COMPUGEN LTD
Form 20-F
June 09, 2003

SECURITIES AND EXCHANGE COMMISSION

WASHINGTON, D.C. 20549

FORM 20-F

ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d) OF

THE SECURITIES EXCHANGE ACT OF 1934

FOR THE FISCAL YEAR ENDED DECEMBER 31, 2002 COMMISSION FILE NO. 005-60609

Compugen Ltd.

(Exact name of registrant as specified in its charter and translation of registrant's name into English)

Israel

(Jurisdiction of incorporation or organization)

72 Pinchas Rosen Street, Tel Aviv, 69512 Israel

(Address of principal executive offices)

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

None

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

Ordinary Shares, par value New Israeli Shekels 0.01 per share

(Title of Class)

Securities for which there is a reporting obligation pursuant to Section 15(d) of the Act:

None

Indicate the number of outstanding shares of each of the issuer's classes of capital or common stock as of the close of the period covered by the annual report:

26,243,446 Ordinary Shares

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 which financial statement item the registrant has elected to follow:

Item 17 [ ] Item 18 [x]

____(1)____

This annual report on Form 20-F includes "forward-looking" statements within the meaning of Section 21E of the Securities Exchange Act of 1934. We have based these forward-looking statements on information available to us on the date hereof, our current intentions, our beliefs, and expectations or projections about future events. We assume no obligation to update any such forward-looking statements. These statements involve risks and uncertainties and actual results could differ materially from our expectations or projections. Factors that could cause our actual results to differ materially from those projected in the forward-looking statements include the risk factors set forth in this annual report at "Item 3. Risk Factors."

We have prepared our consolidated financial statements in United States dollars and in accordance with accounting principles generally accepted in the United States. All references herein to "dollars" or "$" are to United States dollars, and all references to "Shekels" or "NIS" are to New Israeli Shekels.

PART I.

ITEM 1. IDENTITY OF DIRECTORS, SENIOR MANAGEMENT AND ADVISORS

Not applicable.

ITEM 2. OFFER STATISTICS AND EXPECTED TIMETABLE

Not applicable.

ITEM 3. KEY INFORMATION

Selected Financial Data

The selected financial data is incorporated by reference to Item 5 of this annual report.

Risk Factors

This annual report includes forward-looking statements. We have based these forward-looking statements on our current intentions, beliefs, expectations or projections about the future. These forward-looking statements are not guarantees of future performance and are subject to risks, uncertainties and assumptions that could cause our actual results to differ materially from those projected in the forward-looking statements.

Risks Related to Our Business

Our approach of incorporating ideas and methods from mathematics, computer science and physics into the disciplines of biology, organic chemistry and medicine is novel and may not be accepted by our potential customers and/or collaborators.

Compugen is a drug and diagnostic discovery company and a leader in incorporating ideas and methods from mathematics, computer science and physics into the disciplines of biology, organic chemistry and medicine. Our objective is to significantly increase the probability of success of drug discovery and diagnostic development. Notwithstanding that we have already made discoveries by using this approach, our approach and the products and technologies derived from our approach are novel. As a result, they may prove to be ineffective or not as effective as other methods, or they may not be accepted by our potential customers or collaborators. Our products and technologies may prove to be ineffective if, for instance, they fail to account for the complexity of the life processes that we are now attempting to model. If our customers or collaborators do not accept our products or technologies and/or if our technologies prove to be ineffective our business may fail or we may never become profitable.

We have a history of losses, we expect to incur future losses and we may never achieve or sustain profitability.

We incurred net losses of approximately $13.4 million in 2000, $15.1 million in 2001, and $12.2 million in 2002. As of December 31, 2002, we had an accumulated deficit of approximately $55.7 million (not including approximately $24.9 million in accumulated deficit attributable to the conversion of preferred shares upon the closing of our initial public offering). We expect to continue to incur net losses and negative cash flows in the future due in part to high research and development expenses, including enhancements to our technologies and investments in new technologies. As a result, we will need to generate significantly higher revenues to achieve profitability. We cannot assure you that we will ever achieve profitability. Even if we do achieve profitability, we may not be able to sustain or increase profitability.

Even if our computational technologies are effective as research tools, we or our customers may be unable to develop or commercialize new drugs, therapies or other products based on them.

Even if our computational technologies perform their intended functions as research tools, we or our customers may be unable to use the discoveries resulting from them to produce new drugs, therapies, diagnostic products or other life science products. Despite recent scientific advances in the life sciences and our improved understanding of biology, the roles of genes and proteins and their involvement in diseases and in other life processes is not well understood. Only a few therapeutic products based on the study of and discoveries relating to genes or proteins have been developed and commercialized. If we and our customers are unable to use our discoveries to make new drugs or other life science products, our business may fail or we may never become profitable.

There are many risks of failure in the development of drugs, therapies, diagnostic products and other life science products. These risks are inherent to the development and commercialization of these type of products.

A number of risks of failure are an inseparable from the process of developing and commercializing drugs, therapies, diagnostic products and other life science products. These risks include the possibility that any of these products will:

- be found to be toxic or ineffective;
- fail to receive necessary regulatory approvals;
- be difficult or impossible to manufacture on a large scale;
- be uneconomical to market;
- fail to be developed prior to the successful marketing of similar products by competitors; or
- be impossible to market because they infringe on the proprietary rights of third parties or compete with superior products marketed by third parties.

Any of these risks could materially harm our business and financial results.

The industries in which we are active are evolving rapidly, and we may be unable to keep pace with changes in technology.

The pharmaceutical and biotechnology industries are characterized by rapid technological change. This is especially true of the data-intensive areas of such technologies. Our future success will largely depend on maintaining a competitive position in the field of drug, therapeutics and diagnostic products discovery. If we fail to keep pace with changes in technology, our business will be materially harmed. Rapid technological development may result in our products or technologies becoming obsolete. This may occur even before we recover the expenses that we incurred in connection with developing those products and technologies. Products or services offered by us could become obsolete due to the development of less expensive or more effective drug or diagnostics discovery technologies. We

may not be able to make the necessary enhancements to our technologies to compete successfully with newly emerging technologies. In addition, human genomic sequence data and software is available to the public as a result of the federally funded Human Genome Project and other projects which are engaged in the study of genes and their behavior in normal and diseased conditions. These publications, including the publication of the human genome, may make some of our products and technologies less valuable or obsolete.

We face intense competition, and if we are unable to compete successfully, we could experience a loss of market share and reduced gross margins for our platforms, services and technologies.

The markets for our products and services are very competitive, and we expect the competition to increase in the future. We compete with entities in the United States and elsewhere that provide products and services for the analysis of genomic information and information relating to the study of proteins (proteomic information) or that commercialize novel genes and proteins. These include genomics, pharmaceutical and biotechnology companies, academic and research institutions and government and other publicly-funded agencies. We may not be able to successfully compete with current and future competitors. Many of our competitors have substantially greater capital resources, research and development staffs, facilities, manufacturing and marketing experience, distribution channels and human resources than we do. This may allow these competitors to discover and to develop products or to obtain regulatory approval for products based on these discoveries, in advance of us or of our customers.

Greater resources may also allow these competitors to develop products that are more effective than ours or than those of our customers. Some of our competitors, especially academic and research institutions and government and other publicly funded agencies, may provide for free services or data similar to the services and data that we provide for a fee. Moreover, our competitors may obtain patent and other intellectual property protection that would limit our rights or our customers' and partners` ability to use or commercialize our discoveries, products and services. If we are unable to compete successfully against existing or potential competitors, our market share, revenues and margins may decline.

We have allocated limited resources to our discovery activities, and we may never be able to commercialize products resulting from these activities or achieve profitability.

Our discovery team has limited research and development personnel and limited marketing capabilities. We currently have no therapeutics or diagnostic products manufacturing capabilities. Our discovery activities have generated only negligible revenues to date, have no clear source of revenues and may never achieve profitability. Although we intend to allocate additional cash resources to our discovery activities, we do not anticipate that this funding will enable us to achieve profitability in the near future. As a result, our discovery activities may require substantial additional funds in the future. If we are unable to obtain the required additional funds for our discovery activities, whether internally or from third parties on commercially reasonable terms, we may have to curtail or cease our discovery activities.

To date, our discovery team identified a number of potential diagnostic markers and therapeutic proteins. Once developed, product candidates must undergo extensive testing, including animal and human clinical trials, to obtain regulatory approvals needed for commercialization. Even if we are able to develop and commercialize our potential product candidates, we cannot assure you that these products, or any of them, would be commercially marketable or successful.

We may not be able to find business partners to develop and commercialize product candidates deriving from our discovery activities.

Our strategy for the development and commercialization of diagnostic markers and therapeutic proteins depends on the formation of collaborations or licensing relationships with third parties that have complementary capabilities in relevant fields. Potential third parties include pharmaceutical and biotechnology companies, diagnostic companies, academic institutions and other entities.

We have granted two licenses for the development and commercialization of diagnostic markers or therapeutic proteins, which are in their initial stages. We cannot assure you that these collaborations and licenses will be successful. We cannot assure you that we will enter into any other collaboration in the future. If we are not able to establish successful collaborations or licenses, we may be required to undertake product development and

commercialization at our own expense. Such an undertaking may:

- limit the number of product candidates that we will be able to develop and commercialize;
- reduce the likelihood of successful product introduction;
- delay the time by which our product candidates may be developed and commercialized;
- significantly increase our capital requirements; and
- disrupt our business, distract our management and employees and increase our expenses.

As a result of the above, if we fail to enter into successful collaborations and licenses, our discovery activities and financial condition and results of operations may be materially harmed.

Our dependence on licensing and other collaboration agreements with third parties subjects us to a number of risks.

We may not be able to enter into licensing or other collaboration agreements on terms favorable to us. Collaborators may typically be afforded significant discretion in electing whether to pursue any of the planned activities. In most cases, our collaborators or licensees will have responsibility for formulating and implementing key strategic or operational plans. Decisions by our collaborators or licensees on these key plans, which may include development, clinical, regulatory, marketing (including pricing), inventory management and other issues, may prevent successful commercialization of the product or otherwise affect our profitability.

In addition, we may not be able to control the amount and timing of resources our collaborators devote to the product candidates, and collaborators may not perform their obligations as expected. Additionally, business combinations or changes in a collaborator's or a licensee`s business strategy may negatively affect its willingness or ability to complete its obligations under the arrangement with us. Furthermore, our rights in any intellectual property or products that may result from our collaborations may depend on additional investment of money that we may not be able or willing to make.

Potential or future collaborators may pursue alternative technologies, including those of our competitors. Disputes may arise with respect to the ownership of rights to any technology or product developed with any future collaborator. Lengthy negotiations with potential collaborators or disagreements between us and our collaborators may lead to delays or termination in the research, development or commercialization of product candidates or result in time-consuming and expensive litigation or arbitration. If our collaborators pursue alternative technologies or fail to develop or commercialize successfully any product candidate to which they have obtained rights from us, our business, financial condition and results of operations may be significantly harmed.

Our business of providing access to our platforms, tools and data to our customers and the activities of our discovery team may conflict with each other.

Our discovery activities depend, in large part, on our computational platforms and tools and proprietary data to make inventions and establish intellectual property rights in genes and proteins. We believe that the access to our platforms, tools and proprietary information provides our discovery team with a competitive advantage over biotechnology companies that are pursuing technologies that may compete with us and that seek patent protection to gene and protein sequences in which we have an interest. When we make these platforms, tools and information available to our customers, primarily biotechnology and pharmaceutical companies, our discovery team`s competitive advantage over these customers may be diminished or eliminated. If our customers, many of which have greater financial and other resources than we have, research genes or proteins that we are also researching, they may establish intellectual property rights in such genes or proteins before our discovery team does. As a result, our business, financial condition and results of operations may be significantly harmed. In addition, our discovery team may pursue opportunities in fields that could conflict with those of our customers or discourage potential customers from working with us, thereby reducing our potential revenues.

The trend towards consolidation in the pharmaceutical and biotechnology industries may adversely affect us.

The trend towards consolidation in the pharmaceutical and biotechnology industries may negatively affect us in several ways. These consolidations usually involve larger companies acquiring smaller companies, which results in the remaining companies having greater financial resources and technological capabilities, thus strengthening competition in the industry. In addition, continued consolidation may result in fewer customers for our products and services. Also, if one of the consolidating companies already uses the products or services of our competitors, we may lose existing customers as a result of such consolidation.

We rely on a small number of customers for a large portion of our revenues from products and services.

A small number of our customers account for a substantial amount of our revenues. Warner-Lambert Company, a subsidiary of Pfizer, Inc., accounted for approximately 35% of our revenues in 2000, approximately 30% of our revenues in 2001 and approximately 14% of our revenues in 2002. The U.S. Patent and Trademark Office accounted for approximately 24% of our revenues in 2000, approximately 17% of our revenues in 2001, and less than 10% of our revenues in 2002. Novartis Pharma A.G. accounted for approximately 17% of our revenues in 2001 and approximately 18% of our revenues in 2002; and diaDexus Inc. accounted for approximately 12% of our revenues in 2002. Some of these agreements have expired or will expire, unless renewed, in the near future. A loss of our significant customers, or a reduction in orders from these customers, could harm our business and financial results.

If we are unable to hire or retain key personnel or sufficient qualified employees, we may be unable to successfully operate our business.

Our business is highly dependent upon the continued services of our senior management and key technical personnel. While members of our senior management are parties to employment or consulting agreements and non-competition and non-disclosure agreements, we cannot assure you that these key personnel and others will not leave us or compete with us, which could materially harm our financial results and our ability to compete. We do not carry key person life insurance on any member of our senior management. Furthermore, competition for highly qualified personnel in our industry and geographic locations is intense. Our business would be seriously harmed if we were unable to retain our key employees, or to attract, integrate or retain other highly qualified personnel in the future.

If we are unable to raise additional capital in the future, we may have to curtail or cease operations.

Based on our current projections, we anticipate that our existing cash and cash equivalents will be sufficient to support our operations for at least the next two years. We cannot assure you, however, that we will not need to raise additional capital prior to that time or that we would be able to raise sufficient additional capital on favorable terms, if at all. If we fail to raise sufficient funds, we may have to curtail or cease operations, which would materially harm our business and financial results. If we raise additional capital by issuing equity securities, our shareholders may experience dilution. If we raise additional funds through collaboration and licensing arrangements, we may be required to relinquish some rights to our technologies or product candidates, or grant licenses on terms that are not favorable to us.

Our operating results are likely to fluctuate and may fail to meet the expectations of the investment community, which may cause our share price to decline.

Our quarterly operating results have fluctuated in the past and are likely to do so in the future. These fluctuations could cause our share price to fluctuate significantly. If our operating results fail to meet the expectations of the investment community, this could also cause our share price to fluctuate. Consequently these results should not be relied upon as indications of future performance and comparisons quarterly results of operations may not be meaningful. Our operating results may fluctuate as a result of:

- the timing of our receipt of payments under arrangements with our current and future customers and collaborators;
- our rate of success and timing of new collaborations and sales of our products, services and discoveries;
- changes in demand for our existing products and services;
- a drop in the financial resources available to our customers;
- changes to our fee structure imposed by market constraints, or to our operating expenses;

- product quality problems;
- increased competition and the timing of the release of products and data by our competitors and academic and other non-profit organizations;
- inflation in Israel or changes in the conversion rate of Israeli currency (New Israeli Shekel);
- fluctuations in the sales activities of our distributors; and
- the outcome of conflicts in the Middle East.

We may acquire or make strategic investments in other businesses and technologies in the future, and these could prove difficult to integrate, disrupt our business, dilute stockholder value and adversely affect our operating results.

We have not made acquisitions of other companies or businesses in the past and currently have no commitments or agreements with respect to future acquisitions. However, if opportunities arise, we may consider making future acquisitions of businesses, technologies, services or products. Moreover, even if we acquire complementary businesses or technologies, we may be unable to successfully integrate any additional personnel, operations or acquired technologies into our business. Difficulties in integrating an acquired business could disrupt our business, distract our management and employees and increase our expenses. In addition, if we make acquisitions using convertible debt or equity securities, existing stockholders may be diluted, which could affect the market price of our stock.

If our access to tissue samples or to genomic data or other information is restricted, or if this data is faulty, our business may suffer.

To continue to build our technologies and related products and services, we need access to third parties` scientific and other data and information. We also need access to normal and diseased human and other tissue samples and other biological materials. We may not be able to obtain or maintain such access on commercially acceptable terms. Some of our suppliers could become our competitors and discontinue selling supplies to us. Information and data from these suppliers could also contain errors or defects that could corrupt our databases or the results of our analysis of the information and data. In addition, government regulation in the United States and other countries could result in restricted access to, or use of, human and other tissue samples. Although currently we do not face significant problems in obtaining access to tissues, if we lose access to sufficient numbers or sources of tissue samples, or if tighter restrictions are imposed on our use of the information generated from tissue samples, our business may suffer.

Our business and the products developed by our collaborators and licensees may be subject to governmental regulation.

Any new therapy or diagnostic product that may be developed by us, by our collaborators, or by our licensees will have to undergo a lengthy and expensive regulatory review process in the United States and other countries before it can be marketed. It may be several years, or longer, before any therapy or diagnostic product that we develop by using our technologies, will be sold or will provide us with any revenues. This may delay or prevent us from becoming profitable. Changes in policies of regulatory bodies in the United States and in other countries could increase the delay for each new therapy and diagnostic product. Even if regulatory approval is obtained, a product on the market and its manufacturer are subject to continuing review. Discovery of previously unknown problems with a product may result in withdrawal of the product from the market.

We have not yet applied for or received regulatory approval for any therapeutic, diagnostic or other product resulting from the use of our products or services or from our discovery activities. Although we intend to become involved in the clinical phases in the future, we still expect to rely mainly on collaborators or licensees of our discovery activities to file these applications and generally direct the regulatory review process. We cannot be certain whether our collaborators or licensees will be able to obtain marketing clearance for any product that may be developed on a timely basis, if at all. If our collaborators or licensees fail to obtain required governmental clearances, it will prevent them from marketing therapeutic or diagnostic products until clearance can be obtained, if at all. This will in turn reduce our chances of receiving various forms of payments, including those relating to sales of marketed therapeutic or diagnostic products by our collaborators or licensees.

If ethical and other concerns surrounding the use of genetic information become widespread, there may be less demand for our products and services.

Genetic testing has raised ethical issues regarding confidentiality and the appropriate uses of the resulting information. For these reasons, governmental authorities may call for limits on or regulation of the use of genetic testing or prohibit testing for genetic predisposition to various conditions, particularly for those that have no known cure. Any of these scenarios could reduce the potential markets for our technologies in the field of predictive drug response, which could materially harm our business and financial results.

The sales cycle for some of our products and services is lengthy. We expend substantial funds and management effort with no assurance of successfully selling our products or services.

Our ability to obtain customers for our platforms, tools and services depends in large upon the perception that our technologies can help accelerate their efforts in drug and diagnostics discovery. Our ability to obtain customers for our therapeutic or diagnostic product candidates significantly depends on our ability to validate and prove that each such product candidate is suitable for our claimed therapeutic or diagnostic purposes. Our ability to obtain customers will also depend on our ability to successfully negotiate terms and conditions for such arrangements. The sales cycle for our therapeutic and diagnostic product candidates is typically lengthy and may take more than 12 months.

The sales cycle for some of our platforms, tools and services may also take 12 months or longer. Our sales effort may require the effective demonstration of the benefits of our products and services to, and significant training of, many different departments within a potential customer. These departments may include key management personnel. In addition, we are often required to negotiate agreements containing terms unique to each customer. Therefore, we expend and will need to continue expending substantial funds and management effort with no assurance that we will be successful in reaching agreements with potential customers.

We may be subject to product liability claims if our products, or products derived from our products or services, harm people.

We may be held liable if any product we develop, or any product that is made with the use, or incorporation of, any of our technologies or data causes harm or is found otherwise unsuitable. These risks are inherent in the development of genomics, functional genomics and pharmaceutical products. If we are sued for any harm or injury caused by products derived from our services or products, our liability could exceed our total assets. In addition, such claims could cause us to incur substantial costs and subject us to negative publicity even if we prevail in our defense of such claims.

Our business is dependent on the continuous, reliable and secure operation of our computational tools and platforms. If we are unable to safeguard the integrity, security and privacy of our data or our customers' data, our revenue may decline, our business could be disrupted, and we may be sued.

We have implemented and maintain physical and software security measures to preserve and protect our computer and communications hardware and software as well as our data and our customers' data. These measures are intended to protect against loss, corruption and misappropriation caused by system failures or unauthorized access. However, these methods cannot protect us against fire, storm, flood, power loss, earthquakes, telecommunications failures, physical or software break-ins and similar events. In addition, our database products are complex and sophisticated and could contain erroneous data, design defects or software errors that could be difficult to detect and correct. Software errors and viruses may be found in current products or any future products that we develop. If we fail to maintain and further develop the necessary data to support our customers' data discovery efforts, it could result in a loss of or delay in our revenues and market acceptance and exposure.

We have also taken security measures to protect our proprietary databases and have entered into confidentiality agreements with employees, customers and collaborators who have access to our confidential or proprietary information. However, these measures may not be sufficient to prevent unauthorized access, use or publication of our proprietary data. A party who is able to circumvent our security measures could misappropriate or destroy proprietary information or cause interruptions in our operations. In addition, a party who obtains unauthorized access to our proprietary data or breaches a confidentiality agreement with us could publish large portions or all of our proprietary data. Such publication of our proprietary data could make some of our products less valuable or obsolete, thereby seriously harming our financial condition. We also could be subject to liability claims by customers or our collaborators who have submitted their data to us for analysis.

We may be required to bear significant expenditures on an on-going basis to protect against system failures or security breaches or to alleviate problems caused by any failures or breaches. Any failure that causes the loss or corruption of, or unauthorized access to, our or our customers` data could reduce customer satisfaction, expose us to liability and, if significant, could cause our revenue to decline or our entire business to cease.

Any inability to protect our proprietary data, technologies or products could harm our competitive position.

If we do not adequately protect the intellectual property underlying our products and services, competitors may be able to develop and market the same or similar products and services. This would erode our competitive advantage. The laws of some countries do not protect or enable the enforcement of intellectual property to the same extent as the laws of the U.S.

We use contractual obligations to protect a significant portion of our confidential and proprietary information and know-how. This includes a substantial portion of the knowledge base from which we develop a large portion of our proprietary products and services. However, these measures may not provide adequate protection for our trade secrets or other proprietary information and know-how. Customers, employees, scientific advisors, collaborators or consultants may still disclose our proprietary information in violation of their agreements with us, and we may not be able to meaningfully protect our trade secrets against this disclosure.

In addition, we have applied for patents covering some aspects of some of our technologies and predicted genes and proteins we have discovered using these technologies. To date, we have been granted one patent for one of our discoveries. We plan to continue to apply for patents covering parts of our technologies and discoveries as we deem appropriate, but cannot assure you that we will be able to obtain any patents. The patent positions of biotechnology companies, including Compugen, are generally uncertain and involve complex legal and factual questions. Legislative changes and/or changes in the examination guidelines of governmental patents offices may negatively affect our ability to obtain patent protection for certain aspects of our intellectual property, especially with respect to genetic discoveries.

Our success depends in large part on our ability to patent our discoveries.

The success of our discovery activities depends, in large part, on our ability to obtain patents on genes and proteins that we have discovered and are attempting to commercialize. We face intense competition from other biotechnology and pharmaceutical companies. These include customers who use our products and technologies and are pursuing patent protection for discoveries, which may be similar or identical to our discoveries. We cannot assure you that other parties have not sought patent protection relating to the genes and proteins that we discovered or may discover in the future. Our patent applications may conflict with prior applications of third parties or with prior publications. They may not result in issued patents and, even if issued, our patents could be invalidated or may not be sufficiently broad to provide us with any competitive advantages. U.S. and other patent applications ordinarily remain confidential for 18 months from the date of filing. As a result, patent applications that we file which we believe are novel at the time of filing, may be determined at a later stage to be inconsistent with earlier applications. Any of these events could materially harm our business or financial results.

Litigation or other proceedings or third party claims of intellectual property infringement could prevent us, or our customers or collaborators, from using our discoveries or require us to spend time and money or modify our operations.

If we infringe patents or proprietary rights of third parties, or breach licenses that we have entered into with regard to our technologies and products, we could experience serious harm. If litigation is commenced against us for intellectual property rights infringement, we may incur significant costs in litigating, whether or not we prevail in such litigation. These costs would also include diversion of management and technical personnel to defend ourselves against third parties or to enforce our patents (once issued) or other rights against others. In addition, parties making claims against

us may be able to obtain injunctive or other equitable relief that could prevent us from being able to further develop or commercialize. This could also result in the award of substantial damages against us. In the event of a successful claim of infringement against us, we may be required to pay damages and obtain one or more licenses from third parties. If we are not able to obtain these licenses at a reasonable cost, if at all, we could encounter delays in product introductions while we attempt to develop alternative methods or products. Defense of any lawsuit or failure to obtain any of these licenses could prevent us from commercializing available products.

Any claims related to the hazardous chemicals and radioactive and biological materials we use in our business could be time consuming and costly.

Our research and development processes involve the controlled use of hazardous materials, including chemicals, radioactive and biological materials. To our knowledge, our work is performed in accordance with applicable environmental regulations. However, we cannot eliminate the risk of accidental contamination or discharge and any harm from these materials. We could be subject to civil damages and criminal penalties in the event of improper or unauthorized release of, or exposure of individuals to, hazardous materials. In addition, claimants may sue us for harm or contamination that results from our use or the use by third parties (including our collaborators) of these materials, and our liability may exceed our insurance coverage or even our total assets. We could be held responsible for any injury caused to persons or property by exposure to, or release of, these hazardous materials.

Our chemistry operation is in its early research and development stage. We may never be able to validate the technology that we are developing, and even if validated, we may never be able to commercialize it.

Our chemistry operation is in its early research and development stage. We consider it a high-risk operation in that it consumes significant resources and funds but is uncertain of success. Although substantial progress has been made since the initiation of this activity approximately three years ago, the underlying scientific rationale has not yet been fully validated. We do not know whether the underlying technology will ever be validated and, if validated, whether we will be able to commercialize this technology.

Risks Related to our Ordinary Shares

Holders of our ordinary shares who are United States residents face income tax risks.

There is a significant risk that we will be classified as a passive foreign investment company, or PFIC. Our treatment as a PFIC could result in a reduction in the after-tax return to the holders of our ordinary shares and may cause a reduction in the value of these shares. For U.S. Federal income tax purposes, we will be classified as a PFIC for any taxable year in which either (i) 75% or more of our gross income is passive income, or (ii) at least 50% of the average value of all of our assets for the taxable year produce or are held for the production of passive income. For this purpose, passive income includes dividends, interest, royalties, rents, annuities and the excess of gains over losses from the disposition of assets that produce passive income. If we were determined to be a PFIC for U.S. federal income tax purposes, highly complex rules would apply to U.S. taxpayers owning our ordinary shares. Accordingly, you are urged to consult your tax advisors regarding the application of these rules.

As a result of our substantial cash position and the decline in the value of our stock in 2002, there is a significant risk that we will be classified as a PFIC under the asset test described in the preceding paragraph. In addition, there can be no assurance that we will not be classified as a PFIC in the future, because the determination of whether we are a PFIC is based upon the composition of our income and assets from time to time, and such determination cannot be made with certainty until the end of a calendar year.

United States residents should carefully read "Taxation, United States Federal Income Tax Consequences" under "Item 10. Additional Information" for a more complete discussion of the U.S. federal income tax risks related to owning and disposing of our ordinary shares.

Our business is difficult to evaluate because we have a limited history of operations.

Since our incorporation in 1993, our research focus, the products we developed and our business model have been continually evolving. In addition, since 1998, part of our business has involved the research and development of therapeutic products and diagnostic markers. These products are typically developed over a period of approximately 12 years and 5 years respectively. For these reasons, we have a history of operations in which there is insufficient information to identify any historical pattern. Even if we could discern such a pattern, the rapidly evolving nature of the biotechnology and pharmaceutical industries would make it very difficult to identify any meaningful information in such a history. Therefore, it is also be difficult to make any projections about the future of our operations. This difficulty may result in our ordinary shares trading below their value.

Our share price has been volatile and is likely to be volatile in the future.

The market price of our ordinary shares has been highly volatile and is likely to continue to be highly volatile. This is due to the risks and uncertainties described in this annual report, as well as other factors, including:

. conditions in the economy or in life science-related industries;

. actual or anticipated fluctuations in our operating results;

. changes in expectations as to our future financial performance or changes in financial estimates by the investment community;

. technological innovations by us or our competitors;

. investors' perceptions or changes in market valuation of life science companies generally; and

. the operating and share price performance of other comparable companies.

In addition, due to the downturn in the world economy over the past few years and geo-political events, the equity markets in general have experienced a down turn and increased volatility. This has particularly affected the share market prices of many publicly listed high-technology and biotechnology companies. The market prices of equity securities of companies that have a significant presence in Israel may also be affected by the security situation in the Middle East and particularly in Israel. As a result these companies may experience difficulties in raising additional financing required to effectively operate and grow their businesses. Such failure and the volatility of the securities market in general, and our share price in particular, may affect our ability to raise additional financing in the future. Market and industry fluctuations may adversely affect the trading price of our ordinary shares, regardless of our actual operating performance. In the past, following periods of volatility in the market price of some companies' securities, securities class action litigation has been brought against them. We do not know of any reason why such litigation would be brought against us. Nevertheless, we could become involved in this type of litigation in the future. Litigation of this type is often very expensive and diverts management attention and resources.

Future sales of our ordinary shares may depress our share price.

A substantial number of our ordinary shares could be sold in the public market. The occurrence of these sales, or the perception that these sales could occur, could materially and adversely affect our share price or could impair our ability to obtain capital through future offerings of equity securities. As of April 30, 2003, we had outstanding 26,182,260 ordinary shares. In addition, as of April 30, 2003, options to purchase 4,688,167 of our ordinary shares were outstanding, of which 2,880,804 were exercisable. In addition, as of April 30, 2003, there were 35,000 ordinary shares issuable upon the exercise of outstanding warrants, all of which are exercisable.

The trading volume of our shares has been low in the past and may be low in the future, resulting in lower than expected market prices for our shares.

Our shares have been traded at low volumes in the past and may be traded at low volumes in the future for reasons related or unrelated to our performance. This low trading volume may result in market price for our ordinary shares that are below their value.

Our cash reserves have exceeded our quoted market value. If this occurs again we may become an attractive target for takeover attempts by third parties that are interested in those cash reserves.

Our cash reserves have been greater than our quoted market value. If this situation reoccurs, we may become an attractive target for third parties that wish to take control over our cash reserves. This situation would make us more likely to become a target for hostile takeover attempts. However, we believe that the limitations and requirements imposed by the Israeli law on takeovers, will make it very difficult for third parties to succeed in a hostile take over.

Provisions of Israeli law may delay, prevent or affect a potential acquisition of all or a significant portion of our shares or assets and therefore depress the price of our stock.

Israeli corporate law regulates acquisitions of shares through tender offers. It requires special approvals for transactions involving significant shareholders and regulates other matters that may be relevant to these types of transactions. The provisions of Israeli law may delay or prevent an acquisition, or make it less desirable to a potential acquirer and therefore depress the price of our shares. For information about these limitations, see "Anti-Takeover Provisions under Israeli Law" Under "Item 10. Additional Information". Furthermore, Israeli tax considerations may make potential transactions undesirable to us or to some of our shareholders.

Some of our existing shareholders can exert control over us and may not make decisions that are in the best interests of all shareholders.

As of April 30, 2003, officers, directors and shareholders holding more than 5% of our outstanding shares collectively controlled approximately 23% of our outstanding ordinary shares. As a result, these shareholders, if they act together, would be able to exert a significant degree of influence over our management and affairs and over matters requiring shareholder approval, including the election of directors and approval of significant corporate transactions. Accordingly, this concentration of ownership may harm the market price of our ordinary shares by delaying or preventing a change in control of us, even if a change is in the best interests of our other shareholders.

In addition, the interests of this concentration of ownership may not always coincide with our interests or the interests of other shareholders, and accordingly, they could cause us to enter into transactions or agreements that we would not otherwise consider.

Our ordinary shares are traded on more than one market and this may result in price variations.

Our ordinary shares are traded primarily on the Nasdaq National Market and on the Tel Aviv Stock Exchange. Trading in our ordinary shares on these markets is made in different currencies (U.S. dollars on the Nasdaq National Market, and New Israeli Shekels on the Tel Aviv Stock Exchange), and at different times (resulting from different time zones, different trading days and different public holidays in the United States and Israel). Consequently, the trading prices of our ordinary shares on these two markets often differ. Any decrease in the trading price of our ordinary shares on one of these markets could cause a decrease in the trading price of our ordinary shares on the other market.

Risks Relating to Operations in Israel

Conditions in the Middle East and in Israel may harm our ability to produce and sell our products and services.

Our principal offices and research and development facilities and many of our suppliers are located in Israel. Political, economic and military conditions in Israel directly affect our operations. Since the establishment of the State of Israel in 1948, a number of armed conflicts have taken place between Israel and its Arab neighbors, as well as incidents of civil unrest, military and terrorist actions. A state of hostility, varying in degree and intensity, has led to security and economic problems for Israel. There has been a significant increase in violence since September 2000, which has continued with varying levels of severity through to the present. While certain parties with whom we do business have declined to visit our facilities in Israel during periods of heightened unrest or tension, we have made alternative arrangements when required and we do not believe that the political and security situation has had any material adverse impact on our business. The political and security situation in Israel may result in certain Israeli parties with whom we have contracts claiming that they are not obligated to perform their commitments under those agreements pursuant to "force majeure" provisions. Any hostilities involving Israel or the interruption or curtailment of trade between Israel and its present trading partners could adversely affect our operations and could make it more difficult for us to raise capital. Furthermore, since we do not have a detailed disaster recovery plan that would allow us to quickly resume business activity in the event of a major interruption, we could experience serious disruptions as a result of events associated with the Israeli-Palestinian conflict or any war in the Middle East, resulting in any serious damage to our facilities. Our business interruption insurance may not adequately compensate us for losses that may occur. Any losses or damages incurred by us could have a material adverse effect on our business. Any future armed conflicts or political instability in the region would likely negatively affect business conditions and could harm our results of operations.

In addition, in the past Israel and companies doing business with Israel have been subjected to an economic boycott. Several countries still restrict business with Israel and Israeli companies. These restrictive laws and policies may have an adverse impact on our operating results, financial condition or the expansion of our business.

Our results of operations may be negatively affected by the obligation of key personnel to perform military service.

Some of our executive officers and employees are obligated to perform military reserve duty and are subject to being called to active duty for extended periods of time under emergency conditions. To date, any calls to active duty have not affected us materially. However, it is possible that there will be additional call-ups in the future which may have a more material effect on us. The absence of one or more of our executive officers or key employees due to military service could disrupt our operations. Any disruption in our operations may have an adverse impact on our business.

Because a substantial portion of our revenues are generated in U.S. dollars, while a significant portion of our expenses are incurred in New Israeli Shekels, our results of operations may be adversely affected by inflation and currency fluctuations.

We generate a substantial portion of our revenues in U.S. dollars but incur a significant portion of our expenses, principally salaries and related personnel expenses, in New Israeli Shekels, commonly referred to as NIS. As a result, we are exposed to the risk that the rate of inflation in Israel will exceed the rate of devaluation of the NIS in relation to the dollar or that the timing of any devaluation may lag behind inflation in Israel. While in recent years the rate of devaluation of the NIS against the dollar has exceeded the rate of inflation, we cannot be sure that this trend will continue. If the dollar cost of our operations in Israel increases, our dollar-measured results of operations will be adversely affected. Our operations also could be adversely affected if we are unable to guard against currency fluctuations in the future. Accordingly, we may enter into currency hedging transactions to decrease the risk of financial exposure from fluctuations in the exchange rate of the dollar against the NIS. These measures, however, may not adequately protect us from material adverse effects due to the impact of inflation in Israel.

The government programs from which we currently receive benefits require us to meet various conditions. The termination or reduction of these programs in the future would negatively impact our revenues from grants or increase our costs or taxes.

We currently receive research and development grants and are entitled to certain grants and tax benefits under Israeli government programs, particularly as a result of the "approved enterprise" status of our existing facilities in Israel and research and development programs funded by Office of Chief Scientist of the Israeli Ministry of Industry and Trade. To maintain our eligibility for some of these programs and tax benefits, we must continue to meet conditions, including making specified investments in fixed assets and financing a percentage of investments with share capital. In addition, we must continue to file periodic reports and pay royalties with respect to some of the grants received. If we fail to meet such conditions, we will become ineligible for such grants and tax benefits and could be required to return all or part of the benefits received. We cannot assure you that we will continue to receive grants at the same rate, if at all. In addition, some of these programs restrict our ability to manufacture particular products or transfer particular technologies outside of Israel. See "Item 5. Operating and Financial Review and Prospects-Government of Israel Support Programs." From time to time, we submit requests for additional research and development grants and expansions of our approved enterprise programs or for new programs. These requests might not be approved. The termination or reduction of these programs and tax benefits could have a material adverse effect on our business, financial condition and results of operations. If these programs or tax benefits are terminated or reduced, we could lose a significant source of income or be required to pay increased taxes in the future, which could decrease our profits.

Israeli law and regulations prescribe an expiry date for the grant of new benefits. The expiry date has been extended several times in the past. The last expiry date that was in effect was in May 2003, and no new benefits will be granted after that date unless the expiry date is again extended. A government committee is reviewing the benefits program under the law. There can be no assurance that new benefits will be available after May 2003, however benefits already

granted will stay in effect throughout the plan period.

Terrorist attacks that occurred in New York and Washington on September 11, 2001, the war in Iraq and other acts of violence or war may materially affect the markets on which our securities trade, the markets in which we operate, our operations and profitability.

In the aftermath of the September 11, 2001 terrorist attacks on the United States, the United States-led coalition of nations commenced a series of retaliatory military strikes in Afghanistan upon strategic installations of the Taliban regime, and governmental intelligence authorities issue from time to time warnings of the imminent threat of further attacks against civilian and military installations. In addition, the U.S. and the United Kingdom together with certain coalition nations, lead a military campaign to topple the regime of Saddam Hussein in Iraq. These attacks and armed conflicts, as well as the uncertainty surrounding these issues, have had, and we expect will continue for the unforeseeable future to have, an adverse effect on the global economy generally, and the biotechnology industry in particular.

It may be difficult to enforce a U.S. judgment against us, or our officers and directors to assert U.S. securities law claims in Israel.

Service of process upon Compugen, which is incorporated in Israel, and upon our directors and officers and our Israeli auditors, almost all of whom reside outside the United States, may be difficult to obtain within the United States. In addition, because substantially all of our assets and almost all of our directors and officers are located outside the United States, any judgment obtained in the United States against us or any of our directors and officers may not be collectible within the United States.

ITEM 4. INFORMATION ON THE COMPANY

History and Development of the Company

Our legal and commercial name is Compugen Ltd. We were established under the laws of the State of Israel in 1993. Our principal office premises are located at 72 Pinchas Rosen Street, Tel Aviv 69512, Israel, and our telephone number is +972-3-765-8585. The principal office premises of Compugen, Inc., our U.S. subsidiary, are located at 7 Centre Drive, Jamesburg, New Jersey 08831, and its telephone number is (609) 655-5105. Our primary Internet address is www.cgen.com. None of the information on our websites is incorporated by reference into this annual report.

Our mission is to increase the probability of success of drug and diagnostic product development by incorporating ideas and methods from mathematics, computer science and physics into the disciplines of biology, organic chemistry and medicine. To accomplish our mission, we are active in the three scientific fields underlying the drug development process. These fields are biology, chemistry and medicine. This unique capability is the basis for both in-house discovery of potential therapeutic and diagnostic products, and for the development of high value platforms, tools and services for our customers.

We initially directed our technologies towards developing computer hardware systems and software applications to accelerate searches for:

(a) similarity in genetic structure between different organisms, and/or genes -(such similarity is also known as "homology");

(b) sequences of nucleotides, which are components both of the genetic material, DNA, and of RNA (which is a molecule related to and deriving from the transcription of DNA); and

(c) protein sequence databases.

This system and those applications are commercialized under the name "Bioccelerators".

Since 1997, a significant portion of our activities have been directed to the development of technologies that allow molecular biologists to obtain significantly more information and more valuable information from genomic databases and from databases of nucleotide sequences that encode for the expression of protein sequences (referred to as "expressed sequences", "expressed sequence tags" or "EST"s) through the analysis and modeling of the underlying biological phenomena and processes and by accounting for errors inherently generated during the process of constructing such databases. An important aspect of these technologies is the analysis and rearrangement (also known as clustering and assembly) of genomic and expressed sequence data in order to provide information that can lead to the discovery of new genes and proteins and the annotation of genes and proteins. This clustering and assembly

technology, when applied to publicly available database information, can lead and has led to our discovery of novel genes and novel proteins. Some of these discoveries have been discoveries of "splice variants". Splice variants are formed from the alternative splicing of a section of mRNA, before the latter expresses a protein. Such splicing accounts for the expression of more than one protein from the same gene.

We have also developed solutions for challenges in the fields of functional genomics and proteomics. In the field of functional genomics, we are active in improving the design of probes. Probes are short nucleotide sequences that are designed to be unique and, representative of much larger corresponding genes. Probes which we design can be used for gene expression experiments - experiments that identify the RNA (and, thereby, corresponding genes) that express proteins in certain tissues and/or physiological conditions. While important advances have been made in gene expression technologies, we believe that the current usefulness of some of the devices used for gene expression analysis can be significantly enhanced by better probe design. We are applying our clustering and assembly technologies to develop more efficient probe design and data analysis for gene expression.

Additionally, we have applied our technologies in the area of proteomics. A common problem for scientists in this area is the need to separate individual proteins from the thousands included in a test sample and then to identify the known and unknown proteins. Our scientists have created advanced computational techniques to analyze pattern recognition and image processing to seek to overcome these difficult problems.

Since 1997, our multi-disciplinary team of mathematicians, computer scientists, physicists, chemists, physicians and molecular biologists has developed and continues to develop technologies for:

- analyzing and modeling molecular biology phenomena;
- accelerating the analysis of data relating to the genetic material of organisms (genomic data), the functions of genes and their behavior in normal and diseased conditions (functional genomics), and proteins (proteomic data);
- creating user-friendly applications that allow scientists in the field of genomics, functional genomics and proteomics to quickly obtain results from their queries using our modeling and analytical tools;
- discovering potential therapeutic proteins and diagnostic markers;
- designing small molecules for the discovery of drug candidates;
- analyzing medical and clinical data for the purpose of developing predictive drug response models; and
- providing value added information (including annotations) to already existing information.

We apply the above technologies in the areas of biology, chemistry and medicine, which are the three scientific areas underlying the drug development process.

In the area of biology, we develop and commercialize platforms and tools that enable and enhance the discovery and functional analysis of genes, proteins and cell processes. Our platforms and tools include: LEADS, Genecarta, Oligo design (being the design of short nucleotide sequences, also known as "oligonucleotides"), OligoLibraries, Z3 and Z4000.

During the past two years we have expanded our activities in the field of protein discovery by using our proprietary tools and by focusing on therapeutic proteins (drugs which are actually proteins) and diagnostic markers (tools which indicate the presence or absence of a physiological condition, such as a disease). We discover and seek to commercialize potential therapeutic proteins and diagnostic markers, by pursuing commercial relationships with leading biotechnology, diagnostic and pharmaceutical companies.

In the area of chemistry we are developing a unique technology for discovering small molecule drugs.

In the area of medicine we are developing predictive models for drug response, in an effort to improve the effectiveness of drugs, to enhance safety in drug usage and to improve the design of clinical trials.

Business Overview

As stated above, our mission is to increase the probability of success of drug and diagnostic product development, by incorporating ideas and methods from mathematics, computer science and physics into the disciplines of biology,

organic chemistry and medicine. This unique capability is the basis for both in-house discovery of potential therapeutic and diagnostic products, and for the development of high value platforms, tools and services for our customers. In order to understand the importance of this mission, it is helpful to understand how drugs are discovered.

Current Challenges in Pharmaceutical Research and Development

Background

Gene-Based Drug Discovery - The process of gene-based drug discovery is very complex. The first step may involve identifying a gene that codes for a specific protein. Proteins play a range of biological roles. For instance, by increasing or decreasing the amount of a protein or by activating or inhibiting its activity, a disease may be prevented, treated or cured. In such circumstances, the protein may be a target for a drug, and is known as a "drug target". Scientists try to find a drug that binds to the protein and intervenes and/or alters its function and/or activity (known as a "drug candidate"), thereby possibly preventing, treating or curing a disease. Drug candidates may be identified by testing, or "screening", hundreds of thousands of chemical compounds against a selected drug target.

This is a trial and error method for discovering a drug (also known as "high throughput screening"). Such trial and error methods typically involve very large amounts of chemical compounds. When one or more of these compounds is found to interact with the drug target and to produce a desired effect, similar compounds may be synthesized in an attempt to identify a compound with an increased desired effect. This process is known as "lead optimization" and results in a "drug candidate". If and once a drug candidate is identified, drug candidate undergoes safety and suitability tests relevant for human use.

In some cases, the protein itself may be a drug. A familiar example of such a drug is insulin. This category of proteins is referred to as "therapeutic proteins", because use or administration of the protein itself may have the desired effect of preventing, treating or curing a disease. In the case of therapeutic proteins, it is not necessary to perform screening against a drug target because the protein in such circumstances is the drug rather than the drug target. However, therapeutic proteins must undergo tests for safety and efficacy, including clinical trials.

Diagnostic Markers - Another aspect of the pharmaceutical (and biotechnological) research and development is the identification of diseases and a range of other physiological conditions. The presence or absence of proteins or other molecules or changing quantities of proteins or other molecules, may give information about the presence or absence a disease or of the particular stage of a disease or other physiological condition of the body. A molecule that provides this information is known as a diagnostic marker. For example, the presence or unusually increased presence of a certain protein in blood may indicate the presence of a cancerous condition. In order to develop a diagnostic marker it is first necessary to identify a correlation between, on the one hand the presence or absence or the quantity of a marker or its increased or decreased presence and, on the other hand, a disease or other physiological condition. Once such a correlation is identified, it is then necessary to develop a means of recognizing the correlation. The task of developing a method of recognition which is easy to perform, safe and inexpensive is a challenge faced by the pharmaceutical and biotechnological industry.

Challenges

One of the critical challenges currently facing the pharmaceutical industry is the length of time and expense of the drug discovery and development process. Typically, ten to twelve years elapse from the time research begins to the time a drug can reach the market. This process is expensive, on average costing about $800 million per drug (which accounts for the development of drugs that do not reach the market), and involves a very high degree of risk due to the unpredictable nature of the drug discovering and development process. Only one to four percent of the projects initiated by pharmaceutical companies actually result in marketed medicines. Many problems may arise during the discovery and development process. For instance, a potential drug may be found to be toxic or otherwise unsafe, and/or it may not have the intended effect. Since the biology of many diseases is still unknown, the pharmaceutical industry encounters many difficulties in finding drugs. Many if not most drugs are discovered by trial and error.

A range of diseases may be triggered by or associated with changes in the concentration or level of activity of certain proteins. Therefore, treatments for such diseases may involve drugs that interact with the relevant proteins. Such drugs

are often discovered by trial and error. By identifying the proteins associated with a disease and/or the genes that code for such proteins and by understanding their respective functions, it may be possible to understand the biological process involved in the corresponding disease and to scientifically discover a therapeutic drug in a focused and methodical manner, rather than by trial and error.

Our Approach to Addressing the Challenges

There is more and more pressure in the pharmaceutical industry to discover and develop effective and cost effective drugs and diagnostic products, even though the process is long, risky and expensive and often relies on trial and error. Our mission is to increase the probability of success of drug and diagnostic products development by incorporating ideas and methods from mathematics, computer science and physics into the disciplines of biology, organic chemistry and medicine. By using our expertise in a range of disciplines, which were previously generally not combined, we have begun to gain an insight into the underlying biology of diseases and have been able to identify genes and proteins and other molecules within the body that may play a crucial part in diseases, their prevention, treatment and/or cure. Our strategy and our core competence involve the use of the exact and computational sciences to do this in combination with traditional "wet" experimentation done in a laboratory.

We methodically analyze the very large amounts of genomic information discovered through public research, such as the Human Genome Project, as well as privately-generated information. We use mathematical models to analyze and predict structures and processes within the human cells and tissues. We believe that our increasing understanding of the workings of some biological processes within the body will make drug discovery and development a shorter and more efficient process, less prone to failure and less expensive.

We believe that understanding the functions of genes and their behavior in normal and diseased conditions, a science called "functional genomics", and the role played by proteins, a science called "proteomics", will lead to an improved understanding of the biology of diseases. We believe that this will lead to better research capabilities and to more efficient and effective development of drugs and diagnostic products. In order to do this, it is necessary to find a way to analyze the very large amounts of complex genomic and functional genomic data that have become publicly available in recent years, and to extract the data, which is vital to understanding specific diseases.

A key part of our mission is to make this research and development easier through the use of our technologies. These technologies can assist life science researchers in understanding and harnessing genomic and proteomic data. In addition, our technologies may assist researchers in developing more systematic methods to discover and predict drug responses by converting genomic information into knowledge about a particular gene, disease or drug. Our mission, in other words, is to take some of the "trial and error" out of the drug discovery process.

Explanation of the Biological Processes

The characteristics of all living organisms are determined by DNA, a molecule found in most living cells. DNA is comprised of pairs of four types of small chemical units, each called a nucleotide. DNA contains genes, which in general are comprised of thousands of nucleotides. The Human Genome Project, an international research program designed to construct detailed genetic maps of the human genome (that is, all of the genetic information contained in the human genes), demonstrated that the human genome consists of a total of approximately three and a half billion nucleotides and contains at least 30,000 genes.

Cells carry out most of their biological functions by means of genetic instructions encoded in DNA. These codes govern the production of proteins through a process known as gene expression. During gene expression, the nucleotides in a gene are first copied into a related molecule called messenger RNA, or mRNA. This mRNA then instructs the cell to produce a protein. Proteins are the molecules that regulate or perform most of the physiological functions of the body. The sequence of nucleotides determines which protein out of a very large number of possible proteins is produced. Because the sequence of nucleotides in each gene is different, each gene directs the production of a different protein or proteins. Identifying these proteins is made even more difficult because of a phenomenon called alternative splicing. This is a natural process by which a single gene may, under different circumstances or at the same time, express a number of different proteins.

Many human diseases are associated with the inadequate or inappropriate presence, production or performance of proteins. For this reason, genomics, functional genomics and proteomics can assist pharmaceutical and biotechnology companies in developing diagnostic products, therapies and drugs that will interact with a targeted protein involved in disease. Drug therapies currently on the market address several hundred specific protein targets. However, we believe that as the functions of additional proteins are better understood, hundreds or thousands of additional potential drug targets will be identified. As additional progress is achieved in genomics, functional genomics and proteomics research, new drugs, diagnostic markers and therapies may be developed to diagnose, and ultimately to cure disease, rather than just treat the symptoms.

Challenges in Converting DNA Sequence Data into Useful Information

In recent years, public and private endeavors, including the Human Genome Project, have created vast amounts of raw genomic and related data at an increasing rate. These efforts led to the publication of the final draft of the human genome in April of 2003 and to the publication of the genome of mouse, rat and other organisms during 2002. Although these sets of data contain information that provides scientists with important insights and knowledge about molecular biological processes, the data are very difficult to analyze. This difficulty is due to many factors, including the complexity of underlying biological processes, the limitations of existing laboratory devices, and the enormous quantity of raw data with a high rate of errors and inaccuracies.

Although new data are constantly being created at an increasing rate, we believe that a substantial amount of the useful information contained in the data that already exists, has yet to be extracted.

The primary tool used to understand this data still consist of experimental techniques performed in the laboratory. However, scientists are now applying to life sciences more and more techniques from the exact and computational sciences. In these techniques, progress is achieved through the quantitative analysis of vast amounts of data and the use of mathematical models to predict structures and processes in the fields of biology, chemistry and medicine. We believe that the use of techniques from the exact sciences has the potential to significantly improve the research and development processes in the pharmaceutical industry.

The following are some of the most important challenges in making use of this new biological data:

Computational Challenge: Vast Amounts of Data: Public databases today contain millions of randomly arranged short genomic segments, each representing a short fragment of a gene, that code for sections of proteins (ESTs). In order to find the full coding sequence of the gene, scientists must be able to effectively cluster and assemble these millions of ESTs, a process which poses significant computational challenges.

Experimental Challenge: Errors and Anomalies: Experimental errors and anomalies, including sequencing errors, the fusion of two nucleotide sequences from different loci (chimeric events), vector contaminations and genomic contaminations introduce errors into data and complicate the analysis of such data.

Biological Challenge: Alternative Splicing: Alternative splicing is the expression of more than one protein from the same genomic location (also known as "locus") that results from the alternative splicing of mRNA segments. It is now generally accepted by the scientific community that alternative splicing occurs in somewhere between 40% and 60% of the human genes. Alternatively spliced proteins often perform different functions, may be produced in different organs and in different physiological conditions. We believe that, in general, effective analysis of genomic data must take this phenomenon into account.

Biological Challenge: Antisense: Naturally occurring antisense refers to the occurrence of genes that are located on opposite strands of DNA of the same genomic locus. The nucleic acid sequence of these are complementary to each other and of opposite orientation. We have found that naturally occurring antisense occurs in thousands of loci in the genome. Failure to identify the occurrence of antisense, may lead the erroneous prediction of mRNA (transcripts).

Challenges in Research Tools, Functional Genomics and Proteomics

The following are some of the most important challenges in creating research tools which will effectively analyze the biological data described above.

Challenges in Developing Efficient Gene Expression Experimental Devices: The use of gene expression experimental devices enable scientists to perform thousands of measurements of mRNA expression levels in a tissue sample in a single experiment. While important advances have been made in gene expression technology, we believe that such technology can be further improved by developing better probe design capabilities. The main challenges in the selection of probes for gene expression experiments are:

- selecting error-free probes that accurately reflect the exact genes (or corresponding mRNA) of interest;
- selecting probes that are unique to the genes (or corresponding mRNA) of interest;
- ensuring that the probes account for the different alternative splice variants of the genes; and
- ensuring that the probes are constituted by a sequence capable of effectively binding to corresponding portions of genes that such probes represent (this is known as "hybridizing").

Scientists need a reasonably complete picture of all of the possible mRNA, including alternative splice variants, of a tested organism.

Challenges in Getting Better Information From Protein Separation Using 2-D Gels: Proteomics research aims at characterizing the many thousands of proteins found in organisms and identifying the specific tissues where they are located, including normal as contrasted with diseased states. Although still facing technological challenges, typical of an early phase science, the field of proteomics is believed to be indispensable in understanding disease mechanisms and identifying therapeutic targets. One of the main challenges associated with analyzing proteomic data is separating out individual proteins from a mixture of proteins. This is done using a widely used technique known as 2-D Gel PAGE (or polyAcrylamide Gel Electrophoresis). Proteins comprising a protein mixture can be separated through the use of gels based on their molecular weight and the proteins electric. After the separation process is completed, two or more gels are compared for differences between them. The technology of separating proteins by using 2D gels has been available for over 20 years and, although widely used, it has significant limitations. For example, often biologists performing the same experiment in seemingly the same conditions obtain completely different results. This has led many researchers to search for other protein separation techniques.

Our Technologies, Tools and Services

Our core technology and expertise is the modeling of biological phenomena in the field of molecular biology and applying this modeling to the analysis of biological data. This technology, which includes our clustering and assembly technology, has enabled us to efficiently and effectively extract valuable information from genomic, functional genomics and proteomic databases. We have applied our technology and expertise in the fields of functional genomics, to improve the design of probes for gene expression experiments and also in proteomics. We have also created user-friendly applications that allow scientists in the field of genomics, functional genomics and proteomics to quickly obtain results using our modeling and analytical tools.

Core Technology - LEADS and Related Product and Service Offerings

Our clustering and assembly software technology is primarily used in analyzing DNA and EST sequence data. This technology involves seven major steps:

- First, it examines the expressed input data, which is EST or mRNA sequences, and cleans it by eliminating erroneous sequence fragments and marking for identification repetitive and low complexity sequence fragments.
- Second, it compares the cleaned expressed data to the available genomic data, and finds the best possible genomic location.
- Third, based upon the location of the expressed data on the genomic data, it forms groups of EST and mRNA sequences that are located in the same genomic area, and have overlapping regions (clusters), along with the relevant genomic sequence.
- Fourth, it assembles sequences in most of the genomic clusters, taking into account alternative splicing, and derives a consensus genomic sequence, putative genomic segments from the same gene that are not spliced out and therefore are parts of mature mRNA (exons) and putative segments located between expressed segments of a single gene, that are spliced out. A consensus sequence is a predicted combination of all putative exons in a cluster inferred from the data available about these segments. The consensus may or may

not exist in nature. This consensus accounts for alternative splicing by re-inserting exons that are left out of each different alternative spliced sample. Introns are considered part of a gene, although they are not part of the mature mRNA.

- Fifth, a transcript is inferred from the combination of some or all contig segments in the order suggested by the biological data. In cases of alternative splicing, a contig has multiple transcripts, each with a different and usually overlapping set of segments.
- Sixth, it takes all the cleaned expressed data that cannot be located on the genomic data, and taking into account alternative splicing, forms expressed contigs.
- Seventh, it automatically annotates the thousands of predicted genes and presents concise analytical findings for each gene to be used for further evaluation by biologists and other life scientists. This annotation includes predicted SNPs, predicted coding regions, and homology information relating to these coding regions.

LEADS for Genomic and Expressed Data

Our LEADS software platform for computational biology analyzes genomic and expressed sequence data to enable rapid discovery of genes, splice variants and gene function. LEADS solves quantitative and qualitative problems inherent in the analysis of EST data and allows molecular biologists to quickly identify genes from gene fragments. Most LEADS customers have in-house access to the product, which gives them the capability to analyze their own databases in conjunction with public data.

LEADS improves the quality of available genomic and expressed sequence data by, among other things:

- eliminating overlapping regions of sequences belonging to the same gene, thus reducing the size of the databases and the amount of required analysis;
- improving gene coverage by creating a fuller picture of gene structure from EST fragments;
- detecting and correcting sequencing errors;
- detecting and accounting for instances of alternative splicing, antisense and changes in single nucleotides (also known as "single nucleotide polymorphisms" or "SNPs") and distinguishing these occurrences from sequencing errors;
- detecting other experimental anomalies, including chimeric sequences, and contaminations; and
- automatically annotating the resulting sequences.

Genecarta

Genecarta is an annotated database representing the genome, transcriptome (which is comprised of RNA molecules) and proteome. It is comprised of the data obtained from the periodic application of our LEADS software platform to various public databases. Genecarta includes three components: the database, a graphical user interface, and query tools. The current version of Genecarta includes a gene index, with predicted splice variants, genomic alignments, the location of a gene on one of the DNA-containing linear bodies of a cell nucleus (chromosomal location), alignment of ESTs and known mRNAs to their genes, predicted SNPs (based upon the multiple alignments of the DNA, mRNAs and ESTs) and a prediction of the expression distribution of the gene in the body tissues (based on SAGE tag prediction and libraries). Each predicted transcript is further analyzed and annotated, resulting in predicted proteins (where identified), annotation of the predicted functionality and process in which the proteins are involved (using GO descriptions) and homologies to known and predicted proteins and protein domains. The browser interface provides an intuitive graphic presentation of database elements and their inter-relationships, which enables users to browse the genes efficiently. The query tools are suitable for various types of experimental approaches, and enable users to perform searches from multiple entry points. The current version of Genecarta, Version 3.2, includes human, mouse, rat, zebrafish and arabidopsis (a species of grass used as a model for botanical studies) data.

To date, we have found full or partial sequence information for thousands of predicted human proteins that we believe have not been discovered by others. This information exists in our Genecarta annotated database.

We commenced marketing Genecarta in the first quarter of 2001 and offer it as a complete package including the hardware, software and database, which we install at customers` sites and update regularly. We also offer Genecarta in the form of a license to access and query the Genecarta database over the Web, without providing any hardware and without installing software on the customer`s computer.

Oligo Design Service and OligoLibraries

We apply our LEADS software platform technologies to develop more efficient probe design for gene expression experiments. With our technology, we are able to improve the efficiency and accuracy of probe design, thereby enabling more informative and accurate analysis of gene expression experiments and a significant improvement in the quality of the results. We believe that the main challenge in effective oligo design is to select sensitive and specific probes that will represent their corresponding genes and all their splice variants, or alternatively, will ensure accurate differentiation between the different expressed forms, or alternative splice variants, of these genes.

Oligo Design Service - Our probe design service offers the following advantages:

- it reduces the number of redundant clusters, allowing representation of a larger number of genes on any given gene expression device by more accurately clustering large amounts of EST and genomic data;
- it identifies sequencing errors, SNPs and introns in ESTs and selects probes from the most error-free and intron-free regions it identifies, making our probes high quality representatives of the desired transcripts;
- it can select probes in a manner designed to either maximize the differentiation between different splice variants or maximize the chance that alternatively spliced variants of a gene will be identified, depending on the customer`s needs; and
- it designs probes to be as specific as possible to genes of interest, by comparing the probes to other transcripts in the transcriptome.

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OligoLibraries - OligoLibraries are oligonucleotide collections, representing genes, or sub-sets of genes, of various organisms. They are designed to provide scientists with a more accurate solution for the rapidly growing area of high-throughput analysis of gene function. Our OligoLibraries are based on probe selection using our LEADS technology platform and our proprietary design tools. These technologies enable us to address redundancy, account for alternative splicing, choose oligos of high sequence quality, and consider specificity and cross-homology while designing optimum oligos for gene expression, drug discovery or functional assays.

Other Product Offerings

Bioccelerators

Our Bioccelerator line of products consists of dedicated computers designed to accelerate similarity, or homology, searches in nucleotide and protein sequence databases. Some of the rigorous algorithms used for these types of searches are computationally intensive, forcing researchers to use possibly less sensitive but faster algorithms. By performing rigorous searches significantly faster than a typical high-end single-processor workstation, the Bioccelerator makes the use of more sensitive algorithms more attractive.

Since 1994, we have sold Bioccelerator products to over 40 customers worldwide, including many of the leading companies and research institutions in the field of genomic research.

Our Proteomics Products.

Z3 2D-PAGE Gel Analysis - our Z3 2D-PAGE gel analysis uses advanced computational technologies and novel algorithms for image registration, spot detection and differential expression calculation, in order to automatically analyze 2D gel images. Z3`s raw master gel module, designed to maximize the amount and quality of information derived from repeat runs, and the multiple gel analysis mode enable high throughput analyses in multiple gel studies. The product`s color coding enables users to instantaneously detect differential expressions.

Z4000 2D-PAGE GEL Analysis - our Z4000 is based on the Z3 technology and is designed to enable analysis of a large number of gels. Z4000 allows the user to organize the experiment in a hierarchial manner according to the different dimensions tested and control the study's progress. The Z4000`s workflow is designed to extract the most significant data out of the images while enabling the user, at any point, to view the entire expression level of a certain protein across the experiment. Z4000 also includes important query possibilities that allow the user to extract meaningful information from the data accumulated in the study.

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Selected Customers and Collaborators

Company	Agreement	Commencement Date
LEADS		
Pfizer Inc.	We granted Warner Lambert Company (now Pfizer) a non-exclusive license to use LEADS for analyzing genomic and expressed data for all of Pfizer`s internal research and development activities. This agreement accounted for approximately 35% of our revenues from products and services in 2000, approximately 30% of our revenues from products and services in 2001 and approximately 14% of our revenues from products and services in 2002. The LEADS component of the Agreement expired in September 2002.	October 1998
Novartis Pharma A.G.	We granted Novartis a non-exclusive license to use LEADS for analyzing genomic and expressed data for Novartis and its affiliates` internal research and development activities in exchange for an annual license fee. In July, 2002 we amended our agreement with Novartis, under which the parties engage in joint research and collaboration to design molecules for RNA interference. Compugen`s role was to create software for the design of oligonucleotide interference molecule sequences. Our agreement with Novartis accounted for approximately 17% of our revenues from products and services in 2001 and for approximately 18% of our revenues from products and services in 2002. Our agreement with Novartis is for a term of three years.	July 2001
diaDexus Inc.	We entered into a Service Agreement under which we used LEADS to perform an analysis of both proprietary and public genomic and proteomic data for the development of human diagnostic and therapeutic products. This agreement accounted for approximately 12% of our revenues from products	December 2001

	and services in 2002. Our agreement with diaDexus expired in February 2003.	
Abbott Laboratories	We granted Abbott a non-exclusive license to our LEADS computational biology platform for the analysis of human genomic data, creating a comprehensive transcriptome database that represents the repertoire of human mRNA molecules.	December 2002
GENECARTA		
GeneLogic Inc.	We entered into a Collaboration Agreement pursuant to which we customized and integrated our human Genecarta database with the gene expression information in Gene Logic's GeneExpress&reg Suite. Gene Logic is marketing this customized human Genecarta database as an add-on component available to its existing and prospective GeneExpress&reg Suite customers.	January 2002
OLIGOLIBRARIES		
Sigma Genosys, Inc., a wholly-owned subsidiary of Sigma Aldrich, Inc.	We entered into a Joint License and Marketing Agreement for the production of OligoLibraries and their marketing as co-branded products. Compugen provides the designs for these products, Sigma manufactures them and both parties market and sell them. The OligoLibraries product line includes collections representing the human, mouse, rat, zebrafish and bacillus subtilis genome substances.	May 2001

Our Discovery Activities

We use the capabilities of our pioneering platforms to identify genomic sequences and putative proteins that those sequences encode. We seek to discover novel proteins and mRNAs that have potential pharmaceutical therapeutic or diagnostic uses. Our in-house molecular biology laboratories validate the predictions generated by our platforms. The validation may also be performed in our molecular biology laboratory or in one of our collaborator`s molecular biology laboratory, such as a university or another academic institution. We have successfully verified the existence of a large proportion of our predicted potential therapeutic proteins and diagnostic markers.

During the past two years we expanded our discovery activities. We discover and seek to commercialize potential therapeutic proteins and diagnostic markers, for which we pursue commercial relationships with leading biotechnology, diagnostic and pharmaceutical companies. During 2002, we also launched a protein development team, which focuses on protein expression and purification.

Using our proprietary analysis and predictive models, our discovery team has identified full or partial sequence information for thousands of predicted mRNAs. We believe these mRNAs are novel and were not previously identified in any public databases, published scientific literature or patents. In about 90% of the approximately 300 cases we have tested in our laboratory, we verified the existence of the genes predicted by our analysis.

Our Discoveries

General Biological Phenomena:

- *Significance of general biological phenomena* - We believe that the understanding of one scientific phenomenon that is derived from an understanding of other scientific phenomena is made possible as science transforms and matures from largely observational to more predictive. We believe that pharmaceutical research and development is now undergoing this process. As the language of mathematics is increasingly being used to create predictive models for important aspects of life science, we believe that there will be radical changes in the process of pharmaceutical research and development. Through our unique multidisciplinary approach and proven capabilities, we intend to establish ourselves as a worldwide leader in this ongoing revolution. The creation of predictive models presents numerous important commercial opportunities for us. Three examples are our discovery new proteins PSA-LM, K-LM and VEGF114.
- *Alternative Splicing* - alternative splicing is a biological phenomenon whereby one gene may express more than one protein. Since 1997, by applying our proprietary LEADS platform to the analysis of publicly available genomic information, we discovered that the phenomenon of alternative splicing occurs in at least 30% of human genes. Previously, alternative splicing was believed to occur in only a very small number of genes. By having identified the wide-spread nature of the alternative splicing phenomenon and having developed the computational tools to identify it, we are able to discover unknown proteins that are encoded by known genes.

- *Antisense* - antisense is a biological phenomenon of the existence of two genes that are located on opposite strands of DNA and, therefore, have complementary nucleic acid sequences. In 2002, by applying our proprietary LEADS platform to the analysis of publicly available genomic information, we discovered that the phenomenon of antisense, in the human genome, was significantly more common that previously believed. We identified hundreds of antisense pairs of genes and published our findings in the April 2003 issue of Nature Biotechnology, Volume 21, No 4.

Specific Proteins:

- *Potential Diagnostic Markers PSA-LM and K-LM* - In February 2002 we announced the discovery of two novel prostate-specific proteins. This discovery was published in the May 17, 2002 issue of The Journal of Biological Chemistry. These proteins are encoded by alternative mRNA splice variants of the genes for prostate specific antigen (PSA) and its related protein, human kallikrein 2 (hK2). The novel transcripts were predicted using our LEADS platform and then verified in our molecular biology laboratory. These novel proteins may have important applications in developing additional diagnostic tools for prostate cancer and for understanding the disease. Prostate specific antigen (PSA) is the premier tumor marker for screening, diagnosis, monitoring and prognosis of prostate cancer. Despite the substantial experimental research of the PSA field, the variant molecules that we discovered had not been discovered previously.

- *Potential Therapeutic Proteins - VEGF114* - In April 2003 we announced the discovery of VEGF114, a variant protein expressed from the vascular endothelial growth factor (the "VEGF") gene. We have been granted a United States patent covering the protein sequence of this novel VEGF splice variant, vectors and host cells containing VEGF114 sequences, and pharmaceutical drugs and detection methods developed using VEGF114 sequences. Modulation of VEGF activity may have clinical applications in cancer, cardiovascular and related diseases, and in fertility control. Although the VEGF gene has been the subject of extensive worldwide research the existence of our splice variant was unknown. Our discovery was made possible through the predictive capability of our LEADS platform, coupled with additional proprietary discovery technologies and experimental validation in our molecular biology laboratory.

Our Commercial Collaborations

We intend to continue commercializing the most promising discoveries through collaborations and licensing arrangements with third parties, primarily pharmaceutical and biotechnology companies. Currently, we intend to market some of our therapeutic product candidates at the preliminary stage of pre-clinical trials. In addition, we intend to pursue collaborations with pharmaceutical and biotechnology companies and research and academic organizations for the joint discovery, development and commercialization of therapeutic proteins and diagnostic markers. We believe that by combining our computational and experimental capabilities with proprietary technologies of potential collaboration partners, we can substantially increase both our chances and our potential collaborators` chances of successfully discovering, developing and commercializing therapeutic and diagnostic products. At the same time, we are recruiting experienced personnel for the purpose of building our internal capabilities in order to further develop products ourselves should we decide to do so.

To date, we have entered into two licensing agreements.

- In December 2002, we granted a license Diagnostic Products Corporation ("DPC"), on an exclusive basis, to develop and commercialize *in-vitro* diagnostic assays based on our two novel prostate-specific proteins (PSA-LM and K-LM proteins), for the use in the field of cancer immuno-diagnostics. In consideration we will receive milestone payments and royalties based on the commercialization of our intellectual property.
- In April 2003, we granted a license MultiGene Vascular Systems Ltd. ("MGVS"), on a non-exclusive basis to develop and commercialize gene and cell therapy products incorporating our VEGF114 splice variant for use in the treatment of cardiovascular diseases. Under the terms of the agreement, we will receive an equity stake in MGVS and royalties on any future product sales.

In addition, to date, we have entered into a number of academic collaborations, with academic institutions for certain aspects of our research.

Other Activities

Chemistry Activities

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To date, there exists no systematic method for guaranteed discovery lead compounds for protein targets. Existing techniques are largely based on trial and error methodology.

Our mission in the field of chemistry is to develop a unique technology for systematically discovering lead compounds for protein targets. Our technology is based on incorporating ideas and methods from mathematics, computer science and physics into the discipline of organic chemistry. If we are successful, the resulting technology will provide for the rapid creation of lead compounds, without there being a need for high throughput screening of large "drug like" compound libraries. We have made substantial progress since initiating our activities in this field, approximately three years ago. Since the underlying scientific basis of our project has not yet been fully validated, we cannot give any assurance that this technology will indeed be validated and, even if validated, that we will be able or willing to commercialize it.

Although we are currently funding all of our research and development in the field of chemistry, these activities are advancing towards a stage where, for its continued progress, additional resources will be required. The Company is currently initiating discussions with potential partners.

Medicine Activities

One of the main challenges faced by the pharmaceutical and medical communities is the existence of large variations in the response of different patients to the same drug. This variation adds to the complexity of developing therapeutic products. Our objective in the field of medicine is to develop a unique technology for systematically discovering correlations between the administration of a drug (or other treatments) and the response caused by that drug. Our technology is based on incorporating ideas and methods from mathematics and computer science, as well as biology, into the discipline of medicine. Our goals include to increase the benefit from and safety of drug use and to improve the design of clinical trials. To accomplish this goal, we are attempting to develop an advanced drug response analysis platform, based on an analysis of multiple types of information that may include patient medical history files from health care providers, information from clinical trials and environmental, genomic and phenotypic information. Our first pilot project is currently undergoing development and validation. We cannot assure you that our approach will ever be validated and, if validated, we cannot assure you that we will ever be able or willing to commercialize this platform or technologies.

We already have in place research collaborations and we are seeking further research collaborations with pharmaceutical companies and/or health care organizations. However, we do not anticipate commercializing this platform in the near future.

Our Strategy

We strive to substantially increase the probability of success of drug and diagnostic product discovery and development. The key elements of our business strategy are:

Discovery-Based Revenues. We commercialize and intend to continue to commercialize potential therapeutic proteins, diagnostic markers and other intellectual property that we continue to discover in our research and development efforts. We intend to commercialize our intellectual property portfolio with an emphasis on royalty bearing and other revenue-sharing arrangements with diagnostics, pharmaceutical and biotechnology companies. We have currently identified a number of proteins that we believe are the basis for the potential development of therapeutic or diagnostic products and are candidates for further development and licensing. To date we have implemented this strategy by granting a license to DPC on an exclusive basis to develop and commercialize *in-vitro* diagnostic assays based on our two novel prostate-specific proteins, for the use in the field of cancer immuno-diagnostics. We also granted a license on a non-exclusive basis to MultiGene Vascular Systems Ltd. ("MGVS"), to develop and commercialize gene and cell therapy products incorporating VEGF114 splice variant for use in the treatment of cardiovascular diseases.

Technology-Based Revenues. We plan to continue to pursue collaborations and other agreements with leading biopharmaceutical companies for the commercialization of our LEADS software platform and our other existing and future tools and services.

Expand our Technological Leadership. Our current technologies address an immediate need of the pharmaceutical and biotechnology industries to improve the probability of success of the drug development processes. We intend to continue to use our multidisciplinary approach to molecular biology in order to discover and commercialize potential novel therapeutic proteins and diagnostic markers, as well as solutions to the industry's future biological challenges. In addition, our Chemistry division is currently applying our unique approach to creating novel technologies for discovering lead compounds for protein targets. Finally, in the area of medicine, we focus on improving the efficiency of drug use, using advanced drug response analysis through patient stratification based on multiple information types.

Agricultural Biotechnology Company in which Compugen Has Equity Interest

In October 1999, we formed a division focusing on agricultural biotechnology and plant genomics. On January 1, 2002, we spun-off the business of this division into a majority-owned subsidiary, Evogene Ltd., in which Compugen holds 1,640,000 ordinary shares, representing 82% of the outstanding shares. On January 6, 2003, Evogene entered a Convertible Loan Agreement with a group of new lenders for the aggregate amount of two million dollars. Compugen did not participate in this financing round. As part of this convertible loan, Compugen agreed to (1) forgo the entire loan that it extended to Evogene upon Evogene`s incorporation, in the amount of $900,000 plus all accrued interest, and (2) extend the term of the license to use certain of Compugen`s computational tools free of charge, that was granted to Evogene upon Evogene`s incorporation, until December 31, 2005. (See Item 7. Major Shareholders and Related Party Transactions. Related Party Transactions. Evogene Ltd.).

Sales and Marketing and Business Development

Since our founding in 1993, we have devoted most of our capital and human resources to research and development of our technologies, products and services. Between 1999 and 2001 we significantly expanded our sales and marketing capabilities.

In the United States, we have marketing, sales and business development presence in Sunnyvale, California, Jamesburg, New Jersey, and Rockville, Maryland. We also perform some of our research and development in our New Jersey premises. We also conduct marketing, sales and business development from our Tel Aviv offices, and sales activities from the United Kingdom.

The approximate geographic breakdown of our total sales from products and services for the year ended December 31, 2002 was 68% in North America, 20% in Europe, 7% in the Far East and 5% in other countries. The approximate geographic breakdown of our total sales from products and services for the year ended December 31, 2001 was 68% in North America, 22% in Europe, 8% in the Far East and 2% in other countries. The approximate geographic breakdown of our total sales for the year ended December 31, 2000 was 94% in North America, 3% in Europe, 2% in the Far East and 1% in other countries.

As of December 31, 2002, our sales, marketing and business development staff consisted of 18 employees, with 10 based in the United States, 6 based in Tel Aviv and 2 based in England.

We plan to continue to aggressively market our technologies, products and services to pharmaceutical and biotechnology companies. To accomplish this we intend to:

- recruit additional business development personnel in the United States;
- continue to enter into commercial arrangements with third parties with respect to some of our products and services. In the past, these arrangements included worldwide marketing arrangements such as our agreement with Sigma-Genosys relating to our OligoLibraries and our arrangement with Gene Logic relating to Genecarta. In the future, our commercial arrangements may be of a different nature;
- continue to exhibit and speak at industry and scientific conferences; and
- continue to increase the awareness to our technologies and products through publications in scientific journals and coverage in trade and general media.

Intellectual Property Rights

We seek patent protection for certain components of our technology platform, including analysis techniques, and for certain of our discoveries relating to genomic and protein sequences. We also rely heavily on confidentiality obligations to protect our trade secrets and confidential and proprietary information. We use license agreements both to access third party technologies and to grant licenses to third parties to use our intellectual property rights. Our commercial success will be dependent in part on our ability to obtain commercially valuable patent positions, maintain the confidentiality of our trade secrets and otherwise protect our intellectual property portfolio.

Our strategy to apply for patents relates primarily to certain aspects of our computational technologies, certain databases and individual nucleic acid and amino acid sequences. The latter comprises approximately 35 patent applications (not including foreign counterparts).

The patent positions of biotechnology companies, including ours, are generally uncertain and involve complex legal and factual questions that are still evolving. Our business could be harmed by any of the following:

- our pending patent applications may not be accepted by United States Patent and Trademarks Office and, where relevant, corresponding patents jurisdictions and, therefore, may not result in issued patents;
- the claims of any patents that may be issued from an application may not provide meaningful protection;
- we may not be successful in developing additional proprietary technologies that can be effectively protected;
- patents that we may ultimately obtain may not provide a basis for commercially viable products or any competitive advantages;
- patents that we obtain may be successfully challenged by third parties; and
- third parties may have patents that claim the inventions or technology that we use.

The degree of future protection for our intellectual property is therefore uncertain. Furthermore, others may independently develop similar or alternative technologies, duplicate any of our technologies or, if patents are licensed or issued to us, design around the patented technologies licensed to or owned by us. Other third party technologies may also provide third parties with competitive advantages over us and may harm our business. In addition, we could incur substantial costs in litigation if we are required to initiate suits to prevent infringement of our patents, once issued, or to defend ourselves in patent suits brought by third parties.

These costs could significantly increase our expenses and our losses. Furthermore, in circumstances where claims relating to proprietary technology or information are asserted against us, we may seek licenses to this intellectual property. However, any required licenses may not be made available on commercially viable terms, if at all. Failure to obtain any required license could prevent us from using or commercializing one or more of our technologies or discoveries.

We have applied, and intend to make additional applications, for patent protection for inventions relating to novel genes and splice variants and to novel uses for known genes or splice variants identified through our research discovery programs. To date we have one patent issued in our name. We may not be able to continue to obtain patent protection for our inventions.

Several companies and other organizations are attempting to obtain patents relating to novel genes and gene fragments and uses for known genetic sequences, whose functions have not been characterized, as well as for fully characterized genetic sequences. To the extent any patents are issued to other parties on these partial or full-length genes, we may be

prevented from commercializing such genes or products or processes, which are based on such genes. Others may have filed, and in the future are likely to file, patent applications covering genes or gene products that are similar or identical to those for which we may seek patent protection. These patent applications may have priority over patent applications filed by us. Any legal action against us or our customers claiming damages and seeking to enjoin commercial activities relating to the affected products and/or processes could, in addition to subjecting us to potential liability for damages, require us, our consultants and/or our customers to obtain a license in order to continue to manufacture or market the affected products and processes. We, our consultants or our customers may not prevail in any action, and any license required under any patent may not be available on commercially acceptable terms, if at all. In light of the nature of our industry, we believe that there is likely to be litigation in the industry regarding patent and other intellectual property rights. If we become involved in litigation, it could consume a substantial portion of our managerial and financial resources and negatively affect our financial results.

With respect to proprietary know-how that is not patentable or that we choose not to patent, we rely on trade secret protection and confidentiality agreements to protect our interests. We believe that several elements of our computational genomics, functional genomics and proteomics capabilities involve proprietary know-how, technology or data that are not covered by patents or patent applications. In addition, we have developed a proprietary database of genes, alternative splice variants, gene fragment sequences, and methods for discovering novel biological phenomena, which we update on an ongoing basis. Some of these data is the subject to patent applications.

We have implemented security measures to protect our proprietary know-how and technologies and confidential data, including a range of confidentiality agreements with out employees, consultants and customers. While we require employees, consultants and customers to enter into confidentiality agreements, we cannot be sure that proprietary information will not be disclosed in violation of these agreements, that others will not independently develop substantially equivalent proprietary information and techniques or that we can otherwise meaningfully protect our trade secrets. In the case of arrangements with our customers that require the sharing of information, our policy is to make available to our customers only information that is relevant to our agreements with these customers, under controlled circumstances, and only during the contractual term of those agreements, and subject to a duty of confidentiality on the part of our customer. However, these measures may not adequately protect our information. Any material leak of confidential information into the public domain or to third parties may cause our business, financial condition and results of operations to be harmed.

We are a party to various license agreements that give us rights to use technologies and biological materials in our research and development processes. We may not be able to maintain these rights on commercially reasonable terms, if at all. Our failure to maintain these rights could harm our business.

Competition

The biotechnology and pharmaceutical industries are highly competitive. We face tough competition from numerous companies, some of which are more established, may benefit from greater market recognition and have greater financial, production and marketing resources than we do. Our principal competitors include:

- Celera Genomics Group, which provides genomic data that may compete with our LEADS platform, Genecarta and our genomic services;
- Incyte Genomics, Inc., which provides genomic data that may compete with our LEADS platform and Genecarta;
- Lion Bioscience AG, which provides genomic research and infrastructure tools and services that may compete with our genomic services;
- Amersham Pharmacia Biotech, Nonlinear Dynamics Ltd., Biorad, Inc., Geneva Bioinformatics S.A. and Definiens AG, which provide 2D-gel analysis systems that compete with our Z3 product;
- Nonlinear Dynamics Ltd., which provides 2D-gel analysis systems that compete with our Z4000 product;
- MWG-Biotech AG, Operon Technologies, Inc. and Clonetech Laboratories, Inc., which provide products that compete with our OligoLibraries; and
- Millenium Pharmaceuticals Inc., which have a platform for clustering and arranging ESTs.

Competition among entities attempting to identify the genes and proteins associated with specific diseases and to develop products based on these discoveries is intense. We face, and expect to continue to face, competition from pharmaceutical, biotechnology and diagnostic companies, academic and research institutions, and government agencies, in the United States and elsewhere, including many of our customers. We are aware that several of our

competitors use a variety of gene expression analysis methodologies, including the use of gene expression systems, functional information, cell based assays, animal modules and proprietary ESTs, to attempt to identify disease-related genes.

In addition, our discovery activities depend, in large part, on our computational platforms and tools and proprietary data to make inventions and establish intellectual property rights in genes and proteins. We believe that access to our tools and proprietary information provides our discovery team with a competitive advantage over biotechnology companies that are pursuing patent protection that may compete with our own, including patents relating to gene and protein sequences. We may lose that advantage when we provide our customer, primarily biotechnology companies, pharmaceutical companies and diagnostic companies, access to our platforms, tools and proprietary data. If our customers, many of which have greater financial and other resources than we do, research genes or proteins that we are also researching, they may establish intellectual property rights in such genes or proteins which have priority over the protection that we are seeking. In addition, our discovery team may pursue opportunities in fields that could conflict with those of our customers or discourage potential customers from working with us. As a result, our business, financial condition and results of operations may be significantly harmed.

Our chemistry activities face fierce competition from all fully integrated pharmaceutical companies and from companies engaged in drug discovery, such as Infinity pharmaceuticals, Pharmacopia Inc., Vertex Pharmaceuticals Incorporated, Structural GenomiX Inc., Albany Molecular Research inc. and Celera Genomics Group.

Our medicine activities compete with pharmacogenomics companies, such as Genaissance, that are engaged in the prediction of drug response based on genetic information, and with organizations providing clinical trial analysis capabilities, such as Entelos, Inc., Physiome Sciences, Inc., Gene Network Sciences (GNS) and Optimata.

Many of our competitors have substantially greater capital resources, research and development staffs, manufacturing and marketing experience, distribution channels and human resources than we do. Owing to their greater resources, these competitors may discover, characterize or develop important genes, drug targets, lead compounds, drug discovery technologies or drugs before we, our customers or collaborators do so. These competitors may also discover, characterize or develop drug targets, lead compounds, drug discovery technologies or drugs that are more effective than those developed by us, our customers or collaborators, or they may obtain regulatory approvals for their drugs more rapidly than we or our customers do. Any of these events could have a material adverse effect on any of our similar programs. Moreover, our competitors may obtain patent protection or other intellectual property rights that could limit our rights or our customers' ability to use our technologies or commercialize drug, therapeutics, diagnostics or agricultural products.

Government Regulation

As a company which performs life science research we use hazardous materials and tissue samples. We are subject to governmental regulations concerning this use. These regulations impose certain restrictions on our access to and use of human tissue samples. In addition, we receive research and development grants from the Government of Israel. As a result, the products of this research and development are subject to certain restrictions.

Environmental Regulation

Our research and development activities in some cases involve the controlled use of biological and hazardous materials, such as chemicals and radioactive materials. We are subject to Israeli laws and regulations governing the use, storage, handling and disposal of these materials and resulting waste products. We comply with these laws and regulations. However, the risk of accidental contamination or injury from these materials cannot be entirely eliminated. In the event of an accident, we could be held liable for any resulting damages, and any liability could exceed our resources.

Regulation of Use of Human Tissue

Our access to and use of human or other organisms` tissue samples in the expansion of our proprietary database or our product development may become subject to further government regulation, in the United States, Israel and elsewhere. U.S. and foreign governmental agencies may also impose restrictions on the use of data derived from human or other tissue samples. If our access to or use of human tissue samples, or our customers' use of data derived from these samples, is restricted, our business may suffer.

Regulation of Products Developed with Governmental Support

For a discussion of regulations governing products developed with research and development grants from the Government of Israel, see "Item 5. Operating and Financial Review and Prospects, Government of Israel Support Programs, Research and Development Grants."

Regulation of the Internet

There is an increasing body of law and regulation pertaining to the Internet. In addition, a number of legislative and regulatory proposals regarding regulation of the Internet are under consideration by Israeli and foreign governments and agencies. Laws or regulations may be adopted with respect to the Internet relating to liability for information retrieved from or transmitted over the Internet, on-line content regulation, user privacy, taxation and quality of products and services. Moreover, it may take years to determine whether and how existing laws, including those governing intellectual property ownership and infringement, privacy, copyright, trademark, trade secret, taxation and the regulation of the sale of other specified goods and services, apply to the Internet. The requirement that we comply with any new legislation or regulation, or any unanticipated application or interpretation of existing laws, may decrease the growth in the use of the Internet, which could in turn decrease the demand for our Internet-based products, increase our cost of doing business or otherwise harm our business, results of operations and financial condition.

Due to the global reach of the Internet, it is possible that governments of nations to which we transmit data over the Internet might attempt to regulate Internet activity and our transmissions or take action against us for violations of their laws. Violations of these laws may be alleged or charged by state or foreign governments. In addition, these laws may be modified, or new laws enacted, in the future. Any regulation of this type could materially harm our business, results of operations and financial condition.

Organizational Structure

Compugen is the parent of one wholly-owned subsidiary, Compugen, Inc., which is incorporated in Delaware and which has its principal place of business in New Jersey. Compugen owns 82% of the outstanding shares of Evogene Ltd., which was formed under the laws of the State of Israel and which has its principal place of business in Rehovot, Israel (See Item 7. Major Shareholders and Related Party Transactions. Related Party Transactions. Evogene Ltd.).

Property, Plant and Equipment

We lease an aggregate of approximately 2,300 square meters of office and laboratory facilities in Tel Aviv, Israel, and approximately 720 square meters of office and laboratory facilities in Ashqelon, Israel. The leases in Tel Aviv expire on December 31, 2006 and the lease in Ashqelon expires on September 2006.

In addition, Compugen, Inc. leases approximately 4,490 square feet of office space in Jamesburg, New Jersey, approximately 233 square feet of office space in Sunnyvale, California, and approximately 450 square feet of office space in Rockville, Maryland. The lease in New Jersey expires in December 2005, the lease in Sunnyvale expires on November 2003, and the lease in Maryland expires on December 2004.

Evogene Ltd. leases approximately 289 square meters of offices and laboratory facilities in Rehovot, Israel. The lease expires in March 2004.

We believe that the facilities we currently lease are sufficient for approximately the next 12 months.

ITEM 5. OPERATING AND FINANCIAL REVIEW AND PROSPECTS

Selected Financial Data

The following discussion and analysis is based on and should be read in connection with the Company`s audited consolidated financial statements, including the related notes, contained in "Item 18 - Financial Statements" and the other financial information appearing elsewhere in this annual report.

	Year ended December 31,				
	1998*	1999*	2000*	2001*	2002
	(U.S. $ in thousands, except share and per share data)				
Consolidated Statements of Operations Data					
Revenues:					
Products	$4,020	$783	$2,268	$5,883	$5,014
Services	511	2,454	4,623	4,483	4,248
Research and development grants	333	507	466	994	1,835
Total revenues	4,864	3,744	7,357	11,360	11,097
Cost of revenues:					
Products	1,399	611	477	1,853	1,411
Services	100	480	1,243	1,602	1,408
Research and development expenses	3,900	7,183	12,635	15,976	14,170
Sales and marketing expenses	924	1,166	3,781	6,565	5,538
General and administrative	-	-	-		
Expenses	1,815	3,152	5,397	4,383	3,614
Total operating expenses **	8,138	12,592	23,533	30,379	26,141
Operating (loss) profit	(3,274)	(8,848)	(16,176)	(19,019)	(15,044)
Financial and other income, net	192	719	2,772	3,875	2,840
Net loss	$ (3,082)	$ (8,129)	$ (13,404)	$ (15,144)	$ (12,204)
Dividends related to convertible preferred shares	882				-
		1,886	24,923	-	
Net loss available to ordinary shares	(3,964)	(10,015)	(38,327)	(15,144)	(12,204)
Basic and diluted net loss per	-	-	-	-	-
ordinary share ***	$ (0.67)	$ (1.70)	$ (2.75)	$ (0.58)	$ (0.47)
Weighted average number of ordinary	-	-	-	-	-
shares used in computing basic and diluted net loss per share	-	-	-	-	-

	5,886,208	5,896,780	13,914,485	26,005,784	26,103,343
Pro forma basic and diluted net loss	-	-	-	-	-
Per share (unaudited) ****	$ (0.29)	$ (0.58)	$ (0.69)	-	-
Pro forma weighted average number of	-	-		-	-
shares outstanding (unaudited) ****	10,749,861	14,102,899	19,305,553	-	-

	As of December 31,				
	1998	**1999**	**2000**	**2001**	**2002**
	(U.S. $ in thousands)				
Consolidated Balance Sheet Data:					
Cash and cash equivalents, short-term cash deposits and marketable securities	$ 19,941	$ 11,436	$ 90,675	$ 32,347	$ 48,402
Long-term investments in marketable securities and cash deposits	-	-	-	46,148	18,940
Receivables, net	905	710	2,720	3,159	4,581
Inventory	530	380	347	134	111
Total assets	23,279	15,518	97,872	87,289	77,257
Accumulated deficit	(6,788)	(14,917)	(53,244)	(68,388)	(80,592)
Total shareholders' equity	18,780	12,787	92,510	80,062	68,881

(*) Reclassified

(**) Includes deferred stock compensation - see Note 12 to the consolidated financial statements.

(***) Basic and diluted net loss and pro-forma basic and diluted net loss, for the year ended December 31, 2000 exclude the non-cash dividend recorded in the amount