

UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
WASHINGTON, DC 20549

FORM 8-K

CURRENT REPORT PURSUANT
TO SECTION 13 OR 15(D) OF THE
SECURITIES EXCHANGE ACT OF 1934

Date of report (Date of earliest event reported): MARCH 12, 2007

ENZO BIOCHEM, INC.

(Exact Name of Registrant as Specified in Its Charter)

NEW YORK

(State or Other Jurisdiction of Incorporation)

001-09974

13-2866202

(Commission File Number)

(IRS Employer Identification No.)

527 MADISON AVENUE
NEW YORK, NEW YORK

10022

(Address of Principal Executive Offices)

(Zip Code)

(212) 583-0100

(Registrant's Telephone Number, Including Area Code)

(Former Name or Former Address, if Changed Since Last Report)

Check the appropriate box below if the Form 8-K filing is intended to simultaneously satisfy the filing obligation of the registrant under any of the following provisions (SEE General Instruction A.2. below):

☐ Written communications pursuant to Rule 425 under the Securities Act (17 CFR 230.425)

☐ Soliciting material pursuant to Rule 14a-12 under the Exchange Act (17 CFR 240.14a-12)

☐ Pre-commencement communications pursuant to Rule 14d-2(b) under the Exchange Act (17 CFR 240.14d-2(b))

☐ Pre-commencement communications pursuant to Rule 13e-4(c) under the Exchange Act (17 CFR 240.13e-4(c))

ITEM 2.02. RESULTS OF OPERATIONS AND FINANCIAL CONDITION.

(a) The following information, including the Exhibit attached hereto, is being furnished pursuant to this Item 2.02 and shall not be deemed "filed" for purposes of Section 18 of the Securities Exchange Act of 1934, as amended, nor shall it be deemed incorporated by reference in any filing under the Securities Act of 1933, as amended, except as shall be expressly set forth by specific reference in such filing.

On March 12, 2007, Enzo Biochem, Inc., a New York corporation (the "Company"), issued a press release discussing its financial results for its second fiscal quarter ended January 31, 2007. A copy of the press release is furnished as Exhibit 99.1 to this report.

ITEM 8.01. OTHER EVENTS.

On March 12, 2007, the Company issued a press release announcing that its wholly owned subsidiary Enzo Therapeutics, Inc., has treated the first patient in a Phase I/II clinical trial of the company's gene therapy for HIV-1 (Human Immunodeficiency Virus-Type 1) infection. The study, being conducted at the Medical School of the University of California San Francisco (UCSF), intends to enroll HIV-1 infected subjects with compromised CD4+ cell counts, to determine whether the procedure will create enough HIV-1 resistant CD4+ cells to defer disease progression to AIDS (Acquired Immune Deficiency Syndrome). Enrollment is

| Exhibit No. - - - - - | Description - - - - - |
|--------------------------|---|
| 99.1 | Press Release of Enzo Biochem, Inc., dated March 12, 2007, discussing financial results for second fiscal quarter ended January 31, 2007. |
| 99.2 | Press Release of Enzo Biochem, Inc., dated March 13, 2007, announcing initiation of Phase I/II clinical trial. |

[ENZO LOGO]

NEWS
RELEASE
-----Enzo Biochem, Inc.
527 Madison Avenue
New York, NY 10022

FOR IMMEDIATE RELEASE

ENZO BIOCHEM REPORTS RESULTS FOR FISCAL 2007
SECOND QUARTER AND SIX MONTH PERIODS

NEW YORK, NY, March 12, 2007 -- Enzo Biochem, Inc. (NYSE:ENZ), a leading biotechnology company specializing in gene identification and genetic and immune regulation technologies for diagnostic and therapeutic applications, today announced operating results for its second fiscal quarter for the period ended January 31, 2007.

Revenues for the fiscal 2007 second quarter were \$10.6 million, a 5% increase compared to \$10.1 million in the corresponding year-ago period. Revenues increased primarily as a result of higher sales at Enzo Clinical Labs. Gross profit, including royalty income, totaled \$6.2 million, compared with \$6.3 million a year ago.

Net loss for the period amounted to \$4.9 million, or \$0.14 per share, compared with a net loss of \$4.4 million, or \$0.14 per share, in the corresponding year-earlier quarter. The net loss increased as a result of higher research and development expense, principally reflecting increased clinical trial activity at Enzo Therapeutics, which increased 29% to \$2.4 million, and higher legal expenses, due to patent litigation and protection of the Company's intellectual property estate, which increased 20% to \$1.9 million. The results were impacted by \$700,000 in other income relating to a payment by a former distributor of Life Sciences.

At Enzo Clinical Labs, fiscal second quarter revenues totaled \$9.0 million, an increase of \$1.0 million over the year-ago second quarter levels. Enzo Clinical Labs' operating results improved by \$0.5 million, to a loss for the quarter of \$100,000, compared with an operating loss of \$600,000 a year ago. Improvements in selling, general and administrative expenses and the provision for uncollectible accounts contributed to these results. During the quarter, Enzo Clinical Labs, as a result of new payor agreements, began to experience an increase in specimen count.

Enzo Life Sciences' revenues, including royalties, were \$1.6 million, compared to \$2.1 million a year ago. Results were impacted by continued competition in the industry and litigation-related activities. These were partially offset by increases in royalty income relating to an on-going licensing agreement. Operating costs in the quarter remained in line with those of the year-ago period. Inclusive of the partial payment from a former

distributor, operating profits increased to \$0.6 million, compared to \$0.4 million in the year-ago period.

For the six months ended January 31, 2007, revenues amounted to \$21.0 million, compared with \$20.3 million a year ago. Gross profit, including royalty income, totaled \$12.5 million, compared with \$12.4 million in the corresponding year-ago period. The net loss for the first half amounted to \$6.1 million, or \$0.18 per share, compared to net loss of \$7.7 million, or \$0.24 per share a year ago.

The Company ended the second quarter with cash and cash equivalents of approximately \$111 million, as a result of the sale of common stock to various institutional investors, resulting in net proceeds of approximately \$43 million. Subsequent to the end of the quarter, Enzo raised an additional \$15 million through the sale of one million shares to an institutional investor. As of January 31, 2007, working capital amounted to \$118 million. Total stockholders equity amounted to \$134 million. Enzo continues to be debt free.

"Our recently completed capital raising activities position Enzo to make acquisitions to support future growth at Life Sciences and to expand the development of our therapeutic platforms," said Barry Weiner, President. "In addition, our strong balance sheet will serve the Company well in litigation activities designed to protect our intellectual property.

"Meanwhile, we continue to make progress in our therapeutic programs. Clinical trials at Hadassah Hospital for treatments for Crohn's disease and NASH are progressing well. Recently, we also announced that we had commenced a Phase

I/II study at UCSF of antisense gene therapy for HIV-1 infected individuals."

During the quarter, the Company's intellectual property estate was expanded through the issuance of two patents which cover technological developments applicable in the field of molecular diagnostics. Subsequent to the end of the second quarter, the Company reported on a favorable ruling in one of the interference actions that was declared this past October, as Princeton University, the holder of two of the patents involved, conceded priority.

A CONFERENCE CALL CONDUCTED BY ENZO BIOCHEM, INC. MANAGEMENT WILL TAKE PLACE ON TUESDAY, MARCH 13, 2007 AT 8:30 AM E.T. IT CAN BE ACCESSED BY DIALING 1-888-562-3356. INTERNATIONAL CALLERS CAN DIAL 1-973-582-2700. PLEASE REFERENCE PIN NUMBER 8539569. INTERESTED PARTIES MAY ALSO LISTEN OVER THE INTERNET AT WWW.INVESTORCALENDAR.COM. TO LISTEN TO THE LIVE CALL ON THE INTERNET, PLEASE GO TO THE WEB SITE AT LEAST FIFTEEN MINUTES EARLY TO REGISTER, DOWNLOAD AND INSTALL ANY NECESSARY AUDIO SOFTWARE. FOR THOSE WHO CANNOT LISTEN TO THE LIVE BROADCAST, A REPLAY WILL BE AVAILABLE APPROXIMATELY TWO HOURS AFTER THE END OF THE LIVE CALL, THROUGH MIDNIGHT (ET) ON MARCH 27, 2007. THE REPLAY OF THE CONFERENCE CALL CAN BE ACCESSED BY

DIALING 1-877-519-4471, AND, WHEN PROMPTED, USE PIN NUMBER 8539569. INTERNATIONAL CALLERS CAN DIAL 1-973-341-3080, USING THE SAME PIN NUMBER.

ABOUT ENZO

Enzo Biochem is engaged in the research, development and manufacture of innovative health care products based on molecular biology and genetic engineering techniques, and in providing diagnostic services to the medical community. The Company's proprietary labeling and detection products for gene sequencing and genetic analysis are sold to the life sciences market throughout the world. The Company's therapeutic division is in various stages of clinical evaluation of its proprietary gene medicine for HIV-1 infection and its proprietary immune regulation medicines for hepatitis B and hepatitis C infection and for Crohn's Disease. Pre-clinical research is being conducted on several candidate compounds aimed at producing new mineral and organic bone, including technology that could provide therapy for osteoporosis and fractures, among other applications. The Company also holds a patent covering a method and materials for correcting point mutations or small insertions or deletions of genetic material that would allow for editing and correcting certain abnormalities in genes. The Company owns or licenses over 200 patents worldwide. For more information visit our website www.enzo.com.

EXCEPT FOR HISTORICAL INFORMATION, THE MATTERS DISCUSSED IN THIS NEWS RELEASE MAY BE CONSIDERED "FORWARD-LOOKING" STATEMENTS WITHIN THE MEANING OF SECTION 27A OF THE SECURITIES ACT OF 1933, AS AMENDED AND SECTION 21E OF THE SECURITIES EXCHANGE ACT OF 1934, AS AMENDED. SUCH STATEMENTS INCLUDE DECLARATIONS REGARDING THE INTENT, BELIEF OR CURRENT EXPECTATIONS OF THE COMPANY AND ITS MANAGEMENT. INVESTORS ARE CAUTIONED THAT ANY SUCH FORWARD-LOOKING STATEMENTS ARE NOT GUARANTEES OF FUTURE PERFORMANCE AND INVOLVE A NUMBER OF RISKS AND UNCERTAINTIES THAT COULD MATERIALLY AFFECT ACTUAL RESULTS. THE COMPANY DISCLAIMS ANY OBLIGATIONS TO UPDATE ANY FORWARD-LOOKING STATEMENT AS A RESULT OF DEVELOPMENTS OCCURRING AFTER THE DATE OF THIS PRESS RELEASE.

TABLE FOLLOWS

ENZO BIOCHEM, INC.

SELECTED STATEMENT OF OPERATIONS DATA (unaudited) (IN THOUSANDS, EXCEPT PER SHARE DATA)

<TABLE>
<CAPTION>

| | THREE MONTHS ENDED JANUARY 31, ----- | | SIX MONTHS ENDED JANUARY 31, ----- | |
|--------------------------|--|----------|--|----------|
| | 2007 | 2006 | 2007 | 2006 |
| | ----- | ----- | ----- | ----- |
| <S> | <C> | <C> | <C> | <C> |
| TOTAL REVENUES | \$10,594 | \$10,116 | \$21,037 | \$20,281 |
| | ----- | ----- | ----- | ----- |
| LOSS BEFORE INCOME TAXES | (4,777) | (5,098) | (5,978) | (8,260) |

| | | | | |
|---|-----------------------------|-----------------------------|-----------------------------|-----------------------------|
| (PROVISION) BENEFIT FOR INCOME TAXES | (75) | 659 | (120) | 536 |
| NET LOSS | ----- (\$4,852) ----- | ----- (\$4,439) ----- | ----- (\$6,098) ----- | ----- (\$7,724) ----- |
| BASIC LOSS PER SHARE | (\$0.14) | (\$0.14) | (\$0.18) | (\$0.24) |
| DILUTED LOSS PER SHARE | (\$0.14) | (\$0.14) | (\$0.18) | (\$0.24) |
| WEIGHTED AVERAGE COMMON SHARE-BASIC | 34,486 | 32,200 | 33,382 | 32,179 |
| WEIGHTED AVERAGE COMMON SHARE-DILUTED | 34,486 | 32,200 | 33,382 | 32,179 |

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SELECTED BALANCE SHEET DATA
(IN THOUSANDS)

| | JANUARY 31, 2007 ----- (unaudited) ----- | JULY 31, 2006 ----- ----- |
|---------------------------|---|---------------------------------|
| CASH AND CASH EQUIVALENTS | \$110,916 | \$69,854 |
| WORKING CAPITAL | \$118,264 | \$80,161 |
| STOCKHOLDERS' EQUITY | \$133,592 | \$95,587 |
| TOTAL ASSETS | \$141,455 | \$101,524 |

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CONTACT:

For: Enzo Biochem, Inc.
Steve Anreder, 212-532-3232 Or Ed Lewis, CEOcast, Inc., 212-732-4300

[ENZO LOGO]

NEWS
RELEASE

ENZO BIOCHEM, INC.
527 MADISON AVENUE
NEW YORK, NY 10022

FOR IMMEDIATE RELEASE

ENZO THERAPEUTICS TREATS FIRST PATIENT IN PHASE I/II STUDY OF
ANTISENSE GENE THERAPY FOR HIV-1 INFECTIONS

Personalized Medicine Approach Aims to Slow Progression to AIDS

New York, NY, March 13, 2007 - Enzo Therapeutics, Inc., a wholly owned subsidiary of Enzo Biochem, Inc. (NYSE:ENZ), has treated the first patient in a Phase I/II clinical trial of the company's gene therapy for HIV-1 (Human Immunodeficiency Virus-Type 1) infection.

The study, being conducted at UCSF Medical Center, is enrolling HIV-1 infected subjects with compromised CD4+ cell counts, to determine whether the procedure will create sufficient HIV-1 resistant CD4+ cells to defer disease progression to AIDS (Acquired Immune Deficiency Syndrome). Enrollment is continuing under a modified protocol designed to increase the proportion of engineered stem cells that engraft in the patient's bone marrow.

As in its previous study, Enzo's proprietary StealthVector(R) HGTV43(TM) gene construct is used to transfer into the subjects' own stem cells antisense genes designed to interfere with HIV-1 growth. These cells should engraft, replicate and differentiate within the body to produce a population of CD4+ T-cells resistant to HIV-1 infection. The novel aspect of the current study includes a single outpatient radiation treatment to reduce each subject's total number of stem cells before infusion of the genetically engineered cells, in order to increase the proportion of stem cells that contain the anti-HIV-1 antisense genes. The study is being directed by Morton J. Cowan, MD, who is director of the medical center's Pediatric Bone Marrow Transplant Program and a professor in the UCSF School of Medicine.

According to Gary C. Cupit, PharmD, president of Enzo Therapeutics, "Previous work with the Enzo antisense approach in the Phase I study produced encouraging demonstrations of survival of circulating CD4+ cells containing the antisense genes in some patients for up to 60 months after treatment, although there was no reduction in viral load or increase in total CD4 cell counts. The new protocol builds on those results.

The goal in the new study is to produce a renewable supply of engineered CD4+ cells in large enough numbers to allow determining whether these cells can provide for the reconstitution of subjects' immune systems." Enzo developed the HGTV43(TM) vector as a proprietary retrovirus-based delivery system designed to overcome a major challenge in gene medicine, namely the safe and efficient delivery of engineered genes to the appropriate target cells. The StealthVector(R) technology achieves efficient delivery of the genes into the patient's cells while being "silent" and unlikely to trigger an immune response. In addition, critical safety features were incorporated to minimize the possibility of turning on deleterious genes within the body.

The study endpoints are safety of the procedure and the extent of engraftment and proliferation of the engineered cell population. A secondary endpoint is the relationship between the number of antisense RNA-containing CD4+ cells, the HIV-1 viral load and the CD4+ cell count as measured monthly for six months.

"We are thrilled to continue working with the team at UCSF," said Cupit. "Not only do they provide continuity with our previous work, but they bring to this program a depth of expertise in working with HIV-infected patients that originates with the very early days of AIDS research. The investigators and the institution have the advanced medical technology and skills needed to conduct the study and monitor the subjects to the highest standards. This and our Phase I study with the UCSF team represent a bridge from early research on HIV/AIDs to a personalized medicine approach to treatment." In August 2006, at the 16th International AIDS Conference in Toronto, Canada, Enzo presented long-term follow up results of the previous Phase I study. Treated subjects showed long-term presence of the engineered CD34+ stem cells as well as circulating CD4+ immune cells containing the genes as measured by the production

of antisense RNA. No treatment-related adverse events were seen during the study.

ABOUT ENZO

Enzo Biochem is engaged in the research, development and manufacture of innovative health care products based on molecular biology and genetic engineering techniques, as well as providing diagnostic services to the medical community. The company's proprietary labeling and detection products for gene sequencing and genetic analysis are sold to the life sciences market throughout the world. In addition to clinical evaluation of its proprietary gene medicine for HIV-1 infection, the Therapeutics division is in clinical development of proprietary immune regulation medicines for hepatitis B and hepatitis C infection and for Crohn's Disease. The division is conducting pre-clinical research on candidate compounds to produce new mineral and organic bone, including technology that could provide therapy for osteoporosis and fractures, among other applications. The company also holds a patent covering a method and materials for correcting point mutations or small insertions or deletions of genetic material that would allow for editing and correcting certain abnormalities in genes. Enzo Biochem owns or licenses over 200 patents worldwide. For more information visit the website www.enzo.com. EXCEPT FOR HISTORICAL INFORMATION, THE MATTERS DISCUSSED IN THIS NEWS RELEASE MAY BE CONSIDERED "FORWARD-LOOKING" STATEMENTS WITHIN THE MEANING OF SECTION 27A OF THE

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UC DISCLAIMER

THE INFORMATION STATED ABOVE WAS PREPARED BY ENZO THERAPEUTICS, INC., TO REPORT THE OUTCOME OF ITS PRODUCTS AND REFLECTS SOLELY THE OPINION OF ENZO. NOTHING IN THIS STATEMENT SHALL BE CONSTRUED TO IMPLY ANY SUPPORT OR ENDORSEMENT OF ENZO, OR ANY OF ITS PRODUCTS, BY THE REGENTS OF THE UNIVERSITY OF CALIFORNIA, ITS OFFICERS, AGENTS AND EMPLOYEES.