

PROSPECTUS

SENESCO TECHNOLOGIES, INC.

2,651,663 Shares of Common Stock

The stockholders of Senesco listed in this prospectus are offering and selling an aggregate of 2,651,663 shares of our common stock. Of those shares, 1,114,741 are issuable upon the exercise of warrants held by the selling stockholders at exercise prices ranging from \$2.35 to \$3.79 per share and with a weighted average exercise price of \$3.72 per share.

The shares of our common stock may be offered and sold from time to time by the selling stockholders identified in this prospectus, or their pledgees, donees, transferees or other successors-in-interest through public or private transactions at prevailing market prices, at prices related to prevailing market prices or at privately negotiated prices. The selling stockholders will pay all underwriting discounts and selling commissions, if any, applicable to the sale of the shares. We will not receive any proceeds from the sale of the shares other than the exercise price payable to us upon the potential exercise of warrants held by the selling stockholders.

Our common stock is traded on the American Stock Exchange under the ticker symbol "SNT." On March 15, 2004, the last reported sale price of our common stock was \$2.84 per share. You are urged to obtain current market quotations for the common stock.

INVESTING IN OUR COMMON STOCK INVOLVES A HIGH DEGREE OF RISK. SEE "RISK FACTORS" BEGINNING ON PAGE 3 FOR A DISCUSSION OF CERTAIN FACTORS THAT YOU SHOULD CONSIDER BEFORE YOU INVEST IN ANY OF THE COMMON STOCK BEING OFFERED WITH THIS PROSPECTUS.

NEITHER THE SECURITIES AND EXCHANGE COMMISSION NOR ANY STATE SECURITIES COMMISSION HAS APPROVED OR DISAPPROVED OF THESE SECURITIES OR DETERMINED IF THIS PROSPECTUS IS TRUTHFUL OR COMPLETE. ANY REPRESENTATION TO THE CONTRARY IS A CRIMINAL OFFENSE.

The date of this prospectus is May 14, 2004.

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As used in this prospectus, references to "Senesco," "we," "us," and "our" refer to Senesco Technologies, Inc. and its subsidiary, Senesco, Inc., unless the context otherwise requires.

PROSPECTUS SUMMARY

About This Prospectus

This prospectus is a part of a registration statement on Form S-3 filed by us with the Securities and Exchange Commission to register 2,651,663 shares of our common stock. This prospectus does not contain all of the information set forth in the registration statement, certain parts of which are omitted in accordance with the rules and regulations of the SEC. Accordingly, you should refer to the registration statement and its exhibits for further information about us and our common stock. Copies of the registration statement and its exhibits are on file with the SEC. Statements contained in this prospectus concerning the documents we have filed with the SEC are not intended to be comprehensive, and in each instance we refer you to the copy of the actual document filed as an exhibit to the registration statement or otherwise filed with the SEC.

We have not authorized anyone to provide you with information different from that contained or incorporated by reference in this prospectus. The selling stockholders are offering to sell, and seeking offers to buy, shares of our common stock only in jurisdictions where offers and sales are permitted. The information contained in this prospectus is accurate only as of the date of this prospectus, regardless of the time of delivery of this prospectus or of any sale of common stock.

About Senesco

Our primary business is the research, development and commercial exploitation of a potentially significant platform technology involving the identification and characterization of genes that we believe control the aging of plant cells, or senescence, and the programmed cell death of human cells, or apoptosis.

Our technology goals for plant applications are to:

- o extend the shelf-life of perishable plant products;
- o produce larger and more leafy crops;
- o increase crop production, or yield, in horticultural and agronomic crops; and
- o reduce the harmful effects of environmental stress.

Our technology goals for human health research are to:

- o identify drug targets for treatment of diseases caused by abnormal apoptosis; and
- o develop gene therapies which directly target the symptoms of these diseases.

Senesco was formed in June 1998. We are a Delaware corporation and our business is currently operated through Senesco and our wholly-owned subsidiary Senesco, Inc., a New Jersey corporation.

Our executive offices are located at 303 George Street, Suite 420, New Brunswick, New Jersey 08901, our telephone number is (732) 296-8400 and our Internet address is <http://www.senesco.com>. The information on our Internet website is not incorporated by reference in this prospectus, and our website address is included in this prospectus as a textual reference only.

THE OFFERING

Number of shares of our common stock offered by the selling stockholders.....	2,651,663 shares
Use of proceeds.....	We will not receive any proceeds from the sale of shares in this offering.
American Stock Exchange symbol.....	SNT

RISK FACTORS

INVESTING IN OUR COMMON STOCK INVOLVES A HIGH DEGREE OF RISK. BEFORE YOU INVEST IN OUR COMMON STOCK, YOU SHOULD CAREFULLY CONSIDER THE FOLLOWING FACTORS AND CAUTIONARY STATEMENTS, AS WELL AS THE OTHER INFORMATION SET FORTH HEREIN. ADDITIONAL RISKS AND UNCERTAINTIES MAY ALSO IMPAIR OUR BUSINESS OPERATIONS. IF ANY OF THE FOLLOWING RISKS ACTUALLY OCCUR, OUR BUSINESS, FINANCIAL CONDITION OR RESULTS OF OPERATIONS MAY SUFFER. AS A RESULT, THE TRADING PRICE OF OUR COMMON STOCK COULD DECLINE, AND YOU COULD LOSE ALL OR A SUBSTANTIAL PORTION OF YOUR INVESTMENT IN OUR COMMON STOCK.

RISKS RELATED TO OUR BUSINESS

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WE HAVE A LIMITED OPERATING HISTORY AND HAVE INCURRED SUBSTANTIAL LOSSES AND EXPECT FUTURE LOSSES.

We are a developmental stage biotechnology company with a limited operating history and limited assets and capital. We have incurred losses each year since inception and have an accumulated deficit of \$11,695,327 at December 31, 2003. We have generated minimal revenues by licensing certain of our technology to companies willing to share in our development costs. However, our technology may not be ready for widespread commercialization for several years. We expect to continue to incur losses over the next two to three years because we anticipate that our expenditures on research and development, commercialization and administrative activities will significantly exceed our revenues during that period. We cannot predict when, if ever, we will become profitable.

WE DEPEND ON A SINGLE PRINCIPAL TECHNOLOGY AND, IF OUR TECHNOLOGY IS NOT COMMERCIALY SUCCESSFUL, WE WILL HAVE NO ALTERNATIVE SOURCE OF REVENUE.

Our primary business is the development and commercial exploitation of technology to identify, isolate, characterize and silence genes that control the aging and death of cells in plants and mammals. Our future revenue and profitability critically depend upon our ability to successfully develop senescence and apoptosis gene technology and later market and license this technology at a profit. We have conducted experiments on certain crops with favorable results and have conducted certain preliminary cell-line experiments, which have provided us with data upon which we have designed additional research programs. However, we cannot give any assurance that our technology will be commercially successful or economically viable for all crops or human health applications.

In addition, we cannot assure you that adverse consequences might not result from the use of our technology such as the development of negative effects on plants or humans or reduced benefits in terms of crop yield or protection. If we fail to obtain market acceptance of our technology or to successfully commercialize our technology or develop a commercially viable product, we will have no alternative source of revenue.

WE OUTSOURCE ALL OF OUR RESEARCH AND DEVELOPMENT ACTIVITIES AND, IF WE ARE UNSUCCESSFUL IN MAINTAINING OUR ALLIANCES WITH THESE THIRD PARTIES, OUR RESEARCH AND DEVELOPMENT EFFORTS MAY BE DELAYED OR CURTAILED.

We rely on third parties to perform all of our research and development activities. Our primary research and development efforts take place at the University of Waterloo in Ontario, Canada, where our technology was developed, at the University of Colorado, at two research hospitals in Canada, at Anawah, Inc., and with our commercial partners. At this time, we do not have the internal capabilities to perform our research and development activities. Accordingly, the failure of third-party research partners, such as the University of Waterloo, to perform under agreements entered into with us, or our failure to renew important research agreements with these third parties, may delay or curtail our research and development efforts.

WE HAVE SIGNIFICANT FUTURE CAPITAL NEEDS AND MAY BE UNABLE TO RAISE CAPITAL WHEN NEEDED, WHICH COULD FORCE US TO DELAY OR REDUCE OUR RESEARCH AND DEVELOPMENT EFFORTS.

As of December 31, 2003, we had cash and highly-liquid investments valued at \$1,582,062 and working capital of \$1,217,546. In January 2004 and February 2004, we received aggregate net proceeds of approximately \$3,300,000 from a private placement of our equity securities. Using our available reserves as of December 31, 2003 and the net proceeds from the private equity financing, we believe that we can operate according to our current business plan for at least the next twelve months. To date, we have generated minimal revenues and anticipate that our operating costs will exceed any revenues generated over the next several years. Therefore, we may be required to raise additional capital in the future in order to operate according to our current business plan, and this funding may not be available on favorable terms, if at all. In addition, in connection with any funding, if we need to issue more equity securities than our certificate of incorporation currently authorizes, or more than 20% of the shares of our common stock outstanding, we may need stockholder approval. If stockholder approval is not obtained or if adequate funds are not available, we may be required to curtail operations significantly or to obtain funds through arrangements with collaborative partners or others that may require us to relinquish rights to certain of our technologies, product candidates, products or potential markets. Investors may experience dilution in their investment from future offerings of our common stock. For example, if we raise additional capital by issuing equity securities, such an issuance would reduce the percentage ownership of existing stockholders. In addition, assuming the exercise of all options and warrants granted, as of December 31, 2003, we had 11,699,728 shares of our common stock authorized but unissued, which may be issued from time to time by our board of directors without stockholder approval. In connection with our private placement of equity securities, in January 2004 and February 2004, we issued an aggregate of an additional 1,536,922 shares of our common stock and warrants to purchase 842,141 shares of our common stock. Therefore, assuming the exercise of all options and warrants granted as of February 13, 2004, we had 9,320,665 shares of our common stock authorized but unissued, which may be issued from time to time by our board of directors without stockholder approval. Furthermore, we may need to issue securities that have rights, preferences and privileges senior to our common stock. Failure to obtain financing on acceptable terms would have a material adverse effect on our liquidity.

Since our inception, we have financed all of our operations through private equity financings. Our future capital requirements depend on numerous factors, including:

- o the scope of our research and development;
- o our ability to attract business partners willing to share in our development costs;
- o our ability to successfully commercialize our technology;
- o competing technological and market developments;
- o our ability to enter into collaborative arrangements for the development, regulatory approval and commercialization of other products; and
- o the cost of filing, prosecuting, defending and enforcing patent claims and other intellectual property rights.

OUR BUSINESS DEPENDS UPON OUR PATENTS AND PROPRIETARY RIGHTS AND THE ENFORCEMENT OF THESE RIGHTS. OUR FAILURE TO OBTAIN AND MAINTAIN PATENT PROTECTION MAY INCREASE COMPETITION AND REDUCE DEMAND FOR OUR TECHNOLOGY.

As a result of the substantial length of time and expense associated with developing products and bringing them to the marketplace in the agricultural and biotechnology industries, obtaining and maintaining patent and trade secret protection for technologies, products and processes is of vital importance. Our success will depend in part on several factors, including, without limitation:

- o our ability to obtain patent protection for our technologies and processes;
- o our ability to preserve our trade secrets; and

- o our ability to operate without infringing the proprietary rights of other parties both in the United States and in foreign countries.

We have been issued one patent by the U.S. Patent and Trademark Office, or PTO. We have also filed patent applications for our technology in the United States and in several foreign countries, which technology is vital to our primary business, as well as several Continuations in Part on these patent applications. Our success depends in part upon the grant of patents from our pending patent applications.

Although we believe that our technology is unique and will not violate or infringe upon the proprietary rights of any third party, we cannot assure you that these claims will not be made or if made, could be successfully defended against. If we do not obtain and maintain patent protection, we may face increased competition in the United States and internationally, which would have a material adverse effect on our business.

Since patent applications in the United States are maintained in secrecy until patents are issued, and since publication of discoveries in the scientific and patent literature tend to lag behind actual discoveries by several months, we cannot be certain that we were the first creator of the inventions covered by our pending patent applications or that we were the first to file patent applications for these inventions.

In addition, among other things, we cannot assure you that:

- o our patent applications will result in the issuance of patents;
- o any patents issued or licensed to us will be free from challenge and that if challenged, would be held to be valid;
- o any patents issued or licensed to us will provide commercially significant protection for our technology, products and processes;
- o other companies will not independently develop substantially equivalent proprietary information which is not covered by our patent rights;
- o other companies will not obtain access to our know-how;
- o other companies will not be granted patents that may prevent the commercialization of our technology; or
- o we will not require licensing and the payment of significant fees or royalties to third parties for the use of their intellectual property in order to enable us to conduct our business.

OUR COMPETITORS MAY ALLEGE THAT WE ARE INFRINGING UPON THEIR INTELLECTUAL PROPERTY RIGHTS, FORCING US TO INCUR SUBSTANTIAL COSTS AND EXPENSES IN RESULTING LITIGATION, THE OUTCOME OF WHICH WOULD BE UNCERTAIN.

Patent law is still evolving relative to the scope and enforceability of claims in the fields in which we operate. We are like most biotechnology companies in that our patent protection is highly uncertain and involves complex legal and technical questions for which legal principles are not yet firmly established. In addition, if issued, our patents may not contain claims sufficiently broad to protect us against third parties with similar technologies or products, or provide us with any competitive advantage.

The PTO and the courts have not established a consistent policy regarding the breadth of claims allowed in biotechnology patents. The allowance of broader claims may increase the incidence and cost of patent interference proceedings and the risk of infringement litigation. On the other hand, the allowance of narrower claims may limit the value of our proprietary rights.

The laws of some foreign countries do not protect proprietary rights to the same extent as the laws of the United States, and many companies have encountered significant problems and costs in protecting their proprietary rights in these foreign countries.

We could become involved in infringement actions to enforce and/or protect our patents. Regardless of the outcome, patent litigation is expensive and time consuming and would distract our management from other activities. Some of our competitors may be able to sustain the costs of complex patent litigation more effectively than we could because they have substantially greater resources. Uncertainties resulting from the initiation and continuation of any patent litigation could limit our ability to continue our operations.

IF OUR TECHNOLOGY INFRINGES THE INTELLECTUAL PROPERTY OF OUR COMPETITORS OR OTHER THIRD PARTIES, WE MAY BE REQUIRED TO PAY LICENSE FEES OR DAMAGES.

If any relevant claims of third-party patents that are adverse to us are upheld as valid and enforceable, we could be prevented from commercializing our technology or could be required to obtain licenses from the owners of such patents. We cannot assure you that such licenses would be available or, if available, would be on acceptable terms. Some licenses may be non-exclusive and, therefore, our competitors may have access to the same technology licensed to us. In addition, if any parties successfully claim that the creation or use of our technology infringes upon their intellectual property rights, we may be forced to pay damages, including treble damages.

OUR SECURITY MEASURES MAY NOT ADEQUATELY PROTECT OUR UNPATENTED TECHNOLOGY AND, IF WE ARE UNABLE TO PROTECT THE CONFIDENTIALITY OF OUR PROPRIETARY INFORMATION AND KNOW-HOW, THE VALUE OF OUR TECHNOLOGY MAY BE ADVERSELY AFFECTED.

Our success depends upon know-how, unpatentable trade secrets, and the skills, knowledge and experience of our scientific and technical personnel. As a result, we require all employees to agree to a confidentiality provision that prohibits the disclosure of confidential information to anyone outside of our company, during the term of employment and thereafter. We also require all employees to disclose and assign to us the rights to their ideas, developments, discoveries and inventions. We also attempt to enter into similar agreements with our consultants, advisors and research collaborators. We cannot assure you that adequate protection for our trade secrets, know-how or other proprietary information against unauthorized use or disclosure will be available.

We occasionally provide information to research collaborators in academic institutions and request the collaborators to conduct certain tests. We cannot assure you that the academic institutions will not assert intellectual property rights in the results of the tests conducted by the research collaborators, or that the academic institutions will grant licenses under such intellectual property rights to us on acceptable terms, if at all. If the assertion of intellectual property rights by an academic institution is substantiated, and the academic institution does not grant intellectual property rights to us, these events could limit our ability to commercialize our technology.

AS WE EVOLVE FROM A COMPANY PRIMARILY INVOLVED IN THE RESEARCH AND DEVELOPMENT OF OUR TECHNOLOGY INTO ONE THAT IS ALSO INVOLVED IN THE COMMERCIALIZATION OF OUR TECHNOLOGY, WE MAY HAVE DIFFICULTY MANAGING OUR GROWTH AND EXPANDING OUR OPERATIONS.

As our business grows, we may need to add employees and enhance our management, systems and procedures. We will need to successfully integrate our internal operations with the operations of our marketing partners, manufacturers, distributors and suppliers to produce and market commercially viable products. We may also need to manage additional relationships with various collaborative partners, suppliers and other organizations. Although we do not presently intend to conduct research and development activities in-house, we may undertake those activities in the future. Expanding our business will place a significant burden on our management and operations. We may not be able to implement improvements to our management information and control systems in an efficient and timely manner and we may discover deficiencies in our existing systems and controls. Our failure to effectively respond to changes may make it difficult for us to manage our growth and expand our operations.

WE HAVE NO MARKETING OR SALES HISTORY AND DEPEND ON THIRD-PARTY MARKETING PARTNERS. ANY FAILURE OF THESE PARTIES TO PERFORM WOULD DELAY OR LIMIT OUR COMMERCIALIZATION EFFORTS.

We have no history of marketing, distributing or selling biotechnology products, and we are relying on our ability to successfully establish marketing partners or other arrangements with third parties to market, distribute and sell a commercially viable product both here and abroad. Our business plan also envisions creating strategic alliances to access needed commercialization and marketing expertise. We may not be able to attract qualified sub-licensees, distributors or marketing partners, and even if qualified, these marketing partners may not be able to successfully market agricultural products or human health applications developed with our technology. If we fail to successfully establish distribution channels, or if our marketing partners fail to provide adequate levels of sales, our commercialization efforts will be delayed or limited and we will not be able to generate revenue.

WE WILL DEPEND ON JOINT VENTURES AND STRATEGIC ALLIANCES TO DEVELOP AND MARKET OUR TECHNOLOGY AND, IF THESE ARRANGEMENTS ARE NOT SUCCESSFUL, OUR TECHNOLOGY MAY NOT BE DEVELOPED AND THE EXPENSES TO COMMERCIALIZE OUR TECHNOLOGY WILL INCREASE.

In its current state of development, our technology is not ready to be marketed to consumers. We intend to follow a multi-faceted commercialization strategy that involves the licensing of our technology to business partners for the purpose of further technological development, marketing and distribution. We are seeking business partners who will share the burden of our development costs while our technology is still being developed, and who will pay us royalties when they market and distribute products incorporating our technology upon commercialization. The establishment of joint ventures and strategic alliances may create future competitors, especially in certain regions abroad where we do not pursue patent protection. If we fail to establish beneficial business partners and strategic alliances, our growth will suffer and the continued development of our technology may be harmed.

COMPETITION IN THE AGRICULTURAL AND HUMAN HEALTH BIOTECHNOLOGY INDUSTRIES IS INTENSE AND TECHNOLOGY IS CHANGING RAPIDLY. IF OUR COMPETITORS MARKET THEIR TECHNOLOGY FASTER THAN WE DO, WE MAY NOT BE ABLE TO GENERATE REVENUES FROM THE COMMERCIALIZATION OF OUR TECHNOLOGY.

Many agricultural and human health biotechnology companies are engaged in research and development activities relating to senescence and apoptosis. The market for plant protection and yield enhancement products is intensely competitive, rapidly changing and undergoing consolidation. We may be unable to compete successfully against our current and future competitors, which may result in price reductions, reduced margins and the inability to achieve market acceptance for products containing our technology. Our competitors in the field of plant senescence gene technology are companies that develop and produce transgenic plants and include major international agricultural companies, specialized biotechnology companies, research and academic institutions and, potentially, our joint venture and strategic alliance partners. These companies include: Paradigm Genetics; Aventis Crop Science; Mendel Biotechnology; Renessen LLC; Exelixis Plant Sciences, Inc.; PlantGenix, Inc.; and Eden Bioscience, among others. Some of the companies involved in apoptosis research include: Cell Pathways, Inc.; Trevigen, Inc.; Idun Pharmaceuticals; Novartis; Introgen Therapeutics, Inc.; Genta, Inc.; and Oncogene, Inc. Many of these competitors have substantially greater financial, marketing, sales, distribution and technical resources than us and have more experience in research and development, clinical trials, regulatory matters, manufacturing and marketing. We anticipate increased competition in the future as new companies enter the market and new technologies become available. Our technology may be rendered obsolete or uneconomical by technological advances or entirely different approaches developed by one or more of our competitors, which will prevent or limit our ability to generate revenues from the commercialization of our technology.

OUR BUSINESS IS SUBJECT TO VARIOUS GOVERNMENT REGULATIONS AND, IF WE ARE UNABLE TO OBTAIN REGULATORY APPROVAL, WE MAY NOT BE ABLE TO CONTINUE OUR OPERATIONS.

At present, the U.S. federal government regulation of biotechnology is divided among three agencies:

- o the USDA regulates the import, field testing and interstate movement of specific types of genetic engineering that may be used in the creation of transgenic plants;
- o the EPA regulates activity related to the invention of plant pesticides and herbicides, which may include certain kinds of transgenic plants; and
- o the FDA regulates foods derived from new plant varieties.

The FDA requires that transgenic plants meet the same standards for safety that are required for all other plants and foods in general. Except in the case of additives that significantly alter a food's structure, the FDA does not require any additional standards or specific approval for genetically engineered foods, but expects transgenic plant developers to consult the FDA before introducing a new food into the marketplace.

Use of our technology, if developed for human health applications, will also be subject to FDA regulation. The FDA must approve any drug or biologic product before it can be marketed in the United States. In addition, prior to being sold outside of the U.S., any products resulting from the application of our human health technology must be approved by the regulatory agencies of foreign governments. Prior to filing a new drug application or biologics license application with the FDA, we would have to perform extensive clinical trials, and prior to beginning any clinical trial, we need to perform extensive preclinical testing which could take several years and may require substantial expenditures.

We believe that our current activities, which to date have been confined to research and development efforts, do not require licensing or approval by any governmental regulatory agency. However, federal, state and foreign regulations relating to crop protection products and human health applications developed through biotechnology are subject to public concerns and political circumstances, and, as a result, regulations have changed and may change substantially in the future. Accordingly, we may become subject to governmental regulations or approvals or become subject to licensing requirements in connection with our research and development efforts. We may also be required to obtain such licensing or approval from the governmental regulatory agencies described above, or from state agencies, prior to the commercialization of our genetically transformed plants and human health technology. In addition, our marketing partners who utilize our technology or sell products grown with our technology may be subject to government regulations. If unfavorable governmental regulations are imposed on our technology or if we fail to obtain licenses or approvals in a timely manner, we may not be able to continue our operations.

CLINICAL TRIALS ON OUR HUMAN HEALTH APPLICATIONS MAY BE UNSUCCESSFUL IN DEMONSTRATING EFFICACY AND SAFETY, WHICH COULD DELAY OR PREVENT REGULATORY APPROVAL.

Clinical trials may reveal that our human health technology is ineffective or harmful, which would significantly limit the possibility of obtaining regulatory approval for any drug or biologic product manufactured with our technology. The FDA requires submission of extensive pre-clinical, clinical and manufacturing data to assess the efficacy and safety of potential products. Furthermore, the success of preliminary studies does not ensure commercial success, and later-stage clinical trials may fail to confirm the results of the preliminary studies.

EVEN IF WE RECEIVE REGULATORY APPROVAL, CONSUMERS MAY NOT ACCEPT OUR TECHNOLOGY, WHICH WILL PREVENT US FROM BEING PROFITABLE SINCE WE HAVE NO OTHER SOURCE OF REVENUE.

We cannot guarantee that consumers will accept products containing our technology. Recently, there has been consumer concern and consumer advocate activism with respect to genetically engineered consumer products. The adverse consequences from heightened consumer concern in this regard could affect the markets for products developed with our technology and could also result in increased government regulation in response to that concern. If the public or potential customers perceive our technology to be genetic modification or genetic engineering, agricultural products grown with our technology may not gain market acceptance.

WE DEPEND ON OUR KEY PERSONNEL AND, IF WE ARE NOT ABLE TO ATTRACT AND RETAIN QUALIFIED SCIENTIFIC AND BUSINESS PERSONNEL, WE MAY NOT BE ABLE TO GROW OUR BUSINESS OR DEVELOP AND COMMERCIALIZE OUR TECHNOLOGY.

We are highly dependent on our scientific advisors, consultants and third-party research partners. Dr. Thompson is the inventor of our technology and the driving force behind our current research. The loss of Dr. Thompson would severely hinder our technological development. Our success will also depend in part on the continued service of our key employees and our ability to identify, hire and retain additional qualified personnel in an intensely competitive market. Although we have employment agreements with several of our key employees and a research agreement with Dr. Thompson, these agreements may be terminated upon no or short notice. We do not maintain key person life insurance on any member of management. The failure to attract and retain key personnel could limit our growth and hinder our research and development efforts.

CERTAIN PROVISIONS OF OUR CHARTER, BY-LAWS AND DELAWARE LAW COULD MAKE A TAKEOVER DIFFICULT.

Certain provisions of our certificate of incorporation and by-laws could make it more difficult for a third party to acquire control of us, even if the change in control would be beneficial to stockholders. Our certificate of incorporation authorizes our board of directors to issue, without stockholder approval, except as may be required by the rules of the American Stock Exchange, 5,000,000 shares of preferred stock with voting, conversion and other rights and preferences that could adversely affect the voting power or other rights of the holders of our common stock. Similarly, our by-laws do not restrict our board of directors from issuing preferred stock without stockholder approval.

In addition, we are subject to the Business Combination Act of the Delaware General Corporation Law which, subject to certain exceptions, restricts certain transactions and business combinations between a corporation and a stockholder owning 15% or more of the corporation's outstanding voting stock for a period of three years from the date such stockholder becomes a 15% owner. These provisions may have the effect of delaying or preventing a change of control of us without action by our stockholders and, therefore, could adversely affect the value of our common stock.

Furthermore, in the event of our merger or consolidation with or into another corporation, or the sale of all or substantially all of our assets in which the successor corporation does not assume outstanding options or issue equivalent options, our board of directors is required to provide accelerated vesting of outstanding options.

INCREASING POLITICAL AND SOCIAL TURMOIL, SUCH AS TERRORIST AND MILITARY ACTIONS, INCREASE THE DIFFICULTY FOR US AND OUR STRATEGIC PARTNERS TO FORECAST ACCURATELY AND PLAN FUTURE BUSINESS ACTIVITIES.

Recent political and social turmoil, including the terrorist attacks of September 11, 2001, the conflict in Iraq and the current crisis in the Middle East, can be expected to put further pressure on economic conditions in the United States and worldwide. These political, social and economic conditions may make it difficult for us to plan future business activities. Specifically, if the current crisis in Israel continues to escalate, our joint venture with Rahan Meristem Ltd. could be adversely affected.

RISKS RELATED TO OUR COMMON STOCK

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OUR MANAGEMENT AND OTHER AFFILIATES HAVE SIGNIFICANT CONTROL OF OUR COMMON STOCK AND COULD SIGNIFICANTLY INFLUENCE OUR ACTIONS IN A MANNER THAT CONFLICTS WITH OUR INTERESTS AND THE INTERESTS OF OTHER STOCKHOLDERS.

As of December 31, 2003, our executive officers, directors and affiliates together beneficially own approximately 37.5% of the outstanding shares of our common stock, assuming the exercise of options and warrants which are currently exercisable, held by these stockholders. As of February 13, 2004, upon the closing of our private placement of equity securities, our executive officers, directors and affiliated entities together beneficially own approximately 35.5% of the outstanding shares of our

common stock, assuming the exercise of options and warrants which are currently exercisable, held by these stockholders. As a result, these stockholders, acting together, will be able to exercise significant influence over matters requiring approval by our stockholders, including the election of directors, and may not always act in the best interests of other stockholders. Such a concentration of ownership may have the effect of delaying or preventing a change in control of us, including transactions in which our stockholders might otherwise receive a premium for their shares over then current market prices.

OUR STOCKHOLDERS MAY EXPERIENCE SUBSTANTIAL DILUTION AS A RESULT OF THE EXERCISE OF OUTSTANDING OPTIONS AND WARRANTS TO PURCHASE OUR COMMON STOCK.

As of December 31, 2003, we have granted options outside of our stock option plan to purchase 10,000 shares of our common stock and outstanding warrants to purchase 4,358,194 shares of our common stock. In addition, as of December 31, 2003, we have reserved 3,000,000 shares of our common stock for issuance upon the exercise of options granted pursuant to our stock option plan, 1,946,000 of which have been granted and 1,054,000 of which may be granted in the future. As of February 13, 2004, upon the closing of our private placement of equity securities, we have outstanding warrants to purchase 5,135,961 shares of our common stock. The exercise of these options and warrants will result in dilution to our existing stockholders.

A SIGNIFICANT PORTION OF OUR TOTAL OUTSTANDING SHARES OF COMMON STOCK MAY BE SOLD IN THE MARKET IN THE NEAR FUTURE, WHICH COULD CAUSE THE MARKET PRICE OF OUR COMMON STOCK TO DROP SIGNIFICANTLY.

As of December 31, 2003, we had 11,992,179 shares of our common stock issued and outstanding, of which approximately 8,000,000 shares are registered pursuant to a registration statement on Form S-3, which was declared effective on June 28, 2002, and the remainder of which are in the public float. In addition, we have registered 3,000,000 shares of our common stock underlying options granted or to be granted under our stock option plan. As of February 13, 2004, upon the closing of our private placement of equity securities, we had issued and outstanding 13,593,475 shares of our common stock and warrants to purchase 5,127,586 shares of our common stock. Pursuant to the terms of such equity offering, we are obligated to file a registration statement on Form S-3 by March 18, 2004 to register such shares of common stock. Consequently, sales of substantial amounts of our common stock in the public market, or the perception that such sales could occur, may have a material adverse effect on our stock price.

OUR COMMON STOCK HAS A LIMITED TRADING MARKET, WHICH COULD LIMIT YOUR ABILITY TO RESELL YOUR SHARES OF COMMON STOCK AT OR ABOVE YOUR PURCHASE PRICE.

Our common stock is quoted on the American Stock Exchange and currently has a limited trading market. We cannot assure you that an active trading market will develop or, if developed, will be maintained. As a result, our stockholders may find it difficult to dispose of shares of our common stock and, as a result, may suffer a loss of all or a substantial portion of their investment.

THE MARKET PRICE OF OUR COMMON STOCK MAY FLUCTUATE AFTER THIS OFFERING AND MAY DROP BELOW THE PRICE YOU PAID.

We cannot assure you that you will be able to resell the shares of our common stock at or above your purchase price. The market price of our common stock may fluctuate significantly in response to a number of factors, some of which are beyond our control. These factors include:

- o quarterly variations in operating results;
- o the progress or perceived progress of our research and development efforts;
- o changes in accounting treatments or principles;
- o announcements by us or our competitors of new technology, product and service offerings, significant contracts, acquisitions or strategic relationships;
- o additions or departures of key personnel;
- o future offerings or resales of our common stock or other securities;

- o stock market price and volume fluctuations of publicly-traded companies in general and development companies in particular; and
- o general political, economic and market conditions.

BECAUSE WE DO NOT INTEND TO PAY, AND HAVE NOT PAID, ANY CASH DIVIDENDS ON OUR SHARES OF COMMON STOCK, OUR STOCKHOLDERS WILL NOT BE ABLE TO RECEIVE A RETURN ON THEIR SHARES UNLESS THE VALUE OF OUR COMMON STOCK APPRECIATES AND THEY SELL THEIR SHARES.

We have never paid or declared any cash dividends on our common stock and we intend to retain any future earnings to finance the development and expansion of our business. We do not anticipate paying any cash dividends on our common stock in the foreseeable future. Therefore, our stockholders will not be able to receive a return on their investment unless the value of our common stock appreciates and they sell their shares.

IF OUR COMMON STOCK IS DELISTED FROM THE AMERICAN STOCK EXCHANGE, IT MAY BE SUBJECT TO THE "PENNY STOCK" REGULATIONS WHICH MAY AFFECT THE ABILITY OF OUR STOCKHOLDERS TO SELL THEIR SHARES.

In general, regulations of the SEC define a "penny stock" to be an equity security that is not listed on a national securities exchange or the NASDAQ Stock Market and that has a market price of less than \$5.00 per share or with an exercise price of less than \$5.00 per share, subject to certain exceptions. If the American Stock Exchange delists our common stock, it could be deemed a penny stock, which imposes additional sales practice requirements on broker-dealers that sell such securities to persons other than certain qualified investors. For transactions involving a penny stock, unless exempt, a broker-dealer must make a special suitability determination for the purchaser and receive the purchaser's written consent to the transaction prior to the sale. In addition, the rules on penny stocks require delivery, prior to and after any penny stock transaction, of disclosures required by the SEC.

If our common stock were subject to the rules on penny stocks, the market liquidity for our common stock could be severely and adversely affected. Accordingly, the ability of holders of our common stock to sell their shares in the secondary market may also be adversely affected.

SPECIAL NOTE REGARDING FORWARD-LOOKING STATEMENTS

This prospectus includes and incorporates forward-looking statements within the meaning of the Private Securities Litigation Reform Act of 1995, Section 27A of the Securities Act of 1933 and Section 21E of the Securities Exchange Act of 1934 based upon the beliefs of our management, as well as assumptions made by, and the information currently available to, our management. All statements, other than statements of historical facts, included or incorporated in this prospectus regarding our strategy, future operations, financial position, future revenues, projected costs, prospects, plans and objectives of management are forward-looking statements. The words "anticipates," "believes," "estimates," "expects," "intends," "may," "plans," "projects," "will," "would" and similar expressions are intended to identify forward-looking statements, although not all forward-looking statements contain these identifying words. We cannot assure you that we actually will achieve the plans, intentions or expectations disclosed in our forward-looking statements and you should not place undue reliance on our forward-looking statements. Actual results or events could differ materially from the plans, intentions and expectations disclosed in the forward-looking statements we make. We have included important factors in the cautionary statements included or incorporated in this prospectus, particularly under the heading "Risk Factors," that we believe could cause actual results or events to differ materially from the forward-looking statements that we make. Our forward-looking statements do not reflect the potential impact of any future acquisitions, mergers, dispositions, joint ventures or investments we may make. You are cautioned not to place undue reliance on these forward-looking statements, which speak only as of the date of this prospectus. Except for special circumstances in which a duty to update arises when prior disclosure becomes materially misleading in light of subsequent circumstances, we do not intend to update any of these forward-looking statements to reflect events or circumstances after the date of this prospectus or to reflect the occurrence of unanticipated events.

USE OF PROCEEDS

We will not receive any proceeds from the sale of common stock by the selling stockholders. We will receive the proceeds from the exercise of warrants held by the selling stockholders, if any are exercised. The warrants entitle the selling stockholders to purchase shares of our common stock at exercise prices ranging from \$2.35 to \$3.79 per share and with a weighted average exercise price of \$3.72 per share.

The selling stockholders will pay any underwriting discounts and commissions and expenses incurred by the selling stockholders in disposing of the shares. We will bear all other costs, fees and expenses incurred in effecting the issuance and registration of the shares covered by this prospectus, including, without limitation, all registration and filing fees, American Stock Exchange listing fees and fees and expenses of our counsel and our accountants.

SELLING STOCKHOLDERS

The following table sets forth, to our knowledge, the common stock ownership of the selling stockholders, as of March 15, 2004, as adjusted to reflect the sale of the common stock in this offering. Except as described in this prospectus, the selling stockholders have not held any position or office or had any other material relationship with us or any of our predecessors or affiliates within the past three years.

The 2,651,663 shares covered by this prospectus represent approximately 15.6% of our common stock, based on 17,031,364 shares of common stock outstanding as of March 15, 2004, which includes an aggregate of 3,429,514 shares of our common stock issuable upon the exercise of options and warrants held by the selling stockholders. We considered the following factors and made the following assumptions regarding the table:

- o beneficial ownership is determined under Section 13(d) of the Securities Exchange Act of 1934 and generally includes voting or investment power with respect to securities and including any securities that grant the selling stockholder the right to acquire common stock within 60 days of March 15, 2004;
- o unless otherwise indicated below, to our knowledge, the selling stockholders named below have sole voting and investment power with respect to their shares of common stock, except to the extent authority is shared by spouses under applicable law; and
- o the selling stockholders may sell all of the securities offered by this prospectus under certain circumstances.

Notwithstanding these assumptions, the selling stockholders may sell less than all of the shares listed on the table. In addition, the shares listed below may be sold pursuant to this prospectus or in privately negotiated transactions. Accordingly, we cannot estimate the number of shares of common stock that the selling stockholders will sell under this prospectus.

Each of the selling stockholders listed below has sole voting and investment power with respect to the shares beneficially owned by the stockholder unless noted otherwise, subject to community property laws where applicable.

NAME OF SELLING STOCKHOLDERS -----	BENEFICIAL OWNERSHIP OF SELLING STOCKHOLDERS PRIOR TO OFFERING(1) -----		NUMBER OF SHARES OFFERED HEREBY(2) -----	BENEFICIAL OWNERSHIP OF SHARES AFTER OFFERING(1)(2) -----	
	Number -----	Percent -----	Number -----	Number -----	Percent -----
Seneca Capital L.P.(3)	958,861(4)	6.65	208,861(5)	750,000	5.23
Forbes, Christopher(6)	873,498(7)	6.29	47,469(8)	826,029	5.95
Crestview Capital Master L.L.C.(9)	727,848(10)	5.26	727,848(10)	--	--
Seneca Capital International Ltd.(3)	424,050(11)	3.09	424,050(11)	--	--
Bost & Co. FBO Raytheon Master Pension(12)	225,000(13)	1.65	225,000(13)	--	--
Bogar, Daniel T.	189,063(14)	1.37	1,563(15)	187,500	1.36
Stein, Ronald M.	189,063(14)	1.37	1,563(15)	187,500	1.36
Pi, Osvaldo	189,063(14)	1.37	1,563(15)	187,500	1.36
Fusselmann, William R.	189,063(14)	1.37	1,563(15)	187,500	1.36
Forbes, Inc.	171,667(16)	1.25	35,000(17)	136,667	1.00
Brown Brothers Harriman & Co. FBO Heartland Value Fund(18)	150,000(19)	1.10	150,000(19)	--	--
Stalder, Ruedi(20)	514,136(21)	3.67	47,469(22)	466,667	3.33
Phippen, Wm. Michael	143,272(23)	1.05	94,937(24)	48,335	*
May, John Wesley	99,114(25)	*	79,114(26)	20,000	*
St. Albans Global Management(27)	79,114(26)	*	79,114(26)	--	--
McLennan Holdco, Inc.(28)	79,114(26)	*	79,114(26)	--	--
Spectra Capital Management, LLC(29)	79,114(26)	*	79,114(26)	--	--
Plue, Richard	76,391(30)	*	63,291(31)	13,100	*
MSS Descendants Trust	59,400(32)	*	59,400(32)	--	--
Julios Trust	59,400(32)	*	59,400(32)	--	--
Walters, William G.	59,400(32)	*	59,400(32)	--	--
Orlansky, Aharon	73,541(33)	*	73,541(33)	--	--
Stanford Group Company(34)	2,470,535(35)	17.21	6,248(36)	2,464,287	17.17
Targhee Trust	15,296(37)	*	15,296(37)	--	--
KWG Trust dated 01/01/04	15,296(37)	*	15,296(37)	--	--
Cooper, Jordan	9,065(38)	*	9,065(38)	--	--
Lawrence, Jonathan	7,384(39)	*	7,384(39)	--	--

* Less than one percent.

(1) Shares of common stock issuable under stock options and warrants that are exercisable within 60 days after March 15, 2004 are deemed outstanding for computing the percentage ownership of the selling stockholder holding the options or warrants, prior to and after giving effect to the offering, but are not deemed outstanding for computing the percentage ownership of any other selling stockholder.

(2) We do not know when or in what amounts a selling stockholder may offer shares for sale. The selling stockholders might not sell any or all of the shares offered by this prospectus. Because the selling stockholders may offer all or some of the shares pursuant to this offering and because there are currently no agreements, arrangements

or understandings with respect to the sale of any of the shares, we cannot estimate the number of the shares that will be held by the selling stockholders after completion of the offering. However, for purposes of this table, we have assumed that, after completion of the offering, none of the shares covered by this prospectus will be held by the selling stockholders.

(3) Doug Hirsch has voting and investment control over the shares of common stock and warrants to purchase common stock held by each of Seneca Capital L.P. and Seneca Capital International Ltd., but he disclaims beneficial ownership of such shares and warrants, except to the extent of any pecuniary interest therein.

(4) Consists of 139,241 shares of common stock; warrants to purchase 819,620 shares of common stock, 69,620 of which were issued with an exercise price equal to \$3.79 per share, with all such warrants vesting on the date of grant; and warrants to purchase 750,000 shares of common stock, fifty percent with an exercise price equal to \$2.00 per share and fifty percent with an exercise price equal to \$3.25 per share, with all such warrants vesting on the date of grant.

(5) Consists of 139,241 shares of common stock and warrants to purchase 69,620 shares of common stock with an exercise price equal to \$3.79 per share, with all such warrants vesting on the date of grant.

(6) Christopher Forbes is a member of the Board of Directors of Senesco.

(7) Consists of 579,569 shares of common stock; options to purchase 100,000 shares of common stock with various exercise prices ranging from \$2.05 to \$3.50; and warrants to purchase 193,929 shares of common stock, 15,823 of which were issued with an exercise price equal to \$3.79 per share, 89,053 of which were issued with an exercise price equal to \$2.00 per share and 89,053 of which were issued with an exercise price equal to \$3.25 per share, with all such warrants vesting on the date of grant.

(8) Consists of 31,646 shares of common stock and warrants to purchase 15,823 shares of common stock with an exercise price equal to \$3.79 per share, with all such warrants vesting on the date of grant.

(9) Stew Flink and Richard Levy have voting and investment control over the shares of common stock and warrants to purchase common stock held by Crestview Capital Master L.L.C., but they disclaim beneficial ownership of such shares and warrants, except to the extent of any pecuniary interest therein.

(10) Consists of 485,232 shares of common stock and warrants to purchase 242,616 shares of common stock with an exercise price equal to \$3.79 per share, with all such warrants vesting on the date of grant.

(11) Consists of 282,700 shares of common stock and warrants to purchase 141,350 shares of common stock with an exercise price equal to \$3.79 per share, with all such warrants vesting on the date of grant.

(12) The board of directors of Heartland Advisors, Inc. has voting and investment control over the shares of common stock and warrants to purchase common stock held by Bost & Co. FBO Raytheon Master Pension, but they disclaim beneficial ownership of such shares and warrants, except to the extent of any pecuniary interest therein.

(13) Consists of 150,000 shares of common stock and warrants to purchase 75,000 shares of common stock with an exercise price equal to \$3.79 per share, with all such warrants vesting on the date of grant.

(14) Consists of warrants to purchase 189,063 shares of common stock, 1,563 of which were issued with an exercise price equal to \$3.79 per share, with all such warrants vesting on the date of grant, and warrants to purchase 187,500 shares of common stock, fifty percent with an exercise price equal to \$2.00 per share and fifty percent with an exercise price equal to \$3.25 per share, with all such warrants vesting on the date of grant.

(15) Consists of warrants to purchase 1,563 shares of common stock with an exercise price equal to \$3.79 per share, with all such warrants vesting on the date of grant.

(16) Consists of warrants to purchase 80,000 shares of common stock with an exercise price equal to \$3.50 per share, all of which are fully vested; warrants to purchase 80,000 shares of common stock with an exercise price equal to \$2.15 per share, all of which are fully vested; warrants to purchase 5,000 shares of common stock with an exercise price equal to \$2.35 per share, the vested portion of a warrant to purchase 15,000 shares of common stock, which will be fully vested on January 7, 2006; and warrants to purchase 6,667 shares of common stock with an

exercise price equal to \$3.15 per share, the vested portion of a warrant to purchase 20,000 shares of common stock, which will be fully vested on December 16, 2005.

(17) Consists of warrants to purchase 15,000 shares of common stock with an exercise price equal to \$2.35 per share, one-third of which are fully vested, one-third of which will vest on January 7, 2005 and one-third of which will vest on January 7, 2006, and warrants to purchase 20,000 shares of common stock with an exercise price equal to \$3.15 per share, one-third of which were fully vested on the date of grant, one-third of which will vest on December 16, 2004 and one-third of which will vest on December 16, 2005.

(18) The board of directors of Heartland Advisors, Inc. has voting and investment control over the shares of common stock and warrants to purchase common stock held by Brown Brothers Harriman & Co. FBO Heartland Value Fund, but they disclaim beneficial ownership of such shares and warrants, except to the extent of any pecuniary interest therein.

(19) Consists of 100,000 shares of common stock and warrants to purchase 50,000 shares of common stock with an exercise price equal to \$3.79 per share, with all such warrants vesting on the date of grant.

(20) Ruedi Stalder is a director of Senesco and is the Chairman of the Board of Directors of Senesco.

(21) Consists of 98,313 shares of common stock, options to purchase 400,000 shares of common stock with various exercise prices ranging from \$1.50 to \$4.00 and warrants to purchase 15,823 shares of common stock with an exercise price equal to \$3.79 per share, with all such warrants vesting on the date of grant.

(22) Consists of 31,646 shares of common stock and warrants to purchase 15,823 shares of common stock with an exercise price equal to \$3.79 per share, with all such warrants vesting on the date of grant.

(23) Consists of 111,626 shares of common stock and warrants to purchase 31,646 shares of common stock with an exercise price equal to \$3.79 per share, with all such warrants vesting on the date of grant.

(24) Consists of 63,291 shares of common stock and warrants to purchase 31,646 shares of common stock with an exercise price equal to \$3.79 per share, with all such warrants vesting on the date of grant.

(25) Consists of 72,743 shares of common stock and warrants to purchase 26,371 shares of common stock with an exercise price equal to \$3.79 per share, with all such warrants vesting on the date of grant.

(26) Consists of 52,743 shares of common stock and warrants to purchase 26,371 shares of common stock with an exercise price equal to \$3.79 per share, with all such warrants vesting on the date of grant.

(27) Paul A. Novelly and Douglas D. Hommert have voting and investment control over the shares of common stock and warrants to purchase common stock held by St. Albans Global Management, but they disclaim beneficial ownership of such shares and warrants, except to the extent of any pecuniary interest therein.

(28) John A. McLennan has voting and investment control over the shares of common stock and warrants to purchase common stock held by McLennan Holdco, Inc., but he disclaims beneficial ownership of such shares and warrants, except to the extent of any pecuniary interest therein.

(29) Gregory I. Porges has voting and investment control over the shares of common stock and warrants to purchase common stock held by Spectra Capital Management, LLC, but he disclaims beneficial ownership of such shares and warrants, except to the extent of any pecuniary interest therein.

(30) Consists of 55,294 shares of common stock and warrants to purchase 21,097 shares of common stock with an exercise price equal to \$3.79 per share, with all such warrants vesting on the date of grant.

(31) Consists of 42,194 shares of common stock and warrants to purchase 21,097 shares of common stock with an exercise price equal to \$3.79 per share, with all such warrants vesting on the date of grant.

(32) Consists of warrants to purchase 59,400 shares of common stock with an exercise price equal to \$3.79 per share, with all such warrants vesting on the date of grant.

(33) Consists of warrants to purchase 59,400 shares of common stock with an exercise price equal to \$3.59 per share, and warrants to purchase 14,141 shares of common stock with an exercise price equal to \$3.79 per share, with all such warrants vesting on the date of grant.

(34) James M. Davis has voting and investment control over the shares of common stock and warrants to purchase common stock held by Stanford Venture Capital Holdings, Inc., but he disclaims beneficial ownership of such shares and warrants, except to the extent of any pecuniary interest therein. Daniel T. Bogar has voting and investment control over the warrants to purchase common stock held by Stanford Group Company, but he disclaims beneficial ownership of such warrants, except to the extent of any pecuniary interest therein.

(35) Consists of 1,714,287 shares of common stock, warrants to purchase 6,248 shares of common stock with an exercise price equal to \$3.79 per share, with all such warrants vesting on the date of grant and warrants to purchase 750,000 shares of common stock, fifty percent with an exercise price equal to \$2.00 per share and fifty percent with an exercise price equal to \$3.25 per share, with all such warrants vesting on the date of grant. The 1,714,287 shares of common stock and the warrants to purchase 750,000 shares of common stock are held by Stanford Venture Capital Holdings, Inc., an affiliate of Stanford Group Company.

(36) Consists of warrants to purchase 6,248 shares of common stock with an exercise price equal to \$3.79 per share, with all such warrants vesting on the date of grant.

(37) Consists of warrants to purchase 15,296 shares of common stock with an exercise price equal to \$3.79 per share, with all such warrants vesting on the date of grant.

(38) Consists of warrants to purchase 9,065 shares of common stock with an exercise price equal to \$3.79 per share, with all such warrants vesting on the date of grant.

(39) Consists of warrants to purchase 7,384 shares of common stock with an exercise price equal to \$3.79 per share, with all such warrants vesting on the date of grant.

PLAN OF DISTRIBUTION

The shares covered by this prospectus may be offered and sold from time to time by the selling stockholders. The term "selling stockholders" includes donees, pledgees, transferees or other successors-in-interest selling shares received after the date of this prospectus from a selling stockholder as a gift, pledge, partnership distribution or other non-sale related transfer. The selling stockholders will act independently of us in making decisions with respect to the timing, manner and size of each sale. Such sales may be made on one or more exchanges or in the over-the-counter market or otherwise, at prices and under terms then prevailing or at prices related to the then current market price or in negotiated transactions. The selling stockholders may sell their shares by one or more of, or a combination of, the following methods:

- o purchases by a broker-dealer as principal and resale by such broker-dealer for its own account pursuant to this prospectus;
- o ordinary brokerage transactions and transactions in which the broker solicits purchasers;
- o block trades in which the broker-dealer so engaged will attempt to sell the shares as agent but may position and resell a portion of the block as principal to facilitate the transaction;
- o a distribution in accordance with the rules of the American Stock Exchange;
- o in privately negotiated transactions; and
- o in options transactions.

In addition, any shares that qualify for sale pursuant to Rule 144 may be sold under Rule 144 rather than pursuant to this prospectus.

To the extent required, this prospectus may be amended or supplemented from time to time to describe a specific plan of distribution. In connection with distributions of the shares or otherwise, the selling stockholders may enter into hedging transactions with broker-dealers or other financial institutions. In connection with such transactions, broker-dealers or other financial institutions may engage in short sales of the common stock in the course of hedging the positions they assume with selling stockholders. The selling stockholders may also sell the common stock short and redeliver the shares to close out such short positions. The selling stockholders may also enter into option or other transactions with broker-dealers or other financial institutions which require the delivery to such broker-dealer or other financial institution of shares offered by this prospectus, which shares such broker-dealer or other financial institution may resell pursuant to this prospectus, as supplemented or amended to reflect such transaction. The selling stockholders may also pledge shares to a broker-dealer or other financial institution, and, upon a default, such broker-dealer or other financial institution, may effect sales of the pledged shares pursuant to this prospectus, as supplemented or amended to reflect such transaction.

In effecting sales, broker-dealers or agents engaged by the selling stockholders may arrange for other broker-dealers to participate. Broker-dealers or agents may receive commissions, discounts or concessions from the selling stockholders in amounts to be negotiated immediately prior to the sale.

In offering the shares covered by this prospectus, the selling stockholders and any broker-dealers who execute sales for the selling stockholders may be deemed to be "underwriters" within the meaning of the Securities Act in connection with such sales. Any profits realized by the selling stockholders and the compensation of any broker-dealer may be deemed to be underwriting discounts and commissions.

In order to comply with the securities laws of certain states, if applicable, the shares must be sold in such jurisdictions only through registered or licensed brokers or dealers. In addition, in certain states the shares may not be sold unless they have been registered or qualified for sale in the applicable state or an exemption from the registration or qualification requirement is available and is complied with.

We have advised the selling stockholders that the anti-manipulation rules of Regulation M under the Exchange Act may apply to sales of shares in the market and to the activities of the selling stockholders and their affiliates. In addition, we will make copies of this prospectus available to the

selling stockholders for the purpose of satisfying the prospectus delivery requirements of the Securities Act. The selling stockholders may indemnify any broker-dealer that participates in transactions involving the sale of the shares against certain liabilities, including liabilities arising under the Securities Act.

At the time a particular offer of shares is made, if required, a prospectus supplement will be distributed that will set forth the number of shares being offered and the terms of the offering, including the name of any underwriter, dealer or agent, the purchase price paid by any underwriter, any discount, commission and other item constituting compensation, any discount, commission or concession allowed or reallocated or paid to any dealer, and the proposed selling price to the public.

We have agreed to indemnify the selling stockholders against certain liabilities, including certain liabilities under the Securities Act.

We have agreed with the selling stockholders to keep the registration statement of which this prospectus constitutes a part effective until the earlier of:

- o such time as all of the shares covered by this prospectus have been disposed of pursuant to and in accordance with the Registration Statement; or
- o February 2, 2006.

LEGAL MATTERS

The validity of the shares of common stock offered by this prospectus have been passed upon for us by Hale and Dorr LLP, Princeton, New Jersey. We have granted to Hale and Dorr LLP a warrant to purchase 15,000 shares of our common stock.

EXPERTS

The audited consolidated financial statements and schedules incorporated by reference in this prospectus and elsewhere in the registration statement have been audited by Goldstein Golub Kessler LLP, independent public accountants, as indicated in their report with respect thereto, and are incorporated by reference in reliance upon the authority of said firm as experts in accounting and auditing in giving said report.

WHERE YOU CAN FIND MORE INFORMATION

We file reports, proxy statements and other documents with the SEC. You may read and copy any document we file at the SEC's public reference room at Judiciary Plaza Building, 450 Fifth Street, N.W., Room 1024, Washington, D.C. 20549. You should call 1-800-SEC-0330 for more information on the public reference room. Our SEC filings are also available to you on the SEC's Internet site at <http://www.sec.gov>.

This prospectus is part of a registration statement that we filed with the SEC. The registration statement contains more information than this prospectus regarding us and our common stock, including certain exhibits and schedules. You can obtain a copy of the registration statement from the SEC at the address listed above or from the SEC's Internet site.

INCORPORATION BY REFERENCE

The SEC allows us to "incorporate by reference" much of the information we file with them (former Commission File No. 0-22307 and current Commission File No. 001-31326), which means that we can disclose important information to you by referring you to those publicly available documents. The information that we incorporate by reference is considered to be part of this prospectus, and any of our subsequent filings with the SEC will automatically update and supersede this information. This prospectus incorporates by reference the documents listed below and any future filings made by us with the SEC under Sections 13(a), 13(c), 14 or 15(d) of the Exchange Act, until the filing of a post-effective amendment to this prospectus which indicates that all securities registered have been sold or which deregisters all securities then remaining unsold:

- o our registration statement on Form 8-A, dated May 14, 2002;
- o our annual report on Form 10-KSB for the fiscal year ended June 30, 2003, filed on September 29, 2003;
- o our proxy statement filed on October 28, 2003 for our annual meeting of stockholders held on December 15, 2003;
- o our quarterly report on Form 10-QSB for the quarter ended September 30, 2003, filed on November 14, 2003;
- o our quarterly report on Form 10-QSB for the quarter ended December 31, 2003, filed on February 17, 2004;
- o our current report on Form 8-K, dated February 3, 2004;
- o our current report on Form 8-K, dated February 13, 2004; and

- o all of our filings pursuant to the Exchange Act after the date of filing the initial registration statement and prior to effectiveness of the registration statement.

You may request a copy of any or all of these filings, at no cost, by writing or telephoning us at: Senesco Technologies, Inc., 303 George Street, Suite 420, New Brunswick, New Jersey 08901; telephone (732) 296-8400, attention: Joel Brooks.

You should rely only on the information incorporated by reference or provided in this prospectus or any supplement. We have not authorized anyone else to provide you with different information. The selling stockholders will not make an offer of these shares in any state where the offer is not permitted. You should not assume that information in this prospectus or any supplement is accurate as of any date other than the date on the front of these documents.

INDEMNIFICATION OF DIRECTORS AND OFFICERS

Section 145 of the Delaware General Corporation Law empowers a Delaware corporation to indemnify any person who was or is a party or is threatened to be made a party to any threatened, pending or completed action, suit or proceeding, whether civil, criminal, administrative or investigative (other than an action by or in the right of such corporation) by reason of the fact that such person is or was a director, officer, employee or agent of such corporation, or is or was serving at the request of such corporation as a director, officer, employee or agent of another corporation or enterprise. A corporation may, in advance of the final disposition of any civil, criminal, administrative or investigative action, suit or proceeding, pay the expenses (including attorneys' fees) incurred by any officer, director, employee or agent in defending such action, provided that the director or officer undertakes to repay such amount if it shall ultimately be determined that he is not entitled to be indemnified by the corporation. A corporation may indemnify such person against expenses (including attorneys' fees), judgments, fines and amounts paid in settlement actually and reasonably incurred by such person in connection with such action, suit or proceeding if he acted in good faith and in a manner he reasonably believed to be in or not opposed to the best interests of the corporation, and, with respect to any criminal action or proceeding, had no reasonable cause to believe his conduct was unlawful.

A Delaware corporation may indemnify officers and directors in an action by or in the right of the corporation to procure a judgment in its favor under the same conditions, except that no indemnification is permitted without judicial approval if the officer or director is adjudged to be liable to the corporation. Where an officer or director is successful on the merits or otherwise in the defense of any action referred to above, the corporation must indemnify him against the expenses (including attorneys fees) which he actually and reasonably incurred in connection therewith. The indemnification provided is not deemed to be exclusive of any other rights to which an officer or director may be entitled under any corporation's by-law, agreement, vote or otherwise.

Our certificate of incorporation includes a provision that eliminates the personal liability of our directors to us or our stockholders for monetary damages for breach of their fiduciary duty to the maximum extent permitted by the DGCL. The DGCL does not permit liability to be eliminated (i) for any breach of a director's duty of loyalty to us or our stockholders, (ii) for acts or omissions not in good faith or that involve intentional misconduct or a knowing violation of law, (iii) for unlawful payments of dividends or unlawful stock repurchases or redemptions, as provided in Section 174 of the DGCL, or (iv) for any transaction from which the director derived an improper personal benefit. In addition, as permitted in Section 145 of the DGCL, our certificate of incorporation and by-laws provide that we shall indemnify our directors and officers to the fullest extent permitted by the DGCL, including those circumstances in which indemnification would otherwise be discretionary, subject to certain exceptions. Our by-laws also provide that we shall advance expenses to directors and officers incurred in connection with an action or proceeding as to which they may be entitled to indemnification, subject to certain exceptions.

Each of our indemnification agreements with each of our executive officers and directors provides for indemnification to the maximum extent permitted by applicable law. We also indemnify each of our directors and executive officers with the maximum indemnification allowed to directors and executive officers by the DGCL, subject to certain exceptions, as well as certain additional procedural protections. In addition, we will generally advance expenses incurred by directors and executive officers in any action or proceeding as to which they may be entitled to indemnification, subject to certain exceptions.

The indemnification provisions in our certificate of incorporation and by-laws also permit indemnification for liabilities arising under the Securities Act of 1933. Insofar as indemnification for liabilities arising under the Securities Act of 1933 may be permitted to directors, officers and controlling persons pursuant to the foregoing provisions, or otherwise, we have been advised that in the opinion of the Securities and Exchange Commission such indemnification is against public policy as expressed in the Securities Act of 1933 and is, therefore, unenforceable.

We currently carry director and officer liability insurance in the amount of \$3,000,000.