and regulations governing the use, storage, handling, and disposal of these materials and specified waste products. The cost of compliance with these laws and regulations could be significant.

Third party reimbursement for our collaborators' or our future product candidates may not be adequate.

Even if regulatory approval is obtained to sell any product candidates incorporating our technologies, our future revenues, profitability, and access to capital will be determined in part by the price at which we or our collaborators can sell such products. There are continuing efforts by governmental and private third-party payors to contain or reduce the costs of health care through various means. We expect a number of federal, state, and foreign proposals to control the cost of drugs through governmental regulation. We are unsure of the form that any health care reform legislation may take or what actions federal, state, foreign, and private payors may take in response to the proposed reforms. Therefore, we cannot predict the effect of any implemented reform on our business.

Our collaborators and our ability to commercialize our products successfully will depend, in part, on the extent to which reimbursement for the cost of such products and related treatments will be available from government

health administration authorities, such as Medicare and Medicaid in the United States, private health insurers, and other organizations. Significant uncertainty exists as to the reimbursement status of newly approved healthcare products, particularly for indications for which there is no current effective treatment or for which medical care typically is not sought. Adequate third-party coverage may not be available to enable us to maintain price levels

sufficient to realize an appropriate return on investment in product research and development. Inadequate coverage and reimbursement levels provided by government and third-party payors for use of our or our collaborators' products may cause these products to fail to achieve market acceptance and would cause us to lose anticipated revenues and delay achievement of profitability.

BUSINESS

Overview

We develop proprietary technologies for the synthesis and manufacture of complex carbohydrates. Our enzymatic technology platform makes feasible the synthesis and modification of a wide range of complex carbohydrates, which are chains of simple sugar molecules that can be joined together in many different combinations. Our platform enables the production and manipulation of complex carbohydrates either as stand-alone carbohydrate molecules or as carbohydrate structures attached to recombinant therapeutic glycoproteins and glycolipids.

Our GlycoAdvance program uses our technology to complete the human carbohydrate structures on therapeutic glycoproteins. We are also developing our technology to create novel glycosylation patterns, and to link other molecules, such as polyethylene glycol, to glycoproteins. The application of this technology to proteins potentially results in improved clinical activity and pharmacokinetic profile, enhanced drug development flexibility, stronger and additional patent claims, and yield improvements.

Our GlycoTherapeutics program uses our technology to enable the development of carbohydrate-based therapeutics. Our GlycoActives program uses our technology to develop novel carbohydrate food and nutritional ingredients.

GlycoAdvance

Overview

Our GlycoAdvance products and services are used to complete, correct, or improve the carbohydrate structures that are critical portions of therapeutic glycoproteins. Many biotechnology drugs on the market or in development, including monoclonal antibodies, are glycoproteins, and their associated carbohydrates are often critical to the function of the protein. GlycoAdvance can also be used to attach other molecules, such as polyethylene glycol, to glycoproteins.

We are pursuing partnerships for GlycoAdvance with pharmaceutical and biotechnology companies that are developing or marketing glycoprotein drugs. We are also exploring the use of GlycoAdvance for the development of our own glycoprotein drugs, as well as its use to enable alternative protein production systems, such as transgenic animals, plants, insect cells, and fungi such as yeast.

In 2000, worldwide sales of glycoprotein drugs were approximately $17.5 billion, and there were approximately 360 biotechnology drugs in development to treat more than 200 diseases. Many of these drug candidates are glycoproteins, and we expect that many of these compounds could benefit from GlycoAdvance.

Currently, glycoproteins are most often produced in mammalian cell culture systems, primarily Chinese hamster ovary (CHO) cells. Production in these systems often results in incomplete or incorrect glycosylation. Glycosylation refers both to the carbohydrate structures on glycoproteins, and to the process of creating or modifying these structures. The impact of incomplete or incorrect glycosylation on a glycoprotein drug can include suboptimal clinical activity, reduced half-life, greater or more frequent dosing, and increased side effects. Incomplete glycosylation can also result in development delays and production inefficiencies, including lower production yields, higher manufacturing costs, and increased facilities and equipment requirements. Conventional methods of solving the problems of incomplete or incorrect glycosylation include choosing different cell types for use in cell expression systems, re-engineering cells, optimizing cell culture media, purifying for final product only the most completely

glycosylated compounds, and building additional production facilities. These approaches can be expensive, time-consuming, and ineffective.

At the present time, GlycoAdvance is being used to remodel therapeutic glycoproteins, after their production in cell culture, to achieve the desired glycosylation. The use of GlycoAdvance in the production of therapeutic glycoproteins may result in improved clinical activity and pharmacokinetic profile, enhanced drug development flexibility, stronger and additional patent claims, and yield improvements. GlycoAdvance may permit the development of new therapeutic proteins with unique characteristics. GlycoAdvance may also permit the continued development of some drugs by overcoming a variety of development problems associated with poor glycosylation. Although alternatives to mammalian cell culture systems, such as transgenic animals, plants, insect cells, and fungi such as yeast, are in use or being developed, these systems are not now capable of producing glycoproteins with a fully human glycosylation pattern. We are considering the role of GlycoAdvance in the development of glycoproteins produced in some of these alternative systems.

We continue to invest in GlycoAdvance research and development. We are developing intellectual property and know-how in using glycosylation to improve antibody function, impart new therapeutic properties to drugs, and extend half-life, such as through the site-specific addition of polyethylene glycol. We are also developing new GlycoAdvance enzymes and sugar nucleotides to broaden the scope of our technology.

Agreement with Wyeth Pharmaceuticals

In December, 2001, we announced our first commercial agreement for GlycoAdvance. This agreement is with Wyeth Pharmaceuticals, a division of Wyeth, for use of GlycoAdvance services and products to develop an improved production system for Wyeth's recombinant PSGL-Ig (P-selectin glycoprotein ligand). rPSGL-Ig is being developed to treat inflammation and thrombosis associated with acute coronary syndrome and reperfusion injury. The drug is currently in Phase II clinical trials for heart attack.

Under the agreement, we will develop processes for the commercial-scale

manufacture of GlycoAdvance enzymes and sugar nucleotides to be used in the production of rPSGL-Ig, and will license GlycoAdvance technology to Wyeth for commercial production of the drug, if regulatory approval is obtained. During commercial production of Wyeths' current rPSGL-Ig, we would receive ongoing payments tied to yield improvements achieved using GlycoAdvance. In addition, Wyeth has the option to use GlycoAdvance to develop a next generation rPSGL-Ig, in which case we would receive development payments and royalties on product sales.

We will receive license, research, and milestone payments that will total up to $17 million if all milestones are met. In addition to ongoing product payments, Neose and Wyeth would also enter into a supply agreement for the long-term supply of GlycoAdvance process reagents for their commercial production needs.

The scope of our license to Wyeth is limited to rPSGL-Ig and proteins similar in amino acid sequence to rPSGL-Ig. This preserves our ability to work with other companies developing drugs for the same indications.

Feasibility Studies

We have completed more than 20 feasibility studies for pharmaceutical and biotechnology companies to demonstrate the utility of GlycoAdvance. In general, these feasibility studies have been conducted with glycoproteins that are being produced in CHO cell expression systems. In these studies, we have shown that GlycoAdvance can be used to improve the pharmacokinetic properties of these glycoproteins.

At the 2001 Biotechnology Industry Organization meeting, Eli Lilly & Company and Biogen, Inc. presented results of GlycoAdvance feasibility studies conducted with CHO cell produced glycoproteins. In animal studies, the half-life of proteins treated with GlycoAdvance were up to three times greater than the same protein not treated with GlycoAdvance.

Business Strategy

We are actively pursuing collaborations with companies that are developing, manufacturing, or marketing glycoproteins to use GlycoAdvance services and products in the research, development, and commercialization of glycoproteins. We anticipate that these collaborations would provide for up-front license fees, annual license fees, milestone payments, and royalties, as well as revenues from the supply of enzymes and sugar nucleotides. These collaborations could be product specific, as is the case with our Wyeth Pharmaceuticals collaboration, or research and development pipeline collaborations, where companies integrate GlycoAdvance into their protein research, development, and manufacturing processes to enable the accelerated development of better protein drugs.

We are considering opportunities for the use of GlycoAdvance in the development by Neose of glycoprotein drugs. These include using GlycoAdvance to develop improved versions of currently marketed glycoproteins as their patent protection expires; using GlycoAdvance to revive drugs that have been dropped from development because of glycosylation-related problems; and acquiring, co-developing, or in-licensing promising drug candidates that will benefit from GlycoAdvance.

Protein production systems other than mammalian cell culture expression systems, such as transgenic animals, plants, insect cells, and fungi, offer the promise of reduced production costs for glycoproteins. Glycosylation in these systems is often incomplete or incompatible with therapeutic use, resulting in therapeutic proteins that have poor pharmacokinetic activity or are immunogenic in humans. We are considering the possibilities of using GlycoAdvance in conjunction with some of these expression systems to solve their glycosylation problems.

GlycoTherapeutics

In our GlycoTherapeutics program, we are using our core technologies to enable the development and production of novel carbohydrate-based drugs. We are supporting research and development projects on promising, carbohydrate-based therapeutic approaches. We do not intend to proceed beyond early stage clinical trials on any carbohydrate-based drug candidates without a suitable partner for late stage development and commercialization. Our business strategy is to collaborate with others, allowing us to leverage our proprietary technologies to participate in the profits of successful drugs while assuming limited financial and clinical development risk. If we successfully enter into collaborations with other companies, we anticipate that we will receive up-front license fees, annual license fees, milestone payments, royalties, and revenues from the supply of compounds.

Neuronyx, Inc.

We have a research and development collaboration with Neuronyx for the discovery and development of drugs for treating Parkinson's disease and other neurological diseases. We also made an equity investment of approximately $1.3 million in Neuronyx. Currently, the collaboration is focusing on the modification of certain compounds that have previously demonstrated clinical promise in arresting the progression of Parkinson's disease symptoms. If the collaboration identifies potential target compounds, development of these compounds would require the agreement of both parties. If development proceeds, we are responsible for the synthesis and manufacturing scale-up of target compounds, using our proprietary technologies for carbohydrate synthesis, and Neuronyx is responsible for preclinical and clinical development of the compounds. Neose and Neuronyx each bear their own research and development costs under the collaboration. If any drugs are commercialized under this collaboration, Neose will be responsible for manufacturing the drug, and would receive a transfer payment and royalties based on sales. Parkinson's disease is a progressive disorder of the central nervous system. There is no known prevention or cure for Parkinson's disease. Current treatments focus on controlling symptoms of the disease, but do not slow the progression of the disease.

Progenics Pharmaceuticals, Inc.

In May 2001, Bristol-Myers Squibb assigned to Progenics Pharmaceuticals our agreement with Bristol-Myers to develop two synthetic gangliosides for use in two cancer vaccines, GMK and MGV. Progenics is continuing with the development of both vaccines and we are in discussions with them concerning future supply of material for clinical and commercial use, but we will receive no revenues from this agreement unless it is renegotiated.

Other Therapeutic Research Programs

We have early-stage research programs in the following areas:

- Glycolipids. Through our collaborations with Bristol-Myers and Neuronyx, we have developed expertise in the synthesis of glycolipids. We are continuing to develop this technology, and are exploring applications in inflammatory diseases and cancer.
- Heparins. We are exploring the use of our technology to synthesize heparin-like molecules. Heparins may have application in a variety of disesases.
- Immune system regulation. In conjunction with scientists at Harvard University, we are investigating whether certain carbohydrates may be useful as regulators of immune response. We are exploring whether these carbohydrates may be used for the treatment of various autoimmune conditions, including inflammatory bowel disease, allergic asthma, and psoriasis.

GlycoActives

In our GlycoActives program, we are applying our technology platform to the manufacture and development of novel carbohydrate-based food and nutritional ingredients. Our business strategy is to enter into collaborations with others for the use of our technologies for the development of these ingredients.

Joint Venture with McNeil Nutritionals

In 1999, we entered into a joint venture with McNeil Nutritionals, a subsidiary of Johnson & Johnson, to explore the inexpensive, enzymatic production of complex carbohydrates for use as bulking agents. The joint venture developed a process for making fructooligosaccharides and constructed a pilot facility in Athens, Georgia. In 2001, the joint venture closed the pilot facility as it shifted focus to a second generation bulking agent. The joint venture is exploring establishing a manufacturing arrangement with a third party to produce these bulking agents.

Wyeth Nutrition-Infant Formula Additive

We entered into an agreement in 1999 with Wyeth Nutrition, a business unit of Wyeth Pharmaceuticals, to develop a manufacturing process for a bioactive carbohydrate to be used as an ingredient in Wyeth's infant and pediatric nutritional formula products. We are responsible for developing a large-scale manufacturing process for this ingredient. We are receiving contract development payments, and will receive payments if we achieve the milestones specified in the agreement. If Wyeth commercializes the ingredient under this agreement, we will sell product to Wyeth at minimum specified transfer prices. Wyeth is a leading global infant formula manufacturer with products distributed in more than 90 countries.

Abbott Laboratories

Abbott Laboratories has a non-exclusive license to use our technology to manufacture and commercialize, for nutritional purposes only, any complex carbohydrate naturally found in human breast milk. If Abbott commercializes any products manufactured using our technology, we will receive fees from Abbott tied to commercial quantities.

Patents and Proprietary Rights

We solely own 23 issued U.S. patents, and have licensed 68 issued U.S. patents from 14 institutions. In addition, we own or have licensed over 56 patent applications pending in the United States. There are a number of U.S. and foreign patent applications related to our owned and licensed patents. We have licensed, or have an option to

license, patents and patent applications from the following institutions: University of California, The Scripps Research Institute, University of Pennsylvania, Japan Tobacco, Inc., University of Michigan, Marukin Shoyu Co., Ltd., Celltech Therapeutics Limited, University of Arkansas, University of British Columbia, Rockefeller University, University of Alberta, Genencor International, GlycoZym Aps., National Research Council Canada, Harvard University, University of Washington, Wayne State University, University of Illinois, and University of Adelaide.

Government Regulation

Products manufactured using our technologies, and our manufacturing and research activities, will typically be subject to significant, but varying, degrees of regulation by a number of government authorities in the United States and other countries. The development, manufacture, marketing, and sale of products manufactured using our technology will be subject to one of the following regulatory review processes before commercialization:

- pharmaceutical - new drug application or biologic license application;
- infant formula additive - new infant formula submission; or
- foods and food ingredients - either self-affirmed to be, or notified as, GRAS (generally recognized as safe) or food additive petition process.

Our products, systems, and processes are subject to continuing review subsequent to marketing, and affirmative reporting requirements to the FDA and other federal, state, or international agencies may be imposed upon us as a condition of continued marketing approval. Generally, pharmaceuticals are regulated more rigorously than foods and food ingredients. Infant formula additives are special types of food ingredients that are regulated more rigorously than most other types of food ingredients.

Our operations are also subject to regulation under the Occupational Safety and Health Act, the Environmental Protection Act, the Toxic Substances Control Act, the Resource Conservation and Recovery Act, and other similar federal, state, and local laws, rules, and regulations governing laboratory activities, waste disposal, handling dangerous materials, and other matters. We voluntarily comply with the National Institutes of Health Guidelines for Research Involving Recombinant DNA Technologies.

Regulation of Pharmaceutical Product Candidates

We intend to manufacture enzymes and sugar nucleotides for use by our potential GlycoAdvance customers, as well as for our own use in manufacturing complex carbohydrates for our GlycoTherapeutics and GlycoActives programs. Our collaborators will be responsible for obtaining all required regulatory approvals for pharmaceutical product candidates incorporating our technologies.

Neose will be responsible for filing Drug Master Files covering the manufacturing of enzymes and sugar nucleotides for customers. The research and development activities regarding, and the future manufacturing and marketing of, all pharmaceutical product candidates incorporating our technologies are and will be subject to significant regulation by numerous governmental authorities in the United States and other countries. Pharmaceutical product candidates intended for therapeutic use in humans are governed principally by the federal Food, Drug and Cosmetic Act, Public Health Service Act, and FDA regulations in the United States, and by comparable laws and regulations in foreign countries. The federal Food, Drug and Cosmetic Act and other federal statutes and regulations govern the testing, manufacture, safety, effectiveness, marketing, labeling, storage, record keeping, approval, advertising, and promotion of pharmaceutical products. The process of completing preclinical and clinical testing and obtaining FDA approval for a new pharmaceutical product requires a number of years and the expenditure of substantial resources.

Following drug discovery, the steps required before a new pharmaceutical product candidate may be marketed in the United States include:

- preclinical laboratory and animal tests;
- the submission to the FDA of an Investigational New Drug application;
- adequate and well-controlled clinical trials, typically conducted in three phases, to establish the safety and effectiveness of the product candidate;

- the submission of a New Drug Application or Biologic License Application to the FDA; and
- FDA approval of the New Drug Application or Biologic License Application prior to any promotion, commercial sale, or shipment of the product.

Preclinical trials, in vitro or in animals, must be conducted to evaluate the safety of a compound for testing in humans. Various regulations govern such testing including Good Laboratory Practices or similar international regulations. Clinical trials, conducted according to Good Clinical Practices or similar international regulations and subject to review by independent oversight bodies (e.g. Institutional Review Boards), are typically conducted in three sequential phases. Phase I clinical trials are primarily designed to determine the metabolic and pharmacologic effects of the product candidate in humans, and the side effects associated with increasing doses. These studies generally involve a small number of healthy volunteer subjects, but may be conducted on people with the disease the product candidate is intended to treat. Phase II studies are conducted to evaluate the effectiveness of the product candidate for a particular indication, and involve patients with the disease under study. These studies also provide evidence of the short-term side effects and risks associated with the product candidate. Phase III studies are generally designed to assess the overall benefit-risk relationship of the product candidate. Phase III trials must demonstrate that substantial evidence of safety and effectiveness of a product candidate exists in order to obtain FDA approval for marketing the product candidate. Phase III trials often involve a substantial number of patients in multiple study centers, and include longer-term administration of the product candidate than in Phase II trials. A clinical trial may combine the elements of more than one phase, and often at least two Phase III studies demonstrating a product candidate's safety and efficacy are required before marketing approval is received. Typical estimates of the total

time required for completing such clinical testing vary between four and ten years. For marketing outside the United States, foreign regulatory requirements govern human clinical trials and marketing approval for product candidates. The requirements relating to the conduct of clinical trials, product licensing, pricing, and reimbursement vary widely from country to country. Regulatory oversight continues after marketing approval for the product candidate is received. Regulatory bodies may require additional clinical trials be performed as a condition of receiving marketing approval. Affirmative reporting obligations are imposed as a condition of continued marketing approval.

Third Party Reimbursement

Our ability and each of our collaborator's ability to commercialize successfully drug products may depend in part on the extent to which coverage and reimbursement for the cost of such products will be available from government health administration authorities, private health insurers, and other organizations. Significant uncertainty exists as to the reimbursement status of new therapeutic products and we cannot be sure that third-party reimbursement would be available for therapeutic products we or our collaborators might develop. Healthcare reform, especially as it relates to prescription drugs, is an area of increasing national attention and a priority of many governmental officials. Certain reform proposals, if adopted, could impose limitations on the prices we will be able to charge in the United States for our products or the amount of reimbursement available for our products or the amount of reimbursement available for our products from governmental agencies or third-party payors.

Regulation of Foods and Food Ingredients

We expect that any products of our joint venture with McNeil Nutritionals will be regulated as food ingredients. Foods and food ingredients are subject to the provisions of the federal Food, Drug and Cosmetic Act. Food ingredients are broadly defined as any substances that may become a component, or otherwise affect the characteristics, of food. Food ingredients and ingredients used in animal feed are regulated either as substances generally recognized as safe, or GRAS, or as food additives.

Food ingredients that are GRAS are excluded from the definition of food additives. The FDA has affirmed by regulation a number of substances as GRAS, although it is not required that a substance be affirmed as GRAS by regulation of the FDA in order to be GRAS. Alternatively, under a new proposed regulatory framework, a manufacturer may submit GRAS notification to the FDA claiming that a food ingredient is GRAS. The FDA generally will respond to the notification within approximately ninety days as to whether there is sufficient evidence to support the notifier's conclusion that the substance is GRAS. A positive response from the FDA indicates that it has no objection to the notifier's conclusion that a substance is a GRAS. A manufacturer also may self-affirm a

substance as GRAS by making an independent determination that qualified experts would generally agree that the substance is GRAS for a particular use. If the FDA disagrees with the manufacturer's self-determination or GRAS notification, the manufacturer generally must submit a food additive petition to obtain approval to market the food ingredient. Affirmation of GRAS status either by the manufacturer or regulation of the FDA would allow the manufacturer to market and sell the additive or the food containing the additive. Furthermore, a manufacturer's decision to rely on an independent determination may limit the marketability of that manufacturer's products to food manufacturers, many of

whom require confirmation of GRAS status from the FDA before they will purchase substances for use in foods from third parties.

Food ingredients that are not GRAS are regulated as food additives. All new food additives require FDA approval prior to commercialization. Information supporting the safety of a food additive is submitted to the FDA in the form of a food additive petition. The food additive petition process is generally expensive and lengthy. Commercialization of the food additive, if permitted by the FDA, often occurs several years after the petition is submitted to the FDA. The petition must establish with reasonable certainty that the food additive is safe for its intended use at the level specified in the petition. The petition is required to contain reports of safety investigations of the food additive and details regarding its physical, chemical, and biological properties. Product safety studies submitted to the FDA are typically conducted in accordance with FDA good laboratory practices requirements. If a food additive petition is submitted, the FDA may choose to reject the petition or deny any desired labeling claims. Furthermore, the FDA may require the establishment of regulations that necessitate costly and time-consuming compliance procedures.

Regulation of Infant Formula Additives

We are collaborating with Wyeth Nutrition to develop a bioactive carbohydrate as a potential nutritional additive to infant formula. The manufacture, composition, and labeling of infant formulas are subject to the provisions of the United States Infant Formula Act. Prior to commercializing any potential infant formula additive, an infant formula manufacturer must demonstrate that its potential additive:

- is GRAS either by previous regulation of the FDA, or is self-affirmed as GRAS by the infant formula manufacturer; or
- is the subject of an approved food additive petition.

Under the United States Infant Formula Act, infant formula manufacturers are required to notify the FDA of any intent to revise, add, or substitute any protein, fat, or carbohydrate in infant formula ninety days prior to the intended date of commercial distribution. This new infant formula submission must contain the quantitative formulation of the new infant formula, a description of any reformulation or change in processing, and assurances that the new infant formula will not be marketed without complying with the nutrient and quality factor requirements and cGMP control requirements. Upon notification, the FDA has a ninety-day period, in which to request additional information, or deny marketing rights for the new formula. If no response is received from the FDA within the ninety-day period, the manufacturer may proceed with commercial sales of the newly formulated product. Under our agreement, Wyeth is responsible for all regulatory activities relating to the infant formula additive. Wyeth has not yet made, and may never make, any filings with the FDA to propose inclusion of an infant formula additive manufactured using our technology. Their efforts to commercialize any infant formula additive may be materially and adversely affected if they do not self-affirm GRAS status of this potential infant formula additive.

Wyeth may market infant formula containing this additive in foreign countries. Infant formula regulatory requirements vary widely from country to country, and may be more or less stringent than FDA requirements. The time required to obtain clearances, if required, in foreign countries may be longer or shorter than that required in the United States.

Competition

Some companies are producing complex carbohydrates by enzymatic and other means. We do not believe any of these companies has the ability currently to manufacture a wide variety of carbohydrates in quantities sufficient for

commercialization. Some companies are investigating novel methods of chemical synthesis, sometimes with enzymatic steps, to produce commercial quantities of complex carbohydrates. These and other efforts by potential competitors may be successful or other methods of carbohydrate synthesis that compete with our technologies may be developed.

Our GlycoAdvance services and products compete with internal efforts within companies to improve protein glycosylation. This includes efforts to develop better glycosylating cell lines, optimize cell culture conditions to improve glycosylation, and construct additional manufacturing capacity.

Other companies are developing technologies that could compete with GlycoAdvance. This includes the genetic engineering of expression systems to produce glycoproteins in vivo with improved glycosylation, and developing human cell lines for glycoprotein production. Other companies are seeking to extend protein half-life by polyethelyne-glycol or polyglutamate modification, human albumin fusion, or microsphere encapsulation, while still others are developing technologies that focus on improving half-life or efficacy. Companies developing competing technologies are pursuing business strategies that include collaborations with pharmaceutical and biotechnology companies, as well as the use of their technologies to develop proprietary products including improved versions of currently marketed biological products.

Manufacturing

We intend to manufacture enzymes and sugar nucleotides for use by our anticipated GlycoAdvance customers, and for our own use in proprietary drug development, and for use in manufacturing complex carbohydrates for our current and potential GlycoTherapeutics and GlycoActives customers. We will need to develop commercial-scale manufacturing facilities meeting cGMP, or depend on collaborators, licensees, or contract manufacturers for the commercial manufacture of potential products.

During 2001, we committed to spend approximately $17 million to provide additional cGMP manufacturing capacity in our Horsham, Pennsylvania facility to support the initial requirements of our anticipated GlycoAdvance customers. In addition, we entered into a lease during 2002 for a 40,000 square foot building located in Horsham, Pennsylvania. We intend to convert the facility into laboratory and office space at an expected cost of approximately $12 million. We plan to relocate research laboratories and corporate offices from our current facility in Horsham, Pennsylvania to the new facility, leaving our current facility available for future expansion of our cGMP manufacturing capacity.

We believe we have the capacity to develop scalable manufacturing processes required for our collaboration with Wyeth Nutrition in our existing facilities, although we currently estimate that we will require additional facilities to produce these ingredients at commercial scale.

Marketing, Distribution, and Sales

We intend to rely substantially on collaborative partners to commercialize our broad technology platform. These partners would be responsible for the development, regulatory, approval, sales, marketing, and distribution activities, for products incorporating our technologies. If we commercialize any products on our own, we will have to establish or contract for development, regulatory, sales, marketing, and distribution capabilities. The marketing,

advertising, and promotion of any product manufactured using our technology would likely be subject to regulation by the FDA or other governmental agencies.

Employees

As of December 31, 2001, we employed 111 individuals, consisting of 81 employees engaged in research and development activities and 30 employees devoted to business development and administrative activities. Our staff includes carbohydrate biochemists as well as scientists with expertise in organic chemistry, analytic chemistry, molecular biology, microbiology, cell biology, scale-up manufacture, and regulatory affairs. A significant number of our employees have prior experience with pharmaceutical or biotechnology

companies, and in the food industry, and many have specialized training in carbohydrate technology. None of our employees is covered by collective bargaining agreements. We believe we have good relations with our employees.

Executive Officers of the Company

The name, age as of March 25, 2002, and position of each of our executive officers are as follows:

Stephen A. Roth, Ph.D, 59, has served on our Board since 1989 and as Chairman and Chief Executive Officer since August 1994. Dr. Roth co-founded Neose, and from 1992 until August 1994, he served as Senior Vice President, Research and Development and Chief Scientific Officer. Dr. Roth was on the faculty of the University of Pennsylvania from 1980 to 1994, and was Chairman of Biology from 1982 to 1987. Dr. Roth received his A.B. in biology from The Johns Hopkins University, and his Ph.D. in developmental biology from the Case Western Reserve University. He completed his post-doctorate training in carbohydrate chemistry at The Johns Hopkins University.

David A. Zopf, M.D., 59, has served as our Executive Vice President since January 2002. He served as our Vice President, Drug Development from 1992 to January 2002. From 1991 to 1992, we engaged Dr. Zopf as a consultant on the biomedical applications of complex carbohydrates. From 1988 to 1991, Dr. Zopf served as Vice President and Chief Operating Officer of BioCarb, Inc., a biotechnology company and the U.S. subsidiary of BioCarb AB, where he managed the research and development programs of novel carbohydrate-based diagnostics and therapeutics. Dr. Zopf received his A.B. in zoology from Washington University, and his M.D. from Washington University School of Medicine.

Edward J. McGuire, Ph.D., 64, has served as our Vice President, Research and Development since 1990. Dr. McGuire was on the faculty of the University of Pennsylvania from 1985 to 1990. From 1984 to 1985, Dr. McGuire served as a Senior Researcher at Genetic Engineering, Inc., a biotechnology company. Dr. McGuire received his B.A. in biology from Blackburn College, and his Ph.D. in biochemistry/chemistry from the University of Illinois Medical School.

George J. Vergis, Ph.D., 41, has served as our Vice President, Business and Commercial Development since July 2001. From January 1996 to May 2001, Dr. Vergis served as Vice President, New Product Development and Commercialization at Knoll Pharmaceutical Company, a division of BASF Pharma, responsible for the commercial planning, product development, and marketing for the cardiovascular, immunology, and critical care franchises. Prior to his employment at BASF, Dr. Vergis held a variety of clinical and medical marketing positions at Wyeth

Pharmaceuticals and Warner-Lambert Parke-Davis. Dr. Vergis received his BA in Biology and History from Princeton University, his Ph.D. in Physiology from The Pennsylvania State University, and his M.B.A. from Columbia University.

A. Brian Davis, 35, has served in a variety of positions since 1994, most recently as acting Chief Financial Officer and Senior Director, Finance. Mr. Davis is licensed as a Certified Public Accountant in New Jersey, and received his B.S. in accounting from Trenton State College. From 1991 to 1994, Mr. Davis was employed by MICRO HealthSystems, Inc., a provider of healthcare information systems, where he served most recently as Corporate Controller.

Debra J. Poul, Esq., 49, has served as our General Counsel since January 2000. From January 1995 to January 2000, Ms. Poul was of counsel at Morgan Lewis. From September 1978 to December 1994, Ms. Poul was at Dechert, serving as counsel from 1989 to 1994. Ms. Poul received her B.A. from the University of Pennsylvania and her J.D. from Villanova University.

ITEM 2. PROPERTIES.

We own, subject to a mortgage, approximately 45,000 square feet of cGMP manufacturing, laboratory, and corporate office space in Horsham, Pennsylvania. Our lease of approximately 2,600 square feet of laboratory and office space in San Diego, California expired in September 2001. In April 2001, we entered into a new lease agreement for approximately 10,000 square feet of laboratory and office space in San Diego, California. The initial term of the lease ends in March 2006, at which time we have an option to extend the lease for an additional five years. We anticipate our expanded operations in San Diego will allow us to increase our research and development efforts for our GlycoAdvance program.

In 2001, we committed to make approximately $17 million in capital expenditures to provide additional cGMP manufacturing capacity in our Horsham, Pennsylvania facility to support the initial requirements of our anticipated GlycoAdvance customers. In February 2002, we entered into a lease agreement for a 40,000 square foot building in Horsham, Pennsylvania. We intend to convert the facility into laboratory and office space for an expected cost of approximately $12 million. We plan to relocate research laboratories and corporate offices from our current facility in Horsham, Pennsylvania to the new facility, leaving our current facility available for future expansion of our cGMP manufacturing capacity.

We intend to manufacture enzymes and sugar nucleotides for use by our anticipated GlycoAdvance customers, and for our own use in proprietary drug development, and for use in manufacturing complex carbohydrates for our current and potential GlycoTherapeutics and GlycoActives customers. We will need to develop commercial-scale manufacturing facilities meeting cGMP, or depend on collaborators, licensees, or contract manufacturers for the commercial manufacture of potential products. See "Item 1-Business-Manufacturing."

ITEM 3. LEGAL PROCEEDINGS.

We are not a party to any material legal proceedings.

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

We did not submit any matters to a vote of security holders during the fourth quarter of 2001.

PART II

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

Our common stock is listed on The Nasdaq Stock Market under the symbol NTEC. We commenced trading on The Nasdaq Stock Market on February 15, 1996. The following table sets forth the high and low sale prices of our common stock for the periods indicated.

	Common Stock Price	
	High	Low
Year Ended December 31, 2000		
First Quarter	$60.13	$13.00
Second Quarter	45.94	18.63
Third Quarter	51.82	33.00
Fourth Quarter	52.00	25.75
Year Ended December 31, 2001		
First Quarter	44.38	22.38
Second Quarter	46.97	23.25
Third Quarter	47.42	30.15
Fourth Quarter	41.81	27.31
Year Ended December 31, 2002		
First Quarter (through March 25, 2002)	38.35	27.31

As of March 25, 2002, there were approximately 200 record holders and 4,500 beneficial holders of our common stock. We have not paid any cash dividends on our common stock and we do not anticipate paying any in the foreseeable future.

ITEM 6. SELECTED FINANCIAL DATA.

The following Statements of Operations Data for the years ended December 31, 1997, 1998, 1999, 2000, and 2001, and for the period from inception (January 17, 1989) through December 31, 2001, are derived from our consolidated financial statements that have been audited by Arthur Andersen LLP, independent public accountants. The financial data set forth below should be read in conjunction with the sections of this Annual Report on Form 10-K entitled

"Management's Discussion and Analysis of Financial Condition and Results of Operations," and the financial statements and notes included elsewhere in this Form 10-K.

	Year ended December 31,				
	1997	1998	1999	2000	2001
	(in thousands, except per share data)				
Statements of Operations Data:					
Revenue from collaborative agreements	$ 725	$ 390	$ 422	$ 4,600	$ 1,266
Operating expenses:					
Research and development	8,013	9,912	10,649	12,094	14,857
Marketing, general and administrative	3,884	3,635	4,520	5,648	9,374
Total operating expenses	11,897	13,547	15,169	17,742	24,231
Gain on sale of marketable security	–	–	–	–	6,120
Interest income, net	2,108	1,250	1,429	4,642	3,516
Net loss	$ (9,064)	$ (11,907)	$ (13,318)	$ (8,500)	$ (13,329)
Basic and diluted net loss per share	$ (0.96)	$ (1.25)	$ (1.25)	$ (0.63)	$ (0.95)
Basic and diluted weighted-average shares outstanding	9,405	9,556	10,678	13,428	14,032

	As of December 31,				
	1997	1998	1999	2000	2001
	(in thousands)				
Balance Sheet Data:					
Cash and marketable securities	$ 43,303	$ 32,023	$ 33,235	$ 94,762	$76,245
Total assets	58,886	46,265	52,239	114,768	105,786
Long-term debt	8,917	8,300	7,300	6,200	5,100
Deficit accumulated during the development stage	(34,587)	(46,494)	(59,812)	(68,312)	(81,641)
Total stockholders' equity	46,954	36,013	40,785	104,868	93,946

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

The following discussion should be read in conjunction with our consolidated financial statements and related notes included in this Form 10-K.

Overview

Neose develops proprietary technologies for the synthesis and manufacture of complex carbohydrates. Our enzymatic technology platform makes feasible the synthesis and modification of a wide range of complex carbohydrates, which are chains of simple sugar molecules that can be joined together in many different combinations. Our platform enables the production and manipulation of complex carbohydrates either as stand-alone carbohydrate molecules or as carbohydrate structures attached to recombinant therapeutic glycoproteins and glycolipids.

Our GlycoAdvance program uses our technology to complete the human carbohydrate structures on therapeutic glycoproteins. We are also developing our technology to create novel glycosylation patterns, and to link other molecules, such as polyethylene glycol, to glycoproteins. The application of this technology to proteins potentially results in improved clinical activity and pharmacokinetic profile, enhanced drug development flexibility, stronger and additional patent claims, and yield improvements.

Our GlycoTherapeutics program uses our technology to enable the development of carbohydrate-based therapeutics. Our GlycoActives program uses our technology to develop novel carbohydrate food and nutritional ingredients.

As of December 31, 2001, we had an accumulated deficit of approximately $82 million. We expect additional losses for some time as we expand research and development efforts, expand manufacturing scale-up activities, and begin sales and marketing activities.

Critical Accounting Policies

Our significant accounting policies are described in Note 2 to the consolidated financial statements included in Item 8 of this Form 10-K. We believe our most critical accounting policies relate to recognition of revenue and impairment of long-lived assets.

Revenue Recognition

Revenue from collaborative agreements consists of up-front fees, research and development funding, and milestone payments. We recognize revenues from these agreements consistent with Staff Accounting Bulletin No. 101, "Revenue Recognition in Financial Statements", issued by the Securities and Exchange Commission in December 1999. Non-refundable up-front fees are deferred and amortized to revenue over the related performance period. Periodic payments for research and development activities are recognized over the period in which we perform those activities under the terms of each agreement. Revenue resulting from the achievement of milestone events stipulated in the agreements is recognized when the milestone is achieved.

Impairment of Long-Lived Assets

As required by Statement of Financial Accounting Standards No. 121, "Accounting for the Impairment of Long-Lived Assets and for Long-Lived Assets to be Disposed of" (SFAS 121), we assess the recoverability of any long-lived assets for which an indicator of impairment exists. Specifically, we calculate, and recognize, any impairment losses by comparing the carrying value of these assets to our estimate of the undiscounted future operating cash flows. Although our current and historical operating and cash flows are indicators of

impairment, we believe the future cash flows to be received from our long-lived assets will exceed the assets' carrying value. Accordingly, we have not recognized any impairment losses through December 31, 2001.

In October 2001, the Financial Accounting Standards Board issued Statement of Financial Accounting Standard No. 144, "Accounting for the Impairment or Disposal of Long-Lived Assets" (SFAS 144). SFAS 144 replaces SFAS 121 for fiscal years beginning after December 15, 2001. We do not believe SFAS 144 will have a material impact on our consolidated financial position or results of operations.

Results of Operations

Years Ended December 31, 2001 and 2000

Revenues from collaborative agreements decreased to approximately $1.3 million in 2001 from approximately $4.6 million in 2000. Substantially all of our revenues during 2001 were payments received by us under our collaborative agreement with Wyeth Nutrition.

Research and development expenses increased to approximately $14.9 million in 2001 from $12.1 million in 2000. The increase was primarily attributable to the addition of new employees in 2001 and the expenses associated with our San Diego facility, which we began leasing in April 2001. In addition, our joint venture with McNeil Nutritionals reimbursed Neose approximately $0.8 million, which was $0.8 million less than in 2000, for the cost of research and development services and supplies provided to the joint venture. The reimbursement amounts have been reflected as a reduction of research and development expense in our consolidated statements of operations for 2000 and 2001. We expect research and development expenses to increase significantly during 2002.

Marketing, general and administrative expenses increased to approximately $9.4 million in 2001 from $5.6 million in 2000. The increase was primarily attributable to the hiring of additional business development personnel, increased expenses for marketing GlycoAdvance, increased legal and filing expenses associated with our growing patent portfolio, and non-cash compensation expense associated with stock options. We expect marketing, general and administrative expenses to increase significantly during 2002.

We realized a gain of approximately $6.1 million in 2001 from the sale of shares of Genzyme General common stock, which we received as a result of Genzyme's acquisition of Novazyme Pharmaceuticals, Inc. in September 2001. Interest income decreased to approximately $3.7 million in 2001 from approximately $5.1 million in 2000 due to lower average cash and marketable securities balances and lower interest rates during 2001. Interest expense decreased to approximately $0.2 million in 2001 from approximately $0.5 million in 2000 due to lower average loan balances and lower interest rates during 2001.

Years Ended December 31, 2000 and 1999

Revenues from collaborative agreements increased to approximately $4.6 million in 2000 from approximately $0.4 million in 1999. Payments under our agreement with Bristol-Myers accounted for approximately $3.3 million of our collaborative revenues in 2000.

Research and development expenses increased to $12.1 million in 2000 from $10.6 million in 1999. The increase was primarily attributable to additional services rendered under our current research and development agreement with Bristol-Myers, and non-cash compensation expense associated with stock options granted to non-employees. During the year ended December 31, 2000, our joint venture with McNeil Nutritionals reimbursed Neose approximately $1.6 million for the cost of research and development services and supplies provided to the joint venture. This amount has been reflected as a reduction of research and development expense in our consolidated statements of operations.

Marketing, general and administrative expenses increased to $5.6 million in 2000 from $4.5 million in 1999. The increase was primarily attributable to the hiring of additional business development and administrative personnel, and the non-cash compensation expense associated with stock options granted to non-employees.

Interest income increased to $5.1 million in 2000 from $1.9 million in 1999 due to higher average cash and marketable securities balances during 2000 resulting from our public offering of 2.3 million shares of common stock in March 2000. Interest expense increased to $0.5 million in 2000 from $0.4 million in 1999 due to higher average interest rates, and was partly offset by lower average loan balances outstanding during 2000.

Liquidity and Capital Resources

We have incurred operating losses each year since our inception. As of December 31, 2001, we had an accumulated deficit of approximately $82 million. We have financed our operations through private and public offerings of our securities, and revenues from our collaborative agreements. We had approximately $76 million in cash and marketable securities as of December 31, 2001, compared to approximately $95 million in cash and marketable securities as of December 31, 2000. The decrease for 2001was primarily attributable to the use of cash to fund our operating loss and capital expenditures, and was partly offset by the one-time sale of approximately $6.4 million of shares of common stock of Genzyme General. As part of its acquisition of Novazyme Pharmaceuticals, Inc. in 2001, Genzyme assumed Novazyme's obligation to pay us $1.6 million in November 2002.

During 1999, 2000, and 2001, we purchased approximately $1.2 million, $1.7 million, and $10.9 million of property, equipment, and building improvements. In 2001, we committed to make $17 million in capital expenditures to provide additional cGMP manufacturing capacity in our Horsham, Pennsylvania facility to support the initial requirements of our anticipated GlycoAdvance customers. As of December 31, 2001, we had expended approximately $8.2 million for this project.

In December 2001, we entered into a research, development and license agreement with Wyeth Pharmaceuticals, a division of Wyeth, for the use of our GlycoAdvance technology to develop an improved production system for Wyeths'

biopharmaceutical compound, recombinant PSGL-Ig (P-selectin glycoprotein ligand). rPSGL-Ig is being developed to treat inflammation and thrombosis associated with acute coronary syndrome and reperfusion injury. It is currently being evaluated in Phase II clinical trials for heart attack.

Under the agreement, we will receive license, research, and milestone payments that would total up to $17 million if all milestones are met. In addition to ongoing product payments, Neose and Wyeth would also enter into a supply agreement for the long-term supply of GlycoAdvance process reagents for their commercial production needs. In December 2001, we received an upfront-fee of $1 million, which is included in deferred revenue in our consolidated balance sheet as of December 31, 2001. We will amortize the up-front fee to revenue over the estimated four-year performance period.

In February 2002, we entered into a lease agreement for a 40,000 square foot building in Horsham, Pennsylvania. We intend to convert the facility into laboratory and office space for an expected cost of approximately $12 million. We plan to relocate research laboratories and corporate offices from our current facility in Horsham, Pennsylvania to the new facility, leaving our current facility available for future expansion of our cGMP manufacturing capacity.

We may finance some or all of these capital expenditures through the issuance of new debt. If we are able to issue new debt, we may be required to maintain a minimum cash and investments balance, transfer cash into an escrow account to collateralize some portion of the debt, or both.

In 2001, we announced a stock repurchase program authorizing the repurchase of up to one million shares of common stock in the open market at times and prices that we consider appropriate. During 2001, we purchased 6,000 shares of common stock in the open market for approximately $0.2 million.

In 1997, we issued, through the Montgomery County (Pennsylvania) Industrial Development Authority, $9.4 million of taxable and tax-exempt bonds, of which $6.2 million remains outstanding. The bonds were issued to finance the purchase of our previously leased building and the construction of a pilot-scale manufacturing facility within our building. The bonds are supported by an AA-rated letter of credit, and a reimbursement agreement between our bank and

the letter of credit issuer. The interest rate on the bonds will vary weekly, depending on market rates for AA-rated taxable and tax-exempt obligations, respectively. During 2001, the weighted-average, effective interest rate was 5.3% per year, including letter-of-credit and other fees. The terms of the bond issuance provide for monthly, interest-only payments and a single repayment of principal at the end of the twenty-year life of the bonds. However, under our agreement with our bank, we are making monthly payments to an escrow account to provide for an annual prepayment of principal. As of December 31, 2001, we had restricted funds relating to the bonds of approximately $0.9 million, which consisted of our monthly payments to an escrow account plus interest revenue on the balance of the escrow account.

To provide credit support for this arrangement, we have given a first mortgage on the land, building, improvements, and certain machinery and equipment to our bank. We have also agreed to a covenant to maintain a minimum required cash and short-term investments balance of at least two times the current loan balance. At December 31, 2001, we were required to maintain a cash and short-term investments balance of $12.4 million. If we fail to comply with this covenant, we are required to deposit with the lender cash collateral up to,

but not more than, the loan's unpaid balance.

We believe that our existing cash and short-term investments, expected revenue from collaborations and license arrangements, anticipated financing of capital expenditures, and interest income should be sufficient to meet our operating and capital requirements through at least 2003, although changes in our collaborative relationships or our business, whether or not initiated by us, may cause us to deplete our cash and short-term investments sooner than the above estimate. The timing and amount of our future capital requirements and the adequacy of available funds will depend on many factors, including if or when any products manufactured using our technology are commercialized.

The following table summarizes our obligations to make future payments under current contracts:

	Payments due by period			
	Total	Less than 1 Year	1 - 3 Years	4 - 5
Long-term debt.....	$ 6,200,000	$ 1,100,000	$2,500,000	$3
Operating leases.....	11,371,000	517,000	2,299,000	9
Construction contract.....	8,800,000	8,800,000	--	
Total contractual obligations....	$ 26,371,000	$10,417,000	$4,799,000	$1,2

Joint Venture with McNeil Nutritionals

We have a joint venture with McNeil Nutritionals. We account for our investment in the joint venture under the equity method, under which we recognize our share of the income and losses of the joint venture. In 1999, we reduced the carrying value of our initial investment in the joint venture of approximately $0.4 million to zero to reflect our share of the joint venture's losses. We recorded this amount as research and development expense in our consolidated statements of operations. We will record our share of post-1999 losses of the joint venture, however, only to the extent of our actual or committed investment in the joint venture.

The joint venture developed a process for making fructooligosaccharides and constructed a pilot facility in Athens, Georgia. In 2001, the joint venture closed the pilot facility as it shifted focus to a second generation bulking agent. The joint venture is exploring establishing a manufacturing arrangement with a third party to produce these bulking agents.

During the years ended December 31, 2000 and 2001, the joint venture reimbursed Neose approximately $1.6 million and $0.8 million, respectively, for the cost of research and development services and supplies provided to the joint venture. There were no such reimbursements during the year ended December 31, 1999. This amount has been reflected as a reduction of research and development

expense in our consolidated statements of operations. As of December 31, 2001, the joint venture owed Neose approximately $0.2 million. This amount is included in prepaid expenses and other current assets in our consolidated balance sheet. We expect to provide significantly fewer research and development services during 2002, thereby significantly reducing our expected reimbursement from the joint venture.

If the joint venture becomes profitable, we will recognize our share of the joint venture's profits only after the amount of our capital contributions to the joint venture is equivalent to our share of the joint venture's accumulated losses. As of December 31, 2001, the joint venture had an accumulated loss since inception of approximately $9.8 million, of which our share, assuming a 50% ownership interest, is approximately $4.9 million. Until the joint venture is profitable, McNeil Nutritionals is required to fund, as a non-recourse, no-interest loan, all of the joint venture's aggregate capital expenditures in excess of an agreed-upon amount, and all of the joint venture's operating losses. The loan balance would be repayable by the joint venture to McNeil Nutritionals over a seven-year period commencing on the earlier of September 30, 2006 or the date on which Neose attains a 50% ownership interest in the joint venture after having had a lesser ownership interest. In the event of any dissolution of the joint venture, the loan balance would be payable to McNeil Nutritionals before any distribution of assets to us. As of December 31, 2001, the joint venture owed McNeil Nutritionals approximately $8.1 million.

We may be required to make additional investments in the joint venture to fund capital expenditures. If the joint venture builds additional production facilities, and we wish to have a 50% ownership interest in the joint venture, we are required to invest up to $8.9 million to fund half of such expenditures. However, we may elect to fund as little as $1.9 million of the cost of the facilities, so long as our aggregate investments in the joint venture are at least 15% of the joint venture's aggregate capital expenditures. In this case, McNeil Nutritionals will fund the remainder of our half of the joint venture's capital expenditures, and our ownership percentage will be proportionately reduced. We have an option, expiring in September 2006, to return to 50% ownership of the joint venture by reimbursing McNeil Nutritionals for this amount.

Recent Accounting Pronouncements

In June 2001, the Financial Accounting Standards Board finalized Statements of Financial Accounting Standards No. 141, "Business Combinations" (SFAS 141), and No. 142, "Goodwill and Other Intangible Assets" (SFAS 142), which are effective for fiscal years beginning after December 15, 2001. SFAS 141 requires all business combinations initiated after June 30, 2001 to be accounted for using the purchase method. SFAS 142 no longer requires the amortization of goodwill; rather, goodwill will be subject to a periodic assessment for impairment by applying a fair-value-based test. In addition, an acquired intangible asset should be separately recognized if the benefit of the intangible asset is obtained through contractual or other legal rights, or if the intangible asset can be sold, transferred, licensed, rented, or exchanged, regardless of the acquirer's intent to do so. Such acquired intangible assets will be amortized over their useful lives. All of our intangible assets were obtained through contractual rights and have been separately identified and recognized in our balance sheets. These intangibles are being amortized over their estimated useful lives or contractual lives as appropriate. Therefore, we do not expect the adoption of SFAS 142 in the first quarter of 2002 to have a material impact on our consolidated financial position or results of operations.

In October 2001, the Financial Accounting Standards Board issued Statement of Financial Accounting Standard No. 144, "Accounting for the Impairment or Disposal of Long-Lived Assets" (SFAS 144). SFAS 144 changes the accounting for long-lived assets by requiring that all long-lived assets be

measured at the lower of carrying amount or fair value less cost to sell whether included in reporting continuing operations or in discontinued operations. SFAS 144, which replaces SFAS 121 "Accounting for Impairment of Long-Lived Assets and for Assets to be Disposed of," is effective for fiscal years beginning after December 15, 2001. We do not believe SFAS 144 will have a material impact on our consolidated financial position or results of operations.

ITEM 7A. QUANTITATIVE AND QUALITATIVE DISCLOSURE ABOUT MARKET RISK.

Our holdings of financial instruments are comprised primarily of government agency securities. All such instruments are classified as securities held to maturity. We seek reasonable assuredness of the safety of principal and market liquidity by investing in rated fixed income securities, while at the same time seeking to achieve a favorable rate of return. Our market risk exposure consists principally of exposure to changes in interest rates. Our holdings are also exposed to the risks of changes in the credit quality of issuers. We typically invest in the shorter-end of the maturity spectrum. The approximate principal amount and weighted-average interest rate per year of our investment portfolio as of December 31, 2001 was $75.2 million and 3.4%, respectively.

We have exposure to changing interest rates on our taxable and tax-exempt bonds, and we are currently not engaged in hedging activities. Interest on approximately $6.2 million of outstanding indebtedness is at an interest rate that varies weekly, depending on the market rates for AA-rated taxable and tax-exempt obligations. As of December 31, 2001, the weighted-average, effective interest rate was approximately 3.4% per year.

ITEM 8. FINANCIAL STATEMENTS AND SUPPLEMENTARY DATA.

(a) Financial Statements.

The Financial Statements required by this item are attached to this Annual Report on Form 10-K beginning on page F-1.

(b) Supplementary Data.

Quarterly financial data (unaudited)
(in thousands, except per share data)

2001 Quarter Ended	Dec. 31	Sept. 30	June 30	Mar
Revenue from collaborative agreements	$ 332	$ 330	$ 292	$
Net income (loss)	4	(4,824)	(5,210)	(3
Basic and diluted net loss per share	--	(0.34)	(0.37)	(

2000 Quarter Ended	Dec. 31	Sept. 30	June 30	Mar
Revenue from collaborative agreements	$ 301	$ 583	$ 1,769	$ 1
Net loss	(2,136)	(2,478)	(2,060)	(1
Basic and diluted net loss per share	(0.15)	(0.18)	(0.15)	(

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

None.

PART III

ITEM 10. DIRECTORS AND EXECUTIVE OFFICERS OF THE REGISTRANT.

Information concerning our directors is incorporated herein by reference to our definitive proxy statement to be filed in connection with solicitation of proxies for our Annual Meeting of Stockholders to be held on June 25, 2002. For information concerning our executive officers, see "Item 1. Business - Executive Officers of the Company."

ITEM 11. EXECUTIVE COMPENSATION.

The information required by this item is incorporated herein by reference to our definitive proxy statement to be filed in connection with solicitation of proxies for our Annual Meeting of Stockholders to be held on June 25, 2002.

ITEM 12. SECURITY OWNERSHIP OF CERTAIN BENEFICIAL OWNERS AND MANAGEMENT.

The information required by this item is incorporated herein by reference to our definitive proxy statement to be filed in connection with solicitation of proxies for our Annual Meeting of Stockholders to be held on June 25, 2002.

ITEM 13. CERTAIN RELATIONSHIPS AND RELATED TRANSACTIONS.

The information required by this item is incorporated herein by reference to our definitive proxy statement to be filed in connection with solicitation of proxies for our Annual Meeting of Stockholders to be held on June 25, 2002.

PART IV

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

(a) 1. Financial Statements.

The Consolidated Financial Statements filed as part of this Annual Report on Form 10-K are listed on the Index to Consolidated Financial Statements on page F-1.

2. Financial Statement Schedules.

All financial statement schedules have been omitted here because they are not applicable, not required, or the information is shown in the Consolidated Financial Statements or Notes thereto.

3. Exhibits. (See (c) below)

(b) Reports on Form 8-K.

On October 23, 2001, the Company filed a report on Form 8-K, announcing under Item 5 that P. Sherrill Neff, President, Chief Operating Officer and Chief Financial Officer, resigned his executive positions with the Company. Mr. Neff will remain a member of the Company's board of directors.

On October 24, 2001, the Company filed a report on Form 8-K, announcing under Item 5 that its board of directors authorized an open market stock repurchase program enabling the Company to purchase up to one million shares of outstanding common stock.

On February 1, 2002, the Company filed a report on Form 8-K, announcing under Item 5 that it entered into a research, development and license agreement with Wyeth Pharmaceuticals, a division of Wyeth, for the use of Neose's GlycoAdvance services and products to develop an improved production system for a Wyeth compound.

(c) Exhibits.

The following is a list of exhibits filed as part of this Annual Report on Form 10-K. We are incorporating by reference to our previous SEC filings each exhibit that contains a footnote. For exhibits incorporated by reference, the location of the exhibit in the previous filing is indicated in parentheses.

Exhibit Number	Description

3.1	Second Amended and Restated Certificate of Incorporation. (Exhibit 3.1)(1)
3.2	Amended and Restated By-Laws. (Exhibit 3.3)(5)
3.3	Certificate of Designation establishing and designating the Series A Junior Par Preferred Stock. (Exhibit 3.2)(5)
4.1	See Exhibits 3.1, 3.2, and 3.3 for instruments defining rights of holders of co
4.2	Representation pursuant to Item 601(b)(4)(iii)(A) of Regulation S-K. (Exhibit 4
4.3	Trust Indenture, dated as of March 1, 1997, between Montgomery County Industria and Dauphin Deposit Bank and Trust Company. (Exhibit 4.2)(3)
4.4	Form of Montgomery County Industrial Development Authority Federally Taxable Va Revenue Bond (Neose Technologies, Inc. Project) Series B of 1997. (Exhibit 4.3)
4.5	Amended and Restated Rights Agreement, dated as of December 3, 1998, between Am Trust Company, as Rights Agent, and Neose Technologies, Inc. (Exhibit 4.1)(6)
4.6	Amendment No. 1, dated November 14, 2000, to the Amended and Restated Rights Ag December 3, 1998, between Neose Technologies, Inc. and American Stock Transfer Rights Agent. (Exhibit 4.1)(10)
10.1	Stock Purchase Agreement, dated as of August 28, 1990, between University of Pe Technologies, Inc. (Exhibit 10.1)(1)
10.2	License Agreement, dated as of August 28, 1990, between University of Pennsylva Technologies, Inc., as amended to date. (Exhibit 10.2)(1)
10.3(a)+	Series D Preferred Stock Purchase Agreement, dated as of December 30, 1992, bet Laboratories and Neose Technologies, Inc. (Exhibit 10.8(a))(1)
10.3(b)+	Supply Agreement, dated as of December 30, 1992, between Abbott Laboratories an Inc. (Exhibit 10.8(b))(1)
10.3(c)+	Research and License Agreement, dated as of December 30, 1992, between Abbott L Technologies, Inc. (Exhibit 10.8(c))(1)
10.3(d)+	Amendment to the Research and License Agreement, dated as of January 18, 1995, Laboratories and Neose Technologies, Inc. (Exhibit 10.8(d))(2)
10.4	Form of Series E Preferred Stock Investors' Rights Agreement. (Exhibit 10.9)(1)
10.5	Form of Series F Preferred Stock Investors' Rights Agreement. (Exhibit 10.10)(1
10.6	Form of Warrant to Purchase Common Stock, dated as of February 23, 1991. (Exhib
10.7	Form of Warrant to Purchase Common Stock, dated as of June 30, 1993. (Exhibit 1
10.8	Form of Warrant to Purchase Common Stock, dated as of February 16, 1994. (Exhib
10.9	Form of Warrant to Purchase Series E Preferred Stock, dated as of July 29, 1994
10.10	Warrant for the Purchase of Common Stock, dated as of June 30, 1995, between Fi Science International, Inc. and Neose Technologies, Inc. (Exhibit 10.15)(1)
10.11++	1995 Stock Option/Stock Issuance Plan, as amended. (Exhibit 99.1)(4)
10.12++	Employee Stock Purchase Plan. (Exhibit 10.17)(1)
10.13++	Employment Agreement, dated April 1, 1992, between David A. Zopf and Neose Tech amended to date. (Exhibit 10.18)(1)
10.14++	Employment Agreement, dated December 1, 1994, between P. Sherrill Neff and Neos (Exhibit 10.19)(1)
10.15	Agreement for Purchase and Sale of Real Property, dated March 14, 1997, by and Business Campus Delaware, Inc. and Neose Technologies, Inc. (Exhibit 2.1)(3)
10.16	Loan Agreement, dated as of March 1, 1997, between Montgomery County Industrial and Neose Technologies, Inc. (Exhibit 10.1)(3)
10.17	Participation and Reimbursement Agreement, dated as of March 1, 1997, between J CoreStates Bank, N.A. (Exhibit 10.2)(3)
10.18	Form of CoreStates Bank, N.A. Irrevocable Letter of Credit. (Exhibit 10.3)(3)
10.19	Pledge, Security and Indemnification Agreement, dated as of March 1, 1997, by a Bank, N.A., Jefferson Bank, and Neose Technologies, Inc. (Exhibit 10.4)(3)
10.20	Reimbursement Agreement, dated as of March 1, 1997, between Jefferson Bank and Inc. (Exhibit 10.5)(3)
10.21	Specimen of Note from Company to Jefferson Bank. (Exhibit 10.6)(3)

10.22	Mortgage, Assignment and Security Agreement, dated March 20, 1997, between Jeff Neose Technologies, Inc. (Exhibit 10.7)(3)
10.23	Security Agreement, dated as of March 1, 1997, by and between Jefferson Bank an Inc. (Exhibit 10.8)(3)
10.24	Assignment of Contract, dated as of March 20, 1997, between Jefferson Bank and Inc. (Exhibit 10.9)(3)
10.25	Custodial and Collateral Security Agreement, dated as of March 20, 1997, by and Jefferson Bank, and Neose Technologies, Inc. (Exhibit 10.10)(3)
10.26	Placement Agreement, dated March 20, 1997, among Montgomery County Industrial D CoreStates Capital Markets, and Neose Technologies, Inc. (Exhibit 10.11)(3)
10.27	Remarketing Agreement, dated as of March 1, 1997, between CoreStates Capital Ma Technologies, Inc. (Exhibit 10.12)(3)
10.28	Form of Purchase Agreement, dated as of June 25, 1999, between Neose Technologi purchasers set forth on the signature pages thereto. (Exhibit 99.1)(7)
10.29	Form of Amended and Restated Purchase Agreement, dated as of June 25, 1999, bet Technologies, Inc. and the purchasers set forth on the signature pages thereto.
10.30+	Research and Development Agreement, dated June 1, 1998, between Neose Technolog Pharmaceutical Research Institute of Bristol-Myers Squibb Company. (Exhibit 99.
10.31+	Operating Agreement of Magnolia Nutritionals LLC, dated October 12, 1999, betwe Inc. and McNeil PPC, Inc. acting through its division McNeil Specialty Products 99.2)(8)
10.32+	Collaboration and License Agreement, dated November 3, 1999, between Neose Tech American Home Products Corporation. (Exhibit 99.3)(8)
10.33	Modification Agreement Relating To Reimbursement Agreements, dated as of May 1, United Bank, Jefferson Bank Division, successor to Jefferson Bank, and Neose Te (Exhibit 10.1)(9)
10.34	Modification Agreement Relating to Custodial Bank Agreement, dated as of May 1, Offitbank, Hudson United Bank, Jefferson Bank Division, successor to Jefferson Technologies, Inc. (Exhibit 10.2)(9)
10.35++	Employment Offer Letter, dated November 27, 2000, between Eric Sichel and Neose (Exhibit 10.35)(11)
10.36	Amendment No. 1 to Research and Development Agreement, dated May 14, 2001, betw Inc. and the Pharmaceutical Research Institute of Bristol-Myers Squibb Company.
10.37	Separation of Employment Agreement, dated as of May 18, 2001, between Eric Sich Technologies, Inc. (Exhibit 10.1)(13)
10.38#	Research, Development and License Agreement, dated December 19, 2001, between A Corporation and Neose Technologies, Inc. (Exhibit 10.1)(14)
10.39*++	Employment Offer Letter, dated effective July 11, 2001 between George J. Vergis Technologies, Inc.
10.40*	Agreement of Lease, dated as of February 15, 2002, between Liberty Property Lea Neose Technologies, Inc.
10.41*++	Retirement Agreement, dated as of January 14, 2002, between Edward J. McGuire a Inc.
10.42*++	Retention Agreement, dated as of January 21, 2002, between David A. Zopf and Ne
10.43*++	Retention Agreement, dated as of January 21, 2002, between George J. Vergis and Inc.
10.44*++	Tuition Reimbursement Agreement, dated as of May 24, 2001, between A. Brian Dav Technologies, Inc.
10.45*++	Retention Agreement, dated as of January 21, 2002, between A. Brian Davis and N
10.46*++	Retention Agreement, dated as of January 21, 2002, between Debra J. Poul and Ne

10.47*	Standard Industrial/Commercial Multi-Tenant Lease-Net, dated February 2, 2001, between N Ridge Technology Center, LLC and Neose Technologies, Inc.
10.48*	First Amendment to Lease, dated May 18, 2001, between Nancy Ridge Technology Center, LLC Neose Technologies, Inc.
10.49*	Agreement, dated as of August 24, 2001, between IPS and Neose Technologies, Inc.
11*	Statement re: Computation of Net Loss Per Common Share.
23.1*	Consent of Arthur Andersen LLP.
24*	Powers of Attorney (included as part of signature page hereof).
99*	Letter to the SEC from Neose Technologies, Inc. regarding Arthur Andersen LLP.

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*	Filed herewith.
+	Portions of this Exhibit were omitted and filed separately with the Secretary of the SEC of the SEC granting our application for confidential treatment filed pursuant to Rule 40 Act.
++	Compensation plans and arrangements for executives and others.
#	Portions of this Exhibit were omitted and filed separately with the Secretary of the SEC for confidential treatment that has been filed with the SEC.
(1)	Filed as an Exhibit to our Registration Statement on Form S-1 (Registration No. 33-80693 SEC on December 21, 1995, as amended.
(2)	Filed as an Exhibit to our Registration Statement on Form S-1 (Registration No. 333-1962 the SEC on January 13, 1997.
(3)	Filed as an Exhibit to our Quarterly Report on Form 10-Q for the quarterly period ended
(4)	Filed as an Exhibit to our Registration Statement on Form S-8 (Registration No. 333-7334 the SEC on November 14, 2001.
(5)	Filed as an Exhibit to our Current Report on Form 8-K filed with the SEC on October 1, 1
(6)	Filed as an Exhibit to our Current Report on Form 8-K filed with the SEC on January 8, 1
(7)	Filed as an Exhibit to our Current Report on Form 8-K filed with the SEC on July 14, 199
(8)	Filed as an Exhibit to our Current Report on Form 8-K filed with the SEC on February 2,
(9)	Filed as an Exhibit to our Quarterly Report on Form 10-Q for the quarterly period ended
(10)	Filed as an Exhibit to our Current Report on Form 8-K filed with the SEC on November 15,
(11)	Filed as an Exhibit to our Annual Report on Form 10-K for the year ended December 31, 20
(12)	Filed as an Exhibit to our Current Report on Form 8-K filed with the SEC on May 18, 2001
(13)	Filed as an Exhibit to our Quarterly Report on Form 10-Q for the quarterly period ended
(14)	Filed as an Exhibit to our Current Report on Form 8-K filed with the SEC on February 1,

SIGNATURES

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

NEOSE TECHNOLOGIES, INC.

Date: March 28, 2002 By: /s/ Stephen A. Roth

Stephen A. Roth
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 Neose and in the capacities and on the dates indicated.

Each person, in so signing also makes, constitutes, and appoints Stephen A. Roth, Chief Executive Officer of Neose, and A. Brian Davis, Acting Chief Financial Officer of Neose, and each of them acting alone, as his true and lawful attorneys-in-fact, with full power of substitution, in his name, place, and stead, to execute and cause to be filed with the Securities and Exchange Commission any or all amendments to this report.

Name	Capacity	D
/s/ Stephen A. Roth Stephen A. Roth	Chief Executive Officer and Chairman of the Board (Principal Executive Officer)	M
/s/A. Brian Davis A. Brian Davis	Acting Chief Financial Officer (Principal Financial and Accounting Officer)	M
/s/ William F. Hamilton William F. Hamilton	Director	M
/s/ Douglas J. MacMaster, Jr. Douglas J. MacMaster, Jr.	Director	M
/s/ P. Sherrill Neff P. Sherrill Neff	Director	M
/s/ Mark H. Rachesky Mark H. Rachesky	Director	M
/s/ Lindsay A. Rosenwald Lindsay A. Rosenwald	Director	M
/s/ Lowell E. Sears Lowell E. Sears	Director	M
/s/ Jerry A. Weisbach Jerry A. Weisbach	Director	M

Index to Consolidated Financial Statements

Report of Independent Public Accountants

To Neose Technologies, Inc.:

We have audited the accompanying consolidated balance sheets of Neose Technologies, Inc. (a Delaware corporation in the development stage) and subsidiaries as of December 31, 2000 and 2001, and the related consolidated statements of operations, stockholders' equity and comprehensive loss, and cash flows for each of the three years in the period ended December 31, 2001, and for the period from inception (January 17, 1989) to December 31, 2001. 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 Neose Technologies, Inc. and subsidiaries as of December 31, 2000 and 2001, and the results of their operations and their cash flows for each of the three years in the period ended December 31, 2001, and for the period from inception (January 17, 1989) to

December 31, 2001, in conformity with accounting principles generally accepted in the United States.

Arthur Andersen LLP

Philadelphia, Pennsylvania
January 25, 2002

Neose Technologies, Inc. and Subsidiaries
(a development-stage company)

Consolidated Balance Sheets
(in thousands, except per share amounts)

	Decembe
Assets	2000
Current assets:	
Cash and cash equivalents	$ 66,989
Marketable securities	27,773
Restricted funds	893
Prepaid expenses and other current assets	583
Total current assets	96,238
Property and equipment, net	13,577
Other assets, net	4,953
Total assets	$ 114,768
Liabilities and Stockholders' Equity	
Current liabilities:	
Current portion of long-term debt	$ 1,100
Accounts payable	83
Accrued compensation	601
Accrued expenses	1,527
Deferred revenue	389
Total current liabilities	3,700
Long-term debt	6,200
Total liabilities	9,900

Commitments (Note 11)	
Stockholders' equity:	
Preferred stock, $.01 par value, 5,000 shares authorized, none issued	--
Common stock, $.01 par value, 30,000 shares authorized; 13,992 and 14,089 shares issued; 13,992 and 14,083 shares outstanding	140
Additional paid-in capital	173,757
Treasury stock, 6 shares at cost in 2001	--
Deferred compensation	(717)
Deficit accumulated during the development stage	(68,312)
Total stockholders' equity	104,868
Total liabilities and stockholders' equity	$ 114,768

The accompanying notes are an integral part of these consolidated financial statements.

Neose Technologies, Inc. and Subsidiaries
(a development-stage company)

Consolidated Statements of Operations
(in thousands, except per share amounts)

	Year Ended December 31,			Peri inc (Jan 19 Dece
	1999	2000	2001	
Revenue from collaborative agreements	$ 422	$ 4,600	$ 1,266	$
Operating expenses:				
Research and development	10,649	12,094	14,857	
Marketing, general and administrative	4,520	5,648	9,374	
Total operating expenses	15,169	17,742	24,231	1
Operating loss	(14,747)	(13,142)	(22,965)	(1
Gain on sale of marketable security	--	--	6,120	
Interest income	1,862	5,111	3,704	
Interest expense	(433)	(469)	(188)	
Net loss	$ (13,318)	$ (8,500)	$(13,329)	$(

Basic and diluted net loss per share	$ (1.25)	$ (0.63)	$ (0.95)
Basic and diluted weighted-average shares outstanding	10,678	13,428	14,032

The accompanying notes are an integral part of these consolidated financial statements.

Neose Technologies, Inc. and Subsidiaries
(a development-stage company)

Consolidated Statements of Stockholders' Equity and Comprehensive Loss
(in thousands)

	Convertible Preferred Stock		Common Stock		Additional paid-in capital	Treasury Stock	Deferred compensation	ac d d
	Shares	Amount	Shares	Amount				
Balance, January 17, 1989 (inception)	--	$ --	--	$ --	$ --	$ --	$ --	
Initial issuance of common stock	--	--	1,302	13	(3)	--	--	
Shares issued pursuant to consulting, licensing, and antidilutive agreements	--	--	329	3	(1)	--	--	
Sale of common stock	--	--	133	1	1	--	--	
Net loss	--	--	--	--	--	--	--	
Balance, December 31, 1990	--	--	1,764	17	(3)	--	--	
Sale of stock	1,517	15	420	4	4,499	--	(7)	
Shares issued pursuant to consulting and antidilutive agreements	--	--	145	1	--	--	--	
Capital contributions	--	--	--	--	10	--	--	
Dividends on preferred stock	--	--	--	--	(18)	--	--	
Net loss	--	--	--	--	--	--	--	

Balance, December 31, 1991	1,517	15	2,329	22	4,488	--	(7)	
Sale of stock	260	2	17	--	2,344	--	--	
Shares issued pursuant to redemption of notes payable	--	--	107	1	682	--	--	
Exercise of stock options and warrants	--	--	21	--	51	--	--	
Amortization of deferred compensation	--	--	--	--	--	--	5	
Dividends on preferred stock	--	--	--	--	(36)	--	--	
Net loss	--	--	--	--	--	--	--	
Balance, December 31, 1992	1,777	17	2,474	23	7,529	--	(2)	
Sale of preferred stock	250	3	--	--	1,997	--	--	
Shares issued to licensor	--	--	3	--	--	--	--	
Shares issued to preferred stockholder in lieu of cash dividends	--	--	1	--	18	--	--	
Amortization of deferred compensation	--	--	--	--	--	--	2	
Dividends on preferred stock	--	--	--	--	(36)	--	--	
Net loss	--	--	--	--	--	--	--	
Balance, December 31, 1993	2,027	20	2,478	23	9,508	--	--	
Sale of preferred stock	2,449	25	--	--	11,040	--	--	
Exercise of stock options	--	--	35	1	14	--	--	
Shares issued to preferred stockholder in lieu of cash dividends	--	--	10	1	53	--	--	
Dividends on preferred stock	--	--	--	--	(18)	--	--	
Net loss	--	--	--	--	--	--	--	
Balance, December 31, 1994	4,476	$45	2,523	$25	$20,597	$ --	$ --	$

The accompanying notes are an integral part of these consolidated financial statements.

Neose Technologies, Inc. and Subsidiaries
(a development-stage company)

Consolidated Statements of Stockholders' Equity and Comprehensive Loss
(continued)
(in thousands)

	Convertible Preferred							a

	Stock		Common Stock		Additional paid-in	Treasury	Deferred	d
	Shares	Amount	Shares	Amount	capital	Stock	compensation	
Sale of preferred stock	2,721	$27	--	$ --	$10,065	$ --	$ --	
Exercise of stock options and warrants	--	--	116	1	329	--	--	
Shares issued to employees in lieu of cash compensation	--	--	8	--	44	--	--	
Deferred compensation related to grant to grant of stock options	--	--	--	--	360	--	(360)	
Shares issued to stockholder related to the initial public offering	--	--	23	--	--	--	--	
Shares issued to preferred stockholder in lieu of cash dividends	--	--	3	--	18	--	--	
Dividends on preferred stock	--	--	--	--	(36)	--	--	
Conversion of preferred stock into common stock	(1,417)	(14)	472	5	9	--	--	
Net loss	--	--	--	--	--	--	--	
Balance, December 31, 1995	5,780	58	3,145	31	31,386	--	(360)	
Dividends on preferred stock	--	--	--	--	(18)	--	--	
Sale of common stock in initial public offering	--	--	2,588	26	29,101	--	--	
Conversion of preferred stock into common stock	(5,780)	(58)	2,411	24	34	--	--	
Exercise of stock options and warrants	--	--	65	1	162	--	--	
Shares issued pursuant to employee stock purchase plan	--	--	6	--	60	--	--	
Deferred compensation related to acceleration of option vesting	--	--	--	--	106	--	--	
Amortization of deferred compensation	--	--	--	--	--	--	90	
Net loss	--	--	--	--	--	--	--	
Balance, December 31, 1996	--	--	8,215	82	60,831	--	(270)	
Sale of common stock in public offering	--	--	1,250	13	20,326	--	--	
Exercise of stock options and warrants	--	--	42	--	139	--	--	
Shares issued pursuant to employee stock purchase plan	--	--	18	--	189	--	--	
Deferred compensation related to grants of stock options	--	--	--	--	322	--	(322)	
Amortization of deferred compensation	--	--	--	--	--	--	231	
Net loss	--	--	--	--	--	--	--	
Balance, December 31, 1997	--	$ --	9,525	$ 95	$81,807	$ --	$ (361)	

The accompanying notes are an integral part of these consolidated financial statements.

Neose Technologies, Inc. and Subsidiaries
(a development-stage company)

Consolidated Statements of Stockholders' Equity and Comprehensive Loss
(continued)
(in thousands)

	Convertible Preferred Stock		Common Stock		Additional paid-in	Treasury	Deferred	ac d de
	Shares	Amount	Shares	Amount	capital	Stock	compensation	
Exercise of stock options	--	$ --	49	$ 1	$ 261	$ --	$ --	
Shares issued pursuant to employee stock purchase plan	--	--	15	--	171	--	--	
Deferred compensation related to grants of stock options	--	--	--	--	161	--	(161)	
Amortization of deferred compensation	--	--	--	--	--	--	311	
Unrealized gains on marketable securities	--	--	--	--	--	--	--	
Net loss	--	--	--	--	--	--	--	
Balance, December 31, 1998	--	--	9,589	96	82,400	--	(211)	
Sales of common stock in private placements	--	--	1,786	18	17,398	--	--	
Exercise of stock options and warrants	--	--	43	--	263	--	--	
Shares issued pursuant to employee stock purchase plan	--	--	16	--	156	--	--	
Deferred compensation related to grants of stock options	--	--	--	--	796	--	(796)	
Amortization of deferred compensation	--	--	--	--	--	--	477	
Unrealized gains on marketable securities	--	--	--	--	--	--	--	
Net loss	--	--	--	--	--	--	--	
Balance, December 31, 1999	--	--	11,434	114	101,013	--	(530)	
Sales of common stock in								

public offering	--	--	2,300	23	68,582	--	--
Exercise of stock options and warrants	--	--	247	3	2,735	--	--
Shares issued pursuant to employee stock purchase plan	--	--	11	--	157	--	--
Deferred compensation related to grants of stock options	--	--	--	--	1,270	--	(1,270)
Amortization of deferred compensation	--	--	--	--	--	--	1,083
Net loss	--	--	--	--	--	--	--
Balance, December 31, 2000	--	--	13,992	140	173,757	--	(717)
Exercise of stock options and warrants	--	--	79	1	867	--	--
Shares issued pursuant to employee stock purchase plan	--	--	18	--	335	--	--
Acquisition of treasury stock, 6 shares at cost	--	--	(6)	--	--	(175)	--
Deferred compensation related to grants of stock options	--	--	--	--	1,165	--	(1,165)
Amortization of deferred compensation	--	--	--	--	--	--	1,379
Net loss	--	--	--	--	--	--	--
Balance, December 31, 2001	--	$ --	14,803	$ 141	$ 176,124	$(175)	$ (503)

The accompanying notes are an integral part of these consolidated financial statements.

Neose Technologies, Inc. and Subsidiaries
(a development-stage company)

Consolidated Statement of Cash Flows
(in thousands)

	Year ended December 31,		
	1999	2000	
Cash flows from operating activities:			
Net loss	$(13,318)	$ (8,500)	$(
Adjustments to reconcile net loss to cash used in operating activities:			
Depreciation and amortization	1,695	2,051	
Non-cash compensation	477	1,083	
Common stock issued for non-cash and other charges	--	--	

Changes in operating assets and liabilities:			
Prepaid expenses and other current assets	117	(465)	
Accounts payable	192	(154)	
Accrued compensation	125	146	
Accrued expenses	697	(405)	
Deferred revenue	805	(416)	
Net cash used in operating activities	(9,210)	(6,660)	
Cash flows from investing activities:			
Purchases of property and equipment	(1,207)	(1,455)	
Proceeds from sale-leaseback of equipment	--	--	
Purchases of marketable securities	(88,662)	(81,077)	(1
Proceeds from sales of marketable securities	8,882	--	
Proceeds from maturities of and other changes in marketable securities	79,227	76,174	1
Purchase of acquired technology	(3,550)	(1,000)	
Purchase of preferred stock	--	(1,250)	
Restricted cash related to acquired technology	(1,500)	1,500	
Net cash provided by (used in) investing activities	(6,810)	(7,108)	
Cash flows from financing activities:			
Proceeds from issuance of debt	--	--	
Repayment of debt	(617)	(1,000)	
Restricted cash related to debt	(317)	(108)	
Proceeds from issuance of preferred stock, net	--	--	
Proceeds from issuance of common stock, net	17,572	68,762	
Proceeds from exercise of stock options and warrants	263	2,738	
Acquisition of treasury stock	--	--	
Dividends paid	--	--	
Net cash provided by (used in) financing activities	16,901	70,392	
Net increase in cash and cash equivalents	881	56,624	
Cash and cash equivalents, beginning of period	9,484	10,365	
Cash and cash equivalents, end of period	$ 10,365	$ 66,989	$
Supplemental disclosure of cash flow information:			
Cash paid for interest	$ 429	$ 481	
Non-cash investing activities:			
Accrued property and equipment	$ -	$ 275	$
Non-cash financing activities:			
Issuance of common stock for dividends	$ -	$ -	$
Issuance of common stock to employees in lieu of cash compensation	$ -	$ -	$

The accompanying notes are an integral part of these consolidated financial statements.

(a development-stage company)

Notes to Consolidated Financial Statements

Note 1. Background

Neose develops proprietary technologies for the synthesis and manufacture of complex carbohydrates. Our enzymatic technology platform makes feasible the synthesis and modification of a wide range of complex carbohydrates, which are chains of simple sugar molecules that can be joined together in many different combinations. Our platform enables the production and manipulation of complex carbohydrates either as stand-alone carbohydrate molecules or as carbohydrate structures attached to recombinant therapeutic glycoproteins and glycolipids.

Our GlycoAdvance program uses our technology to complete the human carbohydrate structures on therapeutic glycoproteins. We are also developing our technology to create novel glycosylation patterns, and to link other molecules, such as polyethylene glycol, to glycoproteins. The application of this technology to proteins potentially results in improved clinical activity and pharmacokinetic profile, enhanced drug development flexibility, stronger and additional patent claims, and yield improvements.

Our GlycoTherapeutics program uses our technology to enable the development of carbohydrate-based therapeutics. Our GlycoActives program uses our technology to develop novel carbohydrate food and nutritional ingredients. Neose was initially incorporated in January 1989, and began operations in October 1990.

Note 2. Summary of Significant Accounting Policies

Principles of Consolidation

The consolidated financial statements include the accounts of Neose Technologies, Inc. and its wholly-owned subsidiaries, and reflect the elimination of all significant intercompany accounts and transactions.

Use of Estimates

The preparation of financial statements in conformity with accounting principles generally accepted in the United States requires us to make estimates and assumptions. Those estimates and assumptions affect the reported amounts of assets and liabilities as of the date of the financial statements, the disclosure of contingent assets and liabilities as of 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.

Cash and Cash Equivalents

We consider all highly liquid investments with a maturity of three months or less on the date of purchase to be cash equivalents. As of December 31, 2000 and 2001, cash equivalents consisted of securities and obligations of either the U.S. Treasury or U.S. government agencies.

Marketable Securities

Although we held no marketable securities as of December 31, 2001, we often invest in marketable securities. We determine the appropriate classification of our debt securities at the time of purchase and re-evaluate such designation as of each balance sheet date. Marketable securities that we have the positive intent and ability to hold to maturity are classified as held-to-maturity securities and recorded at amortized cost. Our other marketable

securities are classified as available-for-sale securities and are carried at fair value, based on quoted market prices, with unrealized gains and losses reported as a separate component of stockholders' equity. All realized gains and losses on our available-for-sale securities, computed using specific identification, and any declines in value determined to be permanent are recognized in our consolidated statements of operations.

Marketable securities consist of investments that have a maturity of more than three months on the date of purchase. To help maintain the safety and liquidity of our marketable securities, we have established guidelines for the concentration, maturities, and credit ratings of our investments.

Comprehensive Loss

Our comprehensive loss for the years ended December 31, 1999, 2000, and 2001 was approximately $13.5 million, $8.5 million and $13.3 million, respectively. Comprehensive loss is comprised of net loss and other comprehensive income or loss. Our only source of other comprehensive income or loss is unrealized gains and losses on our marketable securities that are classified as available-for-sale.

Property and Equipment

Property and equipment are stated at cost. Property and equipment capitalized under capital leases are recorded at the present value of the minimum lease payments due over the lease term. Depreciation and amortization are provided using the straight-line method over the estimated useful lives of the related assets or the lease term, whichever is shorter. We use depreciable lives of three to seven years for laboratory and office equipment, and seventeen to twenty years for building and improvements. Expenditures for maintenance and repairs are charged to expense as incurred, and expenditures for major renewals and improvements are capitalized.

Impairment of Long-Lived Assets

As required by Statement of Financial Accounting Standards No. 121, "Accounting for the Impairment of Long-Lived Assets and for Long-Lived Assets to be Disposed of," we assess the recoverability of any long-lived assets for which an indicator of impairment exists. Specifically, we calculate, and recognize, any impairment losses by comparing the carrying value of these assets to our estimate of the undiscounted future operating cash flows. Although our current and historical negative cash flows are indicators of impairment, we believe the future cash flows to be received from our long-lived assets will exceed the assets' carrying value. Accordingly, we have not recognized any impairment losses through December 31, 2001.

Research and Development

Research and development costs are charged to expense as incurred.

Income Taxes

We account for income taxes in accordance with Statement of Financial Accounting Standards No. 109, "Accounting for Income Taxes." The objective of

this pronouncement is to recognize and measure, using enacted tax laws, the amount of current and deferred income taxes payable or refundable at the date of the financial statements as a result of all events that have been recognized in the financial statements.

Revenue Recognition

Revenue from collaborative agreements consists of up-front fees, research and development funding, and milestone payments. Non-refundable up-front fees are deferred and amortized to revenue over the related performance period. Periodic payments for research and development activities are recognized over the period in which we perform those activities under the terms of each agreement. Revenue resulting from the achievement of milestone events stipulated in the agreements is recognized when the milestone is achieved.

In December 1999, the Securities and Exchange Commission staff issued Staff Accounting Bulletin No. 101, "Revenue Recognition in Financial Statements" (SAB 101). The bulletin draws on existing accounting rules and provides specific guidance on how those accounting rules should be applied, and specifically addresses revenue recognition for non-refundable technology access fees in the biotechnology industry. We adopted SAB 101 in the fourth quarter of 2000, effective for all of 2000. SAB 101 had no impact on our financial position or results of operations, as our revenue recognition policy was consistent with SAB 101.

Net Loss Per Share

Basic loss per share is computed by dividing net loss by the weighted-average number of common shares outstanding for the period. Diluted loss per share reflects the potential dilution from the exercise or conversion of securities into common stock. For the years ended December 31, 1999, 2000, and 2001, the effects of the exercise of outstanding stock options and warrants were antidilutive; accordingly, they were excluded from the calculation of diluted earnings per share. See Notes 9 and 10 for a summary of outstanding warrants and options.

Fair Value of Financial Instruments

As of December 31, 2001, the carrying values of cash and cash equivalents, restricted funds, accounts payable, accrued expenses, and accrued compensation approximate their respective fair values. In addition, we believe the carrying value of our debt instrument, which does not have a readily ascertainable market value, approximates its fair value.

Recent Accounting Pronouncements

In June 2001, the Financial Accounting Standards Board finalized Statements of Financial Accounting Standards No. 141, "Business Combinations" (SFAS 141), and No. 142, "Goodwill and Other Intangible Assets" (SFAS 142), which are effective for fiscal years beginning after December 15, 2001. SFAS 141 requires all business combinations initiated after June 30, 2001 to be accounted for using the purchase method. SFAS 142 no longer requires the amortization of goodwill; rather, goodwill will be subject to a periodic assessment for impairment by applying a fair-value-based test. In addition, an acquired

intangible asset should be separately recognized if the benefit of the intangible asset is obtained through contractual or other legal rights, or if the intangible asset can be sold, transferred, licensed, rented, or exchanged, regardless of the acquirer's intent to do so. Such acquired intangible assets will be amortized over their estimated useful lives. All of our intangible assets were obtained through contractual rights and have been separately identified and recognized in our consolidated balance sheets. These intangibles are being amortized over their estimated useful lives or contractual lives as appropriate. Therefore, we do not expect the adoption of SFAS 142 in the first quarter of 2002 to have any effect on our consolidated financial position or results of operations.

In October 2001, the Financial Accounting Standards Board issued Statement of Financial Accounting Standard No. 144, "Accounting for the Impairment or Disposal of Long-Lived Assets" (SFAS 144). SFAS 144 changes the accounting for long-lived assets by requiring that all long-lived assets be measured at the lower of the carrying amount or fair value less cost to sell, whether included in reporting continuing operations or in discontinued operations. SFAS 144, which replaces SFAS 121 "Accounting for Impairment of Long-Lived Assets and for Assets to be Disposed of," is effective for fiscal years beginning after December 15, 2001. We do not believe SFAS 144 will have a material impact on our consolidated financial position or results of operations.

Reclassification

Certain prior year amounts have been reclassified to conform to our current year presentation.

Note 3. Collaborative Agreements

Agreement with Wyeth Pharmaceuticals

In December 2001, we entered into a research, development and license agreement with Wyeth Pharmaceuticals, a division of Wyeth, for the use of our GlycoAdvance technology to develop an improved production system for Wyeth's biopharmaceutical compound, recombinant PSGL-Ig (P-selectin glycoprotein ligand). rPSGL-Ig is being developed to treat inflammation and thrombosis associated with acute coronary syndrome and reperfusion injury. It is currently being evaluated in Phase II clinical trials for heart attack.

Under the agreement, we will develop processes for the commercial-scale manufacture of GlycoAdvance enzymes and sugar nucleotides to be used in the production of rPSGL-Ig, and will license GlycoAdvance technology to Wyeth for commercial production of the drug, if regulatory approval is obtained. During commercial production of Wyeth's current rPSGL-Ig, we would receive ongoing payments tied to yield improvements achieved using GlycoAdvance. In addition, Wyeth has the option to use GlycoAdvance to develop a next generation rPSGL-Ig, in which case we would receive development payments and royalties on product sales.

We will receive license, research, and milestone payments that will total up to $17 million if all milestones are met. In addition to ongoing

product payments, Neose and Wyeth would also enter into a supply agreement for the long-term supply of GlycoAdvance process reagents for their commercial production needs. In December 2001, we received an upfront-fee of $1 million, which is included in deferred revenue in our consolidated balance sheet as of December 31, 2001. We will amortize the up-front fee to revenue over the estimated four-year performance period.

Wyeth may not receive regulatory approval to rPSGL-Ig, Wyeth may choose not to commercialize rPSGL-Ig, Wyeth may choose not to use GlycoAdvance services or products to commercialize rPSGL-Ig, or we may not succeed in developing an improved production system for rPSGL-Ig.

Agreement with Wyeth Nutrition

We entered into an agreement in 1999 with Wyeth Nutrition, a business unit of Wyeth Pharmaceuticals, to develop a manufacturing process for a bioactive carbohydrate to be used as an ingredient in Wyeth's infant and pediatric nutritional formula products. We are receiving contract development payments, and will receive payments if we achieve milestones specified in the agreement. If Wyeth commercializes an ingredient under this agreement, we will sell product to Wyeth at minimum specified transfer prices.

In 1999, we received from Wyeth a non-refundable, up-front license fee of $0.5 million, which we are recognizing as revenue ratably over the estimated three-year performance period. During the years ended December 31, 1999, 2000, and 2001, we recorded revenues of $0.2 million, $1.2 million, and $1.2 million, respectively, from Wyeth.

Under our agreement with Wyeth, we are responsible for developing a large-scale manufacturing process for a potential ingredient in infant formula. We may be unable to complete this development successfully, or be successful in commercial scale-up of these processes. Even if we successfully develop a process and fulfill all of our obligations under the agreement, Wyeth may fail to obtain regulatory approval to market the ingredient. Even if Wyeth obtains regulatory approval for the ingredient, Wyeth may elect not to add the ingredient to any of its products.

Agreement with McNeil Nutritionals

In 1999, we entered into a joint venture with McNeil Nutritionals, a subsidiary of Johnson & Johnson, to explore the inexpensive enzymatic production of complex carbohydrates for use as bulking agents. Neose and McNeil Nutritionals own the joint venture equally. Each of Neose and McNeil Nutritionals contributed various intellectual property to the joint venture. In addition, McNeil Nutritionals contributed to the joint venture the pilot commercial manufacturing facility, for which 50% of the cost will be reimbursed by the joint venture. McNeil Nutritionals has the exclusive right to purchase the joint venture's bulking agent for use in specified consumer product applications at a constant mark-up over the joint venture's cost of production.

The joint venture developed a process for making fructooligosaccharides and constructed a pilot facility in Athens, Georgia. In 2001, the joint venture closed the pilot facility as it shifted focus to a second generation bulking agent. The joint venture is exploring establishing a manufacturing arrangement

with a third party to produce these bulking agents.

We account for our investment in the joint venture under the equity method, under which we recognize our share of the income and losses of the joint venture. In 1999, we reduced the carrying value of our initial investment in the joint venture of approximately $0.4 million to zero to reflect our share of the joint venture's losses. We recorded this amount as research and development expense in our consolidated statements of operations. We will record our share of post-1999 losses of the joint venture, however, only to the extent of our actual or committed investment in the joint venture.

For the year ended December 31, 2001, the joint venture had a net loss and a loss from continuing operations of approximately $6.5 million. The joint venture had no revenues during 2001. As of December 31, 2001, the joint venture had no assets, $0.2 million of current liabilities, and $8.1 million noncurrent liabilities, which consisted of amounts owed to McNeil Nutritionals.

If the joint venture becomes profitable, we will recognize our share of the joint venture's profits only after the amount of our capital contributions to the joint venture is equivalent to our share of the joint venture's accumulated loss. As of December 31, 2001, the joint venture had accumulated losses since inception of approximately $9.8 million, of which our share, assuming a 50% ownership interest, is approximately $4.9 million. Until the joint venture is profitable, McNeil Nutritionals is required to fund, as a non-recourse, no-interest loan, all of the joint venture's aggregate capital expenditures in excess of an agreed-upon amount, and all of the joint venture's operating losses. The loan balance would be repayable by the joint venture to McNeil Nutritionals over a seven-year period commencing on the earlier of September 30, 2006 or the date on which Neose attains a 50% ownership interest in the joint venture after having had a lesser ownership interest. In the event of any dissolution of the joint venture, the loan balance would be payable to McNeil Nutritionals before any distribution of assets to us.

During the years ended December 31, 2000 and 2001, the joint venture reimbursed Neose approximately $1.6 million and $0.8 million, respectively, for the cost of research and development services and supplies provided to the joint venture. There were no such reimbursements during the year ended December 31, 1999. This amount has been reflected as a reduction of research and development expense in our consolidated statements of operations. As of December 31, 2001, the joint venture owed Neose approximately $0.2 million. This amount is included in prepaid expenses and other current assets in our consolidated balance sheet.

We may be required to make additional investments in the joint venture to fund capital expenditures. If the joint venture builds additional production facilities, and we wish to have a 50% ownership interest in the joint venture, we are required to invest up to $8.9 million to fund half of such expenditures. However, we may elect to fund as little as $1.9 million of the cost of the facilities, so long as our aggregate investments in the joint venture are at

least 15% of the joint venture's aggregate capital expenditures. In this case, McNeil Nutritionals will fund the remainder of our half of the joint venture's capital expenditures, and our ownership percentage will be proportionately reduced. We have an option, expiring in September 2006, to return to 50%

ownership of the joint venture by reimbursing McNeil Nutritionals for this amount.

The success of our joint venture with McNeil Nutritionals is dependent upon the joint venture's ability to develop, manufacture, sell, and market successfully complex carbohydrates, all of which are in early stages.

Agreement with Progenics Pharmaceuticals

In May 2001, Bristol-Myers Squibb assigned to Progenics Pharmaceuticals our agreement with Bristol-Myers to develop two synthetic gangliosides for use in two cancer vaccines, GMK and MGV. Progenics is continuing with the development of both vaccines and we are in discussions with them concerning future supply of material for clinical and commercial use, but we will receive no revenue from this agreement unless it is renegotiated. During the years ended December 31, 1999 and 2000, we recorded revenues of $0.2 million and $3.3 million, respectively, from Bristol-Myers. We recorded no revenues related to this collaboration during 2001.

Note 4. Marketable Securities

As of December 31, 2000, marketable securities consisted of securities and obligations of either the U.S. Treasury or U.S. government agencies. These securities are classified as held-to-maturity. Held-to-maturity securities represent those securities for which we have the intent and ability to hold to maturity, and are carried at amortized cost. Interest on these securities, as well as amortization of discounts and premiums, is included in interest income.

During the year ended December 31, 1999, we received proceeds from the sales of marketable securities of approximately $8.9 million. Realized gains on these sales for the year ended December 31, 1999 were approximately $0.8 million. We had no sales of marketable securities, or associated realized gains, during the years ended December 31, 2000 and 2001.

Note 5. Property and Equipment

Property and equipment consisted of the following (in thousands):

December 31,	2000	2001
Building and improvements	$ 13,904	$ 14,482
Laboratory and office equipment	6,112	8,227
	20,016	22,709
Less accumulated depreciation	(7,139)	(8,956)
	12,877	13,753
Land	700	700
Construction-in-Progress	--	8,196
	$ 13,577	$ 22,649

In 2001, we capitalized approximately $0.1 million of interest expense in connection with the construction-in-progress. Depreciation expense was approximately $1.4 million, $1.5 million, and $1.8 million for the years ended December 31, 1999, 2000, and 2001, respectively.

Neose Technologies, Inc. and Subsidiaries
(a development-stage company)

Notes to Consolidated Financial Statements

Note 6. Other Assets

Investment in Genzyme General

In 2000, we invested approximately $0.6 million in an 8% convertible subordinated debenture, which included a warrant to purchase shares of common stock, issued by Novazyme Pharmaceuticals, Inc. The investment was charged to expense in the consolidated statement of operations for 2000 due to uncertainty regarding collectibility. In March 2001, Novazyme committed to pay us approximately $1.6 million in November 2002 in exchange for restructuring our agreement. Due to uncertainty regarding collectibility, we elected to defer recognizing this amount as revenue until receiving payment. In September 2001, Genzyme General acquired Novazyme. As a result, we exercised our warrant to purchase shares of Novazyme, converted our debenture into shares of Novazyme, and exchanged our shares of Novazyme for shares of Genzyme. In 2001, we realized a gain of approximately $6.1 million on the sale of Genzyme shares. Genzyme also assumed Novazyme's obligation to pay us approximately $1.6 million in November 2002. This amount will be reflected as other income in our consolidated statements of operations upon receipt of the payment.

Acquired Technology

In March 1999, we acquired the carbohydrate-manufacturing patents, licenses, and other intellectual property of Cytel Corporation for aggregate consideration of $4.8 million, of which $1.3 million was paid in 2000 to Epimmune, Inc., Cytel's successor corporation, as it satisfied certain milestones relating to the acquired patents and licenses. We charged $0.2 million of the $4.8 million to research and development expense in our consolidated statements of operations in 1998. The acquired intellectual property consists of core technology with alternative future uses. We have capitalized, therefore, the remaining $4.6 million as acquired technology, which is included in other assets in our consolidated balance sheets.

The acquired technology balance is being amortized to research and development expense in our consolidated statements of operations over eight years, which is the estimated useful life of the technology. Amortization expense relating to the acquired technology for the years ended December 31, 1999, 2000, and 2001 was approximately $0.4 million, $0.5 million, and $0.6 million, respectively. The net book value of the acquired technology was $3.7 million and $3.1 million as of December 31, 2000 and 2001, respectively.

Investment in Convertible Preferred Stock

In June 2000, we made an investment of $1.3 million in convertible preferred stock of Neuronyx, Inc., and entered into a research and development collaboration with Neuronyx for the discovery and development of drugs for treating Parkinson's disease and other neurological diseases. The collaboration agreement provides for each of Neose and Neuronyx to perform and fund specific tasks, and to share in any financial benefits of the collaboration. We incurred research and development expense related to this collaboration of approximately $0.4 million and $1.0 million for the years ended December 31, 2000 and 2001, respectively. Our equity investment, which represents an ownership interest of approximately 4%, was made on the same terms as other unaffiliated investors. Accordingly, we have stated the investment at cost. We will continue to evaluate the realizability of this investment and record, if necessary, appropriate impairments in value. No such impairments have occurred as of December 31, 2001.

Note 7. Long-Term Debt

In 1997, we issued, through the Montgomery County (Pennsylvania) Industrial Development Authority, $9.4 million of taxable and tax-exempt bonds. The bonds were issued to finance the purchase of our previously leased building and the construction of a pilot-scale manufacturing facility within our building. The bonds are supported by an AA-rated letter of credit, and a

reimbursement agreement between our bank and the letter of credit issuer. The interest rate on the bonds will vary weekly, depending on market rates for AA-rated taxable and tax-exempt obligations, respectively. During 1999, 2000, and 2001, the weighted-average, effective interest rate was 6.5%, 7.5%, and 5.3% per year, including letter-of-credit and other fees.

The terms of the bond issuance provide for monthly, interest-only payments and a single repayment of principal at the end of the twenty-year life of the bonds. However, under our agreement with our bank, we are making monthly payments to an escrow account to provide for an annual prepayment of principal. As of December 31, 2001, we had restricted funds relating to the bonds of $0.9 million, which consisted of our monthly payments to an escrow account plus interest earned on the balance of the escrow account.

To provide credit support for this arrangement, we have given a first mortgage on the land, building, improvements, and certain machinery and equipment to our bank. The net book value of the pledged assets is $8.4 million as of December 31, 2001. We have also agreed to a covenant to maintain a minimum required cash and short-term investments balance of at least two times the current loan balance. As of December 31, 2001, we were required to maintain a cash and short-term investments balance of $12.4 million. If we fail to comply with this covenant, we are required to deposit with the lender cash collateral up to, but not more than, the loan's unpaid balance, which was $6.2 million as of December 31, 2001.

Minimum principal repayments of long-term debt as of December 31, 2001 were as follows (in thousands): 2002--$1,100; 2003--$1,200; 2004--$1,200; 2005--$100; 2006--$200; and thereafter--$2,400 (2007--$100; 2008 through 2011--$200; 2012--$300; 2013--$200; 2014--$300; 2015--$200; 2016--$300; and 2017--$200).

Note 8. Accrued Expenses

Accrued expenses consisted of the following (in thousands):

December 31,	2000	2001
Accrued property and equipment	$ 275	$ 1,800
Accrued outside research expenses	400	286
Accrued professional fees	360	340
Accrued other expenses	492	418
	$ 1,527	$ 2,844

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Note 9. Stockholders' Equity

Common Stock

During 2001, we purchased 6,000 shares of our common stock in the open market for approximately $0.2 million, or an average price of approximately $29.00 per share.

In March 2000, we offered and sold 2.3 million shares of our common stock at a public offering price of $32.00 per share. Our net proceeds from the offering after the payment of underwriting fees and offering expenses were approximately $68.6 million.

In June 1999, we sold 1.5 million shares of common stock in a private placement to a group of institutional and individual investors at a price of $9.50 per share, generating net proceeds of approximately $13.4 million. In January 1999, we sold 286,097 shares of common stock to Johnson & Johnson Development Corporation at a price of $13.98 per share, generating net proceeds of $4 million.

In January 1997, we sold 1,250,000 shares of common stock in a public offering at a price of $17.50 per share. Our net proceeds from this offering after the payment of placement fees and offering expenses were approximately $20.3 million.

Our initial public offering closed in February 1996. We sold 2,587,500 shares of common stock, which included the exercise of the underwriters' over-allotment option in March 1996, at a price of $12.50 per share. Our net proceeds from this offering after the underwriting discount and payment of offering expenses were approximately $29.1 million. In connection with this offering, all outstanding shares of Series A, C, D, E, and F Convertible Preferred Stock converted into 2,410,702 shares of common stock. Some of these common shares have registration rights.

From 1991 through 1995, we sold 7,196,884 shares of Series A, B, C, D, E, and F Convertible Preferred Stock. On December 7, 1995, all outstanding shares of Series B Convertible Preferred Stock converted into 472,249 shares of common stock. As discussed above, in connection with the initial public offering, all outstanding shares of Series A, C, D, E, and F converted into 2,410,702 shares of common stock.

Warrant

In June 1995, we granted a warrant to an equipment finance company to purchase 10,527 shares of common stock at $14.25 per share. The stock warrant, which expires on June 30, 2002, remained outstanding as of December 31, 2001.

Shareholder Rights Plan

In September 1997, we adopted a Shareholder Rights Plan. Under this plan, which was amended in December 1998, holders of common stock are entitled to receive one right for each share of common stock held. Separate rights

certificates would be issued and become exercisable if any acquiring party either accumulates or announces an offer to acquire at least 15% of our common stock. Each right will entitle any holder who owns less than 15% of our common stock to buy one one-hundredth share of the Series A Junior Participating Preferred Stock at an exercise price of $150. Each one one-hundredth share of the Series A Junior Participating Preferred Stock is essentially equivalent to one share of our common stock. If an acquiring party accumulates at least 15% of our common stock, each right entitles any holder who owns less than 15% of our common stock to purchase for $150 either $300 worth of our common stock or $300 worth of the 15% acquiror's common stock. In November 2000, the Plan was amended to increase the threshold from 15% to 20% for Kopp Investment Advisors, Inc. and related parties. The rights expire in September 2007 and may be redeemed by us at a price of $.01 per right at any time up to ten days after they become exercisable.

Note 10. Employee Benefit Plans

Stock Option Plans

We have three stock option plans, the 1991, 1992, and 1995 Stock Option Plans, under which a total of 3,901,666 shares of common stock have been reserved. The 1995 Stock Option Plan, which incorporates the two predecessor plans, provides for the granting of both incentive stock options and nonqualified stock options to our employees, officers, directors, and consultants. In addition, the plan allows us to issue shares of common stock directly either through the immediate purchase of shares or as a bonus tied to either an individual's performance or our attainment of prescribed milestones.

Incentive stock options may not be granted at an exercise price less than the fair market value on the date of grant. In addition, the plan includes stock appreciation rights to be granted at our discretion. The stock options are exercisable over a period, which may not exceed ten years from the date of grant, determined by our board of directors. A summary of the status of our stock option plans as of December 31, 1999, 2000, 2001, and changes during each of the years then ended, is presented below:

	1999		2000		
	Number Outstanding	Weighted-Average Exercise Price Per Share	Number Outstanding	Weighted-Average Exercise Price Per Share	Number Outstand
Balance as of January 1	1,785,489	$ 12.15	2,152,037	$ 12.41	2,506,
Granted	443,626	13.22	616,140	28.94	789,
Exercised	(35,663)	7.41	(247,501)	11.06	(79,
Canceled	(41,415)	14.15	(13,775)	12.89	(104,

Balance as of December 31	2,152,037	$ 12.41	2,506,901	$ 16.61	3,112,
Options exercisable as of December 31	1,242,583	$ 11.07	1,412,499	$ 12.29	1,782,

The following table summarizes information about stock options outstanding as of December 31, 2001:

Options Outstanding				Option
Range of Exercise Prices	Number Outstanding	Weighted-Average Remaining Life (Years)	Weighted-Average Exercise Price	Number Exercisable
$ 0.90 -- $12.54	658,103	4.2	$ 8.04	586,343
$12.69 -- $19.00	1,110,480	6.2	$ 14.82	938,005
$19.44 -- $29.00	878,173	9.2	$ 28.00	158,923
$30.00 -- $41.13	465,500	9.4	$ 36.78	99,000
	3,112,256	7.1	$ 20.39	1,782,271

Fair Value Disclosures

We have elected to adopt the disclosure provisions only of Statement of Financial Accounting Standards No. 123, "Accounting for Stock-Based Compensation," or SFAS 123. Accordingly, we apply APB Opinion No. 25, "Accounting for Stock Issued to Employees," and related interpretations in accounting for our stock-based compensation plans. We record deferred compensation for option grants to employees for the amount, if any, the market price per share exceeds the exercise price per share. In addition, we record deferred compensation for option grants to non-employees in the amount of the fair value per share, as computed using the Black-Scholes option-pricing model and variable plan accounting. We amortize deferred compensation amounts over the vesting periods of each option. We recognized compensation expense of approximately $0.5 million, $1.1 million, and $1.4 million for the years ended December 31, 1999, 2000, and 2001, respectively.

If we had elected to record compensation cost for our stock-based compensation plans consistent with SFAS 123, our net loss and basic and diluted net loss per share would have been increased to the pro forma amounts indicated below (in thousands, except per share data):

Year Ended December 31,	1999	2000
Net loss - as reported	$ (13,318)	$ (8,500)
Net loss - pro forma	$ (15,853)	$ (12,182)
Basic and diluted net loss per share - as reported	$ (1.25)	$ (0.63)
Basic and diluted net loss per share - pro forma	$ (1.48)	$ (0.91)

The fair value of each option grant was estimated on the date of grant using the Black-Scholes option-pricing model. We used the following weighted-average assumptions for 1999, 2000, and 2001 grants, respectively: risk-free interest rate of 5.9%, 4.7%, and 4.9%; expected life of 5.2, 4.3, and 6.1 years; volatility of 60%, 75%, and 75%; and a dividend yield of zero. The weighted-average fair value of employee purchase rights granted under our employee stock purchase plan (see below) in 1999, 2000, and 2001 was $6.25, $8.45, and $11.60, respectively. The fair value of the purchase rights was estimated using the Black-Scholes model with the following weighted-average assumptions for 1999, 2000, and 2001, respectively: risk-free interest rate of 6.5%, 5.0%, and 4.6%; expected life of eighteen, fourteen, and sixteen months; volatility of 60%, 70%, and 75%; and a dividend yield of zero.

A summary of options granted at exercise prices equal to, greater than, and less than the market price on the date of grant is presented below:

Year Ended December 31,	1999	2000
Exercise Price = Market Value		
Options granted	397,366	608,900
Weighted-average exercise price	$ 12.17	$ 29.27
Weighted-average fair value	$ 6.89	$ 17.56
Exercise Price > Market Value		
Options granted	40,000	--
Weighted-average exercise price	$ 25.00	$ --
Weighted-average fair value	$ 5.50	$ --
Exercise Price <Market Value		
Options granted	6,260	7,240
Weighted-average exercise price	$ 4.75	$ 4.83
Weighted-average fair value	$ 11.01	$ 11.54

Employee Stock Purchase Plan

We maintain an employee stock purchase plan, or ESPP, for which 100,000

shares are reserved for issuance. The ESPP allows any eligible employee the opportunity to purchase shares of our common stock through payroll deductions. The ESPP provides for successive, two-year offering periods, each of which contains four semiannual purchase periods. The purchase price at the end of each purchase period is 85% of the lower of the market price per share on the employee's entry date into the offering period or the market price per share on the purchase date. Any employee who owns less than 5% of our common stock may purchase up to the lesser of:

- 10% of his or her eligible compensation;
- 1,000 shares per purchase; or
- the number of shares per year that does not exceed the quotient of $25,000 divided by the market price per share on the employee's entry date into the offering period.

A total of 46,092, 35,102, and 17,312 shares of common stock remained available for issuance under the ESPP as of December 31, 1999, 2000, and 2001, respectively. The total purchases of common stock under the ESPP during the years ended December 31, 1999, 2000, and 2001, were 15,540 shares at a total purchase price of approximately $0.2 million, 10,990 shares at a total purchase price of approximately $0.2 million, and 17,790 shares at a total purchase price of approximately $0.3 million, respectively. We have not recorded any compensation expense for the ESPP.

Note 11. Commitments

Leases

In 1999, we entered into a two-year lease agreement for laboratory and office space in California. This lease expired in September 2001. In April 2001, we entered into a new lease agreement for approximately 10,000 square feet of laboratory and office space in California. The initial term of the lease ends in March 2006, at which time we have an option to extend the lease for an additional five years. In July 2001, we entered into a lease agreement for approximately 5,000 square feet of office and warehouse space in Pennsylvania. The lease term expires in December 2004. Our rental expense for the years ended December 31, 1999, 2000, and 2001 was approximately $19,000, $77,000, and $322,000, respectively. Minimum future annual payments under our operating lease agreements as of December 31, 2001 were as follows (in thousands): 2002--$345; 2003--$349; 2004--$363; 2005--$328; and 2006--$83.

Construction Contract

In October 2001, we entered into an agreement with a construction firm to renovate and expand our facility in Horsham, Pennsylvania at an expected total cost of approximately $17 million, of which approximately $8.2 million was capitalized as construction-in-progress as of December 31, 2001.

License Agreements

We have entered into agreements with various entities under which we have been granted licenses to use patent rights and technology. Typically, these

agreements will terminate upon the expiration of the applicable patent rights, and require us to reimburse the licensor for fees related to the acquisition and maintenance of the patents licensed to us. In addition, we usually are required to pay royalties to the licensor based either on sales of applicable products by us or specified license fees, milestone fees, and royalties received by us from sublicensees, or both.

Employment Agreements

In January 2002, we entered into a retirement agreement with our Vice President, Research. Under this agreement, he will terminate his employment effective June 30, 2002. We have committed to pay a retirement benefit over a five-year period. We will record approximately $0.5 million, which is the present value of the retirement benefit, as compensation expense in 2002. In addition, we have extended the period during which he may exercise his stock options after terminating his employment, and will record non-cash compensation expense of approximately $1.7 million in 2002 associated with this option modification.

In January 2002, we entered into retention agreements with certain employees. Under these agreements, we have committed to pay severance equal to one years' salary in the event of the involuntary termination of, or the resignation with good reason by, the covered employees. In certain circumstances, the employees' stock options would continue to vest and be exercisable for one year following termination.

Note 12. Income Taxes

As of December 31, 2001, we had net operating loss carryforwards for federal and state income tax purposes of approximately $9.6 million and $6.3 million, respectively. In addition, we had federal research and development credit carryforwards of approximately $2.7 million. All of these carryforwards begin to expire in 2004. Due to the uncertainty surrounding the realization of the tax benefit associated with these carryforwards, we have provided a full valuation allowance against this tax benefit. In addition, pursuant to the Tax Reform Act of 1986, the annual utilization of our net operating loss carryforwards will be limited. We do not believe that these limitations will have a material adverse impact on the utilization of our net operating loss carryforwards. The approximate income tax effect of each type of temporary difference and carryforward is as follows (in thousands):

December 31,	2000	2001
Benefit of net operating loss carryforwards	$ 1,621	$ 1,14
Research and development credit carryforwards	2,129	2,68
Capitalized research and development	11,890	14,53
Start-up costs	9,411	11,90
Nondeductible depreciation and amortization	3,242	3,48
Deferred compensation	905	1,49
Accrued expenses not currently deductible	209	14

Deferred revenue	124	5
Other	4	3
	29,535	35,48
Valuation allowance	(29,535)	(35,48
	$ --	$ -

Note 13. Related-Party Transactions

Paramount Capital, Inc., of which the sole shareholder is a member of our Board of Directors, acted as a finder for our private placement of common stock in June 1999 (see Note 9). We paid Paramount Capital approximately $0.8 million for its assistance in completing the private placement. Entities affiliated with Paramount Capital purchased 110,000 shares of common stock in the private placement.

In 1997, we entered into a consulting agreement with an employee of Paramount Capital. Under the agreement, which may be terminated by either party upon sixty days prior notice, we are obligated to pay the consultant an annual amount of $50,000, which was paid in each of the years ended December 31, 1999, 2000 and 2001. During 1999, we granted the consultant an option to purchase 30,000 shares of common stock at an exercise price of $10.38, the market price on the date of grant. The option vests in equal, annual amounts in 2002 and 2003. In connection with this option grant, we have recorded non-cash compensation expense of approximately $0.1 million, $0.3 million, and $0.3 million for each of the years ended December 31, 1999, 2000, and 2001, respectively.

EXHIBIT INDEX

Exhibit Number	Description
3.1	Second Amended and Restated Certificate of Incorporation. (Exhibit 3.1)(1)
3.2	Amended and Restated By-Laws. (Exhibit 3.3)(5)
3.4	Certificate of Designation establishing and designating the Series A Junior Participatin (Exhibit 3.2)(5)
4.2	See Exhibits 3.1, 3.2, and 3.3 for instruments defining rights of holders of common stoc
4.2	Representation pursuant to Item 601(b)(4)(iii)(A) of Regulation S-K. (Exhibit 4.1)(3)
4.3	Trust Indenture, dated as of March 1, 1997, between Montgomery County Industrial Develop Dauphin Deposit Bank and Trust Company. (Exhibit 4.2)(3)
4.4	Form of Montgomery County Industrial Development Authority Federally Taxable Variable Ra Bond (Neose Technologies, Inc. Project) Series B of 1997. (Exhibit 4.3)(3)
4.7	Amended and Restated Rights Agreement, dated as of December 3, 1998, between American St Trust Company, as Rights Agent, and Neose Technologies, Inc. (Exhibit 4.1)(6)
4.8	Amendment No. 1, dated November 14, 2000, to the Amended and Restated Rights Agreement, December 3, 1998, between Neose Technologies, Inc. and American Stock Transfer & Trust C Agent. (Exhibit 4.1)(10)
10.1	Stock Purchase Agreement, dated as of August 28, 1990, between University of Pennsylvani Technologies, Inc. (Exhibit 10.1)(1)

10.2	License Agreement, dated as of August 28, 1990, between University of Pennsylvania and N Inc., as amended to date. (Exhibit 10.2)(1)
10.3(a)+	Series D Preferred Stock Purchase Agreement, dated as of December 30, 1992, between Abbo and Neose Technologies, Inc. (Exhibit 10.8(a))(1)
10.3(b)+	Supply Agreement, dated as of December 30, 1992, between Abbott Laboratories and Neose T (Exhibit 10.8(b))(1)
10.3(c)+	Research and License Agreement, dated as of December 30, 1992, between Abbott Laboratori Neose Technologies, Inc. (Exhibit 10.8(c))(1)
10.3(d)+	Amendment to the Research and License Agreement, dated as of January 18, 1995, between A Laboratories and Neose Technologies, Inc. (Exhibit 10.8(d))(2)
10.4	Form of Series E Preferred Stock Investors' Rights Agreement. (Exhibit 10.9)(1)
10.5	Form of Series F Preferred Stock Investors' Rights Agreement. (Exhibit 10.10)(1)
10.6	Form of Warrant to Purchase Common Stock, dated as of February 23, 1991. (Exhibit 10.11)
10.7	Form of Warrant to Purchase Common Stock, dated as of June 30, 1993. (Exhibit 10.12)(1)
10.8	Form of Warrant to Purchase Common Stock, dated as of February 16, 1994. (Exhibit 10.13)
10.9	Form of Warrant to Purchase Series E Preferred Stock, dated as of July 29, 1994. (Exhibi
10.10	Warrant for the Purchase of Common Stock, dated as of June 30, 1995, between Financing f International, Inc. and Neose Technologies, Inc. (Exhibit 10.15)(1)
10.11++	1995 Stock Option/Stock Issuance Plan, as amended. (Exhibit 99.1)(4)
10.12++	Employee Stock Purchase Plan. (Exhibit 10.17)(1)
10.13++	Employment Agreement, dated April 1, 1992, between David A. Zopf and Neose Technologies, to date. (Exhibit 10.18)(1)
10.14++	Employment Agreement, dated December 1, 1994, between P. Sherrill Neff and Neose Technol (Exhibit 10.19)(1)
10.15	Agreement for Purchase and Sale of Real Property, dated March 14, 1997, by and between P Business Campus Delaware, Inc. and Neose Technologies, Inc. (Exhibit 2.1)(3)
10.16	Loan Agreement, dated as of March 1, 1997, between Montgomery County Industrial Developm Neose Technologies, Inc. (Exhibit 10.1)(3)
10.17	Participation and Reimbursement Agreement, dated as of March 1, 1997, between Jefferson CoreStates Bank, N.A. (Exhibit 10.2)(3)
10.18	Form of CoreStates Bank, N.A. Irrevocable Letter of Credit. (Exhibit 10.3)(3)
10.19	Pledge, Security and Indemnification Agreement, dated as of March 1, 1997, by and among N.A., Jefferson Bank, and Neose Technologies, Inc. (Exhibit 10.4)(3)
10.20	Reimbursement Agreement, dated as of March 1, 1997, between Jefferson Bank and Neose Tec (Exhibit 10.5)(3)
10.21	Specimen of Note from Company to Jefferson Bank. (Exhibit 10.6)(3)
10.22	Mortgage, Assignment and Security Agreement, dated March 20, 1997, between Jefferson Ban Neose Technologies, Inc. (Exhibit 10.7)(3)
10.23	Security Agreement, dated as of March 1, 1997, by and between Jefferson Bank and Neose T (Exhibit 10.8)(3)
10.24	Assignment of Contract, dated as of March 20, 1997, between Jefferson Bank and Neose Tec (Exhibit 10.9)(3)
10.25	Custodial and Collateral Security Agreement, dated as of March 20, 1997, by and among Of Jefferson Bank, and Neose Technologies, Inc. (Exhibit 10.10)(3)
10.26	Placement Agreement, dated March 20, 1997, among Montgomery County Industrial Developmen CoreStates Capital Markets, and Neose Technologies, Inc. (Exhibit 10.11)(3)
10.27	Remarketing Agreement, dated as of March 1, 1997, between CoreStates Capital Markets and Technologies, Inc. (Exhibit 10.12)(3)
10.28	Form of Purchase Agreement, dated as of June 25, 1999, between Neose Technologies, Inc. purchasers set forth on the signature pages thereto. (Exhibit 99.1)(7)
10.29	Form of Amended and Restated Purchase Agreement, dated as of June 25, 1999, between Neos Technologies, Inc. and the purchasers set forth on the signature pages thereto. (Exhibit
10.30+	Research and Development Agreement, dated June 1, 1998, between Neose Technologies, Inc. Pharmaceutical Research Institute of Bristol-Myers Squibb Company. (Exhibit 99.1)(8)
10.31+	Operating Agreement of Magnolia Nutritionals LLC, dated October 12, 1999, between Neose

	Technologies, Inc. and McNeil PPC, Inc. acting through its division McNeil Specialty Pro (Exhibit 99.2)(8)
10.32+	Collaboration and License Agreement, dated November 3, 1999, between Neose Technologies, American Home Products Corporation. (Exhibit 99.3)(8)
10.33	Modification Agreement Relating To Reimbursement Agreements, dated as of May 1, 2000, be United Bank, Jefferson Bank Division, successor to Jefferson Bank, and Neose Technologie 10.1)(9)
10.34	Modification Agreement Relating to Custodial Bank Agreement, dated as of May 1, 2000, by Offitbank, Hudson United Bank, Jefferson Bank Division, successor to Jefferson Bank, and Technologies, Inc. (Exhibit 10.2)(9)
10.35++	Employment Offer Letter, dated November 27, 2000, between Eric Sichel and Neose Technolo (Exhibit 10.35)(11)
10.36	Amendment No. 1 to Research and Development Agreement, dated May 14, 2001, between Neose Technologies, Inc. and the Pharmaceutical Research Institute of Bristol-Myers Squibb Com 99.2)(12)
10.37	Separation of Employment Agreement, dated as of May 18, 2001, between Eric Sichel and Ne Technologies, Inc. (Exhibit 10.1)(13)
10.38#	Research, Development and License Agreement, dated December 19, 2001, between American H Products Corporation and Neose Technologies, Inc. (Exhibit 10.1)(14)
10.39*++	Employment Offer Letter, dated effective July 11, 2001 between George J. Vergis and Neos Technologies, Inc.
10.40*	Agreement of Lease, dated as of February 15, 2002, between Liberty Property Leased Partn Neose Technologies, Inc.
10.41*++	Retirement Agreement, dated as of January 14, 2002, between Edward J. McGuire and Neose Technologies, Inc.
10.42*++	Retention Agreement, dated as of January 21, 2002, between David A. Zopf and Neose Techn Inc.
10.43*++	Retention Agreement, dated as of January 21, 2002, between George J. Vergis and Neose Technologies, Inc.
10.44*++	Tuition Reimbursement Agreement, dated as of May 24, 2001, between A. Brian Davis and Ne Technologies, Inc.
10.45*++	Retention Agreement, dated as of January 21, 2002, between A. Brian Davis and Neose Tech Inc.
10.46*++	Retention Agreement, dated as of January 21, 2002, between Debra J. Poul and Neose Techn Inc.
10.47*	Standard Industrial/Commercial Multi-Tenant Lease-Net, dated February 2, 2001, between N Technology Center, LLC and Neose Technologies, Inc.
10.48*	First Amendment to Lease, dated May 18, 2001, between Nancy Ridge Technology Center, LLC Technologies, Inc.
10.49*	Agreement, dated as of August 24, 2001, between IPS and Neose Technologies, Inc.
11*	Statement re: Computation of Net Loss Per Common Share.
23.1*	Consent of Arthur Andersen LLP.
24*	Powers of Attorney (included as part of signature page hereof).
99*	Letter to the SEC from Neose Technologies, Inc. regarding Arthur Andersen LLP.

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* Filed herewith.

\+ Portions of this Exhibit were omitted and filed separately with the Secretary of the SEC pursuant to an order of the SEC granting our application for confidential treatment filed pursuant to Rule 406 under the Securities Act.

++ Compensation plans and arrangements for executives and others.

\# Portions of this Exhibit were omitted and filed separately with the Secretary of the SEC pursuant to a request for confidential treatment that

has been filed with the SEC.

(1) Filed as an Exhibit to our Registration Statement on Form S-1 (Registration No. 33-80693) filed with the SEC on December 21, 1995, as amended.

(2) Filed as an Exhibit to our Registration Statement on Form S-1 (Registration No. 333-19629) filed with the SEC on January 13, 1997.

(3) Filed as an Exhibit to our Quarterly Report on Form 10-Q for the quarterly period ended March 31, 1997.

(4) Filed as an Exhibit to our Registration Statement on Form S-8 (Registration No. 333-73340) filed with the SEC on November 14, 2001.

(5) Filed as an Exhibit to our Current Report on Form 8-K filed with the SEC on October 1, 1997.

(6) Filed as an Exhibit to our Current Report on Form 8-K filed with the SEC on January 8, 1999.

(7) Filed as an Exhibit to our Current Report on Form 8-K filed with the SEC on July 14, 1999.

(8) Filed as an Exhibit to our Current Report on Form 8-K filed with the SEC on February 2, 2000.

(9) Filed as an Exhibit to our Quarterly Report on Form 10-Q for the quarterly period ended June 30, 2000.

(10) Filed as an Exhibit to our Current Report on Form 8-K filed with the SEC on November 15, 2000.

(11) Filed as an Exhibit to our Annual Report on Form 10-K for the year ended December 31, 2000.

(12) Filed as an Exhibit to our Current Report on Form 8-K filed with the SEC on May 18, 2001.

(13) Filed as an Exhibit to our Quarterly Report on Form 10-Q for the quarterly period ended June 30, 2001.

(14) Filed as an Exhibit to our Current Report on Form 8-K filed with the SEC on February 1, 2002.