

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

SCHEDULE 13D
(Amendment No. 2)

Under The Securities Exchange Act of 1934

LEXICON GENETICS INCORPORATED

(Name of Issuer)

Common Stock \$0.001 Par Value Per Share

(Title of Class of Securities)

528872 10 4

(CUSIP Number)

Mr. John Sullivan
Gordon Cain and Associates
8 Greenway Plaza, Suite 702
Houston, Texas 77046
Telephone: (713) 840-7896

(Name, Address and Telephone Number of Person Authorized to Receive Notices and Communications)

December 22, 2003

(Date of Event which Requires Filing of this Statement)

If the filing person has previously filed a statement on Schedule 13G to report the acquisition that is the subject of this Schedule 13D, and is filing this Schedule because of Rule 13d-1(e), Rule 13d-1(f) or Rule 13d-1(g), check the following box:

The information required on the remainder of this cover page shall not be deemed to be "filed" for the purpose of Section 18 of the Securities Exchange Act of 1934 ("Act") or otherwise subject to the liabilities of that section of the Act but shall be subject to all other provisions of the Act.

1 Name of Reporting Person

Estate of Gordon A. Cain (01-6222478)

2 Check the Appropriate Box If A Member of a Group

(a)

(b)

3 SEC Use Only

4 Source of Funds

OO

5 Check Box If Disclosure of Legal Proceedings Is Required Pursuant to Item 2(d) or 2(e)

6 Citizenship or Place of Organization

Texas

7 Sole Voting Power

0

8 Shared Voting Power

0

9 Sole Dispositive Power

0

10 Shared Dispositive Power

3,795,500*

11 Aggregate Amount Beneficially Owned by Reporting Person

3,795,500*

12 Check Box If the Aggregate Amount in Row (11) Excludes Certain Shares

13 Percent of Class Represented by Amount in Row (11)

6.0%

14 Type of Reporting Person

OO

* Includes 8,500 shares that may be acquired by the Estate of Gordon A. Cain within 60 days upon exercise of stock options

1 Name of Reporting Person

Mary H. Cain

2 Check the Appropriate Box If A Member of a Group

(a)

(b)

3 SEC Use Only

4 Source of Funds

OO

5 Check Box If Disclosure of Legal Proceedings Is Required Pursuant to Item 2(d) or 2(e)

6 Citizenship or Place of Organization

United States of America

7 Sole Voting Power

0

8 Shared Voting Power

700,000*

9 Sole Dispositive Power

0

10 Shared Dispositive Power

4,495,500*

11 Aggregate Amount Beneficially Owned by Reporting Person

4,495,500*

12 Check Box If the Aggregate Amount in Row (11) Excludes Certain Shares

13 Percent of Class Represented by Amount in Row (11)

7.2%

14 Type of Reporting Person

IN

* 3,787,000 of these shares are owned, and 8,500 of these shares can be acquired within 60 days upon exercise of stock options, by the Estate of Gordon A. Cain, of which Mary H. Cain is a co-executor.

700,000 of these shares are owned by the Gordon and Mary Cain Foundation, of which Mary H. Cain is the Chairman.

1 Name of Reporting Person

James D. Weaver

2 Check the Appropriate Box If A Member of a Group

(a)

(b)

3 SEC Use Only

4 Source of Funds

OO

5 Check Box If Disclosure of Legal Proceedings Is Required Pursuant to Item 2(d) or 2(e)

6 Citizenship or Place of Organization

United States of America

7 Sole Voting Power

15,000

8 Shared Voting Power

700,000*

9 Sole Dispositive Power

15,000

10 Shared Dispositive Power

4,495,500*

11 Aggregate Amount Beneficially Owned by Reporting Person

4,510,500*

12 Check Box If the Aggregate Amount in Row (11) Excludes Certain Shares

13 Percent of Class Represented by Amount in Row (11)

7.2%

14 Type of Reporting Person

IN

* 3,787,000 of these shares are owned, and 8,500 of these shares can be acquired within 60 days upon exercise of stock options, by the Estate of Gordon A. Cain, of which James D. Weaver is a co-executor.

700,000 of these shares are owned by the Gordon and Mary Cain Foundation, of which James D. Weaver is the President.

1 Name of Reporting Person

William A. McMinn

2 Check the Appropriate Box If A Member of a Group

(a)

(b)

3 SEC Use Only

4 Source of Funds

OO

5 Check Box If Disclosure of Legal Proceedings Is Required Pursuant to Item 2(d) or 2(e)

6 Citizenship or Place of Organization

United States of America

7 Sole Voting Power

4,854,591*

8 Shared Voting Power

0

9 Sole Dispositive Power

1,059,091

10 Shared Dispositive Power

0

11 Aggregate Amount Beneficially Owned by Reporting Person

4,854,591*

12 Check Box If the Aggregate Amount in Row (11) Excludes Certain Shares

13 Percent of Class Represented by Amount in Row (11)

7.7%

14 Type of Reporting Person

IN

* 3,787,000 of these shares are owned, and 8,500 of these shares can be acquired within 60 days upon exercise of stock options, by the Estate of Gordon A. Cain, of which William A. McMinn was granted voting rights pursuant to an irrevocable voting proxy dated May 7, 1998 between Gordon A. Cain and William A. McMinn.

STATEMENT ON SCHEDULE 13D

This Amendment No. 2 amends and supplements the Statement on Schedule 13D (the "Initial Statement") filed by the Estate of Gordon A. Cain, Mary H. Cain, James D. Weaver and William A. McMinn, on March 19, 2003, as amended by Amendment No. 1 filed on July 22, 2003 (the "Amendment" and, with the Initial Statement, the "Statement"), relating to the shares of Common Stock, par value \$0.001 per share (the "Common Stock") of Lexicon Genetics Incorporated, a Delaware corporation (the "Issuer"). Capitalized terms used but not defined herein shall have the meanings provided therefore in the Statement.

The Initial Statement is hereby supplemented and amended to the extent set forth in this Amendment.

Item 4. Purpose of Transaction

Aside from the transaction described in Item 5(c), neither the Estate nor Mr. McMinn has any plans or proposals with respect to the Shares which relate to or that would result in any of the actions or transactions specified in clauses (a) through (j) of Item 4 of Schedule 13D.

Item 5. Interest in Securities of the Issuer

(c) On December 22, 2003, Acqua Wellington Opportunity I Limited purchased an aggregate of 2,500,000 shares of Common Stock from the Estate and The Gordon and Mary Cain Foundation, 2,050,000 shares and 450,000 shares respectively, in a private transaction not registered under the Securities Act of 1933, as amended. The aggregate purchase price for the shares, which was negotiated by the parties in December 2003 based upon prices prevailing at such time, was \$12,500,000.

On January 2, 2004, Acqua Wellington Opportunity I Limited purchased an additional aggregate of 1,000,000 shares of Common Stock from the Estate and The Gordon and Mary Cain Foundation, 850,000 shares and 150,000 shares respectively, in a private transaction not registered under the Securities Act of 1933, as amended. The aggregate purchase price for the shares, which was negotiated by the parties in December 2003 based upon prices prevailing at such time, was \$5,250,000.

The purchased shares in each transaction remain "restricted securities" under the Securities Act and may not be sold absent an effective registration statement or an exemption from the registration requirements of the Securities Act.

In connection with each transaction, the Issuer entered into a letter agreement with Acqua Wellington Opportunity I Limited that confirms that the purchasers are entitled to the benefits provided under the Issuer's registration rights agreement.

SIGNATURE

After reasonable inquiry and to the best of the undersigned's knowledge and belief, the undersigned hereby certifies that the information set forth in this Statement is true, complete and correct.

Dated: December 31, 2003

ESTATE OF GORDON A. CAIN

By: /s/ MARY H. CAIN

Mary H. Cain
Co-Executor

By: /s/ JAMES D. WEAVER

James D. Weaver
Co-Executor

/s/ MARY H. CAIN

Mary H. Cain

/s/ JAMES D. WEAVER

James D. Weaver

/s/ WILLIAM A. MCMINN

William A. McMinn

Each of the undersigned hereby agrees to be included in the filing of the Amendment No. 2 to the Schedule 13D dated December 31, 2003 with respect to the issued and outstanding Common Stock of Lexicon Genetics Incorporated beneficially owned by each of the undersigned, respectively.

Dated: December 31, 2003

ESTATE OF GORDON A. CAIN

By: /s/ MARY H. CAIN

Mary H. Cain
Co-Executor

By: /s/ JAMES D. WEAVER

James D. Weaver
Co-Executor

/s/ MARY H. CAIN

Mary H. Cain

/s/ JAMES D. WEAVER

James D. Weaver

/s/ WILLIAM A. MCMINN

William A. McMinn