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

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

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

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

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

<TABLE>
<CAPTION>

<S> Title of Each Class of Securities to be Registered	<C> Amount to be Registered(1)(2)	<C> Proposed Maximum Offering Price Per Share	<C> Proposed Maximum Aggregate Offering Price	<C> Amount of Registration Fee
Common Stock, par value $0.01 per share	1,000,000(3)	$14.56(4)	$14,560,000	$1,714.00

</TABLE>

(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.

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.

<TABLE>
<CAPTION>

	BENEFICIAL OWNERSHIP AFTER THIS OFFERING (1)(2)

NAME AND POSITION	BENEFICIAL OWNERSHIP PRIOR TO THIS OFFERING	SHARES THAT MAY BE OFFERED AND SOLD HEREBY	BENEFICIAL OWNERSHIP AFTER THIS OFFERING (1)(2) NUMBER OF SHARES	BENEFICIAL OWNERSHIP AFTER THIS OFFERING (1)(2) PERCENT OF CLASS
<S>	<C>	<C>	<C>	<C>
Elazar Rabbani, Ph.D. Chairman of the Board and Chief Executive Officer	2,297,934 (3)	529,571	1,768,363	5.51%
Shahram K. Rabbani Chief Operating Officer, Secretary and Director	2,228,680 (4)	529,571	1,699,109	5.29%
Barry W. Weiner President, Chief Financial Officer and Director	1,482,918 (5)	529,571	953,347	2.97%
Dean Engelhardt, Ph.D. Executive Vice President	263,816 (6)	99,523	164,293	*
Norman E. Kelker, Ph.D. Senior Vice President	182,648 (7)	65,400	117,248	*
John J. Delucca Director	80,324 (8)	80,324	--	--
Irwin C. Gerson Director	54,690 (9)	54,690	--	--
Melvin F. Lazar, CPA Director	65,394 (10)	28,644	36,750	*
John B. Sias Director	184,210 (11)	110,500	73,710	*
Marcus A. Conant, M.D. Director	26,458 (12)	26,458	--	--

NAME AND POSITION	BENEFICIAL OWNERSHIP PRIOR TO THIS OFFERING	SHARES THAT MAY BE OFFERED AND SOLD HEREBY	BENEFICIAL OWNERSHIP AFTER THIS OFFERING (1)(2) NUMBER OF SHARES	BENEFICIAL OWNERSHIP AFTER THIS OFFERING (1)(2) PERCENT OF CLASS
<S>	<C>	<C>	<C>	
Herb Bass Vice President - Finance	197,968 (13)	85,091	112,877	*
David Goldberg Vice President - Business Development	112,775 (14)	84,408	28,367	*
Barbara Thalenfeld Vice President - Corporate Development	82,734 (15)	70,381	12,353	*

(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

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

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

Shahram K. Rabbani
Chief Operating Officer, Secretary and Director

Date: March 30, 2005 By: /s/ Barry W. Weiner

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

John J. Delucca
Director

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

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

EXHIBIT INDEX

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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.

EXHIBIT 4.1

CERTIFICATE OF INCORPORATION

OF

ENZO BIOCHEM, INC.

Under Section 402 of the Business Corporation Law

1. The name of the Corporation is:

ENZO BIOCHEM, INC.

2. The purposes for which the Corporation is formed are:

(a) To manufacture or otherwise produce, purchase, process, compound, prepare, inventory, sell and conduct research relating to all kinds of chemicals, drugs, enzymes, medicines, physicians and surgeon's supplies and instruments and all accessories, appliances, kits, instruments, and products relating thereto.

(b) To acquire, lease, manage, operate, develop, subdivide, control, build, erect or maintain any rights or interests in real property of any kind for any commercial, residential or public purposes.

(c) To conduct a general mercantile and manufacturing business, to operate a laboratory or similar place of research, and to engage in all activities or services incidental or related thereto.

(d) To manufacture, acquire, sell or otherwise dispose of, and deal in and with, all kinds of personal property.

(e) To acquire, sell or otherwise dispose of, deal in and with, and grant and obtain rights in respect of, all kinds of intangible property including patent rights, inventions, discoveries, formulae and processes, copyrights, trademarks, trade names and designs.

(f) To borrow or raise money, to issue securities and other evidences of indebtedness of all kinds and secure their payment by the creation of security interests in any of its property.

(g) To acquire, sell or transfer its own securities.

(h) To lend any of its funds, with or without either security or interest.

(i) To acquire and to sell or otherwise dispose of (a) any interest in the business or assets of any individual, corporation or other entity, and (b) securities and obligations issued or created by any corporation,

governmental unit or other entity, and to exercise any rights relating to them.

(j) To the extent permitted by law, to promote, finance, underwrite or assist, financially or otherwise, and to assume or guarantee the obligations of, any individual, corporation or other entity, in furtherance of its corporate purposes.

(k) To carry out any of the foregoing purposes as principal or agent, either alone or in association with others.

(l) To carry on any similar lawful business.

The listing of these purposes is not to imply any limitation on or exclusion of any powers this Corporation may have under New York law now or hereafter in effect.

3. The office of the Corporation will be in the City of New York, County of New York and State of New York.

4. The aggregate number of shares which the Corporation is authorized to issue is one-hundred (100) Common Shares of the par value of ten cents (10(cent)) each.

5. The Secretary of State of New York is designated as the agent of the Corporation upon whom process against it may be served. The Secretary of State shall mail a copy of any process against the Corporation which may be served upon him to the Corporation c/o Elazer Rabbani, 69 Fifth Avenue, New York, New York.

6. Any action required or permitted to be taken by the Board may be taken without a meeting if all members of the Board consent in writing to the adoption of a resolution authorizing the action and such written consents and resolutions are filed with the minutes of the proceedings of the Board.

7. The accounting period which the Corporation intends to establish as its first calendar or fiscal year for reporting the franchise tax on business corporations imposed by

Article 9-A of the Tax Law shall be from the date of the filing of this certificate until December 31, 1976.

I affirm under the penalties of perjury that the Statements in this certificate are true.

Dated: August 9, 1976

/s/

EUGENE FARBER
Address: Eugene Farber
319 East 24th Street
New York, New York 10010

EXHIBIT 4.2

CERTIFICATE OF AMENDMENT
OF THE
CERTIFICATE OF INCORPORATION
OF ENZO BIOCHEM, INC.

UNDER SECTION 805 OF THE BUSINESS
CORPORATION LAW

WE, the undersigned, ELAZAR RABBANI and BARRY W. WEINER, being respectively the President and Secretary of ENZO BIOCHEM, INC., do hereby certify:

1. The name of the Corporation is ENZO BIOCHEM, INC.

2. The Certificate of Incorporation was filed by the Department of State on August 13, 1976.

3. The Certificate of Incorporation is hereby amended to affect the following changes authorized by the Business Corporation Law:

(A) To increase the capitalization of the Corporation.

(B) To change the address to which the Secretary of State shall mail a copy of process against the Corporation served upon him.

(C) To provide for the indemnification of officers and directors.

(D) To provide for transactions by the Corporation with its directors.

(E) To provide for the adoption, amendment or repeal of the By-laws of the Corporation.

(F) To provide that no holder of shares of the Corporation shall have preemptive rights.

4. To accomplish the foregoing:

(A) Article 4 is hereby amended to read as follows:

"4. The aggregate number of shares which the Corporation shall have authority to issue is five million (5,000,000) shares, one ($.01) cent par value, per share, all of which shall be designated Common Stock."

(B) Article 5 is hereby amended to read as follows:

"5. The Secretary of State of New York is designated as the agent of the Corporation upon whom process against it may be served. The Secretary of State shall mail a copy of any process against the Corporation which may be served upon him to the Corporation c/o Elazar Rabbani, 300 Park Avenue South, New York, New York 10010."

(C) Article 8 is hereby added to read as follows:

"8. The Corporation shall, to the fullest extent permitted by the Business Corporation Law of the State 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 matter as provided under Article Seven of the Business Corporation Law of the State of New York."

(D) Article 9 is hereby added to read as follows:

"9. (a) No contract or other transaction between the Corporation and one or more of its directors, or between the Corporation and any other corporation, firm, association or other entity, in which one or more of its directors are directors or officers, or are financially interested, shall be either void or voidable for this reason alone or by reason alone that such director or directors are present at the meeting of the Board or of a committee thereof, which

authorizes such contract or transaction, or that his or their votes counted for such purposes:

(1) If the effect of such common directorship, officership, or financial interest is disclosed or known to the Board or committee, and the Board or committee authorizes such contract or transaction by a vote sufficient for such purpose without counting the vote or votes of such interested director or directors, or against,

(2) If such common directorship, officership or financial interest is disclosed or known to the shareholders entitled to vote thereon, and such contract or transaction is approved by vote of the shareholders. For this purpose, the shares of such interested director or directors shall not be shares entitled to vote; or

(3) If the contract or transaction is fair and reasonable as to the Corporation at the time it is authorized by the Board, a committee or the shareholders.

(b) Common or interested directors may be counted in determining the presence of a quorum at a meeting of the Board or of a committee which approves such contract or transaction."

(E) Article 10 is hereby added to read as follows:

"10. The Board of Directors is authorized to alter, repeal or adopt by the By-laws of the Corporation, but any By-law adopted by the Board may be amended or repealed by the shareholders entitled to vote thereon."

(F) Article 11 is hereby added to read as follows:

"11. No holder of any shares of stock of this Corporation shall be entitled as of right to purchase or subscribe for any part of any shares of stock of the Corporation authorized herein or of any additional shares of stock of any class to be issued by reason of any increase of the authorized capital stock of the Corporation, or of any warrants, options or other instruments that shall confer upon the holders thereof the right to subscribe for or purchase or receive from the Corporation any shares of stock of any class which the Corporation may issue or sell, whether or not the same shall be exchangeable for any shares of stock of the Corporation of any class, or to purchase or subscribe for any part of any bonds, certificates of indebtedness, debentures or other securities convertible or exchangeable into shares of stock of any class of the Corporation, or to which shall be attached or appurtenant any options, warrants or other instruments that shall confer upon the holders of such obligations, options, warrants or other instruments the right to subscribe for or purchase or receive from the Corporation any shares of its capital stock of any class or classes now or hereafter authorized, but any shares of stock authorized herein or any such additional authorized issue of any shares of stock or any other securities may be issued and disposed of by the Board of Directors to such persons, firms, corporations or associations, and upon such terms and conditions as the Board of Directors may in their discretion determine, without offering any thereof on the same term or on any terms to the shareholders then of record or to any class of shareholders."

5. The 60 shares of Common Stock, par value $.10 presently issued and outstanding shall be changed into 460,000 shares of the Common Stock, $.01 par value, at the rate of 7,666 2/3 shares of new Common Stock for each share of old Common Stock.

6. The foregoing amendments were authorized by the vote of the

holders of a majority of all outstanding shares entitled to vote thereof at a meeting of shareholders held on the 13th day of March 1980.

IN WITNESS THEREOF, we have signed this Certificate on the 13 day of March 1980 and we affirm the statements contained herein as true under penalty of perjury.

/s/

Elazar Rabbani, President

/s/

Barry W. Weiner, Secretary

EXHIBIT 4.3

CERTIFICATE OF AMENDMENT
OF THE
CERTIFICATE OF INCORPORATION
OF ENZO BIOCHEM, INC.

UNDER SECTION 805 OF THE BUSINESS
CORPORATION LAW

WE, the undersigned, ELAZAR RABBANI and BARRY W. WEINER, being respectively the President and Secretary of ENZO BIOCHEM, INC., do hereby certify:

1. The name of the Corporation is ENZO BIOCHEM, INC.

2. The Certificate of Incorporation was filed by the Department of State on August 13, 1976.

3. The Certificate of Incorporation is hereby amended to affect the following changes authorized by the Business Corporation Law:

(A) To increase the capitalization of the Corporation.

(B) To change the address to which the Secretary of State shall mail a copy of process against the Corporation served upon him.

4. To accomplish the foregoing:

(A) Article 4 is hereby amended to read as follows:

"4. The aggregate number of shares which the Corporation shall have authority to issue is five million (30,000,000) shares, one ($.01) cent par value, per share, all of which shall be designated Common Stock."

(B) Article 5 is hereby amended to read as follows:

"5. The Secretary of State of New York is designated as the agent of the Corporation upon whom process against it may be served. The Secretary of State shall mail a copy of any process against the Corporation which may be served upon him to the Corporation c/o Elazar Rabbani, 325 Hudson Street, New York, New York 10013."

5. The foregoing amendments were authorized by the vote of the holders of a majority of all outstanding shares entitled to vote thereon at a meeting of shareholders held on the 29h day of March 1981.

IN WITNESS THEREOF, we have signed this Certificate on the 3rd day of June 1981 and we affirm the statements contained herein as true under penalty of perjury.

/s/

Elazar Rabbani, President

/s/

Barry W. Weiner, Secretary

EXHIBIT 4.4

CERTIFICATE OF AMENDMENT OF THE CERTIFICATE OF INCORPORATION

OF ENZO BIOCHEM, INC.

Under Section 805 of the Business Corporation Law

IT IS HEREBY CERTIFIED THAT:

FIRST: The name of the Corporation is ENZO BIOCHEM, INC.

SECOND: The certificate of incorporation was filed by the department of state on the 13th day of August, 1976.

THIRD: The amendments of the certificate of incorporation of the Corporation affected by this certificate of amendment are as follows:

Article 4 of the certificate of incorporation, relating to the authorized capital stock of the Corporation, is hereby amended to increase the presently existing one cent ($.01) par value common stock and to create a new class of preferred stock to read as follows:

> "4. The total number of shares of all classes of stock which the Corporation shall have authority to issue is one hundred million (100,000,000) shares, divided into twenty-five million (25,000,000) shares of Preferred Stock of one cent ($.01) par value per share, and seventy-five million (75,000,000) shares of Common Stock of the par value of one cent ($.01) per share. Each share of Common Stock shall be entitled to one vote.
>
> No shareholder shall have a preemptive right to acquire any shares or securities of any class, whether nor or hereafter authorized which may at any time be issued, sold or offered for sale by the Corporation.
>
> The Preferred Stock may be divided into and issued from time to time in one or more series as may be fixed and determined by the Board of Directors. The relative rights and preferences of the Preferred Stock of each series shall be such as shall be stated in any resolution or resolutions adopted by the Board of Directors setting forth the designation of the series and fixing and determining the relative rights and preferences thereof, any such resolution or resolutions being herein called a "Directors' Resolution." The Board of Directors is hereby authorized to fix and determine such variations in the designations, preferences, and relative, participating, optional or other special rights (including, without limitation, special voting rights, of conversion into Common Stock or other securities, redemption provisions or sinking fund provisions) as between series and between the
>
> Preferred Stock or any series thereof and the Common Stock, and the qualifications, limitations or restrictions of such rights, all as shall be stated in a Directors' Resolution, and the shares of Preferred Stock or any series thereof may have full or limited voting powers, or be without voting powers, all as shall be stated in a Directors' Resolution."

Article 10 of the certificate of incorporation of the Corporation, relating to the power of the Board of Directors to alter, repeal or adopt By-laws of the Corporation, is hereby amended to read as follows:

> "10. The Board of Directors is authorized to alter, repeal or adopt By-Laws of the Corporation. Any By-Laws made by the directors under the powers conferred hereby may be altered, amended or repealed by the directors or by the shareholders. Notwithstanding the foregoing and anything contained in this certificate of incorporation to the contrary, ARTICLE I, Sections 2 and 11, ARTICLE II, Sections 2, 11, 12, and 15, and ARTICLE V of the By-Laws shall not be altered, amended or repealed and no provision inconsistent therewith shall be adopted without the affirmative vote of (i) the holders of at least 50% of the voting power of the then outstanding shares of stock entitled to vote generally in the election of directors, voting together as a single class and (ii) a majority of such shares owned by persons not affiliated with an Interested Shareholder (as defined in Article 14 of this certificate of incorporation) provided that notice of such proposed alteration, amendment, repeal or adoption is included in the notice of any special meeting called for the taking of

such action. Notwithstanding any other provisions of this certificate of incorporation or the By-Laws of the Corporation (and not withstanding the fact that the lesser percentage may be specified by law, this certificate of incorporation or By-Laws of the Corporation), the affirmative vote of (i) the holders of at least 80% of the voting power of the then outstanding shares or stock entitled to vote generally in the election of directors, voting together as a single class, and (ii) a majority of such shares beneficially owned by persons not affiliated with an Interested Shareholder (as defined in Article 14 of this certificate of incorporation), shall be required to alter, amend, adopt any provision inconsistent with or repeal this Article 10."

The following is hereby added to the certificate of incorporation as Article 12, relating to director's liability:

"12. No director of the Corporation shall be liable to the Corporation or its shareholders for damages 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 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 710 of the New York Business Corporation Law or (ii) for any act or omission prior to July 8, 1988."

The following is hereby added to the certificate of incorporation as Article 13, relating to classification of the Board of Directors:

"13. (a) The Directors of the Corporation, other than those who may be elected by the holders of any series of Preferred Stock under specified circumstances, shall be classified, with respect to the time for which they severally hold office, into three classes, as nearly equal in number as possible, as shall be provided in the manner specified in the By-Laws of the Corporation, one class to be originally elected for a term expiring at the annual meeting of shareholders to be held in 1989, another class to be originally elected for a term expiring at the annual meeting of shareholders to be held in 1990, and another class to be originally elected for a term expiring at the annual meeting of shareholders to be held in 1991, with each class to hold office until its successor is elected and qualified. At each annual meeting of the shareholders of the Corporation, the successors of the class of directors whose term expires at the meeting shall be elected to hold office for a term expiring at the annual meeting of shareholders held in the third year following the year of their election. Election of directors need not be by ballot unless the By-Laws of the Corporation so provide.

(b) Advance notice of shareholder nominations for the election of directors shall be given in the manner provided in the By-Laws of the Corporation.

(c) Newly created directorships resulting from any increase in the number of directors and any vacancies on the Board of Directors resulting from death, resignation, disqualification, removal or other cause shall be filled by the affirmative vote of a majority of the remaining directors then in office, even though less than a quorum of the Board of Directors. Any director elected in accordance with the preceding sentence shall hold office for the remainder of the full term of the class of directors in which the new directorship was created or the vacancy occurred and until such director's successor shall have been elected and qualified. No decrease in the number of directors, constituting the Board of Directors shall shorten the term of any incumbent director.

(d) Subject to the rights of the holders of any Series of Preferred Stock, any director may be removed from office only with cause and only by the affirmative vote of (1) the holders of at least 80% of the combined voting power of the then-outstanding shares of stock entitled to vote generally in the election of directors, voting together as a single class and (ii) a majority of such shares beneficially owned by

persons not affiliated with an Interested Shareholder (as defined in Article 14 of this Certificate of Incorporation).

(e) Notwithstanding any other provisions of this certificate of incorporation or the By-Laws of the Corporation (and notwithstanding the fact that a lesser percentage may be specified by law, this certificate of incorporation or By-Laws of the Corporation), the affirmative vote of (i) the holders of at least 80% of the combined voting power of the then outstanding shares of stock entitled to vote generally in the election of directors, voting together as a single class, and (ii) a majority of such shares beneficially owned by persons not affiliated with an Interested Shareholder (as defined in Article 14 of this certificate of incorporation), shall be required to alter, amend, adopt any provision inconsistent with or repeal this Article 13."

The following is hereby added to the certificate of incorporation as Article 14, relating to business combinations:

"14. (1) In addition to any affirmative vote required by law or this certificate of incorporation, and except as otherwise expressly provided in Section (2) of this Article 14, a Business Combination (as hereinafter defined) shall require the affirmative vote of (i) the holders of at least 80% of the voting power of the then outstanding shares of capital stock of the Corporation entitled to vote generally in the election of directors (the "Voting Stock"), voting together as a single class, and (ii) a majority of such shares beneficially owned by persons not affiliated with the Interested Shareholder (as hereinafter defined). Such affirmative vote shall be required notwithstanding the fact that no vote may be required or that a lesser percentage may be specified, by law or in any agreement with any national securities exchange or otherwise.

(2) The provisions of Section (1) of this Article 14 shall not be applicable to any particular Business Combination, and such Business Combination shall require only such affirmative vote as is required by law and any other provisions of this certificate of incorporation, if all of the conditions specified in either of the following paragraphs A and B are met or, in the case of a Business Combination not involving the payment of consideration to the

holders of outstanding Voting Stock, if the condition specified in the following paragraph A is met:

(A) The Business Combination shall have been approved by a majority of the Continuing Directors (as hereinafter defined).

(B) All of the following conditions shall have been met:

(i) The aggregate amount of the cash and the Fair Market Value (as hereinafter defined) as of the date of the consummation of the Business Combination (the "Consummation Date") of consideration other than cash to be received per share by holders of common stock of the Corporation in such Business Combination shall be at least equal to the higher of the following:

(a) (if applicable) the highest per share price (including any brokerage commissions, transfer taxes and soliciting dealers' fees) paid by the Interested Shareholder for any shares of common stock of the Corporation acquired by it (1) within the two-year period immediately prior to the first public announcement of the proposal of the Business Combination (the "Announcement Date") or (2) in the transaction in which it became an Interested Shareholder, whichever is higher; or

(b) the Fair Market Value per share of common stock of the Corporation on the Announcement Date or on the date on which the Interested Shareholder became an Interested Shareholder (such later date is referred to in this Article 14 as the

"Determination Date"), whichever is higher.

(ii) The aggregate amount of the cash and the Fair Market Value as of the Consummation Date of consideration other than cash to be received per share by holders of shares of any other class of outstanding Voting Stock shall be at least equal to the highest of the following (it being intended that the requirements of this paragraph (B)(ii) shall be required to be met with respect to every class of outstanding Voting Stock, whether or not the Interested Shareholder has previously acquired any shares of a particular class of Voting Stock);

(a) (if applicable) the highest per share price (including any brokerage commissions, transfer taxes and soliciting dealers' fees) paid by the Interested Shareholder for any shares of such class of Voting Stock acquired by it (1) within the two-year period immediately prior to the Announcement Date or (2) in the transaction in which it became an Interested Shareholder, whichever is higher;

(b) (if applicable) the highest preferential amount per share to which the holders of shares of such class of Voting Stock are entitled in the event of any voluntary or involuntary liquidation, dissolution or winding up of the Corporation; and

(c) the Fair Market Value per share of such class of Voting Stock on the Announcement Date or on the Determination Date, whichever is higher.

(iii) The consideration to be received by holders of a particular class of outstanding Voting Stock shall be in cash or in the same form as the Interested Shareholder has previously paid for shares of such class of Voting Stock. If the Interested Shareholder has paid for shares of any class of Voting Stock with varying forms of consideration, the form of consideration for such class of Voting Stock shall be either cash or the form used to acquire the largest number of shares of such class of Voting Stock previously acquired by it.

(iv) After the Determination Date and prior to the consummation of such Business Combination; (a) except as approved by a majority of the Continuing Directors, there shall have been no failure to declare and pay at the regular date therefor any full quarterly dividends (whether or not cumulative) payable in accordance with the terms of any outstanding Voting Stock; (b) there shall have been (1) no reduction in the annual rate of dividends paid on the common stock of the Corporation (except as necessary to any subdivision of the common stock), except as approved by a majority of the Continuing Directors, and (2) an increase in such annual rate of dividends as necessary to reflect any reclassification (including any reverse stock split), recapitalization, reorganization or any similar transaction which has the effect of reducing the number of outstanding shares of common stock of the Corporation, unless the failure so to increase such annual rate is approved by a majority of the Continuing Directors; and (c) such Interested Shareholder shall have not become the beneficial owner of any additional shares of Voting Stock except as part of the transaction which results in such Interested Shareholder becoming an Interested Shareholder.

(v) After the Determination Date, such Interested Shareholder shall not have received the benefit, directly or indirectly (except proportionately as a shareholder), of any loans, advances, guarantees, pledges or other financial assistance or any tax credits or other tax advantages

provided by the Corporation, whether in anticipation of or in connection with such Business Combination or otherwise.

(vi) A proxy or information statement describing the proposed Business Combination and complying with the requirements of the Securities Exchange Act of 1934 and the rules and regulations thereunder

(or any subsequent provisions replacing such Act, rules or regulations) shall be mailed to all shareholders of the Corporation at least 30 days prior to the documentation of such Business Combination (whether or not such proxy or information statement is required to be mailed pursuant to such Act or subsequent provisions).

(vii) Such Interested Shareholder shall not have made any major changes in the Corporation's business or equity capital structure without the approval of a majority of the Continuing Directors.

(3) For purposes of this Article 14;

(A) The term "Business Combination" shall mean any of the transactions or series of transactions which is referred to in any one or more of the clauses (i) through (v) below.

(i) any merger or consolidation of the Corporation or any Subsidiary (as hereinafter defined) with (a) any Interested Shareholder or (b) any other Corporation (whether or not itself an Interested Shareholder) which is, or after such merger or consolidation would be, an Affiliate (as hereinafter defined) of an Interested Shareholder; or

(ii) any sale, lease, exchange, mortgage, pledge, transfer or other disposition (in one transaction or a series of transactions) to or with any Interested Shareholder or any Affiliate of any Interested Shareholder of any assets of the Corporation or any Subsidiary having an aggregate Fair Market Value of $1,000,000 or more; or

(iii) the issuance or transfer by the Corporation or any Subsidiary (in one transaction or a series of transactions) of any securities of the Corporation or any Subsidiary to any Interested Shareholder or any Affiliate of any Interested Shareholder in exchange for cash, securities or other property (or a combination thereof) having an aggregate Fair Market Value of $1,000,000 or more; or

(iv) the adoption of any plan or proposal for the liquidation or dissolution of the Corporation proposed by or on behalf of an Interested Shareholder or any Affiliate of any Interested Shareholder; or

(v) any reclassification of securities (including any reverse stock split), or recapitalization of the Corporation, or any merger or consolidation of the Corporation with any of its Subsidiaries or any other transaction (whether or not with or into or otherwise involving an Interested Shareholder) which has the effect, directly or indirectly, of increasing the proportionate share of the outstanding shares of any class of equity or convertible securities of the Corporation or any Subsidiary which is directly or indirectly owned by any Interested Shareholder or any Affiliate of any Interested Shareholder.

(B) A "person" shall mean any individual, firm, corporation or other entity.

(C) "Interested Shareholder" shall mean any person (other than the Corporation or any Subsidiary and other than any profit-sharing, employee stock ownership or other

employee benefit plan of the Corporation or any Subsidiary or any trustee of or fiduciary with respect to any such plan when acting in such capacity) who or which:

(i) is the beneficial owner, directly or indirectly, of more than 9% of the voting power of the outstanding Voting Stock;

(ii) is an Affiliate or Associate (as hereinafter defined) of the Corporation and at any time within the two-year period immediately prior to the date in question was the beneficial owner, directly or indirectly, of 9% or more of the voting power of the then outstanding Voting Stock; or

(iii) is an assignee of or has otherwise succeeded to any shares of Voting Stock which were at any time within the two-year period immediately prior to the date in question beneficially owned by any Interested Shareholder, if such assignment or succession shall have occurred in the course of a transaction or series of transactions not involving a public offering within the meaning of the Securities Act of 1933;

provided, however, that the term "Interested Shareholder" shall not include any person who, but for this proviso, would be an Interested Shareholder on June 1, 1988.

(D) A person shall be a "beneficial owner" of any share of Voting Stock:

(i) which such person or any of its Affiliates or Associates beneficially owns, directly or indirectly;

(ii) which such person or any of its Affiliates or Associates has (a) the right to acquire (whether such right is exercisable immediately or only after the passage of time), pursuant to any agreement, arrangement or understanding or upon the exercise of conversion rights, exchange rights, warrants or options, or otherwise, or (b) the right to vote pursuant to any agreement, arrangement or understanding; or

(iii) which are beneficially owned, directly or indirectly, by any other person with which such person or any of its Affiliates or Associates has any agreement, arrangement or understanding for the purpose of acquiring, holding, voting or disposing of any shares of Voting Stock.

(E) For the purposes of determining whether a person is an Interested Shareholder pursuant to paragraph (C) of this Section (3), the number of shares of Voting Stock deemed to be outstanding shall include shares deemed owned through application of paragraph (D) of this Section (3) but shall not include any other shares of Voting Stock which may be issuable pursuant to any agreement, arrangement or understanding, or upon exercise of conversion rights, warrants or options, or otherwise.

(F) "Affiliate" or "Associate" shall have the respective meanings ascribed to such terms in Rule 12b-2 of the General Rules and Regulations under the Securities Exchange Act of 1934, as in effect on December 10, 1987.

(G) "Subsidiary" means any Corporation of which a majority of any class of equity security is owned, directly or indirectly, by the Corporation; PROVIDED, HOWEVER, that for the purposes of the definition of Interested Shareholder set forth in paragraph (C) of this Section (3), the term "Subsidiary" shall mean only a Corporation of which a majority of each class of equity security is owned, directly or indirectly, by the Corporation.

(H) "Continuing Director" means any member of the Board of Directors of the Corporation (the "Board"), while such person is a member of the Board, who is unaffiliated with the Interested Shareholder and was a member of the Board prior to the time that the Interested Shareholder, and any successor of a Continuing Director who is unaffiliated with the

Interested Shareholder and is recommended to succeed a Continuing Director by a majority of Continuing Directors then on the Board.

(I) "Fair Market Value" means (i) in the case of stock, the highest closing sale price during the 30-day period immediately preceding the date in question of a share of such stock on the Composite Tape for New York Stock Exchange-listed Stocks, or, if such stock is not quoted on the Composite Tape, on the New York Stock Exchange, or, if such stock is not listed on such Exchange, on the principal United States securities exchange registered under the Securities Exchange Act of 1934 on which such stock is listed, or, if such stock is not listed on any such exchange, the highest closing sales price or bid quotation with respect to a share of such stock during the 30-day period preceding the date in question on the National Association of Securities Dealers, Inc. Automated Quotations System or any system then in use, or if no such quotations are available, the fair market value on the date in question of a share of such stock as determined in good faith by a majority of the Disinterested Directors; and (ii) in the case of property other than cash or stock, the fair market value of such property on the date in question as determined in good faith by a majority of the Continuing Directors;

(J) In the event of any Business Combination in which the Corporation survives, the phrase "Consideration other than cash to be received" as used in paragraph B(i) and (ii) of Section (2) of this Article 14 shall includes the

shares of common stock of the Corporation and/or the shares of any other class of outstanding Voting Stock retained by the holders of such shares.

(4) A majority of the Continuing Directors of the Corporation shall have the power and duty to determine for the purposes of this Article 14 on the basis of information known to them after reasonable inquiry, (A) whether a person is an Interested Shareholder, (B) the number of shares of Voting Stock beneficially owned by any person, (c) whether a person is an Affiliate or Associate of another, (D) whether a transaction or a series of transactions constitutes a Business Combination, and (E) whether the assets which are the subject of any Business Combination have, or the consideration to be received for the issuance or transfer of securities by the Corporation or any Subsidiary in any Business Combination has, an aggregate Fair Market Value of $1,000,000 or more. Any such determination made in good faith shall be binding and conclusive on all parties.

(5) Nothing contained in this Article 14 shall be construed to relieve any Interested Shareholder from any fiduciary obligation imposed by law.

(6) The fact that any provision complies with paragraph (B) of Section (2) of this Article 14 shall not be construed to impose any fiduciary duty obligation or responsibility on the Board, or any member thereof, to approve such Business Combination or recommend its adoption or approval to the shareholders of the Corporation nor shall such compliance limit, prohibit or otherwise restrict in any manner the Board, or any member thereof, with respect to evaluations of or actions and responses taken with respect to such Business Combination.

(7) Notwithstanding any other provisions of this certificate of incorporation or the By-Laws of the Corporation (and notwithstanding the fact that a lesser percentage may be specified by law, this certificate of incorporation or by By-Laws of the Corporation), the affirmative vote of (a) the holders of 80% or more of the voting power of the then outstanding Voting Stock, voting together as a single class, and (b) a majority of such shares beneficially owned by persons not affiliated with the Interested Shareholder, shall be required to alter, amend or repeal, or adopt any provisions inconsistent with, this Article 14, provided, however, that this Section (7) shall not apply to any alteration, amendment, repeal or adoption unanimously recommended by the Board if all such directors are persons who would be eligible to serve as Continuing Directors within the meaning of Section (3), paragraph H of this Article 14."

FOURTH: The foregoing amendments of the certificate of incorporation of the Corporation were authorized by the vote at a meeting of the Board of Directors of the Corporation, followed by the vote of the holders of at least a majority of all of the outstanding shares of the Corporation entitled to vote on the said amendments of the certificate of incorporation.

IN WITNESS WHEREOF, we have subscribed this document on the date set forth below and do hereby affirm, under the penalties of perjury, that the statements contained therein have been examined by us and are true and correct.

Date: July 21, 1988

/s/

Dr. Elazar Rabbani, President

/s/

Barry W. Weiner, Secretary

EXHIBIT 4.5

AMENDED AND RESTATED

BY-LAWS OF

ENZO BIOCHEM, INC.

(A NEW YORK CORPORATION)

ARTICLE I

MEETING OF SHAREHOLDERS

Section 1. ANNUAL MEETING. The annual meeting of the shareholders of Enzo Biochem, Inc., (hereinafter called the "Corporation") for the election of directors and for the transaction of such other business as may come before the meeting shall be held on the third Wednesday of the fifth month following the close of the Corporation's fiscal year, if not a legal holiday, and if a legal holiday, then on the next succeeding day not a legal holiday, at such time as shall be designated by the Board or Chairman of the Board or the President. If the annual meeting shall not be held on the day hereinabove provided for, the Board shall call a special meeting for the election of directors, which meeting shall be held within two months after said day.

Section 2. SPECIAL MEETINGS. Except as otherwise required by law and subject to the rights of the holders of any class or series of stock having a preference over another class or series of stock as to dividends or upon liquidation, special meetings of shareholders of the Corporation may be called only by the Board pursuant to a resolution approved by a majority of the entire Board (whether or not there exist any vacancies in previously authorized directorships at the time any such resolution is presented to the Board for adoption).

Section 3. NOTICE OF MEETINGS. Notice of the place, date and time of the holding of each annual and special meeting of the shareholders and, in the case of a special meeting, the purpose or purposes thereof, shall be given personally or by mail in a postage prepaid envelope to each shareholder entitled to vote at such meeting, not less than ten nor more than fifty days before the date of such meeting, and, if mailed, it shall be directed to such shareholder at his address as it appears on the records of the Corporation, unless he shall have filed with the Secretary of the Corporation, a written request that notices to him be mailed to some other address, in which case, it shall be directed to him at such other address. Notice of any meeting of shareholders shall not be required to be given to any shareholder who shall attend such meeting in person or by proxy and shall not, at the beginning of such meeting, object to the transaction of any business because the meeting is not lawfully called or convened, or who shall, either before or after the meeting, submit a signed waiver of notice, in person or by proxy. Unless the Board shall fix after the adjournment a new record date for an adjourned meeting, notice of such adjourned meeting need not be given if the time and place to which the meeting shall be adjourned were announced at the meeting at which the adjournment is taken. At the adjourned meeting the Corporation may transact any business which might have been transacted at the original meeting. If the adjournment is for more than thirty days, or if after the adjournment a new record date is fixed for

the adjourned meeting, a notice of the adjourned meeting shall be given to each shareholder of record entitled to vote at the meeting.

Section 4. PLACE OF MEETINGS. Meetings of the shareholders may be held at such place, within or without the State of incorporation, as the Board or other officer calling the same shall specify in the notice of such meeting, or in a duly executed waiver of notice thereof.

Section 5. QUORUM. At all meetings of the shareholders the holders of a majority of the votes of the shares of stock of the Corporation issued and outstanding and entitled to vote shall be present in person or by proxy to constitute a quorum for the transaction of any business, except when shareholders are required to vote by class, in which event a majority of the issued and outstanding shares of the appropriate class shall be present in person or by proxy, or except as otherwise provided by statute or in the Certificate of Incorporation. In the absence of a quorum, the holders of a majority of the votes of the shares of stock present in person or by proxy and entitled to vote, or if no shareholder entitled to vote is present, then any officer of the Corporation may adjourn the meeting from time to time. At any such adjourned meeting at which a quorum may be present any business may be transacted which might have been transacted at the meeting as originally called.

Section 6. ORGANIZATION. At each meeting of the shareholders the Chairman of the Board, or in his absence or inability to act, the President, or in the absence or inability to act of the Chairman of the Board and the

President, a Vice President, or in the absence of all of the foregoing, any person chose by a majority of those shareholders present, shall act as chairman of the meeting. The Secretary, or, in his absence or inability to act, the Assistant Secretary or any person appointed by the chairman of the meeting, shall act as secretary of the meeting and keep the minutes thereof.

Section 7. ORDER OF BUSINESS. The order of business at all meetings of the shareholders shall be as determined by the chairman of the meeting.

Section 8. VOTING. Except as otherwise provided by statute, the Certificate of Incorporation, or any certificate duly filed in the office of the Department of State of the State of incorporation, each holder of record of shares of stock of the Corporation having voting power shall be entitled at each meeting of the shareholders to one vote for every share of such stock standing in his name on the record of shareholders of the Corporation on the date fixed by the Board as the record date for the determination of the shareholders who shall be entitled to notice of and to vote at such meeting; or if such record date shall not have been so fixed, then at the close of business on the day next preceding the day on which notice thereof shall be given, or if notice is waived, at the close of business on the day next preceding the day on which the meeting is held; or each shareholder entitled to vote at any meeting of the shareholders may authorize another person or persons to act for him by a proxy signed by such shareholder or his attorney-in-fact. Any such proxy shall be delivered to the secretary of such meeting at or prior to the time designated in the order of business for so delivering such proxies. No proxy shall be valid after the expiration of three years from the date thereof, unless otherwise provided in the proxy. Every proxy shall be revocable at the pleasure of the shareholder executing it, except in those cases where an irrevocable proxy is permitted by law. Except as otherwise provided by statute, these By-Laws, or the Certificate of Incorporation, any corporate action to be taken by vote of the

shareholders shall be authorized by a majority of the total votes, or when shareholders are required to vote by class by a majority of the votes of the appropriate class, cast at a meeting of shareholders by the holders of shares present in person or represented by proxy and entitled to vote on such action. Unless required by statute, or determined by the chairman of the meeting to be advisable, the vote on any question need not be by written ballot. On a vote by written ballot, each ballot shall be signed by the shareholder voting, or by his proxy, if there be such proxy, and shall state the number of shares voted.

Section 9. LIST OF SHAREHOLDERS. The officer who has charge of the stock ledger of the Corporation, or the transfer agent of the Corporation's stock, if there be one then acting, shall prepare and make, at least ten days before every meeting of shareholders, a complete list of the shareholders entitled to vote at the meeting, arranged in alphabetical order, and showing the address of each shareholder and the number of shares registered in the name of each shareholder. Such list shall be open to the examination of any shareholder, for any purpose germane to the meeting, during ordinary business hours, for a period of at least ten days prior to the meeting, either at a place within the city where the meeting is to be held, at the place where the meeting is to be held, or at the office of the transfer agent. The list shall also be produced and kept at the time and place of the meeting during the whole time thereof, and may be inspected by any shareholder who is present.

Section 10. INSPECTORS. The Board may, in advance of any meeting of shareholders, appoint one or more inspectors to act at such meeting or any adjournment thereof If the inspectors shall not be so appointed or if any of them shall fail to appear or act, the chairman of the meeting may, and on the request of any shareholder entitled to vote thereat shall, appoint inspectors. Each inspector, before entering upon the discharge of his duties, shall take and sign an oath faithfully to execute the duties of inspector at such meeting with strict impartiality and according to the best of his ability. The inspectors shall determine the number of shares outstanding and the voting power of each, the number of shares represented at the meeting, the existence of a quorum, the validity and effect of proxies, and shall receive votes, ballots or consents, hear and determine all challenges and questions arising in connection with the right to vote, count and tabulate all votes, ballots or consents, determine the result, and do such acts as are proper to conduct the election or vote with fairness to all shareholders. On request of the chairman of the meeting or any shareholder entitled to vote thereat, the inspectors shall make a report in writing of any challenge, request or matter determined by them and shall execute a certificate of any fact found by them. No director or candidate for the office of director shall act as inspector or an election of directors. Inspectors need not be shareholders.

Section 11. CONSENT OF SHAREHOLDERS IN LIEU OF MEETING. To the extent permitted by law, the meeting and vote of shareholders can be dispensed with if all of the shareholders who would have been entitled to vote upon the action if such meeting were held shall consent in writing to such corporate action being taken.

ARTICLE II

BOARD OF DIRECTORS

Section 1. GENERAL POWERS. The business and affairs of the Corporation shall be managed by the Board. The Board may exercise all such authority and powers of the Corporation and do all such lawful acts and things as are not by statute or the Certificate of Incorporation directed or required to be exercised or done by the shareholders.

Section 2. ELECTION AND TERMS. The directors, other than those who may be elected by the holders of any class or series of stock having a preference over another class or series of stock as to dividends or upon liquidation, shall be classified, with respect to the time for which they severally hold office, into three classes, as nearly equal in number as possible, as determined by the Board, one class to be originally elected for a term expiring at the annual meeting of shareholders to be held in 1989, another class to be originally elected for a term expiring at the annual meeting of shareholders to be held in 1990, and another class to be originally elected for a term expiring at the annual meeting of shareholders to be held in 1991, with each class to hold office until its successor is elected and qualified. At each annual meeting of the shareholders of the Corporation, the successors of the class of directors whose term expires at the meeting shall be elected to hold office for a term expiring at the annual meeting of shareholders held in the third year following the year of their election.

Section 3. PLACE OF MEETINGS. Meetings of the Board may be held at such place, within or without the State of incorporation, as the Board may from time to time determine or as shall be specified in the notice or waiver of notice of such meeting.

Section 4. ANNUAL MEETING. The Board shall meet for the purpose of organization, the election of officers and the transaction of other business, as soon as practicable after each annual meeting of the shareholders, on the same day and at the same place where such annual meeting shall be held. Notice of such meeting need not be given. Such meeting may be held at any other time or place (within or without the State of incorporation) which shall be specified in a notice thereof given as hereinafter provided in Section 7 of this Article II.

Section 5. REGULAR MEETINGS. Regular meetings of the Board shall be held at such time and place as the Board may from time to time determine. If any day fixed for a regular meeting shall be a legal holiday at the place where the meeting is to be held, then the meeting which would otherwise be held on that day shall be held at the same hour on the next succeeding business day. Notice of regular meetings of the Board need not be given except as otherwise required by statute or these By-Laws.

Section 6. SPECIAL MEETINGS. Special meetings of the Board may be called by two or more directors of the Corporation or by the Chairman of the Board or the President.

Section 7. NOTICE OF MEETINGS. Notice of each special meeting of the Board (and of each regular meeting for which notice shall be required) shall be given by the Secretary as hereinafter provided in this Section 7, in which notice shall be stated the time and place (within or without

the State of incorporation) of the meeting. Notice of each such meeting shall be delivered to each director either personally or by telephone, telegraph, cable or wireless, at least twenty-four hours before the time at which such meeting is to be held or by first-class mail, postage prepaid, addressed to him at his residence, or usual place of business, at least three days before the day on which such meeting is to be held. Notice of any such meeting need not be given to any director who shall, either before or after the meeting, submit a signed waiver of notice or who shall attend such meeting without protesting, prior to or at its commencement, the lack of notice to him. Except as otherwise specifically required by these By-Laws, a notice or waiver of notice of any regular or special meeting need not state the purpose of such meeting.

Section 8. QUORUM AND MANNER OF ACTING. A majority of the entire Board shall be present in person at any meeting of the Board in order to constitute a quorum for the transaction of business at such meeting, and, except as otherwise expressly required by statute or the Certificate of Incorporation, the act of a majority of the directors present at any meeting at which a quorum is present shall be the act of the Board. In the absence of a quorum at any meeting of the Board, a majority of the directors present thereat, or if no director be present, the Secretary, may adjourn such meeting to another time and place, or such meeting, unless it be the annual meeting of the Board, need not be held. At any adjourned meeting at which a quorum is present, any business may be transacted which might have been transacted at the meeting as originally called. Except as provided in Article III of these By-Laws, the directors shall act only as a Board and the individual directors shall have no power as such.

Section 9. ORGANIZATION. At each meeting of the Board, the Chairman of

the Board (or, in his absence or inability to act, the President, or, in his absence or inability to act, another director chosen by a majority of the directors present) shall act as chairman of the meeting and preside thereat. The Secretary (or, in his absence or inability to act, any person appointed by the chairman) shall act as secretary of the meeting and keep the minutes thereof.

Section 10. RESIGNATIONS. Any director of the Corporation may resign at any time by giving written notice of his resignation to the Board or Chairman of the Board or the President or the Secretary. Any such resignation shall take effect at the time specified therein, or, if the time when it shall become effective shall not be specified therein, immediately upon its receipt; and, unless otherwise specified therein, the acceptance of such resignation shall not be necessary to make it effective.

Section 11. NEWLY CREATED DIRECTORSHIPS AND VACANCIES. Except as otherwise provided for or fixed by or pursuant to the provisions of Article 4 of the Certificate of Incorporation relating to the rights of the holders of any class or series of stock having a preference over another class or series of stock as to dividends or upon liquidation to elect directors under specified circumstances, newly created directorships resulting from any increase in the number of directors and any vacancies on the Board resulting from death, resignation, disqualification, removal or other cause shall be filled by the affirmative vote of a majority of the remaining directors then in office, even though less than a quorum of the Board. Any director elected in accordance with the preceding sentence shall hold office for the remainder of the full term of the class of directors in which the new directorship was created or the vacancy occurred and until such director's successor shall have been elected and qualified. No decrease in the number of directors constituting the Board shall shorten the term of any incumbent director.

Section 12. REMOVAL OF DIRECTORS. Subject to the rights of any class or series of stock having a preference over another class or series of stock as to dividends or upon liquidation to elect directors under specified circumstances, any director may be removed from office, only with cause and only by the affirmative vote of (i) the holders of 80% of the combined voting power of the then outstanding shares of stock entitled to vote generally in the election of directors, voting together as a single class and (ii) a majority of such shares beneficially owned by the persons not affiliated with an Interested Shareholder (as defined in Article 14 of the Certificate of Incorporation).

Section 13. COMPENSATION. The Board shall have authority to fix the compensation, including fees and reimbursement of expenses, of directors for services to the Corporation in any capacity, provided no such payment shall preclude any director from serving the Corporation in any other capacity and receiving compensation therefore.

Section 14. ACTION BY THE BOARD. Any member of the Board or of any Committee thereof may participate in a meeting of the Board or such committee by means of a conference telephone or similar communications equipment allowing all persons participating in the meeting to hear each of them at the same time. Participation by such means shall constitute presence in person at a meeting. To the extent permitted under the laws of the State of incorporation, any action required or permitted to be taken at any meeting of the Board or of any committee thereof may be taken without a meeting if all members of the Board or committee, as the case may be, consent thereto in writing, and the writing or writings are filed with the minutes of proceedings of the Board or committee.

Section 15. SHAREHOLDER NOMINATION OF DIRECTOR CANDIDATES. NOTIFICATION OF NOMINATION. Subject to the rights of holders of any class or series of stock having a preference over another class or series of stock as to dividends or upon liquidation to elect additional directors under specified circumstances, nominations for the election of directors may be made by the Board or a proxy committee appointed by the Board or by any shareholder entitled to vote in the election of directors generally. However, any shareholder entitled to vote in the election of directors generally may nominate one or more persons for election as directors at a meeting only if written notice of such shareholder's intent to make such nomination or nominations has been given, either by personal delivery or by United States mail, postage prepaid, to the Secretary of the Corporation not later than (i) with respect to an election to be held at an annual meeting of shareholders, 60 days in advance of such meeting, and (ii) with respect to an election to be held at a special meeting of shareholders for the election of directors, the close of business on the seventh day following the date on which notice of such meeting is first given to shareholders. Each such notice shall set forth: (a) the name and address of the shareholder who intends to make the nomination and the person or persons to be nominated; (b) a representation that the shareholder is a holder of record of stock of the Corporation entitled to vote at such meeting and intends to appear in person or by proxy at the meeting to nominate the person or persons specified in the notice; (c) a description of all arrangements or understandings between the shareholder and each nominee and any other person or persons (naming such person or persons) pursuant to which the nomination or nominations are to be made by the shareholder; (d) such other information regarding each nominee proposed by such shareholder as would be required to be included in a proxy

statement filed pursuant to the proxy rules of the Securities and Exchange

Commission, had the nominee been nominated, or intended to be nominated, by the Board; and (e) the consent of each nominee to serve as a director of the Corporation if so elected. The chairman of the meeting may refuse to acknowledge the nomination of any person not made in compliance with the foregoing procedure.

ARTICLE III

EXECUTIVE AND OTHER COMMITTEES

Section 1. EXECUTIVE AND OTHER COMMITTEES. The Board may, by resolution passed by a majority of the whole Board, designate one or more committees, each committee to consist of two or more of the directors of the Corporation. The Board may designate one or more directors as alternate members of any committee, who may replace any absent or disqualified member at any meeting of the committee. Any such committee, to the extent provided in the resolution shall have and may exercise the powers of the Board in the management of the business and affairs of the Corporation, and may authorize the seal of the Corporation to be affixed to all papers which may require it; provided, however, that in the absence or disqualification of any member of any such committee or committees, the member or members thereof present at any meeting and not disqualified from voting, whether or not he or they constitute a quorum, may unanimously appoint another member of the Board to act at the meeting in the place of any such absent or disqualified member. Each committee shall keep minutes of its proceedings and shall report such minutes to the Board when required. All such proceedings shall be subject to revision or alteration by the Board; provided, however, that third parties shall not be prejudiced by such revision or alteration.

Section 2. GENERAL. A majority of any committee may determine its action and fix the time and place of its meetings, unless the Board shall otherwise provide. Notice of such meetings shall be given to each member of the committee in the manner provided for in Article II, Section 7. The Board shall have the power at any time to fill vacancies in, to change the membership of, or to dissolve any such committee. Nothing herein shall be deemed to prevent the Board from appointing one or more committees consisting in whole or in part of persons who are not directors of the Corporation; provided, however, that no such committee shall have or may exercise any authority of the Board.

ARTICLE IV

OFFICERS

Section 1. NUMBER AND QUALIFICATIONS. The officers of the Corporation shall include the President, one or more Vice Presidents (one or more of whom may be designated Executive Vice President or Senior Vice President), the Treasurer, Controller, and the Secretary. Any two or more offices may be held by the same person. Such officers shall be elected from time to time by the Board, each to hold office until the meeting of the Board following the next annual meeting of the shareholders, or until his successor shall have been duly elected and shall have qualified, or until his death, or until he shall have resigned, or have been removed, as hereinafter provided in

these By-Laws. The Board may from time to time elect a Chairman of the Board and a Vice Chairman of the Board, and the Board may from time to time elect, or the Chairman of the Board, or the President may appoint, such other officers (including one or more Assistant Vice Presidents, Assistant Secretaries, and Assistant Treasurers), and such agents, as may be necessary or desirable for the business of the Corporation. Such other officers and agents shall have such duties and shall hold their offices for such terms as may be prescribed by the Board of by the appointing authority.

Section 2. RESIGNATIONS. Any officer of the Corporation may resign at any time by giving written notice of his resignation to the Board, the Chairman of the Board, the President or the Secretary. Any such resignation shall take effect at the time specified therein, or, if the time when it shall become effective shall not be specified therein, immediately upon its receipt; and unless otherwise specified therein, the acceptance of such resignation shall not be necessary to make it effective.

Section 3. REMOVAL. Any officer or agent of the Corporation may be removed, either with or without cause, at any time, by the vote of the majority of the entire Board at any meeting of the Board, or, except in the case of an officer or agent elected or appointed by the Board, by the Chairman of the Board or the President. Such removal shall be without prejudice to the contractual rights, if any, of the person so removed.

Section 4. VACANCIES. A vacancy in any office, whether arising from death, resignation, removal or any other cause, may be filled for the unexpired

portion of the term of the office which shall be vacant, in the manner prescribed in these By-Laws for the regular election or appointment to such office. -

Section 5.a. THE CHAIRMAN OF THE BOARD. The Chairman of the Board, if one be elected, shall be the chief executive officer of the Corporation and shall have the general and active management of the business of the Corporation and general and active supervision and direction over the other officers, agents and employees and shall see that their duties are properly performed. He shall, if present, preside at each meeting of the shareholders and of the Board and shall be an ex officio member of all committees of the Board. He shall perform all duties incident to the office of Chairman of the Board and chief executive officer and such other duties as may from time to time be assigned to him by the Board.

b. THE VICE CHAIRMAN OF THE BOARD. The Vice Chairman of the Board, if one be elected, shall have such powers and perform all such duties as from time to time may be assigned to him by the Board or the Chairman of the Board and, unless otherwise provided by the Board, shall in the case of the absence or inability to act of the Chairman of the Board, shall perform the duties of the Chairman of the Board and when so acting shall have all the powers of, and be subject to all the restrictions upon, the Chairman of the Board.

Section 6. THE PRESIDENT. The President shall be the chief operating officer of the Corporation and shall have general and active supervision and direction over the business and affairs of the Corporation and over its several officers, subject, however, to the direction of the Chairman of the Board and the control of the Board. If no Chairman of the Board has been

elected. At the request of the Chairman of the Board, or in the case of his absence or inability to act (unless there be a Vice Chairman of the Board so designated to act), the President shall perform the duties of the Chairman of the Board and when so acting shall have all the powers of, and be subject to all the restrictions upon, the Chairman of the Board. He shall perform all duties incident to the office of President and such other duties as from time to time may be assigned to him by the Board, the Chairman of the Board or these By-Laws.

Section 7. VICE-PRESIDENTS. Each Executive Vice-President, each Senior Vice-President and each Vice-President shall have such powers and perform all such duties as from time to time may be assigned to him by the Board, the Chairman of the Board or the President.

Section 8. THE TREASURER. The Treasurer shall be the chief financial officer of the Corporation and shall exercise general supervision over the receipt, custody and disbursement of Corporate funds. He shall have such further powers and duties as may be conferred upon him from time to time by the President or the Board of Directors. He shall perform the duties of controller if no one is elected to that office.

Section 9. THE CONTROLLER. The Controller shall be the chief accounting officer of the Corporation and shall maintain adequate records of all assets, liabilities and transactions of the Corporation; he shall establish and maintain internal accounting control and, in cooperation with the independent public accountants selected by the Board, shall supervise internal auditing. He shall have such further powers and duties as may be conferred upon him from time to time by the President or the Board of Directors.

Section 10. THE SECRETARY. The Secretary shall

(a) keep or cause to be kept in one or more books provided for the purpose, the minutes of all meetings of the Board, the committees of the Board and the shareholders;

(b) see that all notices are duly given in accordance with the provisions of these By-Laws and as required by law;

(c) be custodian of the records and the seal of the Corporation and affix and attest the seal to all stock certificates of the Corporation (unless the seal of the Corporation on such certificates shall be a facsimile, as hereinafter provided) and affix and attest the seal to all other documents to be executed on behalf of the Corporation under its seal;

(d) see that the books, reports, statements, certificates and other documents and records required by law to be kept and filed are properly kept and filed; and

(e) in general, perform all the duties incident to the office of Secretary and such other duties as from time to time may be assigned to him by the Board, the Chairman of the Board, or the President.

Section 11. OFFICERS' BONDS OR OTHER SECURITY. If required by the Board, any officer of the Corporation shall give a bond or other security for the faithful performance of his duties, in such amount and with such surety or sureties as the Board may require.

Section 12. COMPENSATION. The compensation of the officers of the Corporation for their services as such officers shall be fixed from time to time by the Board; provided, however, that the Board may delegate to the Chairman of the Board or the President the power to fix the compensation of officers and agents appointed by the Chairman of the Board or the President, as the case may be. An officer of the Corporation shall not be prevented from receiving compensation by reason of the fact that he is also a director of the Corporation, but any such officer who shall also be a director shall not have any vote in the determination of the amount of compensation paid to him.

ARTICLE V

INDEMNIFICATION

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."

ARTICLE VI

CONTRACTS, CHECKS, DRAFTS, BANK ACCOUNTS, ETC.

Section 1. EXECUTION OF CONTRACTS. Except as otherwise required by statute, the Certificate of Incorporation or these By-Laws, any contracts or other instruments may be executed and delivered in the name and on behalf of the Corporation by such officer or officers (including any assistant officer) of the Corporation as the Board may from time to time direct. Such authority may be general or confined to specific instances as the Board may determine. Unless authorized by the Board or expressly permitted by these By-Laws, an officer or agent or employee shall not have any power or authority to bind the Corporation by any contract or engagement or to pledge its credit or to render it pecuniarily liable for any purpose or to any amount.

Section 2. LOANS. Unless the Board shall otherwise determine either (a) the Chairman of the Board, the Vice-Chairman of the Board or the President, singly, or (b) a Vice-President, together with the Treasurer, may effect loans and advances at any time for the Corporation or

guarantee any loans and advances to any subsidiary of the Corporation, from any bank, trust company or other institution, or from any firm, corporation or individual, and for such loans and advances may make, execute and deliver promissory notes, bonds or other certificates or evidences of indebtedness of the Corporation, or guarantee of indebtedness of subsidiaries of the Corporation, but no officer or officers shall mortgage, pledge, hypothecate or transfer any securities or other property of the Corporation, except when authorized by the Board.

Section 3. CHECKS, DRAFTS, ETC. All checks, drafts, bills of exchange or other orders for the payment of money out of the funds of the Corporation, and all notes or other evidences of indebtedness of the Corporation, shall be signed in the name and on behalf of the Corporation by such persons and in such manner as shall from time to time be authorized by the Board.

Section 4. DEPOSITS. All funds of the Corporation not otherwise employed shall be deposited from time to time to the credit of the Corporation in such banks, trust companies or other depositaries as the Board may from time to time designate or as may be designated by any officer or officers of the Corporation to whom such power of designation may from time to time be delegated by the Board. For the purpose of deposit and for the purpose of collection for the account of the Corporation, checks, drafts and other orders for the payment of money which are payable to the order of the Corporation may be endorsed, assigned and delivered by any officer or agent of the Corporation, or in such other manner as the Board may determine by resolution.

Section 5. GENERAL AND SPECIAL BANK ACCOUNTS. The Board may from time to time authorize the opening and keeping of general and special bank accounts with such banks, trust companies or other depositaries as the Board may designate or as may be designated by any officer or officers of the Corporation to whom such power of designation may from time to time be delegated by the Board. The Board may make such special rules and regulations with respect. to such bank accounts, not inconsistent with the provisions of these By-Laws, as it may deem expedient.

Section 6. PROXIES IN RESPECT OF SECURITIES OF OTHER CORPORATIONS. Unless otherwise provided by resolution adopted by the Board of Directors, the Chairman of the Board, the President, or a Vice-President may from time to time appoint an attorney or attorneys or agent or agents, of the Corporation, in the name and on behalf of the Corporation to cast the votes which the Corporation may be entitled to cast as the holder of stock or other securities in any other corporation, any of whose stock or other securities may be held by the Corporation, at meetings of the holders of the stock or other securities of such other corporation, or to consent in writing, in the name of the Corporation as such holder, to any action by such other corporation, and may instruct the person or persons so appointed as to the manner of casting such votes or giving such consent, and may execute or cause to be executed in the name and on behalf of the Corporation and under its corporate seal, or otherwise, all such written proxies or other instruments as he may deem necessary or proper in the premises.

ARTICLE VII

SHARES, ETC.

Section 1. STOCK CERTIFICATES. Each holder of shares of stock of the Corporation shall be entitled to have a certificate, in such form as shall be approved by the Board, certifying the number of shares of the Corporation owned by him. The certificates representing shares of stock shall be signed in the name of the Corporation by the Chairman of the Board or the President or a Vice-President and by the Secretary or an Assistant Secretary or the Treasurer or an Assistant Treasurer and sealed with the seal of the Corporation (which seal may be a facsimile, engraved or printed); provided, however, that where any such certificate is countersigned by a transfer agent other than the Corporation or its employee, or is registered by a registrar other than the Corporation or one if its employees, the signature of the officers of the Corporation upon such certificates may be facsimiles, engraved or printed. In case any officer who shall have signed or whose facsimile signature has been placed upon such certificates shall have ceased to be such officer before such certificates shall be issued, they may nevertheless be issued by the Corporation with the same effect as if such officer were still in office at the date of their issue.

Section 2. BOOKS OF ACCOUNT AND RECORD OF SHAREHOLDERS. The books and records of the Corporation may be kept at such places within or without the State of incorporation as the Board of Directors may from time to time determine. The stock record books and the blank stock certificate books shall be kept by the Secretary or by any other officer or agent designated by the Board of Directors.

Section 3. TRANSFER OF SHARES. Transfers of shares of stock of the Corporation shall be made on the stock records of the Corporation only upon authorization by the registered holder thereof, or by his attorney thereunto authorized by power of attorney duly executed and filed with the Secretary or with a transfer clerk, and on surrender of the certificate or certificates for such shares properly endorsed or accompanied by a duly executed stock transfer power and the payment of all taxes thereon. Except as otherwise provided by law, the Corporation shall be entitled to recognize the exclusive right of a person in whose name any share or shares stand on the record of shareholders as the owner of such share or shares for all purposes, including, without limitation, the rights to receive dividends or other distributions, and to vote as such owner, and the Corporation may hold any such shareholder of record liable for calls and assessments and the Corporation shall not be bound to recognize any equitable or legal claim to or interesting any such share or shares on the part of any other person whether or not it shall have express or other notice thereof Whenever any transfers of shares shall be made for collateral security and not absolutely, and both the transferor and transferee request the Corporation to do so, such fact shall be stated in the entry of the transfer.

Section 4. REGULATIONS. The Board may make such additional rules and regulations, not inconsistent with these By-Laws, as it may deem expedient concerning the issue, transfer and registration of certificates for shares of stock of the Corporation. It may appoint, or authorize any officer or officers to appoint, one or more transfer agents or one or more transfer clerks and one or more registrars and may require all certificates for shares of stock to bear the signature or signatures of any of them.

Section 5. LOST, DESTROYED OR MUTILATED CERTIFICATES. The holder of any certificate representing the shares of stock of the Corporation shall immediately notify the Corporation of any loss, destruction or mutilation of such certificate, and the Corporation may issue a new certificate of stock in

the place of any certificate theretofore issued by it which the owner thereof

shall allege to have been lost, stolen, or destroyed or which shall have been mutilated, and the Board may, in its discretion, require such owner or his legal representatives to give to the Corporation a bond in such sum, limited or unlimited, and in such form and with such surety or sureties as the Board in its absolute discretion shall determine, to indemnify the Corporation against any claim that may be made against it on account of the alleged loss, theft, or destruction of any such certificate, or the issuance of a new certificate. Anything herein to the contrary notwithstanding, the Board, in its absolute discretion, may refuse to issue any such new certificate, except pursuant to legal proceedings under the laws of the State of incorporation.

Section 6. FIXING OF RECORD DATE. In order that the Corporation may determine the shareholders entitled to notice of, or to vote at, any meeting of shareholders or any adjournment thereof, or to express consent to corporate action in writing without a meeting, or entitled to receive payment of any dividend or other distribution or allotment of any rights, or entitled to exercise any rights in respect of any change, conversion or exchange of stock or for the purpose of any other lawful action, the Board may fix, in advance, a record date, which shall not be more than sixty nor less than ten days before the date of such meeting, nor more than sixty days prior to any other action. A determination of shareholders of record entitled to notice of, or to vote at, a meeting of shareholders shall apply to any adjournment of the meeting; provided, however, that the Board may fix a new record date for the adjourned meeting.

ARTICLE VIII

OFFICE

Section 1. PRINCIPAL OR REGISTERED OFFICE. The principal or registered office of the Corporation shall be at such place as may be specified in the Certificate of Incorporation of the Corporation or other certificate filed pursuant to law, or if none be so specified, at such place as may from time to time be fixed by the Board.

Section 2. OTHER OFFICES. The Corporation also may have an office or offices other than said principal or registered office, at such place or places either within or without the State of incorporation.

ARTICLE IX

FISCAL YEAR

The fiscal year of the Corporation shall be determined by the Board.

ARTICLE X

SEAL

The board shall provide a corporate seal which shall contain the name of the Corporation, the words "Corporate Seal" and the year and State of incorporation.

ARTICLE XI

AMENDMENTS

These By-Laws may be amended or repealed, or new By-Laws may be adopted, at any annual or special meeting of the shareholders, by a majority of the total votes of the shareholders or when shareholders are required to vote by class by a majority of the appropriate class, present in person or represented by proxy and entitled to vote on such action; provided, however, that the notice of such meeting shall have been given as provided in these By-Laws, which notice shall mention that amendment or repeal of these By-Laws, or the adoption of new By-Laws, is one of the purposes of such meeting. These By-Laws may also be amended or repealed, or new By-Laws may be adopted, by the Board at any meeting thereof provided, however, that notice of such meeting shall have been given as provided in these By-Laws, which notice shall mention that amendment or repeal of the By-Laws, or the adoption of new By-Laws, is one of the purposes of such meetings; and provided, further, that By-Laws adopted by the Board may be amended or repealed by the shareholders as hereinabove provided.

EXHIBIT 4.6

[LOGO] ENZO BIOCHEM, INC.

INCORPORATED UNDER THE LAWS OF THE STATE OF NEW YORK

THIS CERTIFICATE IS TRANSFERABLE IN NEW YORK, NY

Number Shares

SEE REVERSE FOR
CERTAIN DEFINITIONS

CUSIP 294100 10 2

This certifies that

is the owner of

FULL PAID AND NON-ASSESSABLE SHARES OF THE PAR VALUE OF ($.01) EACH OF THE COMMON STOCK OF ENZO BIOCHEM, INC.

transferable only on the books of the Corporation by the holder hereof in person or by duly authorized attorney upon surrender of this Certificate properly endorsed.

This Certificate and the shares represented hereby are issued and shall be held subject to all of the provisions of the Certificate of Incorporation, as amended, of the Corporation (a copy of which is on file at the office of the Corporation) to all of which the holder of this certificate, by acceptance hereof, assents. This certificate is not valid unless countersigned by the Transfer Agent and Registrar.

Witness the seal of the Corporation and the signatures of its duly authorized officers.

Dated:

[Seal] Secretary President

Countersigned and Registered:
American Stock Transfer & Trust Company
(New York, NY)
Transfer Agent and Registrar

Authorized Signature

The following abbreviation, when used in the inscription on the face of this certificate, shall be construed as though they were written out in full according to applicable laws or regulations:

<TABLE>
<CAPTION>
<S> <C> <C> <C>
TEN COM - as tenants in common UNIF GIFT MIN ACT_____Custodian_____
(Cust) (Minor)

TEN ENT - as tenants by the entireties under Uniform Gift to Minors

JT TEN - as joint tenants with right of survivorship and not as tenants in common Act_____
(State)
</TABLE>

Additional abbreviations may also be used though not in the above list.

For value received, _____ hereby sell, assign and transfer unto

PLEASE INSERT SOCIAL SECURITY OR OTHER
IDENTIFYING NUMBER OF ASSIGNEE

- ----------

<TABLE>
<CAPTION>

<S> <C>

.....
(PLEASE PRINT OR TYPEWRITE NAME AND ADDRESS, INCLUDING ZIP CODE, OF ASSIGNEE)

.....

.....

shares of the capital stock represented by the within Certificate, and do hereby irrevocably constitute and appoint

.....
Attorney to transfer the said stock on the books of the within named Corporation with full power of substitution in the premises.

Dated:.....

NOTICE: _____
THE SIGNATURE TO THIS AGREEMENT MUST CORRESPOND WITH THE NAME AS WRITTEN UPON THE FACE OF THE CERTIFICATE IN EVERY PARTICULAR, WITHOUT ALTERATION OR ENLARGEMENT OR ANY CHANGE WHATEVER

Signature(s) Guaranteed:

- ---

THE SIGNATURE(S) MUST BE GUARANTEED BY AN ELIGIBLE GUARANTOR INSTITUTION (BANKS, STOCKBROKERS, SAVINGS AND LOAN ASSOCIATIONS AND CREDIT UNIONS WITH MEMBERSHIP IN AN APPROVED SIGNATURE GUARANTEE MEDALLION PROGRAM), PURSUANT TO S.E.C. RULE 17Ad-15.
</TABLE>

ENZO BIOCHEM, INC.

1994 STOCK OPTION PLAN

1. PURPOSE.

The purpose of this plan (the "Plan") is to secure for Enzo Biochem, Inc. (the "Company") and its shareholders the benefits arising from capital stock ownership by employees, officers and directors of, and consultants or advisors to, the Company and its subsidiary corporations who are expected to contribute to the Company's future growth and success. Those provisions of the Plan which make express reference to Section 422 shall apply only to Incentive Stock Options (as that term is defined in the Plan).

2. TYPE OF OPTIONS AND ADMINISTRATION.

(a) TYPES OF OPTIONS. Options granted pursuant to the Plan shall be authorized by action of the Board of Directors of the Company (or a Committee designated by the Board of Directors) and may be either incentive stock options ("Incentive Stock Options") meeting the requirements of Section 422 of the Internal Revenue Code of 1986, as amended or replaced from time to time (the "Code") or non-statutory options which are not intended to meet the requirements of Section 422 of the Code.

(b) ADMINISTRATION. The Plan will be administered by a committee (the "Committee") appointed by the Board of Directors of the Company, whose construction and interpretation of the terms and provisions of the Plan shall be final and conclusive. The delegation of powers to the Committee shall be consistent with applicable laws or regulations (including, without limitation, applicable state law and Rule 16b-3 promulgated under the Securities Exchange Act of 1934 (the "Exchange Act"), or any successor rule ("Rule 16b-3")). The Committee may in its sole discretion grant options to purchase shares of the Company's Common Stock, $.01 par value per share ("Common Stock") and issue shares upon exercise of such options as provided in the Plan. The Committee shall have authority, subject to the express provisions of the Plan, to construe the respective option agreements and the Plan, to prescribe, amend and rescind rules and regulations relating to the Plan, to determine the terms and provisions of the respective option agreements, which need not be identical, and to make all other determinations in the judgment of the Committee necessary or desirable for the administration of the Plan. The Committee may correct any defect or supply any omission or reconcile any inconsistency in the Plan or in any option agreement in the manner and to the extent it shall deem expedient to carry the Plan into effect and it shall be the sole and final judge of such expediency. No director or person acting pursuant to authority delegated by the Board of Directors shall be liable for any action or determination under the Plan made in good faith. Subject to adjustment as provided in Section 15 below, the aggregate number of shares of Common Stock that may be subject to options granted to any person in a calendar year shall not exceed 20% of the maximum

number of shares which may be issued and sold under the Plan, as set forth in Section 4 hereof, as such section may be amended from time to time.

(c) APPLICABILITY OF RULE 16B-3. Those provisions of the Plan which make express reference to Rule 16b-3 shall apply to the Company only at such time as the Company's Common Stock is registered under the Exchange Act, subject to the last sentence of Section 3(b), and then only to such persons as are required to file reports under Section 16(a) of the Exchange Act (a "Reporting Person").

3. ELIGIBILITY.

(a) GENERAL. Options may be granted to persons who are, at the time of grant, employees, officers or directors of, or consultants or advisors to, the Company or any subsidiaries of the Company as defined in Sections 424(e) and 424(f) of the Code ("Participants") PROVIDED, that Incentive Stock Options may only be granted to individuals who are employees of the Company (within the meaning of Section 3401(c) of the Code). A person who has been granted an option may, if he or she is otherwise eligible, be granted additional options if the Committee shall so determine.

(b) GRANT OF OPTIONS TO REPORTING PERSONS. The selection of a director or an officer who is a Reporting Person (as the terms "director" and "officer" are defined for purposes of Rule 16b-3) as a recipient of an option, the timing of the option grant, the exercise price of the option and the number of shares subject to the option shall be determined either (i) by the Board of Directors, of which all members shall be "disinterested persons" (as hereinafter defined), (ii) by a committee consisting of two or more directors having full authority to act in the matter, each of whom shall be a "disinterested person" or (iii) pursuant to provisions for automatic grants set forth in Section 3(c) below. For the purposes of the Plan, a director shall be deemed to be a "disinterested

person" only if such person qualifies as a "disinterested person" within the meaning of Rule 16b-3, as such term is interpreted from time to time. If at least two of the members of the Board of Directors do not qualify as a "disinterested person" within the meaning of Rule 16b-3, as such term is interpreted from time to time, then the granting of options to officers and directors who are Reporting Persons under the Plan shall not be determined in accordance with this Section 3(b) but shall be determined in accordance with the other provisions of the Plan.

(c) DIRECTORS' OPTIONS. Commencing on June 30, 1995, directors of the Company who are not employees or principal stockholders of the Company ("Eligible Directors") will receive an option ("Director Option") to purchase 7,500 shares of Common Stock. Commencing July 19, 1995, future Eligible Directors of the Company will be granted a Director Option to purchase 15,000 shares of Common Stock on the date that such person is first elected or appointed a director ("Initial Director Option"). Commencing on the day immediately following the date of the annual meeting of stockholders for the Company's fiscal year ending July 31, 1995, each Eligible Director will receive an automatic grant

("Automatic Grant") of a Director Option to purchase 7,500 shares of Common Stock, other than Eligible Directors who received an Initial Director Option since the most recent Automatic Grant, on the day immediately following the date of each annual meeting of stockholders, as long as such director is a member of the Board of Directors. The exercise price for each share subject to a Director Option shall be equal to the fair market value of the Common Stock on the date of grant. Director Options shall become exercisable in four equal annual installments commencing one year from the date the option is granted and will expire the earlier of 10 years after the date of grant or 90 days after the termination of the director's service on the Board unless such Director Option is an Incentive Stock Option in which case such Director Option shall be subject to the additional terms and conditions set forth in Section 11.

4. STOCK SUBJECT TO PLAN.

The stock subject to options granted under the Plan shall be shares of authorized but unissued or reacquired Common Stock. Subject to adjustment as provided in Section 15 below, the maximum number of shares of Common Stock of the Company which may be issued and sold under the Plan is 950,000 shares. If an option granted under the Plan shall expire, terminate or is cancelled for any reason without having been exercised in full, the unpurchased shares subject to such option shall again be available for subsequent option grants under the Plan.

5. FORMS OF OPTION AGREEMENTS.

As a condition to the grant of an option under the Plan, each recipient of an option shall execute an option agreement in such form not inconsistent with the Plan as may be approved by the Board of Directors. Such option agreements may differ among recipients.

6. PURCHASE PRICE.

(a) GENERAL. The purchase price per share of stock deliverable upon the exercise of an option shall be determined by the Board of Directors at the time of grant of such option; PROVIDED, HOWEVER, that in the case of an Incentive Stock Option, the exercise price shall not be less than 100% of the Fair Market Value (as hereinafter defined) of such stock, at the time of grant of such option, or less than 110% of such Fair Market Value in the case of options described in Section 11(b). "Fair Market Value" of a share of Common Stock of the Company as of a specified date for the purposes of the Plan shall mean the closing price of a share of the Common Stock on the principal securities exchange (including the Nasdaq National Market) on which such shares are traded on the day immediately preceding the date as of which Fair Market Value is being determined, or on the next preceding date on which such shares are traded if no shares were traded on such immediately preceding day, or if the shares are not traded on a securities exchange, Fair Market Value

shall be deemed to be the average of the high bid and low asked prices of the shares in the over-the-counter market on the day immediately preceding the date as of which Fair Market Value is being determined or on the next preceding date on which such high bid and low asked prices were recorded. If the shares are not publicly traded, Fair Market Value of a share of Common Stock (including, in the case of any repurchase of shares, any distributions with respect thereto which would be repurchased with the shares) shall be determined in good faith by the Board of Directors. In no case shall Fair Market Value be determined with regard to restrictions other than restrictions which, by their terms, will never lapse.

(b) PAYMENT OF PURCHASE PRICE. Options granted under the Plan may provide for the payment of the exercise price by delivery of cash or a check to the order of the Company in an amount equal to the exercise price of such

options, or by any other means which the Board of Directors determines are consistent with the purpose of the Plan and with applicable laws and regulations (including, without limitation, the provisions of Rule 16b-3 and Regulation T promulgated by the Federal Reserve Board).

7. OPTION PERIOD.

Subject to earlier termination as provided in the Plan, each option and all rights thereunder shall expire on such date as determined by the Board of Directors and set forth in the applicable option agreement, PROVIDED, that such date shall not be later than (10) ten years after the date on which the option is granted.

8. EXERCISE OF OPTIONS.

Each option granted under the Plan shall be exercisable either in full or in installments at such time or times and during such period as shall be set forth in the option agreement evidencing such option, subject to the provisions of the Plan. No option granted to a Reporting Person for purposes of the Exchange Act, however, shall be exercisable during the first six months after the date of grant. Subject to the requirements in the immediately preceding sentence, if an option is not at the time of grant immediately exercisable, the Board of Directors may (i) in the agreement evidencing such option, provide for the acceleration of the exercise date or dates of the subject option upon the occurrence of specified events, and/or (ii) at any time prior to the complete termination of an option, accelerate the exercise date or dates of such option.

9. NONTRANSFERABILITY OF OPTIONS.

No option granted under this Plan shall be assignable or otherwise transferable by the optionee except by will or by the laws of descent and distribution or pursuant to a qualified domestic relations order as defined in the Code or Title I of the Employee Retirement Income Security Act, or the rules thereunder. An option may be exercised during the lifetime of the optionee only by the optionee. In the event an optionee dies during

his employment by the Company or any of its subsidiaries, or during the three-month period following the date of termination of such employment, his option shall thereafter be exercisable, during the period specified in the option agreement, by his executors or administrators to the full extent to which such option was exercisable by the optionee at the time of his death during the periods set forth in Section 10 or 11(d).

10. EFFECT OF TERMINATION OF EMPLOYMENT OR OTHER RELATIONSHIP.

Except as provided in Section 11(d) with respect to Incentive Stock Options and except as otherwise determined by the Committee at the date of grant of an option, and subject to the provisions of the Plan, an optionee may exercise an option at any time within three (3) months following the termination of the optionee's employment or other relationship with the Company or within three (3) months if such termination was due to the death or disability of the optionee or within one (1) year if such termination was due to the disability of the optionee but, except in the case of the optionee's death, in no event later than the expiration date of the option. If the termination of the optionee's employment is for cause or is otherwise attributable to a breach by the optionee of an employment or confidentiality or non-disclosure agreement, the option shall expire immediately upon such termination. The Board of Directors shall have the power to determine what constitutes a termination for cause or a breach of an employment or confidentiality or non-disclosure agreement, whether an optionee has been terminated for cause or has breached such an agreement, and the date upon which such termination for cause or breach occurs. Any such determinations shall be final and conclusive and binding upon the optionee.

11. INCENTIVE STOCK OPTIONS.

Options granted under the Plan which are intended to be Incentive Stock Options shall be subject to the following additional terms and conditions:

(a) EXPRESS DESIGNATION. All Incentive Stock Options granted under the Plan shall, at the time of grant, be specifically designated as such in the option agreement covering such Incentive Stock Options.

(b) 10% SHAREHOLDER. If any employee to whom an Incentive Stock Option is to be granted under the Plan is, at the time of the grant of such option, the owner of stock possessing more than 10% of the total combined voting power of all classes of stock of the Company (after taking into account the attribution of stock ownership rules of Section 424(d) of the Code), then the following special provisions shall be applicable to the Incentive Stock Option granted to such individual:

(i) The purchase price per share of the Common Stock subject to such Incentive Stock Option shall not be less than 110% of the Fair Market Value of one share of Common Stock at the time of grant; and

(ii) the option exercise period shall not exceed five years from the date of grant.

(c) DOLLAR LIMITATION. For so long as the Code shall so provide, options granted to any employee under the Plan (and any other incentive stock option plans of the Company) which are intended to constitute Incentive Stock Options shall not constitute Incentive Stock Options to the extent that such options, in the aggregate, become exercisable for the first time in any one calendar year for shares of Common Stock with an aggregate Fair Market Value, as of the respective date or dates of grant, of more than $100,000.

(d) TERMINATION OF EMPLOYMENT, DEATH OR DISABILITY. No Incentive Stock Option may be exercised unless, at the time of such exercise, the optionee is, and has been continuously since the date of grant of his or her option, employed by the Company, except that:

(i) an Incentive Stock Option may be exercised within the period of ninety (90) days after the date the optionee ceases to be an employee of the Company (or within such lesser period as may be specified in the applicable option agreement), PROVIDED, that the agreement with respect to such option may designate a longer exercise period and that the exercise after such ninety (90) day period shall be treated as the exercise of a non-statutory option under the Plan;

(ii) if the optionee dies while in the employ of the Company, or within three months after the optionee ceases to be such an employee, the Incentive Stock Option may be exercised by the person to whom it is transferred by will or the laws of descent and distribution within the period of three (3) months after the date of death (or within such lesser period as may be specified in the applicable option agreement); and

(iii) if the optionee becomes disabled (within the meaning of Section 22(e)(3) of the Code or any successor provisions thereto) while in the employ of the Company, the Incentive Stock Option may be exercised within the period of one (1) year after the date the optionee ceases to be such an employee because of such disability (or within such lesser period as may be specified in the applicable option agreement).

For all purposes of the Plan and any option granted hereunder, "employment" shall be defined in accordance with the provisions of Section 1.421-7(h) of the Income Tax Regulations (or any successor regulations). Notwithstanding the foregoing provisions, no Incentive Stock Option may be exercised after its expiration date.

12. ADDITIONAL PROVISIONS.

(a) ADDITIONAL OPTION PROVISIONS. The Board of Directors may, in its sole discretion, include additional provisions in option agreements covering options granted under the Plan, including without limitation restrictions on transfer, repurchase rights, rights of first refusal, commitments to pay cash bonuses, to make, arrange for or guaranty loans or to transfer other property to optionees upon exercise of options, or such other provisions as shall be determined by the Board of Directors; PROVIDED, that such additional provisions shall not be inconsistent with any other term or condition of the Plan and such additional provisions shall not cause any Incentive Stock Option granted under the Plan to fail to qualify as an Incentive Stock Option within the meaning of Section 422 of the Code.

(b) ACCELERATION, EXTENSION, ETC. The Board of Directors may, in its sole discretion, (i) accelerate the date or dates on which all or any particular option or options granted under the Plan may be exercised or (ii) extend the dates during which all, or any particular, option or options granted under the Plan may be exercised; PROVIDED, HOWEVER, that no such extension shall be permitted if it would cause the Plan to fail to comply with Section 422 of the Code or with Rule 16b-3 (if applicable).

13. GENERAL RESTRICTIONS.

(a) INVESTMENT REPRESENTATIONS. The Company may require any person to whom an option is granted, as a condition of exercising such option, to give written assurances in substance and form satisfactory to the Company to the effect that such person is acquiring the Common Stock subject to the option, for his or her own account for investment and not with any present intention of selling or otherwise distributing the same, and to such other effects as the Company deems necessary or appropriate in order to comply with federal and applicable state securities laws, or with covenants or representations made by the Company in connection with any public offering of its Common Stock, including any "lock-up" or other restriction on transferability.

(b) COMPLIANCE WITH SECURITIES LAW. Each option shall be subject to the requirement that if, at any time, counsel to the Company shall determine that the listing, registration or qualification of the shares subject to such option upon any securities exchange or automated quotation system or under any state or federal law, or the consent or approval of any governmental or regulatory body, or that the disclosure of non-public information or the satisfaction of any other condition is necessary as a condition of, or in connection with the issuance or purchase of shares thereunder, such option may not be exercised, in whole or in part, unless such listing, registration, qualification, consent or approval, or satisfaction of such condition shall have been effected or obtained on conditions acceptable to the Board of Directors. Nothing herein shall be deemed to require the Company to apply for or to obtain such listing, registration or qualification, or to satisfy such condition.

14. RIGHTS AS A SHAREHOLDER.

The holder of an option shall have no rights as a shareholder with respect to any shares covered by the option (including, without limitation, any rights to receive dividends or non-cash distributions with respect to such shares) until the date of issue of a stock certificate to him or her for such shares. No adjustment shall be made for dividends or other rights for which the record date is prior to the date such stock certificate is issued.

15. ADJUSTMENT PROVISIONS FOR RECAPITALIZATIONS, REORGANIZATIONS AND RELATED TRANSACTIONS.

(a) RECAPITALIZATIONS AND RELATED TRANSACTIONS. If, through or as a result of any recapitalization, reclassification, stock dividend, stock split, reverse stock split or other similar transaction, (i) the outstanding shares of Common Stock are increased, decreased or exchanged for a different number or kind of shares or other securities of the Company, or (ii) additional shares or new or different shares or other non-cash assets are distributed with respect to such shares of Common Stock or other securities, an appropriate and proportionate adjustment shall be made in (x) the maximum number and kind of shares reserved for issuance under or otherwise referred to in the Plan, (y) the number and kind of shares or other securities subject to any then outstanding options under the Plan, and (z) the price for each share subject to any then outstanding options under the Plan, without changing the aggregate purchase price as to which such options remain exercisable. Notwithstanding the foregoing, no adjustment shall be made pursuant to this Section 15 if such adjustment (i) would cause the Plan to fail to comply with Section 422 of the Code or with Rule 16b-3 or (ii) would be considered as the adoption of a new plan requiring stockholder approval.

(b) REORGANIZATION, MERGER AND RELATED TRANSACTIONS. All outstanding options under the Plan shall become fully exercisable for a period of sixty (60) days following the occurrence of any Trigger Event, whether or not such options are then exercisable under the provisions of the applicable agreements relating thereto. For purposes of the Plan, a "Trigger Event" is any one of the following events:

(i) the date on which shares of Common Stock are first purchased pursuant to a tender offer or exchange offer (other than such an offer by the Company, any Subsidiary, any employee benefit plan of the Company or of any Subsidiary or any entity holding shares or other securities of the Company for or pursuant to the terms of such plan), whether or not such offer is approved or opposed by the Company and regardless of the number of shares purchased pursuant to such offer;

(ii) the date the Company acquires knowledge that any person or group deemed a person under Section 13(d)-3 of the Exchange Act (other than the Company, any Subsidiary, any employee benefit plan of the Company or of any

Subsidiary or any entity holding shares of Common Stock or other securities of the Company for or pursuant to the terms of any such plan or any individual or entity or group or affiliate thereof which acquired its beneficial ownership interest prior to the date the Plan was adopted by the Board), in a transaction or series of transactions, has become the beneficial owner, directly or indirectly (with beneficial ownership determined as provided in Rule 13d-3, or any successor rule, under the Exchange Act), of securities of the Company entitling the person or group to 30% or more of all votes (without consideration of the rights of any class or stock to elect directors by a separate class vote) to which all shareholders of the Company would be entitled in the election of the Board of Directors were an election held on such date;

(iii) the date, during any period of two consecutive years, when individuals who at the beginning of such period constitute the Board of Directors of the Company cease for any reason to constitute at least a

majority thereof, unless the election, or the nomination for election by the shareholders of the Company, of each new director was approved by a vote of at least two-thirds of the directors then still in office who were directors at the beginning of such period; and

(iv) the date of approval by the shareholders of the Company of an agreement (a "reorganization agreement") providing for:

(A) The merger or consolidation of the Company with another corporation where the shareholders of the Company, immediately prior to the merger or consolidation, do not beneficially own, immediately after the merger or consolidation, shares of the corporation issuing cash or securities in the merger or consolidation entitling such shareholders to 80% or more of all votes (without consideration of the rights of any class of stock to elect directors by a separate class vote) to which all shareholders of such corporation would be entitled in the election of directors or where the members of the Board of Directors of the Company, immediately prior to the merger or consolidation, do not, immediately after the merger or consolidation, constitute a majority of the Board of Directors of the corporation issuing cash or securities in the merger or consolidation; or

(B) The sale or other disposition of all or substantially all the assets of the Company.

(c) BOARD AUTHORITY TO MAKE ADJUSTMENTS. Any adjustments under this Section 15 will be made by the Board of Directors, whose determination as to what adjustments, if any, will be made and the extent thereof will be final, binding and conclusive. No fractional shares will be issued under the Plan on account of any such adjustments.

16. MERGER, CONSOLIDATION, ASSET SALE, LIQUIDATION, ETC.

(a) GENERAL. In the event of any sale, merger, transfer or acquisition of the Company or substantially all of the assets of the Company in which the Company is not the surviving corporation, and provided that after the Company shall have requested the acquiring or succeeding corporation (or an affiliate thereof), that equivalent options shall be substituted and such successor corporation shall have refused or failed to assume all options outstanding under the Plan or issue substantially equivalent options, then any or all outstanding options under the Plan shall accelerate and become exercisable in full immediately prior to such event. The Committee will notify holders of options under the Plan that any such options shall be fully exercisable for a period of fifteen (15) days from the date of such notice, and the options will terminate upon expiration of such notice.

(b) SUBSTITUTE OPTIONS. The Company may grant options under the Plan in substitution for options held by employees of another corporation who become employees of the Company, or a subsidiary of the Company, as the result of a merger or consolidation of the employing corporation with the Company or a subsidiary of the Company, or as a result of the acquisition by the Company, or one of its subsidiaries, of property or stock of the employing corporation. The Company may direct that substitute options be granted on such terms and conditions as the Board of Directors considers appropriate in the circumstances.

17. NO SPECIAL EMPLOYMENT RIGHTS.

Nothing contained in the Plan or in any option shall confer upon any optionee any right with respect to the continuation of his or her employment by the Company or interfere in any way with the right of the Company at any time to terminate such employment or to increase or decrease the compensation of the optionee.

18. OTHER EMPLOYEE BENEFITS.

Except as to plans which by their terms include such amounts as compensation, the amount of any compensation deemed to be received by an employee as a result of the exercise of an option or the sale of shares received upon such exercise will not constitute compensation with respect to which any other employee benefits of such employee are determined, including, without limitation, benefits under any bonus, pension, profit-sharing, life insurance or salary continuation plan, except as otherwise specifically determined by the Board of Directors.

19. AMENDMENT OF THE PLAN.

(a) The Board of Directors may at any time, and from time to time, modify or amend the Plan in any respect; provided, however, that if at any time the approval of the shareholders of the Company is required under Section 422 of the Code or any

successor provision with respect to Incentive Stock Options, or under Rule 16b-3, the Board of Directors may not effect such modification or amendment without such approval; and provided, further, that the provisions of Section 3(c) hereof shall not be amended more than once every six months, other than to comport with changes in the Code, the Employer Retirement Income Security Act of 1974, as amended, or the rules thereunder.

(b) The modification or amendment of the Plan shall not, without the consent of an optionee, affect his or her rights under an option previously granted to him or her. With the consent of the optionee affected, the Board of Directors may amend outstanding option agreements in a manner not inconsistent with the Plan. The Board of Directors shall have the right to amend or modify (i) the terms and provisions of the Plan and of any outstanding Incentive Stock Options granted under the Plan to the extent necessary to qualify any or all such options for such favorable federal income tax treatment (including deferral of taxation upon exercise) as may be afforded incentive stock options under Section 422 of the Code and (ii) the terms and provisions of the Plan and of any outstanding option to the extent necessary to ensure the qualification of the Plan under Rule 16b-3.

20. WITHHOLDING.

(a) The Company shall have the right to deduct from payments of any kind otherwise due to the optionee any federal, state or local taxes of any kind required by law to be withheld with respect to any shares issued upon exercise of options under the Plan. Subject to the prior approval of the Company, which may be withheld by the Company in its sole discretion, the optionee may elect to satisfy such obligations, in whole or in part, (i) by causing the Company to withhold shares of Common Stock otherwise issuable pursuant to the exercise of an option or (ii) by delivering to the Company shares of Common Stock already owned by the optionee. The shares so delivered or withheld shall have a Fair Market Value equal to such withholding obligation as of the date that the amount of tax to be withheld is to be determined. An optionee who has made an election pursuant to this Section 20(a) may only satisfy his or her withholding obligation with shares of Common Stock which are not subject to any repurchase, forfeiture, unfulfilled vesting or other similar requirements.

(b) The acceptance of shares of Common Stock upon exercise of an Incentive Stock Option shall constitute an agreement by the optionee (i) to notify the Company if any or all of such shares are disposed of by the optionee within two years from the date the option was granted or within one year from the date the shares were issued to the optionee pursuant to the exercise of the option, and (ii) if required by law, to remit to the Company, at the time of and in the case of any such disposition, an amount sufficient to satisfy the Company's federal, state and local withholding tax obligations with respect to such disposition, whether or not, as to both (i) and (ii), the optionee is in the employ of the Company at the time of such disposition.

(c) Notwithstanding the foregoing, in the case of a Reporting Person whose options have been granted in accordance with the provisions of Section 3(b) herein, no election to use shares for the payment of withholding taxes shall be effective unless made in compliance with any applicable requirements of Rule 16b-3.

21. CANCELLATION AND NEW GRANT OF OPTIONS, ETC.

The Board of Directors shall have the authority to effect, at any time and from time to time, with the consent of the affected optionees, (i) the cancellation of any or all outstanding options under the Plan and the grant in substitution therefor of new options under the Plan covering the same or different numbers of shares of Common Stock and having an option exercise price per share which may be lower or higher than the exercise price per share of the cancelled options or (ii) the amendment of the terms of any and all outstanding options under the Plan to provide an option exercise price per share which is higher or lower than the then-current exercise price per share of such outstanding options.

22. EFFECTIVE DATE AND DURATION OF THE PLAN.

(a) EFFECTIVE DATE. The Plan shall become effective when adopted by the Board of Directors, but no Incentive Stock Option granted under the Plan shall become exercisable unless and until the Plan shall have been approved by the Company's shareholders. If such shareholder approval is not obtained within twelve months after the date of the Board's adoption of the Plan, no options previously granted under the Plan shall be deemed to be Incentive Stock Options and no Incentive Stock Options shall be granted thereafter. Amendments to the Plan not requiring shareholder approval shall become effective when adopted by the Board of Directors; amendments requiring shareholder approval (as provided in Section 21) shall become effective when adopted by the Board of Directors, but no Incentive Stock Option granted after the date of such amendment shall become exercisable (to the extent that such amendment to the Plan was required to enable the Company to grant such Incentive Stock Option to a particular optionee) unless and until such amendment shall have been approved by the

Company's shareholders. If such shareholder approval is not obtained within twelve months of the Board's adoption of such amendment, any Incentive Stock Options granted on or after the date of such amendment shall terminate to the extent that such amendment to the Plan was required to enable the Company to grant such option to a particular optionee. Subject to this limitation, options may be granted under the Plan at any time after the effective date and before the date fixed for termination of the Plan.

(b) TERMINATION. Unless sooner terminated in accordance with Section 16, the Plan shall terminate upon the earlier of (i) the close of business on the day next preceding the tenth anniversary of the date of its adoption by the Board of Directors, or (ii) the date on which all shares available for issuance under the Plan shall have been issued pursuant to the exercise or cancellation of options granted under the Plan. If the date of termination is

determined under (i) above, then options outstanding on such date shall continue to have force and effect in accordance with the provisions of the instruments evidencing such options.

23. PROVISION FOR FOREIGN PARTICIPANTS.

The Board of Directors may, without amending the Plan, modify awards or options granted to participants who are foreign nationals or employed outside the United States to recognize differences in laws, rules, regulations or customs of such foreign jurisdictions with respect to tax, securities, currency, employee benefit or other matters.

24. GOVERNING LAW.

The provisions of this Plan shall be governed and construed in accordance with the laws of the State of New York without regard to the principles of conflicts of laws.

Adopted by the Board of Directors on November 8, 1994

EXHIBIT 5.1

March 30, 2005

Enzo Biochem, Inc.
60 Executive Boulevard
Farmingdale, New York 11735

Ladies and Gentlemen:

We have assisted in the preparation of a Registration Statement on Form S-8 (the "REGISTRATION STATEMENT") to be filed with the Securities and Exchange Commission under the Securities Act of 1933, as amended (the "ACT"), relating to an aggregate of 1,000,000 shares (the "SHARES") of the common stock, par value $0.01 per share ("COMMON STOCK"), of Enzo Biochem, Inc., a New York corporation (the "COMPANY"), issuable under the Enzo Biochem, Inc. 2005 Equity Compensation Incentive Plan (the "2005 PLAN").

In connection with the preparation of the Registration Statement and this opinion letter, we have examined, considered and relied upon the following documents (collectively, the "DOCUMENTS"):

(i) the Company's Certificate of Incorporation as amended through the date hereof;

(ii) the Company's By-laws, as amended through the date hereof;

(iii) resolutions of the board of directors and stockholders of the Company;

(iv) the Registration Statement and schedules and exhibits thereto;

(v) the 2005 Plan;

(vi) a specimen stock certificate evidencing the Common Stock; and

(vii) such other documents and matters of law as we have considered necessary or appropriate for the expression of the opinions contained herein.

In rendering the opinions set forth below, we have assumed without investigation the genuineness of all signatures and the authenticity of all Documents submitted to us as originals, the conformity to authentic original documents of all Documents submitted to us as copies, and the veracity of the Documents. As to questions of fact material to the opinions hereinafter expressed, we have relied upon the representations and warranties of the Company made in the Documents.

Based upon the foregoing examination, and subject to the qualifications set forth below, we are of the opinion that the Shares have been duly authorized and, when issued, delivered and paid for in accordance with the provisions of the 2005 Plan, will be validly issued, fully paid and non-assessable.

The opinions expressed above are limited to the New York Business Corporation Law which includes the statutory provisions thereof as well as all applicable provisions of the Constitution of the State of New York and reported judicial decisions interpreting these laws. Our opinion is rendered only with respect to laws, and the rules, regulations and orders thereunder, which are currently in effect.

A shareholder of our firm holds options to acquire an aggregate of 55,254 shares of Common Stock of the Company.

We hereby consent to the filing of this opinion as an exhibit to the Registration Statement and to the reference to us in the Registration Statement. In giving this consent, we do not thereby admit that we are included within the category of persons whose consent is required by Section 7 of the Act and the rules and regulations promulgated thereunder.

Very truly yours,

/s/ Greenberg Traurig, LLP

GREENBERG TRAURIG, LLP

EXHIBIT 23.1

CONSENT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

We consent to the reference to our firm under the caption "Experts" in the Registration Statement (Form S-8) pertaining to the 2005 Equity Compensation Incentive Plan, 1999 Stock Option Plan and 1994 Stock Option Plan of Enzo Biochem, Inc. and to the incorporation by reference therein of our report dated October 7, 2004, except for Note 14 and the third paragraph of Note 7, as to which the date is October 14, 2004, with respect to the consolidated financial statements and schedules of Enzo Biochem, Inc. included in its Annual Report (Form 10-K) for the fiscal year ended July 31, 2004, filed with the Securities and Exchange Commission.

/s/ Ernst & Young LLP

Melville, NY
March 29, 2005