ALTEON INC /DE
Form 424B2
January 10, 2005

FILED PURSUANT TO RULE 424(B)(2)
REGISTRATION NO. 333-106048

PROSPECTUS SUPPLEMENT TO PROSPECTUS DATED APRIL 7, 2004

[LOGO]

ALTEON INC.

9,523,813 SHARES OF COMMON STOCK

We are selling up to 9,523,813 shares of common stock on a "best efforts" basis with this prospectus supplement and the accompanying prospectus. See "Plan of Distribution" on page S-5 for more information regarding our arrangements with Rodman & Renshaw, LLC.

The closing price of our common stock on January 7, 2005 was $1.10 per share. Our common stock is listed for trading on the American Stock Exchange under the symbol "ALT."

The following information assumes that we sell all shares of common stock offered hereby.

THE OFFERING	PER SHARE	TOTAL
Public Offering Price	$1.05	$10,000,004
Rodman & Renshaw's Fee	0.0525*	328,000
Rodman & Renshaw's Fee	0.0263**	54,500
Proceeds to Alteon Inc. (before expenses)	1.01	9,617,504

* Payable only with respect to 6,247,622 shares

** Payable only with respect to 2,076,191 shares

Delivery of the shares of common stock to the purchasers is expected to be made on or about January 12, 2005.

THIS INVESTMENT INVOLVES RISKS. SEE "RISK FACTORS" BEGINNING ON PAGE S-5 OF THIS PROSPECTUS SUPPLEMENT.

NEITHER THE SECURITIES AND EXCHANGE COMMISSION NOR ANY STATE SECURITIES COMMISSION HAS APPROVED OR DISAPPROVED OF THESE SECURITIES, OR PASSED UPON THE ACCURACY OR ADEQUACY OF THIS PROSPECTUS SUPPLEMENT OR THE ACCOMPANYING PROSPECTUS. ANY REPRESENTATION TO THE CONTRARY IS A CRIMINAL OFFENSE.

The date of this prospectus supplement is January 10, 2005.

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You should rely only on the information contained in this prospectus supplement, the accompanying prospectus and the documents incorporated by reference. We have not authorized anyone to provide you with information different from that contained in any of these documents. The information contained in these documents is accurate only as of the date of each document, as the case may be, regardless of the time of delivery of this prospectus supplement and accompanying prospectus or of any sale of common stock. Our business, financial condition, results of operations and prospects may change after the date set forth in each document in which the information is presented.

ABOUT THIS PROSPECTUS SUPPLEMENT

We provide information to you about this offering of shares of our common stock in two separate documents: (a) the accompanying prospectus, which provides general information, some of which may not apply to this offering or may have been superseded by subsequent events or filings with the Securities and Exchange Commission; and (b) this prospectus supplement, which describes the specific details regarding this offering. Generally, when we refer to this "prospectus," we are referring to both documents combined. This prospectus supplement is not complete without, and may not be delivered or used except in connection with, the accompanying prospectus. You should read this entire prospectus supplement and the accompanying prospectus, as well as the information incorporated herein and therein by reference, before making an investment decision.

If information in this prospectus supplement is inconsistent with the accompanying prospectus, you should rely on this prospectus supplement. Statements in this prospectus supplement that are not statements or descriptions of historical facts are "forward-looking" statements under Section 21E of the Securities Exchange Act of 1934, as amended, and the Private Securities Litigation Reform Act of 1995 and are subject to numerous risks and uncertainties. These forward-looking statements and other forward-looking statements made by us or our representatives are based on a number of assumptions. The words "believe," "expect," "anticipate," "intend," "estimate" or other expressions, which are predictions of or indicate future events and trends and which do not relate to historical matters, identify forward-looking statements. You are cautioned not to place undue reliance on these forward-looking statements as they involve risks and uncertainties, and actual results could differ materially from those currently anticipated due to a number of factors. See "Risk Factors" beginning on Page S-5.

We do not intend to update any of these forward-looking statements to reflect events or circumstances after the date of this prospectus supplement or to reflect the occurrence of unanticipated events, except as may be required by law.

USE OF PROCEEDS

We intend to use the net proceeds from the sale of the common stock to fund our ongoing and planned Phase 2 systolic hypertension, heart failure, and erectile dysfunction clinical development programs of alagebrium chloride (ALT-711) and for general corporate purposes.

DILUTION

Our net tangible book value as of September 30, 2004 was $12,739,084 or $0.26 per share of common stock. Net tangible book value per share is determined by dividing our net tangible book value, which consists of tangible assets less total liabilities, by the number of shares of common stock outstanding at that date.

Without taking into account any other changes in the net tangible book value after September 30, 2004, other than to give effect to our receipt of the estimated net proceeds from the sale of 9,523,813 shares of common stock at an offering price of $1.05 per share, less estimated offering expenses, our net tangible book value as of September 30, 2004 would have been $22,284,088 or $0.38 per share. This represents an immediate increase in the net tangible book value per share of $0.12 per share to existing stockholders and an immediate dilution of $0.67 per share to purchasers of the shares. The following table illustrates this per share dilution:

Offering Price Per Share		$1.05
Net Tangible Book Value Per Share as of September 30, 2004 Before the Sale of the Shares	$0.26	
Increase in Net Tangible Book Value Per Share After Giving Effect to the Sale of the Shares	$0.12	
Net Tangible Book Value Per Share as of September 30, 2004 After Giving Effect to the Sale of the Shares		$0.38
Dilution Per Share to Purchasers of Shares		$0.67

The above table is based on the number of outstanding shares of common stock as of September 30, 2004 and does not include the following:

- 12,998,129(1) shares of common stock issuable upon conversion of our outstanding Series G Preferred Stock as of September 30, 2004;
- 39,034,200(1) shares of common stock issuable upon conversion of our outstanding Series H Preferred Stock as of September 30, 2004;
- 5,576,985 shares of common stock issuable upon the exercise of outstanding stock options as of September 30, 2004 at a weighted

average exercise price of $2.6567 per share; and

- 272,500, 953,890, 92,284 and 10,000 shares of common stock issuable upon exercise of outstanding warrants as of September 30, 2004 at an exercise price of $1.30, $1.00, $2.25 and $4.025, respectively.

(1) Each share of Series G Preferred Stock and Series H Preferred Stock is convertible, upon 70 days' prior written notice, into the number of shares of common stock determined by dividing $10,000 by the average of the closing sales price of the common stock, as reported on the American Stock Exchange, for the 20 business days immediately preceding the date of conversion. The number of shares indicated as issuable upon conversion of the Series G and Series H were, for purposes of this table, based upon an average closing price of $0.962. Had the table been calculated as of January 5, 2005, the number of shares issuable upon the conversion of the Series G and Series H would have been 10,027,426 and 30,112,991, respectively, using an average closing price of $1.247 per share.

PLAN OF DISTRIBUTION

This prospectus supplement relates to an offering by us on a "best efforts" basis of 9,523,813 shares of our common stock at a purchase price of $1.05 per share to certain individual and institutional investors for aggregate gross proceeds of approximately $10,000,004. We have entered into stock purchase agreements dated as of January 6, 2005 with certain purchasers (the "Purchasers") pursuant to which, subject to certain conditions, we have agreed to sell to the Purchasers, and the Purchasers have agreed to purchase from us, an aggregate of 9,523,813 shares of the shares of common stock offered hereby at $1.05 per share.

In connection with this offering, we will pay a fee of $382,500 to Rodman & Renshaw, LLC ("Rodman") and will issue Rodman a warrant to purchase 312,381 shares of our common stock at an exercise price of $1.37 in consideration of the introduction of investors to us. Because the offering is on a "best efforts" basis, we may not sell the entire amount of our common stock offered pursuant to this prospectus supplement.

We negotiated the price to the public for the common stock offered in this offering with the Purchasers. The factors considered in determining the price to the public included the recent market price of our common stock, the general condition of the securities market at the time of this offering, the history of and the prospects for the industry in which we compete, our past and present operations, and our prospects for future revenues.

Rodman may be deemed to be an underwriter within the meaning of Section 2(a)(11) of the Securities Act of 1933, as amended, or the Securities Act, and any fees or commissions received by Rodman and any profit realized on the resale of the securities sold by Rodman while acting as principal might be deemed to be underwriting discounts or commissions under the Securities Act. As underwriters, Rodman would be required to comply with the requirements of the Securities Act and the Securities Exchange Act of 1934, as amended, or the Exchange Act, including, without limitation, Rule 415(a)(4) under the Securities Act and Rule 10b-5 and Regulation M under the Exchange Act. These rules and regulations may limit the timing of purchases and sales of shares of common stock and warrants by Rodman. Under these rules and regulations, Rodman:

- may not engage in any stabilization activity in connection with our securities; and

- may not bid for or purchase any of our securities or attempt to induce any person to purchase any of our securities, other than as permitted under the Exchange Act, until it has completed its

participation in the distribution.

On January 5, 2005, we entered into a letter agreement with Rodman pursuant to which Rodman agreed to introduce us to one or more investors in connection with this offering. We have agreed that until January 31, 2005, we will not offer any of our securities to any investors other than those introduced to us by Rodman and certain other specified investors. Pursuant to the agreement, with respect to shares of common stock we sell on or before February 15, 2005, we will pay Rodman a cash fee equal to 5% of the cash proceeds we receive from investors introduced to us by Rodman and will issue to Rodman warrants to purchase a number of shares of our common stock equal to 5% of the shares purchased by such investors at a per share exercise price equal to 130% of the price paid by such investors for the common stock they purchase. In addition, we will pay Rodman a cash fee equal to 2.5% of the cash proceeds we receive from certain other investors. The warrants to be issued to Rodman will be restricted from sale, transfer, assignment or hypothecation for a period of six months from the date of this prospectus supplement except to officers or partners (not directors) of Rodman pursuant to Rule 2710(g)(1) of the NASD Conduct Rules. We have also agreed to reimburse Rodman for out-of-pocket expenses up to $15,000. Under no circumstances, however, will the fee, commission or discount received by Rodman or any other NASD member or independent broker-dealer exceed 8% for the sale of any securities in this offering.

We have also agreed to indemnify Rodman against certain liabilities under the Securities Act.

We estimate that our expenses for the offering (exclusive of fees payable to Rodman) will be approximately $72,500. This amount includes approximately $45,000 for exchange registration fees, $20,000 in legal fees and expenses, and $7,500 in miscellaneous expenses.

RISK FACTORS

Investment in our common stock involves substantial risks, including those described below. You should purchase our common stock only if you can afford to lose your entire investment. You should carefully consider all of the information included in this prospectus to evaluate our business and us. You should make this evaluation before deciding whether to purchase our common stock. You should understand that additional risks that we cannot predict at this time may have negative impact on us in the future. You should also understand that the risks discussed below might affect us more than or in a different manner than we now predict.

IF WE DO NOT OBTAIN SUFFICIENT ADDITIONAL FUNDING TO MEET OUR NEEDS, WE MAY HAVE TO CURTAIL OR DISCONTINUE THE RESEARCH, PRODUCT DEVELOPMENT, PRE-CLINICAL TESTING AND CLINICAL TRIALS OF SOME OR ALL OF OUR PRODUCT CANDIDATES.

As of September 30, 2004, we had working capital of $12,364,022, including $14,124,668 of cash and cash equivalents. Our cash used in operations for the nine months ended September 30, 2004 was $10,059,671. We believe that our lead compound, alagebrium chloride (formerly ALT-711), is the only A.G.E. Crosslink Breaker in advanced human testing. Several Phase 2 clinical trials have been completed: the DIAMOND trial in diastolic dysfunction in heart failure, the SAPPHIRE/SILVER trial in systolic hypertension and a trial in cardiovascular compliance. Based on evidence of alagebrium's efficacy and biological activity in these Phase 2 trials, as well as the compound's safety profile in humans, we are proceeding with Phase 2 development of alagebrium in two major

cardiovascular indications, systolic hypertension and heart failure. We are also planning to initiate a Phase 2 trial of alagebrium in erectile dysfunction in early 2005.

We expect to utilize cash and cash equivalents to fund our operations, including the ongoing and planned Phase 2 trials of our lead compound, alagebrium chloride. The first of these Phase 2 trials, SPECTRA, was initiated in March 2004, and the second, PEDESTAL, was initiated in April 2004. Following this sale of common stock, we expect to have sufficient cash and cash equivalents to satisfy our working capital requirements based on our current operations at least into the fourth quarter of 2005. We will actively continue to pursue fund-raising possibilities through the sale of our equity securities. If we are unsuccessful in our efforts to raise additional funds through the sale of additional equity securities, we will be required to significantly reduce or curtail our research and product development activities, including the number of patients enrolled in our trials, and other operations if our level of cash and cash equivalents falls below pre-determined levels. We have the intent and ability to quickly and significantly reduce the cash burn rate, if necessary, as we have limited fixed commitments. We believe that such curtailment actions, if needed, will enable us to fund our operations into 2006.

The amount and timing of our future capital requirements will depend on numerous factors, including the progress of our research and development programs, the number and characteristics of product candidates that we pursue, the conduct of pre-clinical tests and clinical trials, the status and timelines of regulatory submissions, the costs associated with protecting patents and other proprietary rights, the development of marketing and sales capabilities, our ability to complete strategic collaborations and the availability of third-party funding.

We will require, over the long term, substantial new funding to pursue development and commercialization of alagebrium and our other product candidates and to continue our operations. We believe that satisfying these capital requirements over the long term will require successful commercialization of our product candidates, particularly alagebrium. However, it is uncertain whether any products will be approved or will be commercially successful.

Selling securities to satisfy our short-term and long-term capital requirements may have the effect of materially diluting the current holders of our outstanding stock. We may also seek additional funding through corporate collaborations and other financing vehicles. There can be no assurance that such funding will be available at all or on terms acceptable to us. If adequate funds are not available, we may be required to curtail significantly one or more of our research and development programs. If we obtain funds through arrangements with collaborative partners or others, we may be required to relinquish rights to certain of our technologies or product candidates. If we are unable to obtain the necessary funding, we may need to cease operations.

IF WE DO NOT SUCCESSFULLY DEVELOP ANY PRODUCTS, OR ARE UNABLE TO DERIVE REVENUES FROM PRODUCT SALES, WE WILL NEVER BE PROFITABLE.

All of our revenues to date have been generated from collaborative research agreements and interest income. We have not received any revenues from product sales. We may not realize product revenues on a timely basis, if at all, and there can be no assurance that we will ever be profitable.

At September 30, 2004, we had an accumulated deficit of $200,928,479. We anticipate that we will incur substantial, potentially greater, losses in the

future as we continue our research, development and clinical trials. We have not yet requested or received regulatory approval for any product from the United States Food and Drug Administration, or FDA, or any other regulatory body. All of our product candidates, including our lead candidate, alagebrium, are still in research, pre-clinical or clinical development. We may not succeed in the development and marketing of any therapeutic or diagnostic product. We do not have any product other than alagebrium in active clinical development, and there can be no assurance that we will be able to bring any other compound into clinical development. Adverse or uncertain results from any pre-clinical or clinical study could cause us to materially modify our clinical development programs, resulting in delays and increased expenditures, or cease development for all or part of our ongoing programs with respect to alagebrium. For example, as we announced in December 2004, a recent preliminary report of a two-year toxicity study found that male rats exposed to high doses of alagebrium over their natural lifetime developed dose-related increases in liver cell alterations and tumors, and that the liver tumor rate was slightly over the expected background rate in this gender and species of rat. We have discussed these findings with the FDA and intend to conduct additional studies to explore the mechanism by which the liver tumors developed and will provide that information to the agency. We cannot yet determine what effect, if any, these preliminary results will have on our ability to complete clinical development of alagebrium in a timely manner, or at all.

To achieve profitable operations, we must, alone or with others, successfully identify, develop, introduce and market proprietary products. Such products will require significant additional investment, development and pre-clinical and clinical testing prior to potential regulatory approval and commercialization. The development of new pharmaceutical products is highly uncertain and subject to a number of significant risks. Potential products that appear to be promising at early stages of development may not reach the market for a number of reasons. Potential products may be found ineffective or cause harmful side effects during pre-clinical testing or clinical trials, fail to receive necessary regulatory approvals, be difficult to manufacture on a large scale, be uneconomical, fail to achieve market acceptance or be precluded from commercialization by proprietary rights of third parties. We may not be able to undertake additional clinical trials. In addition, our product development efforts may not be successfully completed, we may not obtain regulatory approvals, and our products, if introduced, may not be successfully

marketed or achieve customer acceptance. We do not expect any of our products, including alagebrium, to be commercially available for a number of years, if at all.

CLINICAL TRIALS REQUIRED FOR OUR PRODUCT CANDIDATES ARE TIME-CONSUMING, AND THEIR OUTCOME IS UNCERTAIN.

Before obtaining regulatory approvals for the commercial sale of any of our products under development, we must demonstrate through pre-clinical studies and clinical trials that the product is safe and effective for use in each target indication. Success in pre-clinical studies of a product candidate may not be predictive of similar results in humans during clinical trials. Before a clinical trial may commence in the United States, we must submit an investigational new drug application, or IND, containing pre-clinical studies, chemistry, manufacturing, control and other information and a study protocol to the FDA. If the FDA does not object within 30 days after submission of the IND, then the trial may commence. If commenced, we, the FDA, other applicable regulatory authorities or institutional review boards may delay, suspend or terminate clinical trials of a product candidate at any time if, among other

reasons, we or they believe the subjects or patients participating in the clinical trials are being exposed to unacceptable health risks or for other reasons.

If we do not prove in clinical trials that our product candidates are safe and effective, we will not obtain marketing approvals from the FDA and other applicable regulatory authorities. In particular, one or more of our product candidates may not exhibit the expected medical benefits in humans, may cause harmful side effects or may have other unexpected characteristics that preclude regulatory approval for any or all indications of use or limit commercial use if approved.

The length of time necessary to complete clinical trials varies significantly and may be difficult to predict. Factors that can cause delay or termination of our clinical trials include:

- slower than expected patient enrollment due to the nature of the protocol, the proximity of patients to clinical sites, the eligibility criteria for the study, competition with clinical trials for other drug candidates or other factors;
- lower than expected retention rates of patients in a clinical trial;
- inadequately trained or insufficient personnel at the study site to assist in overseeing and monitoring clinical trials;
- delays in approvals from a study site's review board, or other required approvals;
- longer treatment time required to demonstrate effectiveness or determine the appropriate product dose;
- lack of sufficient supplies of the product candidate;
- adverse medical events or side effects in treated patients;
- adverse results in pre-clinical safety or toxicity studies;
- lack of effectiveness of the product candidate being tested; and
- regulatory changes.

Even if we obtain positive results from pre-clinical or clinical trials for a particular product, we may not achieve the same success in future trials of that product. In addition, some or all of the clinical trials we undertake may not demonstrate sufficient safety and efficacy to obtain the requisite regulatory approvals, which could prevent or delay the creation of marketable products. Our product development costs will increase if we have delays in testing or approvals, if we need to perform more, larger or different clinical trials than planned or if our trials are not

successful. Delays in our clinical trials may harm our financial results and the commercial prospects for our products.

IF WE ARE UNABLE TO FORM THE COLLABORATIVE RELATIONSHIPS THAT OUR BUSINESS STRATEGY REQUIRES, THEN OUR PROGRAMS WILL SUFFER AND WE MAY NOT BE ABLE TO DEVELOP PRODUCTS.

Our strategy for developing and deriving revenues from our products depends, in large part, upon entering into arrangements with research collaborators, corporate partners and others. We intend to enter into these arrangements, especially in target indications in which our potential collaborator has particular therapeutic expertise or that involve a market that must be served by large sales and marketing organizations. The potential market, pre-clinical and clinical trial results and safety profile of our product candidates may not be attractive to potential corporate partners. As noted above, a recent preliminary report of a two-year toxicity study found that male rats exposed to high doses of alagebrium over their natural lifetime developed dose-related increases in liver cell alterations and tumors, and that the liver tumor rate was slightly over the expected background rate in this gender and species of rat. Such results could adversely affect our ability to enter into research and development collaborations with respect to alagebrium. We face significant competition in seeking appropriate collaborators and these collaborations are complex and time-consuming to negotiate and document. We may not be able to negotiate collaborations on acceptable terms, or at all. If that were to occur, we may have to curtail the development of a particular product candidate, reduce or delay its development program or one or more of our other development programs, delay its potential commercialization or reduce the scope of our sales or marketing activities, or increase our expenditures and undertake development or commercialization activities at our own expense. If we elect to increase our expenditures to fund development or commercialization activities on our own, we may need to obtain additional capital, which may not be available to us on acceptable terms, or at all. If we do not have sufficient funds, we will not be able to bring our product candidates to market and generate product revenue.

IF WE ARE ABLE TO FORM COLLABORATIVE RELATIONSHIPS, BUT ARE UNABLE TO MAINTAIN THEM, OUR PRODUCT DEVELOPMENT MAY BE DELAYED AND DISPUTES OVER RIGHTS TO TECHNOLOGY MAY RESULT.

We may form collaborative relationships that, in some cases, will make us dependent upon outside partners to conduct pre-clinical testing and clinical trials and to provide adequate funding for our development programs.

In general, collaborations involving our product candidates pose the following risks to us:

- collaborators have significant discretion in determining the efforts and resources that they will apply to these collaborations;

- collaborators may not pursue further development and commercialization of our product candidates or may elect not to continue or renew research and development programs based on pre-clinical or clinical trial results, changes in their strategic focus or available funding, or external factors such as an acquisition that diverts resources or creates competing priorities;

- collaborators may delay clinical trials, provide insufficient funding for a clinical trial program, stop a clinical trial or abandon a product candidate, repeat or conduct new clinical trials or require a new formulation of a product candidate for clinical testing;

- collaborators could independently develop, or develop with third parties, products that compete directly or indirectly with our products or product candidates if the collaborators believe that competitive products are more likely to be successfully developed or can be commercialized under terms that are more economically attractive;

- collaborators with marketing and distribution rights to one or more products may not commit enough resources to their marketing and distribution;

- collaborators may not properly maintain or defend our intellectual property rights or may use our proprietary information in such a way as to invite litigation that could jeopardize or invalidate our proprietary information or expose us to potential litigation;

- disputes may arise between us and the collaborators that result in the delay or termination of the research, development or commercialization of our product candidates or that result in costly litigation or arbitration that diverts management attention and resources; and

- collaborations may be terminated and, if terminated, may result in a need for additional capital to pursue further development of the applicable product candidates.

In addition, there have been a significant number of recent business combinations among large pharmaceutical companies that have resulted in a reduced number of potential future collaborators. If a present or future collaborator of ours were to be involved in a business combination, the continued pursuit and emphasis on our product development program could be delayed, diminished or terminated.

IF WE FAIL TO OBTAIN REGULATORY APPROVALS OR IF REGULATORY APPROVALS OF OUR PRODUCTS ARE DELAYED OR CONDITIONED, THE COMMERCIAL USE OF OUR PRODUCTS WILL BE LIMITED.

Our research, pre-clinical testing and clinical trials of our product candidates are, and the manufacturing and marketing of our products will be, subject to extensive and rigorous regulation by numerous governmental authorities in the United States and in other countries where we intend to test and market our product candidates.

Prior to marketing, any product we develop must undergo an extensive regulatory approval process. This regulatory process, which includes pre-clinical testing and clinical trials and may include post-marketing surveillance of each compound to establish its safety and efficacy, can take many years and will require the expenditure of substantial resources.

The FDA may delay, limit or deny approval of any of our product candidates for many reasons. For example:

- ongoing pre-clinical or clinical trial results may indicate that the product candidate is not safe or effective;

- the FDA may interpret our pre-clinical or clinical trial results to indicate that the product candidate is not safe or effective, even if we interpret the results differently; or

- the FDA may deem the processes and facilities that our collaborative partners, our third-party manufacturers or we propose to use in connection with the manufacture of the product candidate to be unacceptable.

Data obtained from pre-clinical and clinical activities is susceptible to

varying interpretations that could delay, limit or prevent regulatory approval. In addition, we may encounter delays or rejections based upon changes in FDA policy for drug approval during the period of product development and FDA regulatory review of each submitted new drug application, or NDA. We may encounter similar delays in foreign countries. We may not obtain FDA or other regulatory approval for the drugs we develop. Moreover, regulatory approval may entail limitations on the indicated uses of the drug. Further, even if we obtain regulatory approval, a marketed drug and its manufacturer are subject to continuing review and discovery of previously unknown problems which may have adverse effects on our business, financial condition and results of operations, including withdrawal of the product from the market. Violations of regulatory requirements at any stage, including pre-clinical testing, clinical trials, the approval process or post-approval, may result in various adverse consequences, including the FDA's delay in approving, or its refusal to approve, a product, withdrawal of an approved product from the market and the imposition of criminal penalties against the manufacturer and NDA holder. None of our products has been approved for commercialization in the United States or elsewhere. Failure to obtain requisite governmental approvals or failure to obtain approvals of the scope requested will delay or preclude our licensees or marketing partners from

marketing our products or limit the commercial use of such products and will have a material adverse effect on our business, financial condition and results of operations.

OUR PRODUCT CANDIDATES WILL REMAIN SUBJECT TO ONGOING REGULATORY REVIEW EVEN IF THEY RECEIVE MARKETING APPROVAL. IF WE FAIL TO COMPLY WITH CONTINUING REGULATIONS, WE COULD LOSE THESE APPROVALS AND THE SALE OF OUR PRODUCTS COULD BE SUSPENDED.

Even if we receive regulatory approval to market a particular product candidate, the approval could be conditioned on us conducting additional costly post-approval studies or could limit the indicated uses included in our labeling. Moreover, the product may later cause adverse effects that limit or prevent its widespread use, force us to withdraw it from the market or impede or delay our ability to obtain regulatory approvals in additional countries. In addition, the manufacturer of the product and its facilities will continue to be subject to FDA review and periodic inspections to ensure adherence to applicable regulations. After receiving marketing approval, the manufacturing, labeling, packaging, adverse event reporting, storage, advertising, promotion and record keeping related to the product will remain subject to extensive regulatory requirements. We may be slow to adapt, or we may never adapt, to changes in existing regulatory requirements or adoption of new regulatory requirements.

If we fail to comply with the regulatory requirements of the FDA and other applicable United States and foreign regulatory authorities or if previously unknown problems with our products, manufacturers or manufacturing processes are discovered, we could be subject to administrative or judicially imposed sanctions, including:

- restrictions on the products, manufacturers or manufacturing processes;
- warning letters;
- civil or criminal penalties;
- fines;

- injunctions;
- product seizures or detentions;
- import bans;
- voluntary or mandatory product recalls and publicity requirements;
- suspension or withdrawal of regulatory approvals;
- total or partial suspension of production; and
- refusal to approve pending applications for marketing approval of new drugs or supplements to approved applications.

IF WE CANNOT SUCCESSFULLY DEVELOP A MARKETING AND SALES FORCE OR MAINTAIN SUITABLE ARRANGEMENTS WITH THIRD PARTIES TO MARKET AND SELL OUR PRODUCTS, OUR ABILITY TO DELIVER PRODUCTS TO THE MARKET MAY BE IMPAIRED.

We currently have no experience in marketing or selling pharmaceutical products. In order to achieve commercial success for any approved product, we must either develop a marketing and sales force ourselves, or, where appropriate or permissible, enter into arrangements with third parties to market and sell our products. We might not be successful in developing marketing and sales capabilities. Further, we may not be able to enter into marketing and sales agreements with others on acceptable terms, and any such arrangements, if entered into, may be terminated. If we develop our own marketing and sales capability, we will compete with other companies that currently have experienced, well funded and larger marketing and sales operations. To the extent that we enter into

co-promotion or other sales and marketing arrangements with other companies, our revenues will depend on the efforts of others, which may not be successful.

IF WE CANNOT SUCCESSFULLY FORM AND MAINTAIN SUITABLE ARRANGEMENTS WITH THIRD PARTIES FOR THE MANUFACTURING OF THE PRODUCTS WE MAY DEVELOP, OUR ABILITY TO DEVELOP OR DELIVER PRODUCTS MAY BE IMPAIRED.

We have no experience in manufacturing products and do not have manufacturing facilities. Consequently, we are dependent on contract manufacturers for the production of products for development and commercial purposes. The manufacture of our products for clinical trials and commercial purposes is subject to current Good Manufacturing Practice, or cGMP, regulations promulgated by the FDA. In the event that we are unable to obtain or retain third-party manufacturing capabilities for our products, we will not be able to commercialize our products as planned. Our reliance on third-party manufacturers will expose us to risks that could delay or prevent the initiation or completion of our clinical trials, the submission of applications for regulatory approvals, the approval of our products by the FDA or the commercialization of our products or result in higher costs or lost product revenues. In particular, contract manufacturers:

- could encounter difficulties in achieving volume production, quality control and quality assurance and suffer shortages of qualified personnel, which could result in their inability to manufacture sufficient quantities of drugs to meet our clinical schedules or to commercialize our product candidates;

- could terminate or choose not to renew the manufacturing agreement, based on their own business priorities, at a time that is costly or inconvenient for us;

- could fail to establish and follow FDA-mandated cGMPs, as required for FDA approval of our product candidates, or fail to document their adherence to cGMPs, either of which could lead to significant delays in the availability of material for clinical study and delay or prevent filing or approval of marketing applications for our product candidates; and

- could breach, or fail to perform as agreed, under the manufacturing agreement.

Changing any manufacturer that we engage for a particular product or product candidate may be difficult, as the number of potential manufacturers is limited and we will have to compete with third parties for access to those manufacturing facilities. cGMP processes and procedures typically must be reviewed and approved by the FDA, and changing manufacturers may require re-validation of any new facility for cGMP compliance, which would likely be costly and time-consuming. We may not be able to engage replacement manufacturers on acceptable terms quickly or at all. In addition, contract manufacturers located in foreign countries may be subject to import limitations or bans. As a result, if any of our contract manufacturers is unable, for whatever reason, to supply the contracted amounts of our products that we successfully bring to market, a shortage would result which would have a negative impact on our revenues.

Drug manufacturers are subject to ongoing periodic unannounced inspection by the FDA, the United States Drug Enforcement Agency and corresponding state and foreign agencies to ensure strict compliance with cGMPs, other government regulations and corresponding foreign standards. While we are obligated to audit the performance of third-party contractors, we do not have control over our third-party manufacturers' compliance with these regulations and standards. Failure by our third-party manufacturers or us to comply with applicable regulations could result in sanctions being imposed on us, including fines, injunctions, civil penalties, failure of the government to grant pre-market approval of drugs, delays, suspension or withdrawal of approvals, seizures or recalls of product, operating restrictions and criminal prosecutions. Our current dependence upon others for the manufacture of our products may adversely affect our profit margin, if any, on the sale of future products and our ability to develop and deliver such products on a timely and competitive basis.

IF WE ARE NOT ABLE TO PROTECT THE PROPRIETARY RIGHTS THAT ARE CRITICAL TO OUR SUCCESS, THE DEVELOPMENT AND ANY POSSIBLE SALES OF OUR PRODUCT CANDIDATES COULD SUFFER AND COMPETITORS COULD FORCE OUR PRODUCTS COMPLETELY OUT OF THE MARKET.

Our success will depend on our ability to obtain patent protection for our products, preserve our trade secrets, prevent third parties from infringing upon our proprietary rights and operate without infringing upon the proprietary rights of others, both in the United States and abroad.

The degree of patent protection afforded to pharmaceutical inventions is uncertain and our potential products are subject to this uncertainty. Competitors may develop competitive products outside the protection that may be afforded by the claims of our patents. We are aware that other parties have been issued patents and have filed patent applications in the United States and foreign countries with respect to other agents that have an effect on Advanced

Glycation End-products, or A.G.E.s., or the formation of A.G.E. crosslinks. In addition, although we have several patent applications pending to protect proprietary technology and potential products, these patents may not be issued, and the claims of any patents that do issue, may not provide significant protection of our technology or products. In addition, we may not enjoy any patent protection beyond the expiration dates of our currently issued patents.

We also rely upon unpatented trade secrets and improvements, unpatented know-how and continuing technological innovation to maintain, develop and expand our competitive position, which we seek to protect, in part, by confidentiality agreements with our corporate partners, collaborators, employees and consultants. We also have invention or patent assignment agreements with our employees and certain, but not all, corporate partners and consultants. Relevant inventions may be developed by a person not bound by an invention assignment agreement. Binding agreements may be breached, and we may not have adequate remedies for such breach. In addition, our trade secrets may become known to or be independently discovered by competitors.

FAILURE TO ACHIEVE AND MAINTAIN EFFECTIVE INTERNAL CONTROLS IN ACCORDANCE WITH SECTION 404 OF THE SARBANES-OXLEY ACT OF 2002 COULD HAVE A MATERIAL ADVERSE EFFECT ON OUR BUSINESS AND STOCK PRICE.

We are in the process of documenting and testing our internal control procedures in order to satisfy the requirements of Section 404 of the Sarbanes-Oxley Act, which requires annual management assessments of the effectiveness of our internal controls over financial reporting and a report by our independent auditors addressing these assessments. During the course of our testing, we may identify deficiencies which we may not be able to remediate in time to meet the deadline imposed by the Sarbanes-Oxley Act for compliance with the requirements of Section 404. In addition, if we fail to maintain the adequacy of our internal controls, as such standards are modified, supplemented or amended from time to time, we may not be able to ensure that we can conclude on an ongoing basis that we have effective internal controls over financial reporting in accordance with Section 404 of the Sarbanes-Oxley Act. Failure to achieve and maintain an effective internal control environment could have a material adverse effect on our business and on our stock price.

PRIOR STOCK OPTION REPRICING MAY HAVE AN ADVERSE EFFECT ON OUR FUTURE FINANCIAL PERFORMANCE.

Based on the performance of our stock and in order to bolster employee retention, we repriced certain employee stock options on February 2, 1999. As a result of this repricing, options to purchase 1.06 million shares of stock were repriced and certain vesting periods related to these options were modified or extended. This repricing may have a material adverse impact on future financial performance based on the Financial Accounting Standards Board Interpretation No. 44, "Accounting for Certain Transactions Involving Stock Compensation, An Interpretation of APB Opinion No. 25." This interpretation requires us to record compensation expense or benefit, which is adjusted every quarter, for increases or decreases in the fair value of the repriced options based on changes in our stock price from the value at July 1, 2000, until the repriced options are exercised, forfeited or expire. The options expire at various dates through January 2008.

IF WE ARE NOT ABLE TO COMPETE SUCCESSFULLY WITH OTHER COMPANIES IN THE DEVELOPMENT AND MARKETING OF CURES AND THERAPIES FOR CARDIOVASCULAR DISEASES, DIABETES, ERECTILE DYSFUNCTION AND THE OTHER CONDITIONS FOR WHICH WE SEEK TO DEVELOP PRODUCTS, WE MAY NOT BE ABLE TO CONTINUE OUR OPERATIONS.

We are engaged in pharmaceutical fields characterized by extensive research efforts and rapid technological progress. Many established pharmaceutical and biotechnology companies with resources greater than ours are attempting to develop, or have developed, products that would be competitive with our products. Other companies may succeed in developing products that are safer, more efficacious or less costly than any we may develop and may also be more successful than us in production and marketing. Rapid technological development by others may result in our products becoming obsolete before we recover a significant portion of the research, development or commercialization expenses incurred with respect to those products.

Certain technologies under development by other pharmaceutical companies could result in better treatments for cardiovascular disease, diabetes and its related complications, or erectile dysfunction. Several large companies have initiated or expanded research, development and licensing efforts to build pharmaceutical franchises focusing on these medical conditions, and some companies already have products approved and available for commercial sale to treat these indications. It is possible that one or more of these initiatives may reduce or eliminate the market for some of our products. In addition, other companies have initiated research in the inhibition or crosslink breaking of A.G.E.s.

IF GOVERNMENTS AND THIRD-PARTY PAYERS CONTINUE THEIR EFFORTS TO CONTAIN OR DECREASE THE COSTS OF HEALTHCARE, WE MAY NOT BE ABLE TO COMMERCIALIZE OUR PRODUCTS SUCCESSFULLY.

In certain foreign markets, pricing and/or profitability of prescription pharmaceuticals are subject to government control. In the United States, we expect that there will continue to be federal and state initiatives to control and/or reduce pharmaceutical expenditures. In addition, increasing emphasis on managed care in the United States will continue to put pressure on pharmaceutical pricing. Cost control initiatives could decrease the price that we receive for any products we may develop and sell in the future and have a material adverse effect on our business, financial condition and results of operations. Further, to the extent that cost control initiatives have a material adverse effect on our corporate partners, our ability to commercialize our products may be adversely affected. Our ability to commercialize pharmaceutical products may depend, in part, on the extent to which reimbursement for the products will be available from government health administration authorities, private health insurers and other third-party payers. Significant uncertainty exists as to the reimbursement status of newly approved healthcare products, and third-party payers, including Medicare, frequently challenge the prices charged for medical products and services. In addition, third-party insurance coverage may not be available to patients for any products developed by us. Government and other third-party payers are attempting to contain healthcare costs by limiting both coverage and the level of reimbursement for new therapeutic products and by refusing in some cases to provide coverage for uses of approved products for disease indications for which the FDA has not granted labeling approval. If government and other third-party payers for our products do not provide adequate coverage and reimbursement levels, the market acceptance of these products would be adversely affected.

IF THE USERS OF THE PRODUCTS WE DEVELOP CLAIM THAT OUR PRODUCTS HAVE HARMED THEM, WE MAY BE SUBJECT TO COSTLY AND DAMAGING PRODUCT LIABILITY LITIGATION, WHICH COULD HAVE A MATERIAL ADVERSE EFFECT ON OUR BUSINESS, FINANCIAL CONDITION AND RESULTS OF OPERATIONS.

The use of any of our potential products in clinical trials and the sale of any approved products, including the testing and commercialization of alagebrium or other compounds, may expose us to liability claims resulting from the use of products or product candidates. Claims could be made directly by

participants in our clinical trials, consumers, pharmaceutical companies or others. We maintain product liability insurance coverage for claims arising from the use of our products in clinical trials. However, coverage is becoming increasingly expensive, and we may not be able to maintain or acquire insurance at a reasonable cost or in sufficient amounts to protect us against losses due to liability that could have a material adverse effect on our business, financial condition and results of operations. We may not be able to obtain commercially reasonable product liability insurance for any

product approved for marketing in the future, and insurance coverage and our resources may not be sufficient to satisfy any liability resulting from product liability claims. A successful product liability claim or series of claims brought against us could have a material adverse effect on our business, financial condition and results of operations.

IF WE ARE UNABLE TO ATTRACT AND RETAIN THE KEY PERSONNEL ON WHOM OUR SUCCESS DEPENDS, OUR PRODUCT DEVELOPMENT, MARKETING AND COMMERCIALIZATION PLANS COULD SUFFER.

We depend on the principal members of our management and scientific staff. The loss of services of any of these personnel could impede the achievement of our development objectives. Furthermore, recruiting and retaining qualified scientific personnel to perform research and development work in the future will also be critical to our success. We may not be able to attract and retain personnel on acceptable terms given the competition between pharmaceutical and healthcare companies, universities and non-profit research institutions for experienced scientists. In addition, we rely on consultants to assist us in formulating our research and development strategy. All of our consultants are employed by other entities and may have commitments to or consulting or advisory contracts with those other entities that may limit their availability to us.

WE ARE OFFERING THE COMMON STOCK ON A "BEST EFFORTS" BASIS AND WE CANNOT BE CERTAIN THAT WE WILL RAISE THE FULL AMOUNT CONTEMPLATED IN THIS OFFERING.

The closing of this offering is not conditioned on the sale of all of the shares offered hereby, and we may sell all or any portion of such shares. Accordingly, we cannot be certain of the number of shares that will be purchased by investors.

LEGAL MATTERS

Mintz, Levin, Cohn, Ferris, Glovsky and Popeo, P.C., Boston, Massachusetts, will pass upon the validity of the common stock offered hereby and other legal matters on behalf of Alteon Inc.

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[LOGO]

9,523,813 SHARES

ALTEON INC.

COMMON STOCK

January 10, 2005

S-15

ALTEON INC.

COMMON STOCK

$100,000,000

This prospectus will allow us to issue our common stock from time to time. This means we will provide a prospectus supplement each time we issue securities; the prospectus supplement will inform you about the specific terms of that offering and also may add, update or change information contained in this document. You should read this document and any prospectus supplement carefully before you invest.

Our common stock is traded on The American Stock Exchange under the symbol "ALT." On March 31, 2004 the last reported sale price of the common stock was $1.80 per share.

INVESTING IN OUR COMMON STOCK INVOLVES A HIGH DEGREE OF RISK. SEE "RISK FACTORS" BEGINNING ON PAGE 4.

Neither the Securities and Exchange Commission nor any state securities commission has approved or disapproved of these securities or passed upon the adequacy or accuracy of this prospectus. Any representation to the contrary is a criminal offense.

The date of this prospectus is April 7, 2004.

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We are a product-based biopharmaceutical company engaged in the discovery and development of small molecule drugs to reverse or slow down diseases of aging and complications of diabetes. Our product candidates represent novel approaches to some of the largest pharmaceutical markets. Our lead compound is in clinical development; several others are in earlier development stages. These pharmaceutical candidates were developed as a result of our research on the Advanced Glycation End-Products ("A.G.E.") pathway, a fundamental pathological process and inevitable consequence of aging that causes or contributes to many medical disorders, including cardiovascular, kidney and eye diseases.

A.G.E.s are glucose/protein complexes that form as a result of circulating blood glucose reacting with proteins. These A.G.E. complexes subsequently interact and bond (crosslink) with other proteins, resulting in "hardened" (stiffened) arteries, toughened tissues and impaired flexibility and function of many body organs. In healthy individuals, this pathological A.G.E.-formation process occurs slowly as the body ages. In diabetic patients, the rate of A.G.E. accumulation and the extent of protein crosslinking are accelerated because of high glucose levels.

Our research and drug development activities targeting the A.G.E. pathway have taken three directions: the breaking of A.G.E. crosslinks between proteins in order to reverse damage ("A.G.E. Crosslink Breakers"); the prevention or inhibition of A.G.E. formation ("A.G.E.-Formation Inhibitors") and the reduction of the A.G.E. burden through a novel class of anti-hyperglycemic agents, Glucose Lowering Agents ("GLA"). We believe that we were the first company to focus on the development of compounds to treat diseases caused by A.G.E. formation and crosslinking. Since our inception, we have created an extensive library of novel compounds targeting the A.G.E. pathway, and have actively pursued patent protection for these discoveries.

The primary focus of our research and development activities is alagebrium chloride (formerly ALT-711), which is our lead product candidate and we believe the only A.G.E. Crosslink Breaker in advanced clinical development. In February, 2004, the United States Adopted Name (USAN) Council approved alagebrium chloride as the generic name of the chemical compound formerly known as ALT-711. Alagebrium offers the possibility of the first therapeutic approach to "breaking" A.G.E. crosslinks, the benefit of which may be to reverse tissue damage caused by aging and diabetes, thereby restoring flexibility and function to tissues, blood vessels and organs of the body. Alagebrium has demonstrated safety and efficacy in three Phase 2 trials and several Phase 1 studies in which over 800 patients received alagebrium in clinical trials. We are actively developing the compound for the treatment of cardiovascular diseases including systolic hypertension and heart failure. In July 2003, we announced initial results from the Phase 2b SAPPHIRE (Systolic And Pulse Pressure Hemodynamic Improvement by Restoring Elasticity) and SILVER (Systolic Hypertension Interaction with Left VEntricular Remodeling) trial that focused on patients with systolic hypertension. Alagebrium was safe and well tolerated at all doses tested. Results from this 768 patient, six-month, placebo-controlled, dose-ranging study showed that although the pre-specified primary endpoint of reduction of systolic blood pressure by office cuff pressure measurement did not demonstrate statistical significance, as compared to placebo, pre-specified secondary analyses of ambulatory blood pressure measurements ("ABPM") in all patients who completed the study demonstrated a blood pressure lowering effect at lower doses of approximately 4 mm Hg net of placebo. In February 2004, we announced the partial results of a post hoc analysis which showed that alagebrium treatment resulted in significant lowering of systolic blood pressures in patients with a baseline systolic ABPM of > or = 140 mm Hg, with

little concurrent effect on diastolic blood pressure readings. The treatment effects were greatest in patients with higher starting systolic blood pressure readings.

The DIAMOND (Distensibility Improvement And ReMOdeliNg in Diastolic Heart Failure) open-label, single dose trial of alagebrium was conducted in 23 patients with diastolic heart failure ("DHF"). Treatment with alagebrium over 16 weeks demonstrated a statistically significant reduction in left ventricular mass and a marked improvement in left ventricular diastolic filling. The trial also showed statistically significant improvements in multiple quality of life measurements. Pre-specified primary endpoint data was not evaluable. Patients with Class III heart failure at baseline, the sickest patients in the study, appeared to benefit the most from alagebrium treatment. Side effects were as expected for a similar patient population of this size and severity. In 2001, we conducted a Phase 2a clinical trial, in which 93 patients received alagebrium or placebo tablets once daily for eight weeks. Study results showed that alagebrium patients experienced a statistically significant and clinically meaningful reduction in pulse pressure (p