ENZO BIOCHEM INC
Form S-8
March 31, 2005

As Filed with the Securities and Exchange Commission on March 31, 2005

UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
Washington, D.C. 20549

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FORM S-8
REGISTRATION STATEMENT
Under
THE SECURITIES ACT OF 1933

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ENZO BIOCHEM, INC.
(EXACT NAME OF REGISTRANT AS SPECIFIED IN ITS CHARTER)

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| NEW YORK<br>(STATE OR OTHER JURISDICTION<br>OF INCORPORATION OR ORGANIZATION) | 13-2866202<br>(I.R.S. EMPLOYER<br>IDENTIFICATION NUMBER) |
| 60 EXECUTIVE BOULEVARD<br>FARMINGDALE, NEW YORK<br>(ADDRESS OF PRINCIPAL EXECUTIVE OFFICES) | 11735<br>(ZIP CODE) |

ENZO BIOCHEM, INC. 2005 EQUITY COMPENSATION INCENTIVE PLAN
ENZO BIOCHEM, INC. 1999 STOCK OPTION PLAN
ENZO BIOCHEM, INC. 1994 STOCK OPTION PLAN
(FULL TITLE OF THE PLANS)

BARRY W. WEINER
Enzo Biochem, Inc.
60 Executive Boulevard
Farmingdale, NY 11735
(631) 755-5500

(NAME, ADDRESS, INCLUDING ZIP CODE, AND TELEPHONE NUMBER, INCLUDING AREA CODE,
OF AGENT FOR SERVICE)

Copy to:

Robert H. Cohen, Esq.
Greenberg Traurig, LLP
200 Park Avenue
New York, NY 10166
(212) 801-9200 (Phone)
(212) 801-6400 (Fax)

CALCULATION OF REGISTRATION FEE

| Title of Each Class of Securities to be Registered | Amount to be Registered(1)(2) | Proposed Maximum Offering Price Per Share | Proposed Maximum Aggregate Offering Price |
|---|---|---|---|

| | | | |
|---|---|---|---|
| Common Stock, par value $0.01 per share | 1,000,000(3) | $14.56(4) | $14,560,000 |

(1) Pursuant to Rule 416(a) under the Securities Act of 1933, as amended (the "Securities Act"), this Registration Statement shall also cover such indeterminate number of additional shares as may be issued to prevent dilution resulting from stock splits, stock dividends, or similar transactions.

(2) Pursuant to Rule 429 of the Securities Act, the prospectus contained herein also relates to (i) 1,154,731 shares of common stock previously registered on Form S-8, Registration No. 333-87153, and (ii) 1,157,625 shares of common stock previously registered on Form S-8, Registration No. 333-89308, in each case issuable upon exercise of options granted or available to be granted under the Enzo Biochem, Inc. 1999 Stock Option Plan, and 1,336,745 shares of common stock previously registered on Form S-8, Registration No. 33-88826, issued or issuable upon exercise of options granted or available to be granted under the Enzo Biochem, Inc. 1994 Stock Option Plan.

(3) Represents shares issuable upon the exercise of stock options and restricted stock awards granted or available to be granted under the Enzo Biochem, Inc. 2005 Equity Compensation Incentive Plan.

(4) Estimated solely for the purpose of determining the amount of the registration fee pursuant to Rule 457(c) under the Securities Act, based on the average of the high and low prices of the Company's common stock on the New York Stock Exchange on March 29, 2005.

AS PERMITTED BY RULE 429 UNDER THE SECURITIES ACT OF 1933, AS AMENDED, THE PROSPECTUS FILED AS PART OF THIS REGISTRATION STATEMENT ON FORM S-8 IS A COMBINED RESALE PROSPECTUS WHICH SHALL BE DEEMED A POST-EFFECTIVE AMENDMENT TO THE REGISTRANT'S REGISTRATION STATEMENTS ON FORM S-8, REGISTRATION NOS. 33-88826, 333-87153 AND 333-89308.

EXPLANATORY NOTES:

This Registration Statement has been prepared in accordance with the requirements of Form S-8 under the Securities Act of 1933, as amended (the "Securities Act"), to register shares issuable pursuant to the Enzo Biochem, Inc. 2005 Equity Compensation Incentive Plan (the "2005 Plan") and to file a prospectus (prepared in accordance with the requirements of Part I of Form S-3 and pursuant to General Instruction C of Form S-8) to be used for reoffers and resales of common stock acquired by persons who may be deemed "affiliates" of Enzo Biochem, Inc., as that term is defined in Rule 405 under the Securities Act, upon the exercise of stock options or receipt of stock awards granted or available to be granted under the 2005 Plan, upon the exercise of stock options granted or available to be granted under the Enzo Biochem, Inc. 1999 Stock Option Plan (the "1999 Plan") or upon the exercise of stock options granted or available to be granted under the Enzo Biochem, Inc. 1994 Stock Option Plan (the "1994 Plan").

On January 27, 1995, the registrant filed a Registration Statement on Form S-8 (Registration No. 33-88826) for purposes of effecting the registration under the Securities Act of 950,000 shares of common stock issuable upon exercise of stock options issued or issuable under the 1994 Plan. As a result of 5% stock

dividends issued in each of the registrant's fiscal years ended July 31, 1995, 1996, 1998 and 2001 to 2004, the 950,000 shares became 1,336,745 shares of common stock.

On September 15, 1999, the registrant filed a Registration Statement on Form S-8 (Registration No. 333-87153) for purposes of effecting the registration under the Securities Act of 950,000 shares of common sock issuable upon exercise of stock options issued or issuable under the 1999 Plan. As a result of 5% stock dividends issued in each of the registrant's fiscal years ended July 31, 2001 to 2004, the 950,000 shares became 1,154,731 shares of common stock.

On May 29, 2002, the registrant filed a Registration Statement on Form S-8 (Registration No. 333-89308) for purpose of effecting the registration under the Securities Act of 1,000,000 shares of common stock issuable upon exercise of stock options issued or issuable pursuant to an amendment to the 1999 Plan. As a result of 5% stock dividends issued in each of the registrant's fiscal years ended July 31, 2002 to 2004, the 1,000,000 shares became 1,157,625 share of common stock.

As permitted by Rule 429 under the Securities Act of 1933, as amended, the prospectus filed as part of this registration statement on Form S-8 is a combined resale prospectus which shall be deemed a post-effective amendment to the registrant's Registration Statements on Form S-8, Registration Nos. 33-88826, 333-87153 and 333-89308.

The documents containing information specified by Part I of this Registration Statement will be sent or given to holders of options or restricted stock awards granted under the 2005 Plan, as specified in Rule 428(b)(1) promulgated by the Securities and Exchange Commission under the Securities Act. Such document(s) are not required to be filed with the SEC but constitute (along with the documents incorporated by reference into this Registration Statement pursuant to Item 3 of Part II hereof) a prospectus that meets the requirements of Section 10(a) of the Securities Act.

PROSPECTUS

ENZO BIOCHEM, INC.

4,649,101 SHARES OF COMMON STOCK

This prospectus relates to the reoffer and resale of up to 4,649,101 shares of our common stock by certain selling stockholders who may be considered our "affiliates." These selling stockholders have or may acquire these shares upon the exercise of stock options or pursuant to restricted stock awards granted or available to be granted under our Enzo Biochem, Inc. 2005 Equity Compensation Incentive Plan, upon the exercise of stock options granted or available to be granted under our Enzo Biochem, Inc. 1999 Stock Option Plan, or upon the exercise of stock options granted or available to be granted under our Enzo Biochem, Inc. 1994 Stock Option Plan.

Shares covered by this prospectus may be offered and sold from time to time by or on behalf of the selling stockholders through brokers on the New York Stock Exchange or otherwise at the prices prevailing at the time of such sales or at prices otherwise negotiated. No specified brokers or dealers have been designated by the selling stockholders and no agreement has been entered into in respect of brokerage commissions or for the exclusive or coordinated sale of any securities which may be offered pursuant to this prospectus. The net proceeds to the selling stockholders will be the proceeds received by them upon such sales, less brokerage commissions, if any. We will not receive any proceeds from these

sales. We will bear all expenses incurred in registering the shares, but all commissions and other selling expenses incurred by each selling stockholder will be borne by that stockholder.

Our common stock is presently traded on the New York Stock Exchange under the symbol "ENZ." The closing price per share of our common stock as reported on the New York Stock Exchange Composite Transactions on March 29, 2005 was $14.42.

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INVESTING IN OUR COMMON STOCK INVOLVES MATERIAL RISKS. 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 determined if this prospectus is truthful or complete. Any representation to the contrary is a criminal offense.

The date of this prospectus is March 31, 2005.



YOU SHOULD RELY ONLY ON THE INFORMATION CONTAINED IN THIS PROSPECTUS. WE HAVE NOT AUTHORIZED ANYONE TO PROVIDE YOU WITH INFORMATION DIFFERENT FROM THAT CONTAINED IN THIS PROSPECTUS. THIS PROSPECTUS IS NOT AN OFFER TO SELL, OR A SOLICITATION OF AN OFFER TO BUY, SHARES OF COMMON STOCK IN ANY JURISDICTION WHERE OFFERS AND SALES WOULD BE UNLAWFUL. THE INFORMATION CONTAINED IN THIS PROSPECTUS IS COMPLETE AND ACCURATE ONLY AS OF THE DATE ON THE FRONT COVER OF THIS PROSPECTUS, REGARDLESS OF THE TIME OF DELIVERY OF THIS PROSPECTUS OR OF ANY SALE OF THE SHARES OF COMMON STOCK.

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WE HAVE NOT TAKEN ANY ACTION TO PERMIT A PUBLIC OFFERING OF OUR SHARES OF COMMON STOCK OUTSIDE OF THE UNITED STATES OR TO PERMIT THE POSSESSION OR DISTRIBUTION OF THIS PROSPECTUS OUTSIDE OF THE UNITED STATES. PERSONS OUTSIDE OF THE UNITED STATES WHO CAME INTO POSSESSION OF THIS PROSPECTUS MUST INFORM THEMSELVES ABOUT AND OBSERVE ANY RESTRICTIONS RELATING TO THE OFFERING OF THE SHARES OF COMMON STOCK AND THE DISTRIBUTION OF THIS PROSPECTUS OUTSIDE OF THE UNITED STATES.



## SUMMARY

YOU SHOULD READ THE FOLLOWING SUMMARY TOGETHER WITH THE MORE DETAILED INFORMATION CONTAINED ELSEWHERE IN THIS PROSPECTUS, INCLUDING THE SECTION TITLED "RISK FACTORS," REGARDING OUR COMPANY AND THE COMMON STOCK BEING SOLD IN THIS OFFERING.

### THE COMPANY

We are a leading life sciences and biotechnology company focused on harnessing genetic processes to develop research tools, diagnostics and therapeutics. We also provide diagnostic services to the medical community. Since our formation in 1976, we have concentrated on developing enabling technologies for detecting and identifying genes and for modifying gene expression. These technologies are generally applicable to the diagnosis of infectious and other diseases and form the basis for a portfolio of over 300 products marketed to the biomedical and pharmaceutical research markets. We are further using these technologies as platforms for our planned entry into the clinical diagnostics market. In addition, our work in gene analysis has led to the development of significant therapeutic product candidates, several of which are currently in clinical trials, and several are in preclinical studies. In the course of our research and development activities, we have built what we believe is a significant patent position (comprised of 42 issued U.S. patents, over 190 issued foreign patents and various pending applications worldwide) around our core technologies.

Our business activities are conducted through our three wholly owned subsidiaries--Enzo Life Sciences, Inc., Enzo Therapeutics, Inc., and Enzo Clinical Labs, Inc. These activities are: (1) research and development, manufacturing and marketing of biomedical research products and tools through Enzo Life Sciences and research and development of therapeutic products through Enzo Therapeutics, and (2) the operation of a clinical reference laboratory through Enzo Clinical Labs. Our primary sources of revenue have historically been from sales of research products utilized in life science research and from the clinical laboratory services provided to the healthcare community.

Our principal executive offices are located at 60 Executive Boulevard, Farmingdale, New York 11735, and our telephone number is (631) 755-5500.



## RISK FACTORS

AN INVESTMENT IN OUR COMMON STOCK INVOLVES A HIGH DEGREE OF RISK. YOU SHOULD CAREFULLY CONSIDER THE FOLLOWING MATERIAL RISKS, TOGETHER WITH THE OTHER INFORMATION CONTAINED IN THIS PROSPECTUS, BEFORE YOU DECIDE TO BUY OUR COMMON STOCK. IF ANY OF THE FOLLOWING RISKS ACTUALLY OCCUR, OUR BUSINESS, RESULTS OF OPERATIONS AND FINANCIAL CONDITION WOULD LIKELY SUFFER. IN THESE CIRCUMSTANCES,

THE MARKET PRICE OF OUR COMMON STOCK COULD DECLINE, AND YOU MAY LOSE ALL OR PART OF YOUR INVESTMENT.

RISKS RELATING TO OUR COMPANY AND OUR INDUSTRIES

WE FACE INTENSE COMPETITION WHICH COULD CAUSE US TO DECREASE THE PRICES FOR OUR PRODUCTS OR SERVICES OR RENDER OUR PRODUCTS UNECONOMICAL OR OBSOLETE, ANY OF WHICH COULD REDUCE OUR REVENUES AND LIMIT OUR GROWTH.

Our competitors in genetic engineering in the United States and abroad are numerous and include major pharmaceutical, energy, food and chemical companies, as well as specialized genetic engineering firms. Many of our large competitors in genetic engineering have substantially greater resources than us and have the capability of developing products which compete directly with our products. Many of these companies are performing research in the same areas as we are.

Our clinical laboratory business is highly fragmented and intensely competitive, and we compete with numerous national and local companies. Some of these entities are larger than we are and have greater resources than we do. We compete primarily on the basis of the quality of our testing, reporting and information services, our reputation in the medical community, the pricing of our services and our ability to employ qualified laboratory personnel.

These competitive conditions could, among other things:

- Require us to reduce our prices to retain market share;
- Require us to increase our marketing efforts which could reduce our profit margins;
- Increase our cost of labor to attract qualified laboratory personnel;
- Render our biotechnology products uneconomical or obsolete; or
- Reduce our revenue.

WE ARE REQUIRED TO EXPEND SIGNIFICANT RESOURCES FOR RESEARCH AND DEVELOPMENT FOR OUR PRODUCTS IN DEVELOPMENT AND THESE PRODUCTS MAY NOT BE DEVELOPED SUCCESSFULLY. FAILURE TO SUCCESSFULLY DEVELOP THESE PRODUCTS MAY PREVENT US FROM EARNING A RETURN ON OUR RESEARCH AND DEVELOPMENT EXPENDITURES.

The products we are developing are at various stages of development and clinical evaluations and may require further technical development and investment to determine whether commercial application is practicable. There can be no assurance that our efforts will result in products with valuable commercial applications. Our cash requirements may vary materially from current estimates because of results of our research and development programs, competitive and technological advances and other factors. In any event, we will require substantial funds to conduct development activities and pre-clinical and clinical trials, apply for regulatory approvals and commercialize products, if any, that are developed. We do not have any commitments or arrangements to obtain any additional financing and there is no assurance that required financing will be available to us on acceptable terms, if at all. Even if we spend substantial amounts on research and development, our potential products may not be developed successfully. If our product candidates on which we have expended significant amounts for research and development are not commercialized, we will not earn a return on our research and development expenditures, which may harm our business.

PROTECTING OUR PROPRIETARY RIGHTS IS DIFFICULT AND COSTLY. IF WE FAIL TO

ADEQUATELY PROTECT OR ENFORCE OUR PROPRIETARY RIGHTS, WE COULD LOSE REVENUE.

Our success depends in large part on our ability to obtain maintain and enforce our patents. Our ability to commercialize any product successfully will largely depend on our ability to obtain and maintain patents of sufficient scope to prevent third parties from developing similar or competitive products. In the absence of patent protection, competitors may impact our business by developing and marketing substantially equivalent products and technology.



Patent disputes are frequent and can preclude the commercialization of products. We have in the past been, are currently, and may in the future be, involved in material patent litigation, such as the matters discussed under "Part I--Item 3. Legal Proceedings" in our Annual Report on Form 10-K for the year ended July 31, 2004, which is incorporated by reference in this prospectus. Patent litigation is time-consuming and costly in its own right and could subject us to significant liabilities to third parties. In addition, an adverse decision could force us to either obtain third-party licenses at a material cost or cease using the technology or product in dispute.

We have filed applications for United States and foreign patents covering certain aspects of our technology, but there is no assurance that pending patents will issue or as to the degree of protection which any issued patent might afford. We also utilize certain unpatented proprietary technology.

LAWSUITS IN THE BIOTECHNOLOGY INDUSTRY ARE NOT UNCOMMON. IF WE BECOME INVOLVED IN ANY SIGNIFICANT LITIGATION, WE WOULD SUFFER AS A RESULT OF THE DIVERSION OF OUR MANAGEMENT'S ATTENTION, THE EXPENSE OF LITIGATION AND ANY JUDGMENTS AGAINST US.

In addition to intellectual property litigation, other substantial, complex or extended litigation could result in large expenditures by us and distraction of our management. For example, lawsuits by employees, stockholders, collaborators or distributors could be very costly and substantially disrupt our business. Disputes from time to time with companies or individuals are not uncommon in the biotechnology industry, and we cannot assure you that we will always be able to resolve them out of court.

WE MAY BE UNABLE TO OBTAIN OR MAINTAIN REGULATORY APPROVALS FOR OUR PRODUCTS WHICH COULD REDUCE OUR REVENUE OR PREVENT US FROM EARNING A RETURN ON OUR RESEARCH AND DEVELOPMENT EXPENDITURES.

Our research, preclinical development, clinical trials, product manufacturing and marketing are subject to regulation by the FDA and similar health authorities in foreign countries. FDA approval is required for our products, as well as the manufacturing processes and facilities, if any, used to produce our products that may be sold in the United States. The process of obtaining approvals from the FDA is costly, time consuming and often subject to unanticipated delays. Even if regulatory approval is granted, such approval may include significant limitations on indicated uses for which any products could be marketed. Further, even if such regulatory approvals are obtained, a marketed product and its manufacturer are subject to continued review, and later discovery of previously unknown problems may result in restrictions on such product or manufacturer, including withdrawal of the product from the market.

New government regulations in the United States or foreign countries also may be established that could delay or prevent regulatory approval of our products under development. Further, because gene therapy is a relatively new technology and has not been extensively tested in humans, the regulatory requirements governing gene therapy products are uncertain and may be subject to

substantial further review by various regulatory authorities in the United States and abroad. This uncertainty may result in extensive delays in initiating clinical trials and in the regulatory approval process. Our failure to obtain regulatory approval of their proposed products, processes or facilities could have a material adverse effect on our business, financial condition and results of operations. The proposed products under development may also be subject to certain other federal, state and local government regulations, including, but not limited to, the Federal Food, Drug and Cosmetic Act, the Environmental Protection Act, and Occupational Safety and Health Act, and state, local and foreign counterparts to certain of such acts.

We cannot be sure that we can obtain necessary regulatory approvals on a timely basis, if at all, for any of the products we are developing or manufacturing or that we can maintain necessary regulatory approvals for our existing products, and all of the following could have a material adverse effect on our business:

- Significant delays in obtaining or failing to obtain required approvals.
- Loss of, or changes to, previously obtained approvals.
- Failure to comply with existing or future regulatory requirements.
- Changes to manufacturing processes, manufacturing process standards or Good Manufacturing Practices following approval or changing interpretations of these factors.



OUR CLINICAL LABORATORY BUSINESS IS SUBJECT TO EXTENSIVE GOVERNMENT REGULATION AND OUR LOSS OF ANY REQUIRED CERTIFICATIONS OR LICENSES COULD REQUIRE US TO CEASE OPERATING THIS PART OF OUR BUSINESS, WHICH WOULD REDUCE OUR REVENUE AND INJURE OUR REPUTATION.

The clinical laboratory industry is subject to significant governmental regulation at the Federal, state and local levels. Under the Clinical Laboratory Improvement Act of 1967 and the Clinical Laboratory Improvement Amendments of 1988 (collectively, as amended "CLIA") virtually all clinical laboratories, including ours, must be certified by the Federal government. Many clinical laboratories also must meet governmental standards, undergo proficiency testing and are subject to inspection. Certifications or licenses are also required by various state and local laws. The failure of our clinical laboratory to obtain or maintain such certifications or licenses under these laws could interrupt our ability to operate our clinical laboratory business and injure our reputation.

REIMBURSEMENTS FROM THIRD-PARTY PAYORS, UPON WHICH OUR CLINICAL LABORATORY BUSINESS IS DEPENDENT, ARE SUBJECT TO INCONSISTENT RATES AND COVERAGE AND LEGISLATIVE REFORM THAT ARE BEYOND OUR CONTROL. THIS INCONSISTENCY AND ANY REFORM THAT DECREASES COVERAGE AND RATES COULD REDUCE OUR EARNINGS AND HARM OUR BUSINESS.

Our clinical laboratory business is primarily dependent upon reimbursement from third-party payors, such as Medicare (which principally serves patients 65 and older) and Medicaid (which principally serves indigent patients) and insurers. We are subject to variances in reimbursement rates among different third-party payors, as well as constant renegotiation of reimbursement rates. We also are subject to audit by Medicare and Medicaid which can result in the return of payments made to us under these programs. These variances, rates and audit results could reduce our margins and thus our earnings.

The health care industry is undergoing significant change as third-party payors increase their efforts to control the cost, utilization and delivery of health care services. In an effort to address the problem of increasing health care costs, legislation has been proposed or enacted at both the Federal and state levels to regulate health care delivery in general and clinical laboratories in particular. Some of the proposals include managed competition, global budgeting and price controls. Changes that decrease reimbursement rates or coverage, or increase administrative burdens on billing third-party payors could reduce our revenues and increase our expenses.

THE CONTINUED GROWTH OF MANAGED CARE MAY REDUCE OUR REVENUES AND REDUCE OUR NET EARNINGS.

The number of individuals covered under managed care contracts or other similar arrangements has grown over the past several years and may continue to grow in the future. In addition, Medicare and Medicaid and other government healthcare programs may continue to shift to managed care. Entities providing managed care coverage have reduced payments for medical services, including clinical laboratory services, in numerous ways such as entering into arrangements under which payments to a service provider are capitated, limiting testing to specified procedures, denying payment for services performed without prior authorization and refusing to increase fees for specified services. These trends reduce our revenues and limit our ability to pass cost increases to our customers. Also, if these or other managed care organizations do not select us as a participating provider, we may lose some or all of that business, which could have an adverse effect on our business, financial condition and results of operations.

COMPLIANCE WITH MEDICARE ADMINISTRATIVE POLICIES, INCLUDING THOSE PERTAINING TO CERTAIN AUTOMATED BLOOD CHEMISTRY PROFILES, MAY REDUCE THE REIMBURSEMENTS WE RECEIVE.

Containment of health care costs, including reimbursement for clinical laboratory services, has been a focus of ongoing governmental activity. In 1984, Congress established the Medicare fee schedule for clinical laboratory services, which is applicable to patients covered under Part B of the Medicare program as well as patients receiving Medicaid. Clinical laboratories must bill Medicare directly for the services provided to Medicare beneficiaries and may only collect the amounts permitted under this fee schedule. Reimbursement to clinical laboratories under the Medicare Fee Schedule has been steadily declining since its inception. Furthermore, Medicare has mandated use of the Physicians Current Procedural Terminology, or CPT, for coding of laboratory services which has altered the way we bill these programs for some of our services, thereby reducing the reimbursement that we receive.

In March 1996, HCFA (now, the Center for Medicare and Medicaid Services or CMS) implemented changes in the policies used to administer Medicare payments to clinical laboratories for the most frequently performed automated blood chemistry profiles. Among other things, the changes established a consistent standard



nationwide for the content of the automated chemistry profiles. Another change requires laboratories performing certain automated blood chemistry profiles to obtain and provide documentation of the medical necessity of tests included in the profiles for each Medicare beneficiary. Reimbursements have been reduced as a result of this change. Because a significant portion of our costs is fixed, these Medicare reimbursement reductions and changes have a direct adverse effect on our net earnings and cash flows.

WE DEPEND ON KEY EMPLOYEES IN A COMPETITIVE MARKET FOR SKILLED PERSONNEL, AND THE LOSS OF THE SERVICES OF ANY OF OUR KEY EMPLOYEES, INCLUDING OUR SENIOR MANAGEMENT, COULD DELAY OUR RESEARCH AND DEVELOPMENT PROGRAMS AND WOULD ADVERSELY AFFECT OUR ABILITY TO DEVELOP OUR BUSINESS.

The specialized scientific nature of our business requires us to attract and retain personnel with a wide variety of scientific capabilities. There is intense competition in the biotechnology industry for qualified scientific and technical personnel. To a large extent, our success in developing proprietary technological products has been the result of the effective efforts of our internal scientific staff and its experience and talent. Since our inception an insignificant number of key employees have left us. We have key man life insurance on Dr. Elazar Rabbani, our Chief Executive Officer, in the amount of $3,000,000. There can be no assurance that we will continue to attract and retain personnel of high scientific caliber. If we lose the services of our management and scientific personnel and fail to recruit other scientific and technical personnel, our research and development programs could be materially and adversely delayed.

NEGATIVE PUBLICITY AND NEWS COVERAGE ABOUT US OR THE CLINICAL LABORATORY MAY HARM OUR BUSINESS AND OPERATING RESULTS.

In the past, the clinical laboratory industry has received negative publicity. This publicity has led to increased legislation, regulation, and review of industry practices. These factors may adversely affect our ability to market our services, require us to change our services and increase the regulatory burdens under which we operate, further increasing the costs of doing business and adversely affecting our operating results.

OUR FUTURE SUCCESS WILL DEPEND IN PART UPON OUR ABILITY TO ENHANCE EXISTING PRODUCTS AND TO DEVELOP AND INTRODUCE NEW PRODUCTS.

The market for our products is characterized by rapidly changing technology, evolving industry standards and new product introductions, which may make our existing products obsolete. Our future success will depend in part upon our ability to enhance existing products and to develop and introduce new products.

The development of new or enhanced products is a complex and uncertain process requiring the accurate anticipation of technological and market trends as well as precise technological execution. In addition, the successful development of new products will depend on the development of new technologies. We will be required to undertake time-consuming and costly development activities and to seek regulatory approval for these new products. We may experience difficulties that could delay or prevent the successful development, introduction and marketing of these new products. Regulatory clearance or approval of any new products may not be granted by the FDA or foreign regulatory authorities on a timely basis, or at all, and the new products may not be successfully commercialized.

OUR INABILITY TO CARRY OUT OUR CERTAIN OF OUR MARKETING AND SALES PLANS MAY MAKE IT DIFFICULT FOR US TO GROW OR MAINTAIN OUR BUSINESS.

During fiscal 2004, Enzo Life Sciences continued to implement an aggressive marketing program designed to more directly service its end users, while simultaneously positioning us for product line expansion. The program involves continued increases in the direct field sales force, a comprehensive advertising campaign, increased attendance at top industry trade meetings, and publications in leading scientific journals, as well as the development of a new interactive web site. In addition to our direct sales, we distribute our research products through leading producers of gene analysis formats and other

life sciences companies. If we are unable to successfully implement these programs, we may be unable to grow and our business could suffer.



BECAUSE OF COMPETITIVE PRESSURES AND THE COMPLEXITY AND EXPENSE OF THE BILLING PROCESS IN OUR CLINICAL LABORATORY BUSINESS, WE MUST OBTAIN NEW CUSTOMERS WHILE MAINTAINING EXISTING CUSTOMERS TO GROW OUR BUSINESS.

Intense competition in the clinical laboratory business, increasing administrative burdens upon the reimbursement process and reduced coverage and payments by insurers make it necessary for us to increase our volume of laboratory services. To do so, we must obtain new customers while retaining existing customers. Our failure to attract new customers or the loss of existing customers or a reduction in business from those customers could significantly reduce our revenues and impede our ability to grow.

RISKS RELATING TO OUR COMMON STOCK

OUR STOCK PRICE IS VOLATILE, WHICH COULD RESULT IN SUBSTANTIAL LOSSES FOR INVESTORS.

Our common stock is quoted on the New York Stock Exchange, and there has been substantial volatility in the market price of our common stock. The trading price of our common stock has been, and is likely to continue to be, subject to significant fluctuations due to a variety of factors, including:

- fluctuations in our quarterly operating and earnings per share results;
- the gain or loss of significant contracts;
- loss of key personnel;
- announcements of technological innovations or new products by us or our competitors;
- delays in the development and introduction of new products;
- legislative or regulatory changes;
- general trends in the industry;
- recommendations and/or changes in estimates by equity and market research analysts;
- biological or medical discoveries;
- disputes and/or developments concerning intellectual property, including patents and litigation matters;
- public concern as to the safety of new technologies;
- sales of common stock of existing holders;
- securities class action or other litigation;
- developments in our relationships with current or future customers and suppliers; and
- general economic conditions, both in the United States and abroad.

In addition, the stock market in general has experienced extreme price and volume fluctuations that have affected the market price of our common stock, as well as the stock of many companies in our industries. Often, price fluctuations are unrelated to operating performance of the specific companies whose stock is affected.

In the past, following periods of volatility in the market price of a company's stock, securities class action litigation has occurred against the issuing company. If we were subject to this type of litigation in the future, we could incur substantial costs and a diversion of our management's attention and resources, each of which could have a material adverse effect on our revenue and earnings. Any adverse determination in this type of litigation could also subject us to significant liabilities.

SALES OF A SUBSTANTIAL NUMBER OF SHARES OF COMMON STOCK IN THE PUBLIC MARKET FOLLOWING THIS OFFERING COULD ADVERSELY AFFECT THE MARKET PRICE FOR OUR COMMON STOCK.

Registration statements filed by us with the SEC have been declared effective with respect to significant amounts of our common stock. Sales of common stock pursuant to such registration statements may have an adverse effect on the market price of our common stock.

BECAUSE WE DO NOT INTEND TO PAY CASH DIVIDENDS ON OUR COMMON STOCK, AN INVESTOR IN OUR COMMON STOCK WILL BENEFIT ONLY IF IT APPRECIATES IN VALUE.

We currently intend to retain our future earnings, if any, to finance the expansion of our business and do not expect to pay any cash dividends on our common stock in the foreseeable future. As a result, the success of an investment in our common stock will depend entirely upon any future appreciation. There is no guarantee that our common stock will appreciate in value or even maintain the price at which an investor purchased her shares.



IT MAY BE DIFFICULT FOR A THIRD PARTY TO ACQUIRE US, WHICH COULD INHIBIT STOCKHOLDERS FROM REALIZING A PREMIUM ON THEIR STOCK PRICE.

We are subject to the New York anti-takeover laws regulating corporate takeovers. These anti-takeover laws prohibit certain business combinations between a New York corporation and any "interested shareholder" (generally, the beneficial owner of 20% or more of the corporation's voting shares) for five years following the time that the shareholder became an interested shareholder, unless the corporation's board of directors approved the transaction prior to the interested shareholder becoming interested.

Our certificate of incorporation, as amended, and by-laws contain provisions that could have the effect of delaying, deferring or preventing a change in control of us that stockholders may consider favorable or beneficial. These provisions could discourage proxy contests and make it more difficult for stockholders to elect directors and take other corporate actions. These provisions could also limit the price that investors might be willing to pay in the future for shares of our common stock. These provisions include:

- a staggered board of directors, so that it would take three successive annual meetings to replace all directors; and
- advance notice requirements for the submission by stockholders of nominations for election to the board of directors and for proposing matters that can be acted upon by stockholders at a meeting.

SPECIAL NOTE REGARDING FORWARD-LOOKING STATEMENTS

This prospectus contains "forward-looking statements" as defined in the Private Securities Litigation Reform Act of 1995. All statements other than statements of historical fact are "forward-looking statements." Forward-looking statements may include the words "believes," "expects," "plans," "intends," "anticipates," "continues" or other similar expressions. These statements are based on our current expectations of future events and are subject to a number of risks and uncertainties that may cause our actual results to differ materially from those described in the forward-looking statements. Should one or more of these risks or uncertainties materialize, or should underlying assumptions prove incorrect, actual results may vary materially from those anticipated, estimated or projected. These factors and uncertainties include, among others:

- Heightened competition, including the intensification of price competition.
- Impact of changes in payor mix, including the shift from traditional, fee-for-service medicine to managed-cost health care.
- Adverse actions by governmental or other third-party payors, including unilateral reduction of fee schedules payable to us.
- The impact upon our collection rates or general or administrative expenses resulting from compliance with Medicare administrative policies including specifically the HCFA's recent requirement that laboratories performing certain automated blood chemistry profiles obtain and provide documentation of the medical necessity of tests included in the profiles for each Medicare beneficiary.
- Failure to obtain new customers, retain existing customers or reduction in tests ordered or specimens submitted by existing customers.
- Adverse results in significant litigation matters.
- Denial of certification or licensure of any of our clinical laboratories under CLIA, by Medicare programs or other Federal, state or local agencies.
- Adverse publicity and news coverage about us or the clinical laboratory industry.
- Inability to carry out marketing and sales plans.
- Loss or retirement of key executives.



- Impact of potential patent infringement by others or us.
- Inability to obtain patent protection or secure and maintain proprietary positions on our technology.
- Dependence on new technologies for our product development and dependence on product candidates in early stages of development.
- Clinical trials for our products will be expensive and their outcome is uncertain. We incur substantial expenses that might not result in viable products.

- May need additional capital in the future, and if unavailable, we may need to curtail or cease operations.

- Fluctuations in quarterly results resulting from uneven customer order flow.

These and other risks and uncertainties are disclosed from time to time in our filings with the Securities and Exchange Commission, in our press releases and in oral statements made by or with the approval of authorized personnel. We assume no obligation to update any forward-looking statements as a result of new information or future events or developments.

## USE OF PROCEEDS

The selling stockholders will receive all of the proceeds from the sale of the shares of our common stock offered for sale by the selling stockholders under this prospectus. We will receive none of the proceeds from the sale of the shares by the selling stockholders. We will bear all expenses incurred in registering the shares, but all commissions and other selling expenses incurred by each selling stockholder will be borne by that stockholder.



## SELLING STOCKHOLDERS

The shares of common stock to which this prospectus relates may be reoffered and sold from time to time by selling stockholders who may be deemed our "affiliates" (as defined in Rule 501(b) of Regulation D of the Securities Act of 1933, as amended). The selling stockholders will acquire or have acquired the shares of common stock upon exercise of options granted or to be granted to them pursuant to the Enzo Biochem, Inc. 2005 Equity Compensation Incentive Plan ("2005 Plan") or Enzo Biochem, Inc. 1999 Stock Option Plan ("1999 Plan"), upon exercise of stock options granted under our Enzo Biochem, Inc. 1994 Stock Option Plan ("1994 Plan") or pursuant to stock awards under the 2005 Plan. The table below identifies each selling stockholder and his or her relationship to us. The table also sets forth, as of March 1, 2005, for each selling stockholder: (i) the number of shares of common stock beneficially owned prior to this offering, (ii) the number of shares of common stock that may be offered and sold through this prospectus, and (iii) the number of shares of common stock and the percentage of the class represented by such shares to be owned by each such selling stockholder assuming the sale of all of the registered shares. There is no assurance that any of the selling stockholders will sell any or all of their shares of common stock. The inclusion in the table of the individuals named therein shall not be deemed to be an admission that any such individuals are one of our affiliates. Except as otherwise noted, all shares of common stock are beneficially owned and the sole investment and voting power is held by the person named, and such persons' address is c/o Enzo Biochem, Inc., 60 Executive Boulevard, Farmingdale, New York 11735. Information regarding the selling stockholders, including the number of shares offered for sale, may change from time to time, and any changed information will be set forth in a prospectus supplement to the extent required.

| NAME AND POSITION | BENEFICIAL OWNERSHIP PRIOR TO THIS OFFERING | SHARES THAT MAY BE OFFERED AND SOLD HEREBY | BENEF AFTER TH NUMBER O |
|---|---|---|---|

| | | | |
|---|---|---|---|
| Elazar Rabbani, Ph.D.<br>Chairman of the Board and Chief Executive Officer | 2,297,934 (3) | 529,571 | 1,76 |
| Shahram K. Rabbani<br>Chief Operating Officer, Secretary and Director | 2,228,680 (4) | 529,571 | 1,69 |
| Barry W. Weiner<br>President, Chief Financial Officer and Director | 1,482,918 (5) | 529,571 | 95 |
| Dean Engelhardt, Ph.D.<br>Executive Vice President | 263,816 (6) | 99,523 | 16 |
| Norman E. Kelker, Ph.D.<br>Senior Vice President | 182,648 (7) | 65,400 | 11 |
| John J. Delucca<br>Director | 80,324 (8) | 80,324 | |
| Irwin C. Gerson<br>Director | 54,690 (9) | 54,690 | |
| Melvin F. Lazar, CPA<br>Director | 65,394 (10) | 28,644 | 3 |
| John B. Sias<br>Director | 184,210 (11) | 110,500 | 7 |
| Marcus A. Conant, M.D.<br>Director | 26,458 (12) | 26,458 | |



| NAME AND POSITION | BENEFICIAL OWNERSHIP PRIOR TO THIS OFFERING | SHARES THAT MAY BE OFFERED AND SOLD HEREBY | BENEF AFTER TH NUMBER O |
|---|---|---|---|
| Herb Bass<br>Vice President - Finance | 197,968 (13) | 85,091 | 11 |
| David Goldberg<br>Vice President - Business Development | 112,775 (14) | 84,408 | 2 |
| Barbara Thalenfeld<br>Vice President - Corporate Development | 82,734 (15) | 70,381 | 1 |

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(1) Percentage calculated on the basis of 32,094,300 shares of common stock outstanding at March 1, 2005, plus in the case of each selling stockholder, additional shares of common stock deemed to be outstanding because such shares may be acquired through the exercise of outstanding options beneficially owned by such selling stockholder.

(2) Assumes the sale of all shares of common stock registered pursuant to this prospectus, although selling stockholders are under no obligation known to us to sell any shares of common stock at this time.

(3) Includes (i) 60,775 shares of common stock issuable upon exercise of options under the Enzo Biochem, Inc. 1993 Incentive Stock Option Plan (the "1993 Plan"), (ii) 130,819 shares of common stock issuable upon the exercise of options issued under the 1994 Plan, (iii) 348,752 shares of common stock issuable upon the exercise of exercisable options issued under the 1999 Plan, of which 243,172 are exercisable and 105,580 have not yet become exercisable as of March 1, 2005, (iv) 50,000 shares of common stock issuable upon the exercise of options issued under the 2005 Plan that have not yet become exercisable as of March 1, 2005, (v) 3,469 shares of common stock held in the name of Dr. Rabbani as custodian for certain of his children, (vi) 2,168 shares of common stock held in the name of Dr. Rabbani's wife as custodian for certain of their children, and (vii) 3,141 shares of common stock held in the Enzo Biochem, Inc. 401(k) plan.

(4) Includes (i) 60,775 shares of common stock issuable upon exercise of options under the 1993 Plan, (ii) 130,819 shares of common stock issuable upon the exercise of options issued under the 1994 Plan, (iii) 348,752 shares of common stock issuable upon the exercise of exercisable options under the 1999 Plan, of which 243,172 are exercisable and 105,580 have not yet become exercisable as of March 1, 2005, (iv) 50,000 shares of common stock issuable upon the exercise of options issued under the 2005 Plan that have not yet become exercisable as of March 1, 2005, (v) 644 shares of common stock held in the name of Mr. Rabbani's son, (vi) 1,754 shares of common stock that Mr. Rabbani holds as custodian for certain of his nephews, and (vii) 3,106 shares of common stock held in the Enzo Biochem, Inc. 401(k) plan.

(5) Includes (i) 60,775 shares of common stock issuable upon exercise of options under the 1993 Plan, (ii) 130,819 shares of common stock issuable upon the exercise of options issued under the 1994 Plan, (iii) 348,752 shares of common stock issuable upon the exercise of exercisable options under the 1999 Plan, of which 243,172 are exercisable and 105,580 have not yet become exercisable as of March 1, 2005, (iv) 50,000 shares of common stock issuable upon the exercise of options issued under the 2005 Plan that have not yet become exercisable as of March 1, 2005, (v) 3,642 shares of common stock which Mr. Weiner holds as custodian for certain of his children, and (vi) 3,148 shares of common stock held in the Enzo Biochem, Inc. 401(k) plan.

(6) Includes (i) 39,292 shares of common stock issuable upon the exercise of options issued under the 1994 Plan, (ii) 43,195 shares of common stock issuable upon the exercise of exercisable options under the 1999 Plan, of which 23,623 are exercisable and 19,572 have not yet become exercisable as of March 1, 2005, (iii) 10,000 shares of common stock issuable upon the exercise of options issued under the 2005 Plan that have not yet become exercisable as of March 1, 2005, (iv) 3,128 shares of common stock held in the Enzo Biochem, Inc. 401(k) plan, and (v) 7,036 shares of common stock issued upon the exercise of options granted under the 1994 Plan.

(7) Includes (i) 19,191 shares of common stock issuable upon the exercise of exercisable options issued under the 1994 Plan, (ii) 36,209 shares of common stock issuable upon the exercise of options under the 1999 Plan, of which 22,052 are exercisable and 14,157 have not yet become exercisable as of March 1, 2005, (iii) 10,000 shares of common stock issuable upon the exercise of options issued under the 2005 Plan that have not yet become exercisable as of March 1, 2005, and (iv) 3,057 shares of common stock held in the Enzo Biochem, Inc. 401(k) plan.

(8) Includes (i) 15,650 shares of common stock issuable upon the exercise of exercisable options under the 1994 Plan, and (ii) 64,674 shares of common stock issuable upon the exercise of options under the 1999 Plan, of which 48,236 are exercisable and 16,438 have not yet become exercisable as of March 1, 2005.

(9) Includes 54,690 shares of common stock issuable upon the exercise of exercisable options under the 1999 Plan, of which 38,252 are exercisable and 16,438 have not yet become exercisable as of March 1, 2005.

(10) Includes (i) 28,644 shares of common stock issuable upon the exercise of exercisable options under the 1999 Plan, of which 12,206 are exercisable and 16,438 have not yet become exercisable as of March 1, 2005, (ii) 7,875 shares of common stock owned by Mr. Lazar's wife, and (iii) 3,150 shares of common stock held in the name of a defined benefit plan for which Mr. Lazar is the sole trustee and beneficiary.

(11) Includes (i) 45,826 shares of common stock issuable upon the exercise of exercisable options issued under the 1994 Plan, (ii) 54,121 shares of common stock issuable upon the exercise of options under the 1999 Plan, of which 37,683 are exercisable and 16,438 have not yet become exercisable as of March 1, 2005, and (iii) 10,553 shares of common stock issued upon the exercise of options granted under the 1994 Plan.

(12) Includes 26,458 shares of common stock issuable upon the exercise of options under the 1999 Plan, of which 9,550 are exercisable and 16,908 have not yet become exercisable as of March 1, 2005.

(13) Includes (i) 9,267 shares of common stock issuable upon the exercise of exercisable options issued under the 1994 Plan, (ii) 39,400 shares of common stock issuable upon the exercise of options under the 1999 Plan, of which 24,674 shares are exercisable and 14,726 have not yet become exercisable as of March 1, 2005, (iii) 10,000 shares of common stock issuable upon the exercise of options issued under the 2005 Plan that have not yet become exercisable as of March 1, 2005, (iv) 26,424 shares of common stock issued upon the exercise of options granted under the 1994 Plan, and (v) 2,980 shares of common stock held in the Enzo Biochem, Inc. 401(k) plan.

(14) Includes (i) 35,767 shares of common stock issuable upon the exercise of exercisable options issued under the 1994 Plan, (ii) 38,641 shares of common stock issuable upon the exercise of options under the 1999 Plan, of which 25,931 shares are exercisable and 12,710 have not yet become exercisable as of March 1, 2005, (iii) 10,000 shares of common stock issuable upon the exercise of options issued under the 2005 Plan that have not yet become exercisable as of March 1, 2005, and (iv) 2,272 shares of common stock held in the Enzo Biochem, Inc. 401(k) plan.

(15) Includes (i) 26,875 shares of common stock issuable upon the exercise of

exercisable options issued under the 1994 Plan, (ii) 33,506 shares of common stock issuable upon the exercise of options under the 1999 Plan, of which 26,625 shares are exercisable and 6,881 have not yet become exercisable as of March 1, 2005, (iii) 10,000 shares of common stock issuable upon the exercise of options issued under the 2005 Plan that have not yet become exercisable as of March 1, 2005.

* Denotes less than 1%.



## PLAN OF DISTRIBUTION

The shares of common stock covered by this prospectus are being registered by us for the account of the selling stockholders.

The shares of common stock offered hereby may be sold from time to time directly by or on behalf of each selling stockholder in one or more transactions on the New York Stock Exchange or on any stock exchange on which the common stock may be listed at the time of sale, in privately negotiated transactions, or through a combination of such methods, at market prices prevailing at the time of sale, at prices related to such prevailing market prices, at fixed prices (which may be changed) or at negotiated prices. The selling stockholder may sell shares through one or more agents, brokers or dealers or directly to purchasers. Such brokers or dealers may receive compensation in the form of commissions, discounts or concessions from the selling stockholders and/or purchasers of the shares or both. Such compensation as to a particular broker or dealer may be in excess of customary commissions.

In connection with their sales, a selling stockholder and any participating broker or dealer may be deemed to be "underwriters" within the meaning of the Securities Act of 1933, as amended ("Securities Act"), and any commissions they receive and the proceeds of any sale of shares may be deemed to be underwriting discounts and commissions under the Securities Act.

We are bearing all costs relating to the registration of the shares of common stock. Any commissions or other fees payable to broker-dealers in connection with any sale of the shares will be borne by the selling stockholder or other party selling such shares. In order to comply with certain states' securities laws, if applicable, the shares may be sold in such jurisdictions only through registered or licensed brokers or dealers. In certain states, the shares may not be sold unless the shares have been registered or qualified for sale in such state, or unless an exemption from registration or qualification is available and is obtained or complied with. Sales of the shares must also be made by the selling stockholders in compliance with all other applicable state securities laws and regulations.

In addition to any shares sold hereunder, selling stockholders may sell shares of common stock in compliance with Rule 144 under the Securities Act. There is no assurance that the selling stockholders will sell all or a portion of the common stock offered hereby.

The selling stockholders may agree to indemnify any broker-dealer or agent that participates in transactions involving sales of the shares against certain liabilities in connection with the offering of the shares arising under the Securities Act of 1933.

We have notified the selling stockholders of the need to deliver a copy of this prospectus in connection with any sale of the shares.

## LEGAL MATTERS

The validity of the shares of common stock will be passed upon for us by Greenberg Traurig, LLP, New York, New York.

## EXPERTS

The consolidated financial statements of Enzo Biochem, Inc. incorporated by reference from the Company's Annual Report (Form 10-K) for the year ended July 31, 2004, have been audited by Ernst & Young LLP, independent registered public accounting firm, as set forth in their report thereon included therein and incorporated herein by reference. Such consolidated financial statements are incorporated herein by reference in reliance upon such report given on the authority of such firm as experts in accounting and auditing.

## WHERE YOU CAN FIND MORE INFORMATION

We have filed registration statements with the SEC on Forms S-8 to register the shares of our common stock being offered by this prospectus. This prospectus, which is part of the registration statements, does not contain all the information included in the registration statements. Some information has been omitted in accordance with the rules and regulations of the SEC. For further information, please refer to the registration statements and the exhibits and schedules filed with them. In addition, we file annual, quarterly and current reports, proxy statements and other information with the SEC. You may read and copy any reports, statements or other information that we file at the SEC's public reference facilities at 450 Fifth Street, N.W., Washington, D.C. 20549. Please call the SEC at 1-800-SEC-0330 for further information regarding the public reference facilities. The SEC maintains a website, http://www.sec.gov, that contains reports, proxy statements and information statements and other information regarding registrants that file electronically with the SEC, including us. Our SEC filings are also available to the public from commercial document retrieval services. Information contained on our website should not be considered part of this prospectus.

You may also request a copy of our filings at no cost by writing or telephoning us at:

Enzo Biochem, Inc.
60 Executive Boulevard
Farmingdale, New York 11735
Attention: Corporate Secretary
(631) 755-5500

## INCORPORATION OF CERTAIN DOCUMENTS BY REFERENCE

The SEC allows us to "incorporate by reference" the information we file with them, which means that we can disclose important information to you by referring you to those documents. The information incorporated by reference is considered to be part of this prospectus, and information that we file later with the SEC will automatically update and supersede this information. We incorporate by reference the documents listed below and any future filings that we will make with the SEC under Sections 13(a), 13(c), 14 or 15(d) of the Securities Exchange Act of 1934.

(a) Our Annual Report on Form 10-K for the year ended July 31, 2004, filed on October 14, 2004.

(b) Our Quarterly Report on Form 10-Q for the quarter ended January 31, 2005 filed on March 14, 2005; our Quarterly Report on Form 10-Q for the

quarter ended October 31, 2004 filed on December 10, 2004; and our Current Report on Form 8-K dated December 13, 2004 filed on December 14, 2004.

(c) The description of our shares of common stock contained in our registration statement on Form 8-A, as filed with the SEC on December 8, 1999.

We will provide without charge to each person, including any beneficial owner, to whom a copy of this prospectus is delivered a copy of any or all documents incorporated by reference into this prospectus except the exhibits to such documents (unless such exhibits are specifically incorporated by reference in such documents). Requests for copies can be made by writing or telephoning us at: Enzo Biochem, Inc., 60 Executive Boulevard, Farmingdale, New York 11735, Attention: Corporate Secretary, telephone number: (631) 755-5500.



PART II
INFORMATION REQUIRED IN THE REGISTRATION STATEMENT

ITEM 3. INCORPORATION OF DOCUMENTS BY REFERENCE

The following documents filed with the SEC are hereby incorporated by reference:

(a) Our Annual Report on Form 10-K for the year ended July 31, 2004, filed on October 14, 2004.

(b) Our Quarterly Report on Form 10-Q for the quarter ended January 31, 2005 filed on March 14, 2005; our Quarterly Report on Form 10-Q for the quarter ended October 31, 2004 filed on December 10, 2004; and our Current Report on Form 8-K dated December 13, 2004 filed on December 14, 2004.

(c) The description of our shares of common stock contained in our registration statement on Form 8-A, as filed with the SEC on December 8, 1999.

All documents subsequently filed by the Registrant pursuant to Sections 13(a), 13(c), 14 and 15(d) of the Securities Exchange Act of 1934, prior to the filing of a post-effective amendment to this Registration Statement which indicates that all securities offered hereby have been sold or which deregisters all securities then remaining unsold, shall be deemed to be incorporated by reference in this Registration Statement and to be part hereof from the date of filing of such documents. Any statement contained in a document incorporated or deemed to be incorporated by reference herein shall be deemed to be modified or superseded for the purposes of this Registration Statement to the extent a statement contained herein or in any other subsequently filed document which also is or is deemed to be incorporated by reference herein modifies or supersedes such statement. Any statement so modified or superseded shall not be deemed, except as so modified or superseded, to constitute a part of this Registration Statement.

ITEM 4. DESCRIPTION OF SECURITIES.

Not applicable.

ITEM 5. INTERESTS OF NAMED EXPERTS AND COUNSEL.

A shareholder of Greenberg Traurig, LLP, New York, New York, holds

options to acquire an aggregate of 55,254 shares of our common stock.

ITEM 6. INDEMNIFICATION OF DIRECTORS AND OFFICERS

The registrant is a New York corporation. Sections 721 through 726 of the New York Business Corporation Law (the "BCL") provide that, in certain circumstances, a corporation may indemnify its directors and officers against judgments, fines, amounts paid in settlement and reasonable expenses, including attorneys' fees, actually and necessarily incurred as a result of any actual or threatened action or proceeding against such directors or officers, or by or in the right of any other enterprise which such directors or officers served in any capacity at the request of the corporation, by reason of the fact that such person acted in any of the capacities set forth above, if such director or officer (i) acted, in good faith, for a purpose which he or she reasonably believed to be in or not opposed to the best interests of the corporation and (ii) in criminal actions or proceedings, had no reasonable cause to believe that his or her conduct was unlawful; provided, however, that no indemnification may be provided where a final adjudication adverse to the director or officer establishes that his or her actions were committed in bad faith or were the result of active and deliberate dishonesty and were material to the cause of action adjudicated, or that he or she personally gained a financial profit or other advantage to which he or she was not legally entitled. A corporation is required to indemnify against reasonable expenses (including attorneys' fees) incurred by any director or officer who successfully defends any such action. The BCL also provides for indemnification of officers and directors in actions by or in the right of the corporation, subject to certain exceptions. Indemnification provided by these provisions of the BCL is not exclusive of any other rights to which a director or officer may be entitled. The foregoing statements are subject to the detailed provisions of the BCL.



The registrant's Certificate of Incorporation states the following:

"Article 8. The Corporation shall, to the fullest extent permitted by the Business Corporation Law of the States of New York, indemnify any and all persons whom it shall have power to indemnify from and against any and all of the expenses, liabilities or other matters as provided under Articles of Seven of the Business Corporation Law of the State of New York."

"Article 12. No director of the Corporation shall be liable to the Corporation or its shareholders for damage for any breach of duty in such capacity, provided that nothing contained in this Article shall eliminate or limit the liability of a director (i) if a judgment or other final adjudication adverse to him establishes that his acts or omissions were in bad faith or involved acts or omissions were in bad faith or involved intentional misconduct or a knowing violation of law or that he personally gained in fact a financial profit or other advantage to which he was not legally entitled or that his acts violated Section 719 of the New York Business Corporation Law or (ii) for any act or omission prior to July 8, 1988."

ARTICLE V of the registrant's By-Laws provides as follows:

"Section 1. INDEMNIFICATION-THIRD PARTY AND DERIVATIVE ACTIONS.

(a) The Corporation shall indemnify any person made, or threatened to be made, a party to an action or proceeding (other than one by or in the right of the Corporation to procure a judgment in its favor), whether civil or criminal, including an action by or in the right of any other corporation of any type or kind, domestic or foreign, or any partnership, joint venture, trust, employee benefit plan or other enterprise, which any director or officer of the

Corporation served in any capacity at the request of the Corporation, by reason of the fact that he, his testator or intestate, is or was a director or officer of the Corporation, by reason of the fact that he, his corporation, partnership, joint venture, trust, employee benefit plan or other enterprise in any capacity, against judgments, fines, amounts paid in settlement and expenses (including attorneys' fees) incurred in connection with any such action or proceeding, or any appeal therein, provided that no indemnification may be made to or on behalf of such person if (i) his acts were committed in bad faith or were the result of his active and deliberate dishonesty and were material to such action or proceeding or (ii) he personally gained in fact a financial profit or other advantage to which he was not legally entitled.

(b) The Corporation shall indemnify any person made, or threatened to be made, a party to an action by or in the right of the Corporation to procure a judgment in its favor by reason of the fact that he, his testator or intestate, is or was a director or officer of the Corporation, or is or was serving at the request of the Corporation as a director or officer of any other corporation of any type or kind, domestic or foreign, or of any partnership, joint venture, trust, employee benefit plan or other enterprise, against judgments, fines, amounts paid in settlement and expenses (including attorneys' fees) incurred in connection with such action, or any appeal therein, provided that no indemnification may be made to or on behalf of such person if (i) his acts were committed in bad faith or were the result of his active and deliberate dishonesty and were material to such action or (ii) he personally gained in fact a financial profit or other advantage to which he was not legally entitled.

(c) The termination of any civil or criminal action or proceeding by judgment, settlement, conviction or upon a plea of nolo contendere, or its equivalent, shall not in itself create a presumption that any such person has not met the standard of conduct set forth in this Section 1.

(d) For the purpose of this Section 1: (i) the Corporation shall be deemed to have requested a person to serve an employee benefit plan where the performance by such person of his duties to the Corporation also imposes duties on, or otherwise involve services by, such person to the plan or participants or beneficiaries of the plan; and (ii) excise taxes assessed on a person with respect to an employee benefit plan pursuant to applicable law shall be considered fines.

Section 2. PAYMENT OF INDEMNIFICATION; REPAYMENT.

(a) A person who has been successful, on the merits or otherwise, in the defense of a civil or criminal action or proceeding of the character described in Section 1 of this Article V shall be entitled to indemnification as authorized in such Section.



(b) Except as provided in paragraph (a) of this Section 2, any indemnification under Section 1 of this Article V, unless ordered by a court, shall be made by the Corporation only if authorized in the specific case:

(i) by the Board of Directors acting by a quorum consisting of directors who are not parties to the action or proceeding giving rise to the indemnity claim upon a finding that the director or officer has met the standard of conduct set forth in Section 1 of this Article V; or (ii) if a quorum under the foregoing clause (i) is not obtainable or, even if obtainable, a quorum of disinterested directors so directs: (A) by the Board of Directors upon the opinion in writing of independent legal counsel that indemnification is proper in the circumstances because the standard of conduct set forth in Section 1 of this Article V has been met by such director or officer, or (B) by the

shareholders of the Corporation upon a finding that the director or officer has met such standard of conduct.

(c) Expenses Incurred by a director or officer in defending a civil or criminal action or proceeding shall be paid by the Corporation in advance of the final disposition of such action or proceeding upon receipt of an undertaking by or on behalf of such director or officer to repay such amount incase he is ultimately found, in accordance with this Article V, not to be entitled to indemnification or, where indemnity is granted, to the extent the expenses so paid exceed the indemnification to which he is entitled.

(d) Any indemnification of a director or officer of the Corporation under Section 1 of this Article V, or advancement of expenses under paragraph (c) of this Section 2, shall be made promptly, and in any event within 60 days, upon the written request of the director of officer.

Section 3. ENFORCEMENT; DEFENSES.

The right to indemnification or advancement of expenses granted by this Article V shall be enforceable by the director or officer in any court of competent jurisdiction if the Corporation denies such request, in whole or in part, or if no disposition thereof is made within 60 days after written request by the director or officer. Such person's expenses incurred in connection with successfully establishing his right to indemnification, in whole or in part, in any such action shall also be indemnified by the Corporation. It shall be a defense to any such action (other than an action brought to enforce a claim for the advancement of expenses under Section 2 of this Article V where the required undertaking has been received by the Corporation) that the claimant has not met the standard of conduct set forth in Section 1 of this Article V, but the burden of providing such defense shall be on the Corporation. Neither the failure of the Corporation (including its Board of Directors, its independent legal counsel, and its shareholders) to have made a determination that indemnification of the claimant is proper in the circumstances, nor the fact that there has been an actual determination by the Corporation (including its Board of Directors, its independent legal counsel, and its shareholders) that indemnification of the claimant is not proper in the circumstances, shall be a defense to the action or create a presumption that the claimant is not entitled to indemnification.

Section 4. SURVIVAL, SAVINGS CLAUSE; PRESERVATION OF OTHER RIGHTS.

(a) The foregoing indemnification provisions shall be deemed to be a contract between the Corporation and each director and officer who serves in such capacity at any time while these provisions, as well as the relevant provisions of the New York Business Corporation Law, are in effect and any repeal or modification thereof shall not affect any right or obligation then existing with respect to any state of facts then or previously existing or any action or proceeding previously or thereafter brought or threatened based in whole or in part upon any such state of facts. Such a contract fight may not be modified retroactively without the consent of such director or officer.

(b) If this Article V or any portion hereof shall be invalidated on any ground by any court of competent jurisdiction, then the Corporation shall nevertheless indemnify each director or officer of the Corporation against judgments, fines, amounts paid in settlement and expenses (including attorneys' fees) incurred in connection with any actual or threatened action or proceeding, whether civil or criminal, including any actual or threatened action by or in the right of the Corporation, or any appeal therein, to the full extent permitted by any applicable portion of this Article V that shall not have been invalidated and to the full extent permitted by applicable law.

(c) The indemnification provided by this Article V shall not be deemed exclusive of any other rights to which those indemnified may be entitled under

any by-law, agreement, vote of shareholders or directors or otherwise, both as to action in his official capacity and as to action in another capacity while holding such office, and shall continue as to a person who has ceased to be a director or officer and shall inure to the benefit of the heirs, executors and administrators of such a person. The Corporation is hereby authorized to provide further



indemnification if it deems advisable by resolution of shareholders or directors, by amendment of these by-laws or by agreement.

Section 5. INSURANCE.

The Corporation may purchase and maintain insurance:

(a) to indemnify the Corporation for any obligation which it incurs as a result of the indemnification of directors and officers under the provisions of this Article V,

(b) to indemnify directors and officers in instances in which they may be indemnified by the Corporation under the provisions of this Article V, and

(c) to indemnify directors and officers in instances in which they may not otherwise be indemnified by the Corporation under the provisions of this Article V, provided that the contract of insurance covering such directors and officers pursuant to the foregoing paragraph (c) of Section 4 of this Article V shall provide, in a manner acceptable to the superintendent of insurance, for retention amount and for co-insurance, and provided, further, that no insurance under this Article V may provide for any payment, other than the cost of defense, to or on behalf of any director or officer if a judgment or other final adjudication adverse to the insured director or officer establishes (i) that his acts of active and deliberate dishonesty were material to the cause of action so adjudicated or (ii) that the director or officer personally gained in fact a financial profit or other advantage to which he was not legally entitled.

Section 6. INDEMNIFICATION OF PERSONS NOT DIRECTORS OR OFFICERS OF THE CORPORATION.

The Corporation may, by resolution adopted by the Board of directors of the Corporation, indemnify any person not a director or officer of the Corporation, who is made, or threatened to be made, a party to an action or proceeding, whether civil or criminal, by reason of the fact that he, his testator or intestate, is or was an employee or other agent of the Corporation, against judgments, fines, amounts paid in settlement and expenses (including attorneys' fees) incurred in connection with such action or proceeding, or any appeal therein, provided that no indemnification may be made to or on behalf of such person if (i) his acts were committed in bad faith or were the result of active and deliberate dishonesty, and such acts were material to such action or proceeding, or (ii) he personally gained in fact a financial profit or other advantage to which he was not legally entitled.

Section 7. RETROACTIVITY.

The right to indemnification conferred by this Article V shall be retroactive to events occurring prior to the adoption f this Article V to the fullest extent permitted by law."

ITEM 7. EXEMPTION FROM REGISTRATION CLAIMED

Not applicable.

ITEM 8. EXHIBITS

| NO. | DESCRIPTION |
|---|---|
| 4.1 | Certificate of Incorporation |
| 4.2 | Certificate of Amendment of the Certificate of Incorporation, Filed March 17, 1980 |
| 4.3 | Certificate of Amendment of the Certificate of Incorporation, Filed June 16, 1981 |
| 4.4 | Certificate of Amendment to the Certificate of Incorporation, Filed July 22, 1988 |
| 4.5 | Amended and Restated By-laws |
| 4.6 | Form of Common Stock Certificate |
| 4.7 | Enzo Biochem, Inc. 2005 Equity Compensation Incentive Plan, previously filed as an exhibit to the registrant's |



Proxy Statement on Schedule 14A filed on January 19, 2005, is incorporated herein by reference.

| | |
|---|---|
| 4.8 | Enzo Biochem, Inc. 1999 Stock Option Plan, previously filed as exhibit 4.1 to the registrant's Registration Statement on Form S-8 (Registration No. 333-87153), is incorporated herein by reference |
| 4.9 | Enzo Biochem, Inc. 1994 Stock Option Plan |
| 5.1 | Legal Opinion of Greenberg Traurig, LLP |
| 23.1 | Consent of Ernst & Young LLP |
| 23.2 | Consent of Greenberg Traurig, LLP (included in exhibit 5.1) |
| 24.1 | Powers of Attorney of the directors and certain officers of the registrant (included in the signature pages to this Registration Statement) |

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* Except as otherwise indicated, all exhibits listed are filed herewith.

ITEM 9. UNDERTAKINGS

The undersigned registrant hereby undertakes:

(1) To file, during any period in which offers or sales are being made, a post-effective amendment to this registration statement:

(i) To include any prospectus required by Section 10(a)(3) of the Securities Act of 1933 ("Securities Act");

(ii) To reflect in the prospectus any facts or events arising after the effective date of the registration statement (or the most recent post-effective amendment thereof) which, individually or in the

aggregate, represent a fundamental change in the information set forth in the registration statement. Notwithstanding the foregoing, any increase or decrease in volume of securities offered (if the total dollar value of securities offered would not exceed that which was registered) and any deviation from the low or high end of the estimated maximum offering range may be reflected in the form of prospectus filed with the Commission pursuant to Rule 424(b) if, in the aggregate, the changes in volume and price represent no more than 20% change in the maximum aggregate offering price set forth in the "Calculation of Registration Fee" table in the effective registration statement; and

(iii) To include any material information with respect to the plan of distribution not disclosed previously in the registration statement or any material change to such information in the registration statement; provided, however, that paragraphs (a)(1)(i) and (a)(1)(ii) do not apply if the information required to be included in a post-effective amendment by those paragraphs is contained in periodic reports filed with or furnished to the Commission by the registrant pursuant to Sections 13 or 15(d) of the Securities Exchange Act of 1934 ("Exchange Act") that are incorporated by reference in the registration statement.

(2) That, for the purpose of determining any liability under the Securities Act, each such post-effective amendment shall be deemed to be a new registration statement relating to the securities offered therein, and the offering of such securities at that time shall be deemed to be the initial bona fide offering thereof.

(3) To remove from registration by means of a post-effective amendment any of the securities being registered which remain unsold at the termination of the offering.

The undersigned registrant hereby undertakes that, for purposes of determining any liability under the Securities Act, each filing of the registrant's annual report pursuant to Sections 13(a) or 15(d) of the Exchange Act (and, where applicable, each filing of an employee benefit plan's annual report pursuant to Section 15(d) of the Exchange Act), that is incorporated by reference in the registration statement shall be deemed to be a new registration statement relating to the securities offered therein, and the offering of such securities at that time shall be deemed to be the initial bona fide offering thereof.



Insofar as indemnification for liabilities arising under the Securities Act may be permitted to directors, officers and controlling persons of the registrant pursuant to the provisions described in Item 6, or otherwise, the registrant has been advised that in the opinion of the Securities and Exchange Commission such indemnification is against public policy as expressed in the Securities Act and is, therefore, unenforceable. In the event that a claim for indemnification against such liabilities (other than the payment by the registrant of expenses incurred or paid by a director, officer or controlling person of the registrant in the successful defense of any action, suit or proceeding) is asserted by such director, officer or controlling person in connection with the securities being registered, the registrant will, unless in the opinion of its counsel the matter has been settled by controlling precedent, submit to a court of appropriate jurisdiction the question whether such indemnification by it is against public policy as expressed in the Act and will be governed by the final adjudication of such issue.

SIGNATURES

Pursuant to the requirements of the Securities Act of 1933, the Registrant certifies that it has reasonable grounds to believe that it meets all of the requirements for filing on Form S-8 and has duly caused this Registration Statement to be signed on its behalf by the undersigned, thereunto duly authorized, in the City of Farmingdale, New York, on March 30, 2005.

ENZO BIOCHEM, INC.

By: /s/ Elazar Rabbani
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Elazar Rabbani, Ph.D.
Chairman and Chief Executive Officer

SPECIAL POWER OF ATTORNEY

The undersigned constitute and appoint Elazar Rabbani and Shahram K. Rabbani or either of them acting alone, their true and lawful attorney-in-fact and agent with full power of substitution, for him and in his name, place, and stead, in any and all capacities, to sign any and all amendments, including post-effective amendments, to this Form S-8 Registration Statement, and to file the same with all exhibits thereto, and all documents in connection therewith, with the U.S. Securities and Exchange Commission, granting such attorney-in-fact the full power and authority to do and perform each and every act and thing requisite and necessary to be done in and about the premises, as fully and to all intents and purposes as he might or could do in person, hereby ratifying and confirming all that such attorney-in-fact may lawfully do or cause to be done by virtue hereof.

Pursuant to the requirements of the Securities Act of 1933, this Registration Statement has been signed below by the following persons in the capacities and on the dates indicated.

Date: March 30, 2005 By: /s/ Elazar Rabbani
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Elazar Rabbani, Ph.D.
Chairman of the Board of Directors and Chief Executive Officer (Principal Executive Officer)

Date: March 30, 2005 By: /s/ Shahram K. Rabbani
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Shahram K. Rabbani
Chief Operating Officer, Secretary and Director

Date: March 30, 2005 By: /s/ Barry W. Weiner
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Barry W. Weiner
President, Chief Financial Officer (Principal Financial and Accounting Officer) and Director

Date: By:
---
John B. Sias
Director

Date: March 30, 2005 By: /s/ John J. Delucca
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John J. Delucca
Director

Date: March 30, 2005 By: /s/ Irwin C. Gerson
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Irwin C. Gerson
Director

Date: March 30, 2005 By: /s/ Melvin F. Lazar
---
Melvin F. Lazar
Director

Date: By:
---
Marcus A. Conant, M.D.
Director

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* Except as otherwise indicated, all exhibits listed are filed herewith.