

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

SCHEDULE 13G

UNDER THE SECURITIES EXCHANGE ACT OF 1934

(AMENDMENT NO. 1)*

Targacept, Inc.

(Name of Issuer)

Common Stock, \$.001 par value per share

(Title of Class of Securities)

87611R306

(CUSIP Number)

December 31, 2007

(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 in 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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ITEM 1(A). NAME OF ISSUER: Targacept, Inc. (the "Issuer")

ITEM 1(B). ADDRESS OF ISSUER'S PRINCIPAL EXECUTIVE OFFICES: 200 East First Street, Suite 300, Winston-Salem, NC 27101

ITEM 2(A). NAMES OF PERSONS FILING: 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"), 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."

ITEM 2(B). ADDRESS OF PRINCIPAL BUSINESS OFFICE OR, IF NONE, RESIDENCE: The address of the principal business office of Oxford IV, mRNA II, OBP IV, Barnes, 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.

ITEM 2(C). CITIZENSHIP: The Funds and OBP IV are limited partnerships organized under the laws of the State of Delaware. Each of the General Partners is a United States citizen.

ITEM 2(D). TITLE OF CLASS OF SECURITIES: Common Stock, \$.001 par value ("Common Stock").

ITEM 2(E). CUSIP NUMBER: 87611R306.

ITEM 3. IF THIS STATEMENT IS FILED PURSUANT TO SS.SS. 240.13D-1(B) OR 240.13D-2(B) OR (C), CHECK WHETHER THE PERSON FILING IS A:

Not applicable.

ITEM 4. OWNERSHIP.

Not applicable.

ITEM 5. OWNERSHIP OF FIVE PERCENT OR LESS OF A CLASS.

Each Reporting Person has ceased to own beneficially five percent (5%) or more of the Issuer's outstanding Common Stock. Mark P. Carthy has ceased to be a general partner of OBP IV and accordingly is no longer deemed to share the power to direct the disposition or vote of record by Oxford IV and mRNAILI.

ITEM 6. OWNERSHIP OF MORE THAN FIVE PERCENT ON BEHALF OF ANOTHER PERSON.

Not applicable.

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. The Reporting Persons expressly disclaim membership in a "group" as used in Rule 13d-5(b).

ITEM 9. NOTICE OF DISSOLUTION OF GROUP.

Not applicable.

ITEM 10. CERTIFICATION.

Not applicable. This statement on Schedule 13G is not filed pursuant to Rule 13d-1(b) or Rule 13d-1(c).

*By: /s/ Raymond Charest

Raymond Charest
As attorney-in-fact

This Amendment to Schedule 13G was executed by Raymond Charest on behalf of the individuals listed above pursuant to Powers of Attorney, copies of which are attached as Exhibit 2.

*

Alan G. Walton

*By: /s/ Raymond Charest

Raymond Charest
As attorney-in-fact

This Amendment to Schedule 13G was executed by Raymond Charest on behalf of the individuals listed above pursuant to Powers of Attorney, copies of which are attached as Exhibit 2.

EXHIBIT 2

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 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 Fleming

Name: Jonathan J. Fleming
Title: General Partner

OBP MANAGEMENT IV L.P.

By: /s/ Jonathan 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