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UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
WASHINGTON, D.C. 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): APRIL 21, 2004

LEXICON GENETICS INCORPORATED
(EXACT NAME OF REGISTRANT AS SPECIFIED IN ITS CHARTER)

DELAWARE
(STATE OR OTHER JURISDICTION OF
INCORPORATION OR ORGANIZATION)

000-30111
(COMMISSION FILE NUMBER)

76-0474169
(I.R.S. EMPLOYER
IDENTIFICATION NUMBER)

8800 TECHNOLOGY FOREST PLACE
THE WOODLANDS, TEXAS 77381
(ADDRESS OF PRINCIPAL EXECUTIVE
OFFICES AND ZIP CODE)

(281) 863-3000
(REGISTRANT'S TELEPHONE NUMBER,
INCLUDING AREA CODE)

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ITEM 2. ACQUISITION OR DISPOSITION OF ASSETS

On April 21, 2004, we refinanced the \$54.8 million synthetic lease financing facility with Wells Fargo Northwest, National Association and Bank of America, N.A. of our headquarters and research facility in The Woodlands, Texas with a \$34.0 million conventional mortgage from iStar Financial, Inc., and repaid the balance of our obligations under the lease facility. The mortgage has a ten-year term with a 20-year amortization and bears a fixed interest rate of 8.23%.

ITEM 7. FINANCIAL STATEMENTS AND EXHIBITS

(c) Exhibits

EXHIBIT NO.
DESCRIPTION

99.1 --
Press
Release of
Lexicon
Genetics
Incorporated
dated April
29, 2004

ITEM 12. RESULTS OF OPERATIONS AND FINANCIAL CONDITION

On April 29, 2004, we issued a press release to report our financial results for the quarter ended March 31, 2004. A copy of the press release is attached to this current report on Form 8-K as Exhibit 99.1.

The information in Items 7 and 12 in this Form 8-K and the Exhibit attached to this Form 8-K shall not be deemed "filed" for purposes of Section 18 of the Securities Exchange Act of 1934 (the "Exchange Act") or otherwise subject to the liabilities of that section, nor shall it be deemed incorporated by reference in any filing under the Securities Act of 1933 or the Exchange Act, except as expressly set forth by specific reference in such a filing.

SIGNATURES

Pursuant to the requirements of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned thereunto duly authorized.

LEXICON GENETICS INCORPORATED

Date: April 29, 2004

By: /s/ JEFFREY L. WADE

Jeffrey L. Wade
Executive Vice President and
General Counsel

INDEX TO EXHIBITS

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LEXICON GENETICS REPORTS 2004
FIRST QUARTER FINANCIAL RESULTS

THE WOODLANDS, TEXAS, APRIL 29, 2004 - Lexicon Genetics Incorporated (Nasdaq: LEXG), a biopharmaceutical company focused on the discovery of breakthrough treatments for human disease, today reported financial results for the three months ended March 31, 2004.

REVENUES: Lexicon's revenues for the three months ended March 31, 2004 increased 46 percent to \$11.8 million from \$8.1 million for the corresponding period in 2003. The increase was primarily attributable to revenue recognized under Lexicon's neuroscience alliance for drug development with Bristol-Myers Squibb Company.

RESEARCH AND DEVELOPMENT EXPENSES: Research and development expenses for the three months ended March 31, 2004 increased 13 percent to \$22.4 million from \$19.8 million for the corresponding period in 2003. The increase primarily reflects the continued advancement of Lexicon's drug discovery programs. Research and development expenses included non-cash, stock-based compensation expense of \$0.4 million and \$1.3 million for the three months ended March 31, 2004 and 2003, respectively.

GENERAL AND ADMINISTRATIVE EXPENSES: General and administrative expenses for the three months ended March 31, 2004 decreased 13 percent to \$5.0 million from \$5.8 million for the corresponding period in 2003. General and administrative expenses included non-cash, stock-based compensation expense of \$0.4 million and \$1.3 million for the three months ended March 31, 2004 and 2003, respectively.

NET LOSS: Net loss for the three months ended March 31, 2004 decreased to \$15.5 million, or \$0.25 per share, from a net loss of \$17.1 million, or \$0.33 per share, in the corresponding period in 2003.

CASH AND INVESTMENTS: As of March 31, 2004, Lexicon had \$145.4 million in cash and investments, including restricted cash and investments, compared to \$161.0 million as of December 31, 2003. Restricted cash and investments were \$57.5 million on both such dates. Lexicon's cash and investments and restricted cash and investments changed subsequent to March 31, 2004 as a result of the refinancing of the Company's synthetic lease, as described in "Subsequent Event," below.

SUBSEQUENT EVENT: On April 21, 2004, Lexicon refinanced the \$54.8 million synthetic lease of its headquarters and research facility in The Woodlands, Texas with a \$34.0 million conventional mortgage and repaid the balance of its obligations under the lease arrangement. The mortgage has a ten-year term with a 20-year amortization and bears a fixed interest rate of 8.23%. As a result of the refinancing, Lexicon's long-term debt and other long-term liabilities decreased by \$21.4 million and its cash and investments decreased by approximately \$22.4 million. Importantly, the transaction eliminated all restrictions on the cash and investments that had secured Lexicon's obligations under the synthetic lease, leaving the Company with a net increase of \$34.5 million in its unrestricted cash and investment balances. A total of \$0.6 million remains in restricted investments.

"Restructuring the financing to own our unique, state-of-the-art facility in The Woodlands enables us to control one of our key strategic assets in the race for novel drug discoveries from the human genome," said Julia P. Gregory, executive vice president, corporate development and chief financial officer of Lexicon. "The transaction unrestricts all of our cash, thereby increasing our financial flexibility and extending our ability to fund our drug discovery and development operations, based on current expectations, through about the next three years. We were pleased to refinance our facility while in a relatively low interest rate environment."

FIRST QUARTER 2004 HIGHLIGHTS

"The productivity of Lexicon's drug discovery engine has persisted in 2004. We are continuing to identify exciting, novel drug targets using our industrialized gene knockout technology and our phenotypic and behavioral screens and are on track to attain our goal of 25 to 30 additional drug discovery programs this year," said Arthur T. Sands, M.D., Ph.D., president and chief executive officer of Lexicon. "In addition, we are encouraged by the pre-clinical progress of several of our lead small molecule and antibody drug development programs."

Lexicon's key business and scientific accomplishments in first quarter 2004 include:

NOVEL DISCOVERIES FROM GENOME5000(TM) PROGRAM: Lexicon's Genome5000 program for drug discovery continued to yield novel drug discovery programs. Lexicon has harvested more than 40 drug discovery programs from its Genome5000 program in the fields of diabetes, obesity, cardiovascular disease, psychiatric and neurological disorders, cancer, immune system disorders and ophthalmic disease. In its Genome5000 program, Lexicon is analyzing 5,000 genes using its proprietary gene knockout technologies and its extensive physiological and behavioral analyses to discover novel drug targets from the human genome. To date, Lexicon has completed the analysis of more than a third of these genes.

KEY INTELLECTUAL PROPERTY DEVELOPMENTS: Lexicon's intellectual property position in the gene targeting and gene knockout fields was further fortified by the issuance of a new U.S. patent that broadly covers a key technology used in gene targeting. The patented technology encompasses a variety of methods of selecting desired genetic manipulations made by gene targeting, and specifically includes methods that are sometimes referred to as "positive-positive" selection. As a result of this patent, Lexicon has broad, exclusive rights in certain fields under eight issued U.S. patents covering aspects of gene targeting. The technologies covered by these eight patents are widely used in the pharmaceutical and biotechnology industries.

LEXICON CONFERENCE CALL:

Dr. Arthur T. Sands, president and chief executive officer, and Julia P. Gregory, executive vice president, corporate development and chief financial officer, will host the conference call at 11:00 a.m. EDT on Thursday, April 29, 2004. They will review Lexicon's operating highlights and financial results for the three months ended March 31, 2004 and will discuss the Company's expectations for the second quarter.

Conference call participants may dial: 800/930-1344 (domestic USA), 312/461-0644 (international). Pass code for all callers: 648215.

The audio web cast can be heard by logging on to www.lexicon-genetics.com. It will be archived and available for review through May 4, 2004.

ABOUT LEXICON GENETICS

Lexicon Genetics is a biopharmaceutical company focused on the discovery of breakthrough treatments for human disease. Lexicon is systematically discovering the physiological and behavioral functions of genes to identify potential points of therapeutic intervention, or drug targets. Lexicon makes these discoveries using its proprietary gene knockout technology to model the physiological effects that could be expected from prospective drugs directed against novel targets. The Company has advanced knockout-validated targets into drug discovery programs in six therapeutic areas: diabetes and obesity, cardiovascular disease, cancer, immune system disorders, ophthalmic disease, and psychiatric and neurological disorders. Lexicon is working both independently and through strategic collaborations and

alliances to accelerate the development and commercialization of its discoveries. Additional information about Lexicon is available through its corporate website, www.lexicon-genetics.com.

SAFE HARBOR STATEMENT

This press release contains "forward-looking statements," including statements about Lexicon's growth and future operating results, discovery and development of products, strategic alliances and intellectual property, as well as other matters that are not historical facts or information. These forward-looking statements are based on management's current assumptions and expectations and involve risks, uncertainties and other important factors, specifically including those relating to Lexicon's ability to develop drug candidates from its discoveries, achieve its operational objectives, obtain patent protection for its discoveries and establish strategic alliances, that may cause Lexicon's actual results to be materially different from any future results expressed or implied by such forward-looking statements. Information identifying such important factors is contained under "Factors Affecting Forward-Looking Statements" and "Business - Risk Factors" in Lexicon's annual report on Form 10-K for the year ended December 31, 2003, as filed with the Securities and Exchange Commission. Lexicon undertakes no obligation to update or revise any such forward-looking statements, whether as a result of new information, future events or otherwise.

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CONTACT FOR LEXICON GENETICS:

Carol Schafer
Vice President, Finance and Communications
281/863-3880
cschafer@lexgen.com

LEXICON GENETICS INCORPORATED

SELECTED FINANCIAL DATA

| ===== CONSOLIDATED STATEMENTS OF OPERATIONS DATA THREE MONTHS | | |
|---|-------------|---|
| ENDED MARCH 31, ----- (In thousands, except per share data) | | |
| 2004 | 2003 | ----- (UNAUDITED) |
| | | Revenues: Subscription and license fees |
| | | \$ 3,548 \$ 3,102 |
| | | Collaborative research |
| | | 8,294 4,993 |
| | | Compound libraries and other |
| | | -- 11 ----- |
| | | ---- Total revenues |
| | | 11,842 |
| 8,106 | | Operating expenses: Research and development, including stock-based |
| | | compensation of \$419 and \$1,270, respectively |
| | | 22,401 19,834 |
| | | General and administrative, including stock-based compensation of \$411 and \$1,276, respectively |
| | | 5,044 5,804 ----- Total |
| | | operating expenses |
| | | 27,445 25,638 ----- Loss from operations |
| | | (15,603) |
| | | (17,532) Interest and other income |
| | | 428 468 |
| | | Interest expense |
| | | (291) |
| | | (81) ----- Net loss |
| | | |
| \$ (15,466) | \$ (17,145) | ===== Net loss per common share, basic and |
| | | diluted |
| | | \$ (0.25) \$ (0.33) |
| | | ===== Shares used in computing net loss per common share |
| | | 63,065 52,371 |

| ===== CONSOLIDATED BALANCE SHEET DATA AS OF AS OF MARCH 31, | | |
|--|--------|--|
| DECEMBER 31, (In thousands) 2004 2003 ----- (UNAUDITED) Cash and | | |
| 2004 | 2003 | ----- (UNAUDITED) |
| | | investments, including restricted cash and investments of \$57,514 (1) |
| | | \$ 145,425 \$ 161,001 |
| | | Property and equipment, net |
| | | 82,146 83,676 |
| | | Goodwill |
| | | |
| 25,798 | 25,798 | Intangible assets other than goodwill, net |
| | | 2,740 3,040 Total assets |
| | | |
| | | 262,936 284,199 Deferred revenue |
| | | 42,753 |
| | | 47,692 Long-term debt (1) |
| | | 56,344 |
| | | 56,344 Deferred stock compensation |
| | | (61) (899) |
| | | Accumulated deficit |
| | | (229,409) |
| | | (213,943) Total stockholders' equity |
| | | 152,782 166,216 |

(1) On April 21, 2004, Lexicon refinanced the \$54.8 million synthetic lease of its headquarters and research facility in The Woodlands, Texas, with a \$34.0 million conventional mortgage and repaid the balance of its obligations under the lease arrangement. As a result of the refinancing, Lexicon's long-term debt and other long-term liabilities decreased by \$21.4 million; its cash and investments decreased by approximately \$22.4 million; and all restrictions on the cash and investments that had secured Lexicon's obligations under the synthetic lease were lifted, leaving a total of \$0.6 million in restricted investments.