

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

-----

FORM 11-K

FOR ANNUAL REPORTS OF EMPLOYEE STOCK REPURCHASE SAVINGS AND SIMILAR PLANS  
PURSUANT TO SECTION 15(d) OF THE  
SECURITIES EXCHANGE ACT OF 1934

(MARK ONE)

ANNUAL REPORT PURSUANT TO SECTION 15(d) OF THE SECURITIES  
EXCHANGE ACT OF 1934

FOR THE FISCAL YEAR ENDED DECEMBER 31, 2005

OR

TRANSITION REPORT PURSUANT TO SECTION 15(d) OF THE SECURITIES  
EXCHANGE ACT OF 1934

FOR THE TRANSITION PERIOD FROM \_\_\_\_\_ TO \_\_\_\_\_

COMMISSION FILE NUMBER 001-09974

-----

Enzo Biochem, Inc. Salary Reduction Profit Sharing Plan

(Full title of the plan and the address of the plan, if different from that  
of the issuer named below:)

ENZO BIOCHEM, INC., 60 EXECUTIVE BOULEVARD, FARMINGDALE, NY 11735

(Name of issuer of the securities held pursuant to the plan and the address  
of its principal executive office)

ENZO BIOCHEM, INC.  
SALARY REDUCTION PROFIT SHARING PLAN

FINANCIAL STATEMENTS

DECEMBER 31, 2005 AND 2004

ENZO BIOCHEM, INC.  
SALARY REDUCTION PROFIT SHARING PLAN

TABLE OF CONTENTS

	PAGE
	-----
REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM	1
FINANCIAL STATEMENTS:	
Statements of Net Assets Available for Benefits December 31, 2005 and 2004	2
Statement of Changes in Net Assets Available for Benefits For the year ended December 31, 2005	3
Notes to Financial Statements	4-7
SUPPLEMENTAL SCHEDULE FOR THE YEAR ENDED DECEMBER 31, 2005:	
Schedule H, Item 4i - Schedule of Assets Held at End of Year	8
CONSENT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM	Exhibit 23

REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

To the Trustees of  
Enzo Biochem, Inc. Salary Reduction Profit Sharing Plan

We have audited the accompanying statement of net assets available for benefits of Enzo Biochem, Inc. Salary Reduction Profit Sharing Plan (the "Plan") as of December 31, 2005 and the related statement of changes in net assets available for benefits for the year then ended. These financial statements are the responsibility of the Plan's management. Our responsibility is to express an opinion on these financial statements based on our audit.

We conducted our audit in accordance with generally accepted auditing standards as established by the Auditing Standards Board (United States) and in accordance with the standards of the Public Company Accounting Oversight Board (United States). Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement. The Plan is not required to have, nor were we engaged to perform, an audit of its internal control over financial reporting. Our audit included consideration of internal control over financial reporting as a basis for designing audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the Plan's internal control over financial reporting. Accordingly, we express no such opinion. An audit also includes examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements, assessing the accounting principles used and significant estimates made by management, as well as evaluating the overall financial statement presentation. We believe that our audit provides a reasonable basis for our opinion.

In our opinion, the financial statements referred to above present fairly, in all material respects, the net assets available for benefits of the Plan as of December 31, 2005 and the changes in net assets available for benefits for the year ended December 31, 2005 in conformity with accounting principles generally accepted in the United States of America.

Our audit was conducted for the purpose of forming an opinion on the basic financial statements taken as a whole. The supplemental schedule of assets held for investment purposes at the end of the year, is presented for the purpose of additional analysis and is not a required part of the basic financial statements but is supplementary information required by the Department of Labor's Rules and Regulations for Reporting and Disclosure under the Employee Retirement Income Security Act of 1974. The supplemental schedule is the responsibility of the Plan's management. The supplemental schedule has been subjected to the auditing procedures applied in the audit of the basic financial statements and, in our opinion, is fairly stated in all material respects in relation to the basic financial statements taken as a whole.

The 2004 statement of net assets available for benefits and statement of changes in net assets available for benefits of Enzo Biochem, Inc. Salary Reduction Profit Sharing Plan was reported on by other auditors, whose report dated May 23, 2005, expressed an opinion that such financial statements present fairly, in all material respects the net assets available for benefits and changes in net assets available for benefits of Enzo Biochem, Inc. Salary Reduction Profit Sharing Plan as of and for the year ended December 31, 2004 in conformity with accounting principles generally accepted in the United States of America.

June 23, 2006  
Woodbury, New York

Page 2

ENZO BIOCHEM, INC.  
SALARY REDUCTION PROFIT SHARING PLAN

STATEMENTS OF NET ASSETS AVAILABLE FOR BENEFITS

DECEMBER 31,

2005

2004

ASSETS

Cash	\$ 6,008	\$ 13,334
	-----	-----
Investments at fair value:		
Mutual funds	8,315,380	7,243,623
Common stock	1,643,178	2,289,847
Common/Collective trusts	783,325	522,263
	-----	-----
	10,741,883	10,055,733
	-----	-----
Receivables:		
Employer's contributions	402,304	351,579
Participants' contributions	28,908	19,258
	-----	-----
	431,212	370,837
	-----	-----
Loans receivable - participants	233,700	218,831
	-----	-----
TOTAL ASSETS	11,412,803	10,658,735
	-----	-----
LIABILITIES		
Benefit claims payable	--	6,333
	-----	-----
TOTAL LIABILITIES	--	6,333
	-----	-----
NET ASSETS AVAILABLE FOR BENEFITS	\$ 11,412,803	\$ 10,652,402
	=====	=====

See notes to financial statements.

Page 3

ENZO BIOCHEM, INC.  
SALARY REDUCTION PROFIT SHARING PLAN

STATEMENT OF CHANGES IN NET ASSETS AVAILABLE FOR BENEFITS

FOR THE YEAR ENDED DECEMBER 31, 2005

Additions to (reductions of) net assets attributed to:		
Participants' contributions		\$ 1,037,669
Employer's contributions		402,304
Interest on loans to participants		12,790
Net appreciation (depreciation) in fair value of investments:		
Mutual funds	\$ 677,979	
Common stock	(947,704)	(269,725)
	-----	-----
Total additions		1,183,038
		-----
Deductions from net assets attributed to:		
Benefits paid to participants		391,847
Administrative expenses		30,790
		-----
Total deductions		422,637
		-----
Net increase in net assets		760,401
Net assets available for benefits, beginning of year		10,652,402
		-----
Net assets available for benefits, end of year		\$ 11,412,803
		=====

ENZO BIOCHEM, INC.  
SALARY REDUCTION PROFIT SHARING PLAN

NOTES TO FINANCIAL STATEMENTS

NOTE 1: PLAN DESCRIPTION

The following description of the Enzo Biochem, Inc. Salary Reduction Profit Sharing Plan ("the Plan") provides only general information. Participants should refer to the Plan Agreement, as amended, for a more complete description of the Plan's provisions.

GENERAL

The Plan is a defined contribution plan covering all eligible full time employees of Enzo Biochem, Inc., the Plan Sponsor, and its wholly owned subsidiaries, Enzo Clinical Labs, Inc., Enzo Therapeutics, Inc. and Enzo Life Sciences, Inc. (collectively, the "Company") who have completed three months of service and have attained age twenty-one.

The Plan is subject to the provisions of the Employee Retirement Income Security Act of 1974 (ERISA).

CONTRIBUTIONS

Eligible employee participants can elect to defer up to the maximum amount permitted by the Internal Revenue Code for each year (\$14,000 in 2005 and \$13,000 in 2004). Effective January 1, 2002, catch-up contributions are also permitted for participants who have attained age 50 by December 31st, in accordance with Section 414(v) of the Code, in an amount up to a maximum of \$4,000 in 2005, and \$3,000 in 2004, bringing those participants' statutory limitation to \$18,000 for 2005 and \$16,000 for 2004.

In addition, the Company will contribute to the Plan a discretionary matching contribution equal to 50% of the participant's 401(k) contribution, not to exceed 50% of 10% of the participant's annual compensation. Participants who have completed a year of service during the plan year and are actively employed as of the last day of the plan year shall be deemed eligible to share in the matching contribution for the year. In 2005 and 2004 the total matching contributions were \$402,304 and \$351,579 respectively, in the form of Enzo Biochem Inc. common stock.

PARTICIPANTS' ACCOUNTS

Contributions are invested in a choice of thirteen mutual funds, a benefit responsive investment contract, and the common stock of Enzo Biochem, Inc. Contribution selections are designated by the participants. Each participant's account is credited with the participant's contribution and allocations of (a) the Company's matching contribution and, (b) Plan earnings, and charged with an allocation of administrative expenses. Allocations are based on participant compensation or account balances, as defined. The benefit to which a participant is entitled is the benefit that can be provided from the participant's vested account.

VESTING

Participants' contributed funds arising from salary reductions and the earnings thereon, are fully vested at all times. Vesting in the Company's matching contribution and earnings thereon, is ratable over four years of service. Any forfeited amounts shall be applied to reduce the Company's future contributions. For the years ended December 31, 2005 and 2004, the Company's contributions were reduced by forfeitures of approximately \$11,200 and \$7,000, respectively.

SALARY REDUCTION PROFIT SHARING PLAN

NOTES TO FINANCIAL STATEMENTS

NOTE 1: PLAN DESCRIPTION (CONTINUED)

LOANS TO PARTICIPANTS

Participants may borrow from their 401(k) accounts a minimum of \$1,000 up to a maximum of 50% of their vested account balance or \$50,000. Participants are entitled to borrow from their account for a maximum loan term of five years unless the proceeds are used to acquire a principal residence in which case it may exceed 5 years. The loans are secured by the participant's vested account balance and bear a reasonable rate of interest. Principal and interest is paid ratably through payroll deductions.

PAYMENT OF BENEFITS

On termination of service due to death, disability or retirement, participants may elect to receive an amount equal to the value of the vested interest in their account in either a lump sum amount or in various annuity options. For termination of service due to other reasons, a participant may receive the value of the vested interest in their account as a lump sum distribution. Benefits are payable in the form of cash or property.

OPERATING EXPENSES

Certain operating expenses of the Plan are absorbed by the Plan Sponsor.

NOTE 2: SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES

The Plan's financial statements have been prepared in conformity with accounting principles generally accepted in the United States of America and under the accrual basis method of accounting.

The Plan's investments are stated at fair value except for its benefit responsive investment contract which is valued at contract value (Note 4). Investment earnings are reinvested in the respective funds. Investment earnings include the Plan's proportionate share of realized gains and losses on the disposal of investments, and appreciation or depreciation in the fair value of the underlying investments comprising the respective mutual funds. All purchases and sales are recorded on a trade date basis.

The Plan presents in the statement of changes in net asset available for benefits, the net appreciation in fair value of its investments, which consists of the realized gains or losses and the unrealized appreciation (depreciation) on those investments.

The preparation of the financial statements in conformity with accounting principles generally accepted in the United States of America requires management to make estimates and assumptions that affect reported amounts and disclosures in the financial statements. Actual results could differ from those estimates.

Certain accounts in the prior-year financial statements have been reclassified for comparative purposes to conform with the presentation in the current-year financial statements. Collective/Common trusts have been reclassified from mutual funds for the years ended December 31, 2005 and 2004.

Page 6

ENZO BIOCHEM, INC.  
SALARY REDUCTION PROFIT SHARING PLAN

NOTES TO FINANCIAL STATEMENTS

NOTE 3: INVESTMENTS

The following table presents the fair values, as determined by quoted market price, of the investments except for the Metropolitan Life Stable Value Contract, which is presented at contract value:

<TABLE>

<CAPTION>

		2005	2004
<S>	<C>	----- <C>	----- <C>
	Enzo Biochem, Inc.*	\$ 1,643,178	\$ 2,289,847
	American Century Government Bond	\$ 266,421	\$ 188,121
	American Funds AMCAP Fund CL A*	\$ 644,819	\$ 26,459
	American Funds American Balanced Fund CL A*	\$ 1,436,346	\$ 1,318,378
	American Funds Europacific Growth CL A*	\$ 1,410,406	\$ 1,174,844
	American Funds Washington Mutual Investors Fund CL A*	\$ 2,299,358	\$ 2,117,271
	Baron Growth Fund	\$ 112,259	\$ 46,874
	Calamos Growth Fund CL A	\$ 470,628	\$ -
	Fidelity Contrafund*	\$ 823,150	\$ 673,476
	Fidelity Spartan US Equity Index Fund	\$ 155,716	\$ 178,479
	Freemont Bond Fund	\$ 75,272	\$ 6,481
	Hotchkis & Wiley Mid Cap Value CL 1	\$ 193,168	\$ 26,381
	Neuberger & Berman Genesis Fund Trust	\$ 378,051	\$ 319,346
	Metropolitan Life Stable Value Contract (Note 4)*	\$ 783,325	\$ 522,263
	Royce Total Return	\$ 49,786	\$ -
	Federated Kaufmann Fund K	\$ -	\$ 471,276
	Janus Fund	\$ -	\$ 696,237

</TABLE>

\* Denotes investments representing 5% or more of net assets available for benefits at December 31, 2005.

NOTE 4: INVESTMENT CONTRACT WITH INSURANCE COMPANY

The Plan has a benefit-responsive investment contract with MetLife Trust Company, National Association (MetLife). MetLife maintains the contributions in separate accounts. The accounts are credited with earnings on the underlying investments and charged for participant withdrawals and administrative expenses. The contract is included in the financial statements at contract value as reported to the Plan by Counsel Trust Company. Contract value represents contributions made under the contract, plus earnings, less participant withdrawals and administrative expenses. Participants may ordinarily direct the withdrawal or transfer of all or a portion of their investment at contract value.

There are no reserves against contract value for credit risk of the contract issuer or otherwise. The average yield and crediting interest rates were approximately 4.1% and 3.7% for 2005 and 2004, respectively.

Page 7

ENZO BIOCHEM, INC.  
SALARY REDUCTION PROFIT SHARING PLAN

NOTES TO FINANCIAL STATEMENTS

NOTE 5: RIGHT TO TERMINATE PLAN

Although it has not expressed any intent to do so, the Company has the right under the Plan to discontinue its contributions at any time and to terminate the Plan subject to the provisions of ERISA.

NOTE 6: TAX STATUS

The Plan obtained its latest determination letter in February 2002 in which the Internal Revenue Service stated that the Plan was in compliance with the applicable requirements of the Internal Revenue Code. The Plan has been amended since receiving the determination letter. However, the plan administrator and the plan's tax counsel believe that the plan is currently designed and being operated in compliance with the applicable requirements of the Internal Revenue Code.

NOTE 7: RELATED PARTY TRANSACTIONS

During 2005, the Plan purchased shares of common stock in Enzo Biochem, Inc., the parent company of the Plan sponsor, at market prices totaling approximately \$140,000. In addition, shares were sold, at market prices totaling approximately \$263,000. At December

31, 2005 and 2004 the Plan held Enzo Biochem, Inc. common stock with a fair value of \$1,643,178 and \$2,289,847, respectively.

Fees paid by the Plan to the third party Plan administrators amounted to \$28,690 for the year ended December 31, 2005.

NOTE 8: RISKS AND UNCERTAINTIES

The Plan invests in various investment securities. Investment securities are exposed to various risk such as interest rate, market, and credit risks. Due to the level of risk associated with certain investment securities, it is at least reasonably possible that changes in the values of investment securities will occur in the near term and that such changes could materially affect participants' account balances and the amounts reported in the statement of net assets available for benefits.

NOTE 9: SUBSEQUENT EVENTS - PLAN AMENDMENTS

Effective April 15, 2006, the Company amended the Plan to allow a Plan participant to elect to classify all or part of his or her elective deferrals as a Roth 401(k) deferral.

Effective June 1, 2006, the Company amended the Plan's participant's salary reduction election. The amendment requires participants to make an initial salary deferral election, or an election to receive cash in lieu of a salary deferral election, within 30 days after entering the Plan. A participant's compensation will automatically be reduced by 3%, which will be considered to be the Participant's salary reduction election if the Participant does not elect to defer a portion of compensation or elect to receive cash in lieu of making a salary deferral election.

ENZO BIOCHEM, INC.  
SALARY REDUCTION PLAN

SCHEDULE H, ITEM 4I  
SCHEDULE OF ASSETS HELD AT END OF YEAR

E.I.N. # 13-2869332  
PLAN # 001

YEAR ENDED DECEMBER 31, 2005

<TABLE>  
<CAPTION>

VALUE	IDENTITY OF ISSUE, BORROWER, LESSOR OR SIMILAR PARTY	DESCRIPTION OF INVESTMENT INCLUDING MATURITY DATE, RATE OF INTEREST, COLLATERAL, PAR OR MATURITY VALUE	CURRENT COST	
(e) (a)	(b)	(c)	(d)	-----
-----	-----	-----	-----	
<S>	<C>	<C>	<C>	<C>
*	Enzo Biochem, Inc.	Common Stock		\$
1,643,178				
	American Century Government Bond	Mutual Fund		\$
266,421				
	American Funds AMCAP Fund CL A	Mutual Fund		\$
644,819				
	American Funds American Balanced Fund CL A	Mutual Fund		\$
1,436,346				
	American Funds Europacific Growth CL A	Mutual Fund		\$
1,410,406				
	American Funds Washington Mutual Investors Fund CL A	Mutual Fund		\$
2,299,358				
	Baron Growth Fund	Mutual Fund		\$
112,259				
	Calamos Growth Fund CL A	Mutual Fund		\$
470,628				
	Fidelity Contrafund	Mutual Fund		\$
823,150				
	Fidelity Spartan US Equity Index Fund	Mutual Fund		\$
155,716				
	Freemont Bond Fund	Mutual Fund		\$

75,272	Hotchkis & Wiley Mid Cap Value CL 1	Mutual Fund		\$
193,168	Neuberger & Berman Genesis Fund Trust	Mutual Fund		\$
378,051	Metropolitan Life Ins Co.	Guaranteed Investment		\$
783,325		Contract		
	Royce Total Return	Mutual Fund		\$
49,786	Participant Loans	5.00% - 9.50%	-0-	\$
233,700				

</TABLE>

\* Party-in-interest

See Independent Auditors' Report.

SIGNATURES

THE PLAN. Pursuant to the requirements of the Securities Exchange Act of 1934, a trustee of the below named employee benefit plan has duly caused this annual report to be signed on its behalf by the undersigned hereunto duly authorized.

Enzo Biochem, Inc. Salary Reduction Profit Sharing Plan

Date: June 27, 2006

/s/ Herbert Bass

-----  
By: Herbert Bass  
Trustee



Consent of Independent Registered Public Accounting Firm

To the Trustees of  
Enzo Biochem, Inc. Salary Reduction Profit Sharing Plan

We consent to incorporation of our report dated June 23, 2006 relating to the statements of net assets available for plan benefits of the Enzo Biochem, Inc. Salary Reduction Profit Sharing Plan as of December 31, 2005 and 2004 and the related statement of changes in net assets available for plan benefits for the year ended December 31, 2005; in the December 31, 2005 annual report on Form 11-K of Enzo Biochem, Inc.

Marks Paneth & Shron LLP  
Woodbury, NY  
June 23, 2003