

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

FORM 11-K

FOR ANNUAL REPORTS OF
EMPLOYEE STOCK PURCHASE, 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, 2009
- 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., 527 Madison Ave. New York, NY 10022

(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

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REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

To the Trustees and Participants 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, 2009, and the related statement of changes in net assets available for benefits for the year ended December 31, 2009. 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 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. We were not engaged to perform an audit of the Plan's internal control over financial reporting. Our audit includes 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 includes examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements. An audit also includes 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, 2009, and the changes in net assets available for benefits for the year ended December 31, 2009 in conformity with accounting principles generally accepted in the United States of America.

Our audit was performed for the purpose of forming an opinion on the basic financial statements taken as a whole. The supplemental schedule of assets (held at end of year) as of December 31, 2009 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.

/s/ Eisner LLP

New York, New York
June 24, 2010

REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

To the Trustees and Participants 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, 2008. This financial statement is the responsibility of the Plan's management. Our responsibility is to express an opinion on this financial statement based on our audit.

We conducted our audit 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. An audit includes examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements. An audit also includes 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 statement referred to above present fairly, in all material respects, the net assets available for benefits of the Plan as of December 31, 2008, in conformity with accounting principles generally accepted in the United States of America.

/s/ Marks Paneth & Shron LLP

Woodbury, New York
June 30, 2009

ENZO BIOCHEM, INC.
SALARY REDUCTION PROFIT SHARING PLAN

S statements of Net Assets Available for Benefits

December 31,

	2009	2008
ASSETS		
Investments (at fair value):		
Mutual funds	\$ 11,448,554	\$ 8,162,659
Common stock	1,580,131	825,489
Loans receivable – participants	286,851	194,527
	<u>13,315,536</u>	<u>9,182,675</u>
Receivables:		
Employer’s contributions	697,044	582,817
Participants’ contributions		47,733
Due from Plan Sponsor		155,000
	<u>697,044</u>	<u>785,550</u>
TOTAL ASSETS	<u>14,012,580</u>	<u>9,968,225</u>
NET ASSETS AVAILABLE FOR BENEFITS	<u>\$ 14,012,580</u>	<u>\$ 9,968,225</u>

See notes to financial statements.

ENZO BIOCHEM, INC.
SALARY REDUCTION PROFIT SHARING PLAN

S statement of Changes in Net Assets Available for Benefits

For the Year Ended December 31, 2009

Additions to net assets attributed to:	
Participants' contributions	\$ 2,197,267
Employer's contributions	697,044
Interest on loans to participants and interest bearing cash	14,919
Interest and dividends	277,692
Net appreciation in fair value of investments and net gain on sale of investments	2,346,775
Total additions	5,533,697
Deductions from net assets attributed to:	
Benefits paid to participants	1,481,847
Administrative expenses	7,495
Total deductions	1,489,342
Net increase in net assets available for benefits	4,044,355
Net assets available for plan benefits, beginning of year	9,968,225
Net assets available for plan benefits, end of year	\$ 14,012,580

See notes to financial statements.

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 United States based full-time employees who have completed three months of service and have attained age twenty-one 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”), and the United States based employees of Enzo Life Sciences, Inc.. 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 (the “Code”) for each year (\$16,500 in 2009 and \$15,500 in 2008). 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 \$5,500 in 2009 and \$5,000 in 2008, bringing those participants’ statutory limitation to \$22,000 maximum in 2009 and \$20,500 in 2008. In 2009 participant contributions totaled \$2,197,267 which includes \$419,179 in rollover contributions.

The Company may contribute to the Plan annually, a discretionary matching contribution. For 2009 the contribution was 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 2009, the total matching contributions were \$697,044 in the form of Enzo Biochem Inc. common stock.

The Plan provides that unless the participant affirmatively elects otherwise, the participant’s compensation will automatically be reduced by 3%, which will be considered to be the Participant’s salary reduction election.

Participant Accounts

Participants direct their contributions into various investment options offered by the Plan which include a choice of mutual funds 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.

ENZO BIOCHEM, INC.
SALARY REDUCTION PROFIT SHARING PLAN
Notes to Financial Statements

NOTE 1: PLAN DESCRIPTION (continued)

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.

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, are ratable over four years of service.

Forfeitures

Through December 31, 2009 any forfeited nonvested amounts are credited to active participant accounts. At and for the years ended December 31, 2009 and 2008, forfeitures were \$16,453 and \$0, respectively. The 2009 forfeitures will be allocated in 2010. Effective April 1, 2010 any forfeited nonvested amounts shall be applied to reduce the Company's future contributions to the Plan.

Participant Loans

Participants may borrow from their 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 five 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.

Plan Expenses

Certain operating expenses including, among others professional fees of the Plan, are paid by the Plan Sponsor.

NOTE 2: SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES

Basis of Accounting

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. Benefits are recorded when paid.

Use of Estimates

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 of net assets available for benefits at the date of the financial statements and the accompanying footnotes and the changes in net assets available for benefits during the reporting period and when applicable disclosures of contingent assets and liabilities at the date of the financial statements. Actual results could differ from those estimates.

ENZO BIOCHEM, INC.
SALARY REDUCTION PROFIT SHARING PLAN
Notes to Financial Statements

NOTE 2: SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES (continued)

Investment Valuation and Income Recognition

The Plan's investments are stated at fair value. The Company stock is valued at quoted market prices. Shares of mutual funds are valued at quoted market prices, which represent the net asset values of shares held by the Plan at year end. The loans receivable from participants, which are secured by vested account balances of borrowing participants, are valued at amortized costs, which approximates fair value.

Interest income is recorded on the accrual basis. 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 (depreciation) in fair value of its investments, which consists of the realized gains or losses and the unrealized appreciation (depreciation) on those investments.

NOTE 3: RECENT ACCOUNTING DEVELOPMENTS

In January 2010, the Financial Accounting Standards Board (FASB) issued a new accounting guidance for Fair Value Measurements and Disclosures and Improving Disclosures about Fair Value Measurements. The guidance requires Plans to disclose (i) separately the amounts of significant transfers in and out of Level 1 and Level 2 and reasons for the transfers; (ii) disclosure on gross basis of purchases, sales, issuances and settlements within Level 3; (iii) disclosures by class of assets and liabilities; and (iv) a description of the valuation techniques and inputs used to measure for both recurring and non-recurring fair value measurements for Level 2 or Level 3. The guidance is effective for interim and annual reporting periods beginning after December 15, 2009 except for the level 3 disclosures requirements which will be effective for fiscal years beginning after December 15, 2010, and for interim periods within those fiscal years. The Plan is evaluating the impact, if any, the adoption of this pronouncement will have on its financial statements.

In September 2009, the FASB issued Fair Value Measurements and Disclosures -Investments in Certain Entities that Calculate Net Assets Value per Share (or Its Equivalent). This update provides guidance on measuring the fair value of an alternative investment that does not have a readily determinable fair value. The guidance permits the use of the investment's net asset value, as a practical expedient, to determine fair value. The guidance also requires additional disclosure of these investments such as: (i) the nature of any restrictions on the investor's ability to redeem its investments at the measurement date, (ii) any unfunded commitment by the investor and (iii) the investment strategies of the investees. The guidance is effective for interim and annual periods ending after December 15, 2009. The adoption of this guidance did not have a material impact on the Plan's financial statements.

In June 2009, the FASB issued guidance under Accounting Standards Codification (ASC/Codification), Generally Accepted Accounting Principles (GAAP) which establishes the ASC as the source of authoritative GAAP in the United States of America for non-governmental entities. Rules and interpretive releases of the Securities and Exchange Commission (SEC) under the authority of federal securities laws are also sources of authoritative GAAP for SEC registrants. The Codification supersedes all existing non-SEC accounting and reporting standards. This guidance and the Codification are effective for financial statements issued for periods after September 15, 2009. The Codification did not change the existing GAAP and hence the adoption did not have an impact on the Plan's financial statements.

ENZO BIOCHEM, INC.
SALARY REDUCTION PROFIT SHARING PLAN
Notes to Financial Statements

NOTE 4: FAIR VALUE MEASUREMENTS

The Plan adopted guidance under ASC 820, Fair Value Measurements, which establishes a framework for measuring fair value. That framework provides a fair value hierarchy that prioritizes the inputs to valuation techniques used to measure fair value. The hierarchy gives the highest priority to unadjusted quoted prices in active markets for identical assets or liabilities (level 1 measurements) and the lowest priority to unobservable inputs (level 3 measurements). The three levels of the fair value hierarchy under ASC 820 are described as follows:

Level 1 - Inputs to the valuation methodology are unadjusted quoted prices for identical assets or liabilities in active markets that the Plan has the ability to access.

Level 2 - Inputs to the valuation methodology include: quoted prices for similar assets or liabilities in active markets; quoted prices for identical or similar assets or liabilities in inactive markets; inputs other than quoted prices that are observable for the assets or liability; inputs that are derived principally from or corroborated by observable market data by correlation or other means.

If the asset or liability has a specified (contractual) term, the level 2 Input must be observable for substantially the full term of the asset or liability.

Level 3 - Inputs to the valuation methodology are unobservable and significant to the fair value measurements.

The asset or liability's fair value measurement level within the fair value hierarchy is based on the lowest level of any input that is significant to the fair value measurement. Valuation techniques used need to maximize the use of observable inputs and minimize the use of unobservable inputs.

There have been no changes in the methodologies used at December 31, 2009 and 2008. The methods described may produce a fair value calculation that may not be indicative of net realizable value or reflective of future fair values. Furthermore, although the plan believes its valuation methods are appropriate and consistent with other market participants, the use of different methodologies or assumptions to determine the fair value of certain financial instruments could result in a different fair value measurement at the reporting date.

ENZO BIOCHEM, INC.
SALARY REDUCTION PROFIT SHARING PLAN
Notes to Financial Statements

NOTE 4: FAIR VALUE MEASUREMENTS (continued)

The following tables sets forth by level, within the fair value hierarchy, the Plan's investments and participant loans as of December 31:

Assets at Fair Value as of December 31, 2009			
	Level 1	Level 3	Total
Mutual funds	\$ 11,448,554	\$	\$ 11,448,554
Common stock	1,580,131		1,580,131
Loans receivable-participants		286,851	286,851
	\$ 13,028,685	\$ 286,851	\$ 13,315,536

Assets at Fair Value as of December 31, 2008			
	Level 1	Level 3	Total
Mutual funds	\$ 8,162,659	\$	\$ 8,162,659
Common stock	825,489		825,489
Loans receivable-participants		194,527	194,527
	\$ 8,988,148	\$ 194,527	\$ 9,182,675

The valuation techniques used to measure fair value of investments are included in Note 2.

The Plan has no level 2 assets at December 31, 2009 and 2008.

The following table sets forth a summary of changes in the fair value of the Plan's level 3 assets, Loans receivable-participants for the year ended December 31, 2009:

Balance, beginning of year	\$ 194,527
Loan withdrawals	196,848
Loan repayments	(104,524)
Balance, end of year	\$ 286,851

ENZO BIOCHEM, INC.
SALARY REDUCTION PROFIT SHARING PLAN
Notes to Financial Statements

NOTE 5: INVESTMENTS

The following table presents the fair values, as determined by quoted market price, of the investments at December 31:

	2009	2008
Enzo Biochem, Inc.* (293,704 shares at 2009, 168,812 shares at 2008)	\$ 1,580,131	\$ 825,489
Pimco Total Return	239,281	41,007
MSIFT Mid Cap Growth Portfolio	59,507	12,824
NB Genesis	267,428	150,266
John Hancock International	0	1,178
Allianz NFJ Dividend Value	19,534	5,664
Columbia Acorn International Select	217,402	120,967
Allianz NFJ Small Cap Value	49,541	18,469
Royce Value Plus	76,734	25,388
Fidelity Fund	96,657	52,632
Fidelity Contrafund	653,955	262,419
Fidelity Capital & Income	46,481	4,160
Fidelity Government Income	291,846	55,092
Fidelity Leveraged Company	46,978	12,212
Fidelity International Discovery	56,613	23,542
Fidelity Emerging Markets	41,928	1,160
Fidelity Growth Discovery	35,988	17,341
Fidelity Freedom Income	67,367	27,381
Fidelity Freedom 2000	31,324	1,775
Fidelity Freedom 2010*	1,062,611	826,042
Fidelity Freedom 2020*	1,416,264	1,133,494
Fidelity Freedom 2030*	1,076,506	1,114,805
Spartan Extended Market Index	77,095	32,166
Spartan International Index	43,648	12,387
Fidelity Retirement Money Market	560,445	48,475
Fidelity Retirement Government Money Market	499,069	300,278
Spartan 500 Equity Index	102,317	24,058
Fidelity Freedom 2040	317,277	162,696
Fidelity Freedom 2005	456,546	546,934
Fidelity Freedom 2015*	1,422,648	1,790,097
Fidelity Freedom 2025*	1,194,675	739,963
Fidelity Freedom 2035	579,818	406,104
Fidelity Freedom 2045	187,692	101,897
Fidelity Freedom 2050	152,350	88,775
Fidelity Cash Reserves	1,029	1,011
	<hr/>	<hr/>
Total Mutual funds & Common stock	13,028,685	8,988,148
Loans receivable – participants	286,851	194,527
	<hr/>	<hr/>
Total Investments	\$ 13,315,536	\$ 9,182,675
	<hr/>	<hr/>

* Denotes investments representing 5% or more of net assets available for benefits at December 31, 2009.

ENZO BIOCHEM, INC.
SALARY REDUCTION PROFIT SHARING PLAN
Notes to Financial Statements

NOTE 5: INVESTMENTS (continued)

During the year ended December 31, 2009, the Plan's investments (including gains and losses on investments bought and sold, as well as held during the year) appreciated in value by \$2,346,775 as follows:

Mutual funds	\$2,049,093
Common stock	297,682
	<u>\$2,346,775</u>

NOTE 6: INVESTMENT CONTRACT WITH INSURANCE COMPANY

Through November 28, 2008, the date of the liquidation of the investment, the Plan had a benefit-responsive investment contract with MetLife Trust Company National Association (MetLife). MetLife maintained the contributions in separate accounts and the investment was carried at contract value. Contract value represented contributions made under the contract, plus earnings, less participant withdrawals and administrative expenses. Participants could ordinarily direct the withdrawal or transfer of all or a portion of their investment at contract value. The guaranteed investment contract issuer was contractually obligated to repay the principal and a specified interest rate that is guaranteed to the Plan. The guaranteed investment contract was fully benefit-responsive and the contract value was the relevant measurement attribute for that portion of the net assets available for benefits attributable to the guaranteed investment contract. Through November 28, 2008, there were no reserves against contract value for credit risk of the contract issuer or otherwise and contract value was estimated to approximate fair value. The contract value of the investment contract on the date of liquidation was \$1,291,867.

The Plan had the right to end its participation in the MetLife investment contract at any time and would receive the lesser of the investment contract guaranteed value or market value. The difference between the investment contract's guaranteed value and the market value received by the Plan was \$153,162. The Plan Sponsor recorded this amount, plus interest earnings of approximately \$2,000 for the period November 29, 2008 through December 31, 2008, as Due from Plan Sponsor in the Statement of Net Asset Available for Benefits as of December 31, 2008. This amount and additional earnings through the funding date was allocated to the affected plan participants.

ENZO BIOCHEM, INC.
SALARY REDUCTION PROFIT SHARING PLAN
Notes to Financial Statements

NOTE 7: 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 8: TAX STATUS

The Plan adopted the Corporate Plan for Retirement, a Fidelity Management and Research Company prototype plan. The Plan obtained its latest opinion letter in March 2008 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 opinion letter. However, the plan administrator believes that the Plan is currently designed and being operated in compliance with the applicable requirements of the Internal Revenue Code.

NOTE 9: PARTY IN INTEREST TRANSACTIONS

During 2009, the Plan purchased 71,112 shares of common stock of the Plan sponsor, at market prices totaling \$349,135 and sold 88,058 shares of common stock at market prices totaling approximately \$473,710. At December 31, 2009 and 2008, the Plan held Enzo Biochem, Inc. common stock with a fair value of \$1,580,131 and \$825,489, respectively.

Effective November 28, 2008 Fidelity Management Trust Company ("FMTC") became the trustee of the Plan. Certain Plan investments are shares of mutual funds managed by affiliates of FMTC. Therefore, these transactions qualify as party-in-interest transactions.

During 2008, the Plan was owed \$155,000 from the Plan sponsor (see Note 6).

Fees paid by the Plan to the third party Plan administrators amounted to \$7,495 for the year ended December 31, 2009.

In connection with a late payment of withholding of \$6,555, relating to the Plan year ended December 31, 2008, the Plan Sponsor provided the affected participants with the lost earnings of \$19 and completed all required filings.

In March 2009, the Plan distributed \$28,570 of excess participant contributions resulting from discrimination test results relating to participant contributions for the 2008 Plan year. The \$28,570 is included as a reduction of participant contributions in the accompanying statement of changes in net assets available for benefits.

NOTE 10: 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 statements of net assets available for benefits.

NOTE 11: SUBSEQUENT EVENTS

The Plan's management evaluated subsequent events through June 24, 2010, the date on which the financial statements were issued and no additional disclosures were required.

ENZO BIOCHEM, INC.
SALARY REDUCTION PLAN
S schedule H, Line 4i
Schedule of Assets (Held at End of Year)
E.I.N. # 13-2866202
Plan # 001
December 31, 2009

(a)	Identity of Issue, Borrower, Lessor or Similar Party (b)	Description of Investment Including Maturity Date, Rate of Interest, Collateral, Par or Maturity Value (c)	Cost** (d)	Current Value (e)
*	Enzo Biochem, Inc.	Common Stock		\$ 1,580,131
	Pimco Total Return	Mutual Fund		239,281
	MSIFT Mid Cap Growth Portfolio	Mutual Fund		59,507
	NB Genesis	Mutual Fund		267,428
	Allianz NFJ Dividend Value	Mutual Fund		19,534
	Columbia Acorn International Select	Mutual Fund		217,402
	Allianz NFJ Small Cap Value	Mutual Fund		49,541
	Royce Value Plus	Mutual Fund		76,734
*	Fidelity Fund	Mutual Fund		96,657
*	Fidelity Contrafund	Mutual Fund		653,955
*	Fidelity Capital & Income	Mutual Fund		46,481
*	Fidelity Government Income	Mutual Fund		291,846
*	Fidelity Leveraged Company	Mutual Fund		46,978
*	Fidelity International Discovery	Mutual Fund		56,613
*	Fidelity Emerging Markets	Mutual Fund		41,928
*	Fidelity Growth Discovery	Mutual Fund		35,988
*	Fidelity Freedom Income	Mutual Fund		67,367
*	Fidelity Freedom 2000	Mutual Fund		31,324
*	Fidelity Freedom 2010	Mutual Fund		1,062,611
*	Fidelity Freedom 2020	Mutual Fund		1,416,264
*	Fidelity Freedom 2030	Mutual Fund		1,076,506
*				77,095
*	Spartan Extended Market Index	Mutual Fund		43,648
*	Spartan International Index	Mutual Fund		560,445
*	Fidelity Retirement Money Market	Mutual Fund		499,069
*	Fidelity Retirement Government Money Market	Mutual Fund		102,317
*	Spartan 500 Equity Index	Mutual Fund		317,277
*	Fidelity Freedom 2040	Mutual Fund		456,546
*	Fidelity Freedom 2005	Mutual Fund		1,422,648
*	Fidelity Freedom 2015	Mutual Fund		1,194,675
*	Fidelity Freedom 2025	Mutual Fund		579,818
*	Fidelity Freedom 2035	Mutual Fund		187,692
*	Fidelity Freedom 2045	Mutual Fund		152,350
*	Fidelity Freedom 2050	Mutual Fund		1,029
*	Fidelity Cash Reserves	Mutual Fund		286,851
*	Loans receivable - participants	5.00% - 9.25%, maturity through January 2015	\$ 0	

* Party-in-interest

**Cost information omitted with respect to participant or beneficiary directed transactions.

See Independent Auditor's Report.

SIGNATURE

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 24, 2010

/s/ Herbert Bass

By: Herbert Bass
Trustee