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

**SCHEDULE 13G**

Under the Securities Exchange Act of 1934

Codexis, Inc.

COMMON STOCK, \$0.0001 par value  
(Title of Class of Securities)

192005106  
(CUSIP Number)

December 31, 2010  
(Date of Event which Requires Filing of this Statement)

Check the appropriate box to designate the rule pursuant to which this Schedule is filed:

Rule 13d-1(b)

Rule 13d-1(c)

Rule 13d-1(d)

\* The remainder of this cover page shall be filled out for a reporting person's initial filing on this form with respect to the subject class of securities, and for any subsequent amendment containing information which would alter the disclosures provided in a prior cover page.

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 (however, see the Notes).

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1 Names of Reporting Persons

FIRSTMARK CAPITAL, L.L.C.

2 Check the Appropriate Box If a Member of a Group (See Instructions)

(a)

(b)

3 SEC Use Only

4 Citizenship or Place of Organization

Delaware

5 Sole Voting Power

Number of  
Shares  
Beneficially  
Owned By  
Each  
Reporting  
Person  
With

2,176,349

6 Shared Voting Power

0

7 Sole Dispositive Power

2,176,349

8 Shared Dispositive Power

0

9 Aggregate Amount Beneficially Owned by Each Reporting Person

2,176,349

10 Check Box If the Aggregate Amount in Row (9) Excludes Certain Shares (See Instructions)

11 Percent of Class Represented By Amount in Row (9)

6.3%

12 Type of Reporting Person (See Instructions)

IA

1 Names of Reporting Persons

Lawrence D. Lenihan, Jr.

2 Check the Appropriate Box If a Member of a Group (See Instructions)

(a)

(b)

3 SEC Use Only

4 Citizenship or Place of Organization

United States of America

5 Sole Voting Power

Number of  
Shares  
Beneficially  
Owned By  
Each  
Reporting  
Person  
With

11,000

6 Shared Voting Power

2,176,349

7 Sole Dispositive Power

11,000

8 Shared Dispositive Power

2,176,349

9 Aggregate Amount Beneficially Owned by Each Reporting Person

2,187,349

10 Check Box If the Aggregate Amount in Row (9) Excludes Certain Shares (See Instructions)

11 Percent of Class Represented By Amount in Row (9)

6.4%

12 Type of Reporting Person (See Instructions)

IN

1 Names of Reporting Persons

Brian Kempner

2 Check the Appropriate Box If a Member of a Group (See Instructions)

(a)

(b)

3 SEC Use Only

4 Citizenship or Place of Organization

United States of America

5 Sole Voting Power

Number of  
Shares  
Beneficially  
Owned By  
Each  
Reporting  
Person  
With

5,000

6 Shared Voting Power

0

7 Sole Dispositive Power

5,000

8 Shared Dispositive Power

0

9 Aggregate Amount Beneficially Owned by Each Reporting Person

5,000

10 Check Box If the Aggregate Amount in Row (9) Excludes Certain Shares (See Instructions)

11 Percent of Class Represented By Amount in Row (9)

0.01%

12 Type of Reporting Person (See Instructions)

IN

**Item 1(a) Name of Issuer:**  
Codexis, Inc.

**1(b) Address of the Issuer's Principal Executive Offices:**  
200 Penobscot Drive  
Redwood City, California 94063

**Item 2(a) – (c) Name, Principal Business Address, and Citizenship of Person Filing:**

FirstMark Capital, L.L.C.  
1221 Sixth Avenue, New York, New York 10020,  
a Delaware limited liability company

Lawrence D. Lenihan  
Chief Executive Officer and Managing Director  
FirstMark Capital, L.L.C.  
1221 Sixth Avenue, New York, New York 10020  
Mr. Lenihan is a citizen of the United States of America

Brian Kempner  
Chief Operating Officer and General Counsel  
FirstMark Capital, L.L.C.  
1221 Sixth Avenue, New York, New York 10020  
Mr. Kempner is a citizen of the United States of America

**2(d) Title of Class of Securities:**  
COMMON STOCK, \$0.0001 par value

**2(e) CUSIP Number:**  
192005106

**Item 3. If this statement is filed pursuant to §§ 240.13d-1(b) or 240.13d-2(b) or (c), check whether the person filing is a:**

- (a)  Broker or dealer registered under section 15 of the Act (15 U.S.C. 78o).
- (b)  Bank as defined in section 3(a)(6) of the Act (15 U.S.C. 78c).
- (c)  Insurance company as defined in section 3(a)(19) of the Act (15 U.S.C. 78c).
- (d)  Investment company registered under section 8 of the Investment Company Act of 1940 (15 U.S.C. 80a-8).
- (e)  An investment adviser in accordance with § 240.13d-1(b)(1)(ii)(E);
- (f)  An employee benefit plan or endowment fund in accordance with § 240.13d-1(b)(1)(ii)(F);
- (g)  A parent holding company or control person in accordance with § 240.13d-1(b)(1)(ii)(G);
- (h)  A savings associations as defined in Section 3(b) of the Federal Deposit Insurance Act (12 U.S.C. 1813);
- (i)  A church plan that is excluded from the definition of an investment company under section 3(c)(14) of the Investment Company Act of 1940 (15 U.S.C. 80a-3);
- (j)  Group, in accordance with § 240.13d-1(b)(1)(ii)(J).

**Item 4. Ownership:**

Ownership as of December 31, 2010 is incorporated herein by reference from items (5) – (9) and (11) of the cover page for each Reporting Person.

The number of shares reported in items (5) – (9) and (11) consists of 2,114,718 shares of common stock and warrants to acquire 61,631 shares of common stock held for the accounts of funds for which FirstMark Capital, L.L.C. acts as investment advisor/manager and exercises sole investment discretion. Lawrence D. Lenihan, Jr. and Gerald Poch are the controlling shareholders of FirstMark Capital, L.L.C. FirstMark Capital, L.L.C. disclaims beneficial ownership of the shares held of record by such funds. The number of shares reported in items (5) – (9) and (11) for Lawrence D. Lenihan, Jr. consists of the 2,176,349 shares deemed to be beneficially owned by FirstMark Capital, L.L.C., 5,000 shares beneficially owned by Mr. Lenihan and 6,000 shares beneficially owned by Mr. Lenihan's minor children. Mr. Lenihan disclaims beneficial ownership of the shares deemed to be beneficially owned by FirstMark Capital, L.L.C., except to the extent of his pecuniary interest therein and disclaims beneficial ownership of the shares owned by his minor children.

**Item 5. Ownership of Five Percent or Less of a Class:**

Not applicable.

**Item 6. Ownership of More than Five Percent on Behalf of Another Person:**

FirstMark Capital, L.L.C. is an investment adviser acting on behalf of its clients' accounts and, as such, has beneficial ownership of 2,176,349 shares through the investment discretion FirstMark Capital, L.L.C. exercises over such accounts. Although such accounts do not have beneficial ownership of the Shares for purposes of Section 13 and Section 16 of the Act, one account of FirstMark Capital, L.L.C., FirstMark III, L.P., owns of record more than 5% of the Issuer's Common Stock.

**Item 7. Identification and Classification of the Subsidiary Which Acquired the Security Being Reported on by the Parent Holding Company:**

Not applicable.

**Item 8. Identification and Classification of Members of the Group:**

Not applicable.

**Item 9. Notice of Dissolution of Group:**

Not applicable.

**Item 10. Certification:**

By signing below I certify that, to the best of my knowledge and belief, the securities referred to above were acquired and are held in the ordinary course of business and were not acquired and are not held for the purpose of or with the effect of changing or influencing the control of the issuer of the securities and were not acquired and are not held in connection with or as a participant in any transaction having that purpose or effect.

**SIGNATURES**

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

FirstMark Capital, L.L.C.

Date: February 8, 2011

By: /s/ Brian Kempner  
Brian Kempner  
Chief Operating Officer & General Counsel

Date: February 8, 2011

By: /s/ Lawrence D. Lenihan, Jr.  
Lawrence D. Lenihan, Jr.

Date: February 8, 2011

By: /s/ Brian Kempner  
Brian Kempner