

OMB APPROVAL
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SECURITIES AND EXCHANGE COMMISSION

Washington, D.C. 20549

SCHEDULE 13G

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

TARGACEPT, INC.

(Name of Issuer)

Common Stock
(Title of Class of Securities)

87611R 30 6
(CUSIP Number)

July 27, 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).

(Continued on following page(s))

1	NAMES OF REPORTING PERSONS: GlaxoSmithKline plc I.R.S. IDENTIFICATION NOS. OF ABOVE PERSONS (ENTITIES ONLY):	
2	CHECK THE APPROPRIATE BOX IF A MEMBER OF A GROUP (SEE INSTRUCTIONS): (a) <input type="radio"/> (b) <input type="radio"/>	
3	SEC USE ONLY:	
4	CITIZENSHIP OR PLACE OF ORGANIZATION: England and Wales	
NUMBER OF SHARES BENEFICIALLY OWNED BY EACH REPORTING PERSON WITH:	5	SOLE VOTING POWER: 1,275,502
	6	SHARED VOTING POWER: -0-
	7	SOLE DISPOSITIVE POWER: 1,275,502
	8	SHARED DISPOSITIVE POWER: -0-
9	AGGREGATE AMOUNT BENEFICIALLY OWNED BY EACH REPORTING PERSON: 1,275,502	
10	CHECK IF THE AGGREGATE AMOUNT IN ROW (9) EXCLUDES CERTAIN SHARES (SEE INSTRUCTIONS): <input type="radio"/>	
11	PERCENT OF CLASS REPRESENTED BY AMOUNT IN ROW (9): 6.2%	
12	TYPE OF REPORTING PERSON (SEE INSTRUCTIONS): CO	

*SEE INSTRUCTION BEFORE FILLING OUT!

- Item 1. (a). Name of Issuer:
Targacept, Inc.
- (b). Address of Issuer's Principal Executive Offices:
200 East First Street, Suite 300
Winston-Salem, North Carolina 27101

- Item 2. (a). Names of Person Filing:
GlaxoSmithKline plc
- (b). Address of Principal Business Office:
980 Great West Road
Brentford
Middlesex
TW8 9GS ENGLAND

- (c). Citizenship:
England and Wales

- (d). Title of Class of Securities:
Common stock.

- (e). CUSIP Number:
87611R 30 6

Item 3. Not Applicable.

Item 4. Ownership.

The information in items 1 and 5 through 11 on the cover pages (page 2) on Schedule 13G is hereby incorporated by reference.

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

If this statement is being filed to report the fact that as of the date hereof the reporting person has ceased to be the beneficial owner of more than five percent of the class of securities, check the following o.

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

Shares held by Glaxo Group Limited, a wholly-owned subsidiary of Reporting Person.

Item 7. Identification and Classification of Subsidiaries 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 not held for the purpose of or with the effect of changing or influencing the control of the issuer of such securities and were not acquired in connection with or as a participant in any transaction having such purpose or effect.

Signature:

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.

GLAXOSMITHKLINE PLC

By: /s/ Victoria A. Whyte
Victoria A. Whyte
Deputy Secretary

Dated: August 1, 2007