

**UNITED STATES
SECURITIES AND EXCHANGE
COMMISSION**

Washington, D.C. 20549

SCHEDULE 13D

(Rule 13d-101)

**INFORMATION TO BE INCLUDED IN STATEMENTS FILED PURSUANT TO RULE
13d-1(a) AND AMENDMENTS THERETO FILED PURSUANT TO RULE 13d-2(a)**

**Under the Securities Exchange Act of 1934
(Amendment No.)***

ACADIA PHARMACEUTICALS INC.

(Name of Issuer)

Common Stock

(Title of Class of Securities)

004225108

(CUSIP Number)

**Raymond Charest
c/o Oxford Bioscience Partners IV L.P.
222 Berkeley Street
Boston, Massachusetts 02116
(617-357-7474)**

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

April 20, 2005

(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 §§240.13d-1(e), 240.13d-1(f) or 240.13d-1(g), check the following box.

Note: Schedules filed in paper format shall include a signed original and five copies of the schedule, including all exhibits. See §240.13d-7 for other parties to whom copies are to be sent.

* 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 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).

CUSIP No. US0042251084

1. Names of Reporting Persons. I.R.S. Identification Nos. of above persons (entities only)
Oxford Bioscience Partners IV L.P.

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

(a)

(b)

3. SEC Use Only

4. Source of Funds (See Instructions)

5. Check if Disclosure of Legal Proceedings Is Required Pursuant to Items 2(d) or 2(e)

6. Citizenship or Place of Organization
Delaware

7. Sole Voting Power
0 shares

Number of
Shares
Beneficially
Owned by
Each
Reporting
Person With

8. Shared Voting Power
3,186,217 shares

9. Sole Dispositive Power
0 shares

10. Shared Dispositive Power
3,186,217 shares

11. Aggregate Amount Beneficially Owned by Each Reporting Person
3,186,217 shares

12. Check if the Aggregate Amount in Row (11) Excludes Certain Shares (See Instructions)

13. Percent of Class Represented by Amount in Row (11)
13.66 %

14. Type of Reporting Person (See Instructions)
PN

2

1. Names of Reporting Persons. I.R.S. Identification Nos. of above persons (entities only)
mRNA Fund II L.P.

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

(a)

(b)

3. SEC Use Only

4. Source of Funds (See Instructions)

5. Check if Disclosure of Legal Proceedings Is Required Pursuant to Items 2(d) or 2(e)

6. Citizenship or Place of Organization
Delaware

7. Sole Voting Power
0 shares

Number of
Shares
Beneficially
Owned by
Each
Reporting
Person With

8. Shared Voting Power
3,186,217 shares

9. Sole Dispositive Power
0 shares

10. Shared Dispositive Power
3,186,217 shares

11. Aggregate Amount Beneficially Owned by Each Reporting Person
3,186,217 shares

12. Check if the Aggregate Amount in Row (11) Excludes Certain Shares (See Instructions)

13. Percent of Class Represented by Amount in Row (11)
13.66 %

14. Type of Reporting Person (See Instructions)
PN

1. Names of Reporting Persons. I.R.S. Identification Nos. of above persons (entities only)
OBP Management IV L.P.

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

(a)

(b)

3. SEC Use Only

4. Source of Funds (See Instructions)

5. Check if Disclosure of Legal Proceedings Is Required Pursuant to Items 2(d) or 2(e)

6. Citizenship or Place of Organization
Delaware

7. Sole Voting Power
0 shares

Number of
Shares
Beneficially
Owned by
Each
Reporting
Person With

8. Shared Voting Power
3,186,217 shares

9. Sole Dispositive Power
0 shares

10. Shared Dispositive Power
3,186,217 shares

11. Aggregate Amount Beneficially Owned by Each Reporting Person
3,186,217 shares

12. Check if the Aggregate Amount in Row (11) Excludes Certain Shares (See Instructions)

13. Percent of Class Represented by Amount in Row (11)
13.66 %

14. Type of Reporting Person (See Instructions)
PN

1. Names of Reporting Persons. I.R.S. Identification Nos. of above persons (entities only)
Jeffrey T. Barnes

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

(a)

(b)

3. SEC Use Only

4. Source of Funds (See Instructions)

5. Check if Disclosure of Legal Proceedings Is Required Pursuant to Items 2(d) or 2(e)

6. Citizenship or Place of Organization
United States

7. Sole Voting Power
0 shares

Number of
Shares
Beneficially
Owned by
Each
Reporting
Person With

8. Shared Voting Power
3,186,217 shares

9. Sole Dispositive Power
0 shares

10. Shared Dispositive Power
3,186,217 shares

11. Aggregate Amount Beneficially Owned by Each Reporting Person
3,186,217 shares

12. Check if the Aggregate Amount in Row (11) Excludes Certain Shares (See Instructions)

13. Percent of Class Represented by Amount in Row (11)
13.66 %

14. Type of Reporting Person (See Instructions)
IN

1. Names of Reporting Persons. I.R.S. Identification Nos. of above persons (entities only)
Mark P. Carthy

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

(a) o

(b) o

3. SEC Use Only

4. Source of Funds (See Instructions)

5. Check if Disclosure of Legal Proceedings Is Required Pursuant to Items 2(d) or 2(e) o

6. Citizenship or Place of Organization
United States

7. Sole Voting Power
0 shares

Number of
Shares
Beneficially
Owned by
Each
Reporting
Person With

8. Shared Voting Power
3,186,217 shares

9. Sole Dispositive Power
0 shares

10. Shared Dispositive Power
3,186,217 shares

11. Aggregate Amount Beneficially Owned by Each Reporting Person
3,186,217 shares

12. Check if the Aggregate Amount in Row (11) Excludes Certain Shares (See Instructions) o

13. Percent of Class Represented by Amount in Row (11)
13.66 %

14. Type of Reporting Person (See Instructions)
IN

1. Names of Reporting Persons. I.R.S. Identification Nos. of above persons (entities only)
Jonathan J. Fleming

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

(a)

(b)

3. SEC Use Only

4. Source of Funds (See Instructions)

5. Check if Disclosure of Legal Proceedings Is Required Pursuant to Items 2(d) or 2(e)

6. Citizenship or Place of Organization
United States

7. Sole Voting Power
0 shares

Number of
Shares
Beneficially
Owned by
Each
Reporting
Person With

8. Shared Voting Power
3,186,217 shares

9. Sole Dispositive Power
0 shares

10. Shared Dispositive Power
3,186,217 shares

11. Aggregate Amount Beneficially Owned by Each Reporting Person
3,186,217 shares

12. Check if the Aggregate Amount in Row (11) Excludes Certain Shares (See Instructions)

13. Percent of Class Represented by Amount in Row (11)
13.66 %

14. Type of Reporting Person (See Instructions)
IN

1. Names of Reporting Persons. I.R.S. Identification Nos. of above persons (entities only)
Michael E. Lytton

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

(a)

(b)

3. SEC Use Only

4. Source of Funds (See Instructions)

5. Check if Disclosure of Legal Proceedings Is Required Pursuant to Items 2(d) or 2(e)

6. Citizenship or Place of Organization
United States

7. Sole Voting Power
0 shares

Number of
Shares
Beneficially
Owned by
Each
Reporting
Person With

8. Shared Voting Power
3,186,217 shares

9. Sole Dispositive Power
0 shares

10. Shared Dispositive Power
3,186,217 shares

11. Aggregate Amount Beneficially Owned by Each Reporting Person
3,186,217 shares

12. Check if the Aggregate Amount in Row (11) Excludes Certain Shares (See Instructions)

13. Percent of Class Represented by Amount in Row (11)
13.66 %

14. Type of Reporting Person (See Instructions)
IN

1. Names of Reporting Persons. I.R.S. Identification Nos. of above persons (entities only)
Alan G. Walton

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

(a)

(b)

3. SEC Use Only

4. Source of Funds (See Instructions)

5. Check if Disclosure of Legal Proceedings Is Required Pursuant to Items 2(d) or 2(e)

6. Citizenship or Place of Organization
United States

7. Sole Voting Power
9,000 shares

Number of
Shares
Beneficially
Owned by
Each
Reporting
Person With

8. Shared Voting Power
3,186,217 shares

9. Sole Dispositive Power
9,000 shares

10. Shared Dispositive Power
3,186,217 shares

11. Aggregate Amount Beneficially Owned by Each Reporting Person
3,186,217 shares

12. Check if the Aggregate Amount in Row (11) Excludes Certain Shares (See Instructions)

13. Percent of Class Represented by Amount in Row (11)
13.7%

14. Type of Reporting Person (See Instructions)
IN

NOTE: This Statement on Schedule 13D is being filed on behalf of: (i) Oxford Bioscience Partners IV L.P., a Delaware limited partnership; (ii) mRNA Fund II L.P., a Delaware limited partnership; (iii) OBP Management IV L.P., a Delaware limited partnership; (iv) Jeffrey T. Barnes; (v) Mark P. Carthy; (vi) Jonathan J. Fleming; (vii) Michael E. Lytton; and (viii) Alan G. Walton.

Item 1. Security and Issuer

This statement relates to the Common Stock of Acadia Pharmaceuticals Inc. (the “Issuer”), having its principal executive office at 3911 Sorrento Valley Boulevard, San Diego, California, 92121.

Item 2. Identity and Background

Set forth below is the following information with respect to the filing on this Schedule 13D: (a) name; (b) business address; (c) principal occupation and name, business and address of employer; (d) information concerning criminal convictions during the last five years; (e) information concerning civil or administrative proceedings under state or federal securities laws during the past five years with respect to any state or federal securities laws; and (f) citizenship.

(a) Oxford Bioscience Partners IV L.P. (“Oxford IV”) and mRNA Fund II L.P. (“MRNA II”) (collectively, the “Funds”); OBP Management IV L.P. (“OBP IV”) which is the sole general partner of Oxford IV and MRNA II; and Jeffrey T. Barnes (“Barnes”), Mark P. Carthy (“Carthy”), Jonathan J. Fleming (“Fleming”), Michael E. Lytton (“Lytton”) and Alan G. Walton (“Walton”) (collectively, the “General Partners”) who are the general partners of OBP IV. The persons named in this paragraph are referred to individually herein as a “Reporting Person” and collectively as the “Reporting Persons.”

(b) The address of the principal business office of Oxford IV, MRNA II, OBP IV, Barnes, Carthy, Fleming and Lytton is 222 Berkeley Street, Suite 1650, Boston, Massachusetts 02116. The address of the principal business office of Walton is 315 Post Rd. West, Westport, Connecticut 06880.

(c) The principal business of Oxford IV and MRNA II is to invest in and assist growth-oriented businesses located principally in the United States. The principal business of OBP IV is to manage the affairs of Oxford IV and MRNA II. The principal business of each of the General Partners is to manage the affairs of OBP IV.

(d) During the five years prior to the date hereof, none of the Reporting Persons has been convicted in a criminal proceeding.

(e) During the five years prior to the date hereof, none of the Reporting Persons has been a party to a civil proceeding of a judicial or administrative body of competent jurisdiction ending in a judgment, decree or final order enjoining future violations of, or prohibiting or mandating activities subject to, Federal or State securities laws or finding any violation with respect to such laws.

(f) Each of Oxford IV, MRNA II and OBP IV is a limited partnership organized under the laws of the State of Delaware. Each of the General Partners is a United States citizen.

Item 3. Source and Amount of Funds or Other Consideration

On April 20, 2005, pursuant to a Securities Purchase Agreement dated as of April 15, 2004 (the “Purchase Agreement”), among Oxford IV, the Issuer and various other investors, Oxford IV purchased 586,402 shares of the Issuer’s Common Stock at a price of \$6.82125 per share for total consideration of \$3,999,994.65 (the “Private Placement”). Under the terms of the Purchase Agreement, Oxford IV also received a warrant to purchase 146,600 shares of Common Stock at an exercise price of \$8.148 per share. The funds used by Oxford IV to acquire the Common Stock and the Warrants were obtained from its investment funds.

References to and descriptions of the Purchase Agreement as set forth in this Item 3 are qualified in their entirety by reference to the copy of the Purchase Agreement filed as Exhibit 99.1 to the Issuer’s Current Report on Form 8-K filed on April 20, 2005 and is incorporated herein in its entirety by reference.

Item 4. Purpose of Transaction

Oxford IV entered into the Purchase Agreement and purchased Common Stock of the Issuer for investment purposes.

(a-i) Not applicable.

(j) The Reporting Persons currently have no plan or proposals which relate to, or may result in, any of the matters listed in Items 4(a) - (i) of Schedule 13D (although the Reporting Persons reserve the right to develop such plans).

All shares of common stock of the Issuer purchased by the Reporting Persons in the Private Placement were acquired for their own accounts for investment purposes, but the Reporting Persons reserve the right to dispose of the shares in compliance with applicable law.

Item 5. Interest in Securities of the Issuer

(a) After consummation of the Private Placement, Oxford IV holds 3,160,238 shares of the common stock of the Issuer and MRNA II holds 25,979 shares of the common stock of the Issuer. Collectively, this represents 3,186,217 shares of common stock of the Issuer and approximately 13.66% of the Issuer’s outstanding common stock, based upon a total of 23,328,818 shares of the Issuer’s common stock. Mr. Walton beneficially owns options to purchase 9,000 shares of common stock, all of which are immediately exercisable.

Under SEC rules, and by virtue of their relationship as affiliated limited partnerships which share a sole general partner (OBP IV), Oxford IV and MRNA II may be deemed to share voting power and the power to direct the disposition of the shares of common stock of the Issuer which each partnership owns of record. OBP IV, as the general partner of Oxford IV and MRNA II, may also be deemed to own beneficially the shares of Oxford IV and MRNA II. Barnes, Carthy, Fleming, Lytton and Walton are general partners of OBP IV and accordingly may be deemed to own beneficially the shares held by Oxford IV and MRNA II. Oxford IV, OBP IV, Barnes, Carthy, Fleming, Lytton and Walton expressly disclaim beneficial ownership of the shares held by MRNA II, except to the extent of their respective pecuniary interest therein, and MRNA II, OBP IV, Barnes, Carthy, Fleming, Lytton and Walton expressly disclaim beneficial ownership of the shares held by Oxford IV, except to the extent of their respective pecuniary interest therein.

These percentages are calculated based upon 23,328,818 shares of the Issuer's Common Stock outstanding, as adjusted pursuant to Rule 13d-3(d) (1) promulgated under the Securities Act, which is the sum of: (a) 18,051,197 shares of the Issuer's Common Stock outstanding on March 14, 2005, as reported by the Issuer in its Form 10-K as filed with the Securities and Exchange Commission on March 18, 2005 and (b) 5,277,621 shares of Common Stock issued pursuant to the Purchase Agreement, as reported by the Issuer in its Current Report on Form 8-K as filed with the Securities and Exchange Commission on April 20, 2005.

(b) Number of shares as to which each person named in paragraph (a) above has:

(i) sole power to vote or to direct the vote: 0 shares for the Funds, OBP IV, Barnes, Carthy, Fleming, and Lytton; 9,000 for Walton.

(ii) shared power to vote or to direct the vote: 3,186,217 shares for the Funds, OBP IV and the General Partners.

(iii) sole power to dispose or to direct the disposition of: 0 shares for the Funds, OBP IV, Barnes, Carthy, Fleming, Lytton; 9,000 for Walton.

(iv) shared power to dispose or to direct the disposition of: 3,186,217 shares for the Funds, OBP IV and the General Partners.

(c) Except as set forth above, none of the Reporting Persons have effected any transaction in the common stock in the last 60 days.

(d) No other person is known to have the right to receive or the power to direct the receipt of dividends from, or any proceeds from the sale of the shares beneficially owned by any of the Reporting Persons.

(e) Not applicable.

Item 6. Contracts, Arrangements, Understandings or Relationships with Respect to Securities of the Issuer

Not applicable.

Item 7. Material to Be Filed as Exhibits

Exhibit A – Agreement regarding filing of joint Schedule 13D.

Exhibit B – Power of Attorney dated as of April 8, 2004.

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SIGNATURES

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

Dated: April 29, 2005

OXFORD BIOSCIENCE PARTNERS IV L.P.
by its General Partner, OBP MANAGEMENT IV L.P.

By: /s/ Jonathan J. Fleming
Name: Jonathan J. Fleming
Title: General Partner

MRNA FUND II L.P.
By its General Partner, OBP MANAGEMENT IV L.P.

By: /s/ Jonathan J. Fleming
Name: Jonathan J. Fleming
Title: General Partner

OBP MANAGEMENT IV L.P.

By: /s/ Jonathan J. Fleming
Name: Jonathan J. Fleming

Title: General Partner

/s/ Jeffrey T. Barnes
Jeffrey T. Barnes

/s/ Mark P. Carthy
Mark P. Carthy

/s/ Jonathan J. Fleming
Jonathan J. Fleming

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/s/ Michael E. Lytton
Michael E. Lytton

*
Alan G. Walton

*By: /s/ Raymond Charest
Raymond Charest as Attorney-in-Fact

This Schedule 13D was executed by Raymond Charest pursuant to Powers of Attorney, filed with the Securities and Exchange Commission on April 8, 2004, which Powers of Attorney are incorporated herein by reference and copies of which are attached hereto as Exhibit B.

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EXHIBIT INDEX

- A. Agreement regarding filing of joint Schedule 13D.
- B. Power of Attorney dated as of April 8, 2004.

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Exhibit A

JOINT FILING UNDERTAKING

Pursuant to Rule 13d-1(k)(1) promulgated under the Securities Exchange Act of 1934, as amended, each of the undersigned agree that the Schedule 13D, and any amendments thereto, filed with respect to the beneficial ownership by the undersigned of the equity securities of Acadia Pharmaceuticals Inc., is being filed on behalf of each of the undersigned.

Dated: April 29, 2005

OXFORD BIOSCIENCE PARTNERS IV L.P.
by its General Partner, OBP MANAGEMENT IV L.P.

By: /s/ Jonathan J. Fleming
 Name: Jonathan J. Fleming
 Title: General Partner

MRNA FUND II L.P.
By its General Partner, OBP MANAGEMENT IV L.P.

By: /s/ Jonathan J. Fleming
 Name: Jonathan J. Fleming
 Title: General Partner

OBP MANAGEMENT IV L.P.

By: /s/ Jonathan J. Fleming
 Name: Jonathan J. Fleming
 Title: General Partner

/s/ Jeffrey T. Barnes
 Jeffrey T. Barnes

/s/ Mark P. Carthy
 Mark P. Carthy

/s/ Jonathan J. Fleming
 Jonathan J. Fleming

/s/ Michael E. Lytton
 Michael E. Lytton

*

Alan G. Walton

*By: /s/ Raymond Charest
 Raymond Charest as Attorney-in-Fact

This Schedule 13D was executed by Raymond Charest pursuant to Powers of Attorney, filed with the Securities and Exchange Commission on April 8, 2004, which Powers of Attorney are incorporated herein by reference and copies of which are attached hereto as Exhibit D.

Exhibit B

POWER OF ATTORNEY

KNOW ALL MEN BY THESE PRESENTS, that each person whose signature appears below hereby constitutes and appoints Raymond Charest, Alexia Pearsall and Jonathan J. Fleming, and each of them, with full power to act without the other, his true and lawful attorney-in-fact and agent, with full power of substitution, for him and in his name, place and stead, in any and all capacities (until revoked in writing) to sign any and all instruments, certificates and documents required to be executed on behalf of himself as an individual or in his capacity as a general partner or authorized signatory, as the case may be, on behalf of any of Oxford Bioscience Partners IV L.P., mRNA II L.P., or OBP Management IV L.P., pursuant to section 13 or 16 of the Securities Exchange Act of 1934, as amended (the "Exchange Act"), and any and all regulations promulgated thereunder and to file the same, with all exhibits thereto, and any other documents in connection therewith, with the Securities and Exchange Commission, and with any other entity when and if such is mandated by the Exchange Act or by the By-laws of the National Association of Securities Dealers, Inc., granting unto said attorney-in-fact and agent full power and authority to do and perform each and every act and thing requisite and necessary fully to all intents and purposes as he might or could do in person thereby ratifying and confirming all that said attorney-in-fact and agent, or his substitute or substitutes, may lawfully do or cause to be done by virtue hereof, or may have done in connection with the matters described above.

IN WITNESS WHEREOF, this Power of Attorney has been signed as of the 8th day of April, 2004.

OXFORD BIOSCIENCE PARTNERS IV L.P.
by its General Partner, OBP MANAGEMENT IV L.P.

By: /s/ Jonathan J. Fleming

Name: Jonathan J. Fleming

Title: General Partner

MRNA FUND II L.P.
By its General Partner, OBP MANAGEMENT IV L.P.

By: /s/ Jonathan J. Fleming

Name: Jonathan J. Fleming

Title: General Partner

OBP MANAGEMENT IV L.P.

By: /s/ Jonathan J. Fleming

Name: Jonathan J. Fleming

Title: General Partner

/s/ Jeffrey T. Barnes

Jeffrey T. Barnes

/s/ Mark P. Carthy

Mark P. Carthy

/s/ Jonathan J. Fleming

Jonathan J. Fleming

/s/ Michael E. Lytton

Michael E. Lytton

/s/ Alan G. Walton

Alan G. Walton
