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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): DECEMBER 23, 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)

Check the appropriate box below if the Form 8-K filing is intended to simultaneously satisfy the filing obligations of the registrant under any of the following provisions:

- 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))
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ITEM 1.01 ENTRY INTO A MATERIAL DEFINITIVE AGREEMENT

On December 23, 2004, we entered into an amendment (the "Amendment") to the LexVision Database and Collaboration Agreement dated as of September 26, 2000 by and between Lexicon Genetics Incorporated and Bristol-Myers Squibb Company (the "LexVision Agreement"). Under the Amendment, the collaboration term of the LexVision Agreement will end on December 31, 2004 and Lexicon's remaining obligations under the LexVision Agreement to deliver phenotypic data to Bristol-Myers Squibb will be limited to phenotypic data with respect to only those genes specified by Bristol-Myers Squibb in the Amendment, which obligations Lexicon expects to satisfy by December 31, 2004.

Concurrently with the execution of the Amendment, Lexicon and Bristol-Myers Squibb also entered into a Drug Target Validation Collaboration Agreement dated December 23, 2004 (the "Drug Target Validation Agreement") under which Lexicon will develop mice and phenotypic data for certain genes previously requested by Bristol-Myers Squibb under the LexVision Agreement, but that Lexicon is not required to deliver thereunder, and certain additional genes to be requested by Bristol-Myers Squibb.

Lexicon and Bristol-Myers Squibb are also parties to that certain Collaboration and License Agreement dated as of December 17, 2003 (the "Neuroscience Drug Discovery Alliance Agreement") relating to the discovery, development and commercialization of small molecule drugs in the neuroscience field. The Neuroscience Drug Discovery Alliance Agreement is not affected by the Amendment or the Drug Target Validation Agreement, and remains in effect in accordance with its terms.

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: December 29, 2004

By: /s/ JEFFREY L. WADE

Jeffrey L. Wade
Executive Vice President and
General Counsel