

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

Form S-3

REGISTRATION STATEMENT UNDER THE SECURITIES ACT OF 1933

TARGACEPT, INC.

(Exact name of registrant as specified in its charter)

Delaware
(State or other jurisdiction of
incorporation or organization)

56-2020050
(I.R.S. Employer
Identification No.)

**200 East First Street, Suite 300
Winston-Salem, North Carolina 27101
(336) 480-2100**

(Address, including zip code, and telephone number, including area code, of registrant's principal executive offices)

**J. Donald deBethizy
President and Chief Executive Officer
Targacept, Inc.
200 East First Street, Suite 300
Winston-Salem, North Carolina 27101
(336) 480-2100**

(Name, address, including zip code, and telephone number, including area code, of agent for service)

Copies to:

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**Peter A. Zorn, Esq.
Targacept, Inc.
200 East First Street, Suite 300
Winston-Salem, North Carolina 27101
(336) 480-2100**

Approximate date of commencement of proposed sale to the public: From time to time after this Registration Statement becomes effective.

If the only securities being registered on this Form are being offered pursuant to dividend or interest reinvestment plans, please check the following box:

If any of the securities being registered on this Form are to be offered on a delayed or continuous basis pursuant to Rule 415 under the Securities Act of 1933, other than securities offered only in connection with dividend or interest reinvestment plans, check the following box:

If this Form is filed to register additional securities for an offering pursuant to Rule 462(b) under the Securities Act, please check the following box and list the Securities Act registration statement number of the earlier effective registration statement for the same offering.

If this Form is a post-effective amendment filed pursuant to Rule 462(c) under the Securities Act, check the following box and list the Securities Act registration statement number of the earlier effective registration statement for the same offering.

If this Form is a registration statement pursuant to General Instruction I.D. or a post-effective amendment thereto that shall become effective upon filing with the Commission pursuant to Rule 462(e) under the Securities Act, check the following box.

If this Form is a post-effective amendment to a registration statement filed pursuant to General Instruction I.D. filed to register additional securities or additional classes of securities pursuant to Rule 413(b) under the Securities Act, check the following box.

CALCULATION OF REGISTRATION FEE

Title of Each Class of Securities to be Registered	Amount to be Registered	Proposed Maximum Offering Price Per Share	Proposed Maximum Aggregate Offering Price	Amount of Registration Fee (1)
Common Stock, \$0.001 par value	(2)	(3)	\$75,000,000	\$2,303

- Calculated pursuant to Rule 457(o) under the Securities Act of 1933, as amended, based on the proposed maximum aggregate offering price.
- The offer and sale of an indeterminate number of shares of common stock as shall have an aggregate initial offering price not to exceed \$75,000,000 plus, pursuant to Rule 416 under the Securities Act, such indeterminate number of shares of common stock as may be issuable as a result of stock splits, stock dividends, recapitalizations or similar transactions with respect thereto, are registered hereunder.
- The proposed maximum aggregate offering price per share of common stock will be determined from time to time by the registrant in connection with its offer and sale of shares of common stock registered hereunder.

The Registrant hereby amends this Registration Statement on such date or dates as may be necessary to delay its effective date until the Registrant shall file a further amendment which specifically states that this Registration Statement shall thereafter become effective in accordance with Section 8(a) of the Securities Act of 1933, as amended, or until the Registration Statement shall become effective on such date as the Securities and Exchange Commission, acting pursuant to said Section 8(a), may determine.

The information in this prospectus is not complete and may be changed. We may not sell these securities until the registration statement filed with the Securities and Exchange Commission is effective. This prospectus is not an offer to sell these securities and is not soliciting an offer to buy these securities in any jurisdiction where the offer or sale is not permitted.

SUBJECT TO COMPLETION, DATED MAY 25, 2007

PROSPECTUS

\$75,000,000


TARGACEPT, INC.
COMMON STOCK

This prospectus will allow us to issue up to \$75,000,000 of our common stock from time to time at prices and on terms to be determined at or prior to the time of the applicable offering. We will provide you with specific terms of any offering in one or more supplements to this prospectus. You should read this document and the applicable prospectus supplement carefully before you invest.

Our common stock is listed on The Nasdaq Global Market under the symbol "TRGT." On May 24, 2007, the last reported sale price of our common stock was \$9.49 per share. Prospective purchasers of common stock are urged to obtain current information as to the market prices of our common stock.

Investing in our common stock involves a high degree of risk. Before deciding whether to invest in our common stock, you should consider carefully the risks that we have described on page 4 of this prospectus under the caption "Risk Factors." We may also include specific risk factors in supplements to this prospectus under the caption "Risk Factors." This prospectus may not be used to offer or sell our common stock unless accompanied by a prospectus supplement.

Our common stock may be sold directly by us to investors, through agents designated from time to time or to or through underwriters or dealers. For additional information on the methods of sale, you should refer to the section entitled "Plan of Distribution" in this prospectus. If any underwriters are involved in the sale of our common stock with respect to which this prospectus is being delivered, the names of such underwriters and any applicable commissions or discounts and over-allotment options will be set forth in a prospectus supplement. The price to the public of such common stock and the net proceeds that we expect to receive from such sale will also be set forth in a prospectus supplement.

Neither the Securities and Exchange Commission nor any state securities commission has approved or disapproved of these securities or passed upon the adequacy or accuracy of this prospectus. Any representation to the contrary is a criminal offense.

The date of this prospectus is _____, 2007.

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ABOUT THIS PROSPECTUS

This prospectus is part of a registration statement that we filed with the Securities and Exchange Commission, or SEC, utilizing a “shelf” registration process. Under the shelf registration process, we may sell shares of our common stock, with an aggregate initial offering price of up to \$75,000,000, in one or more offerings. Each time we sell shares subject to the shelf registration, we will provide a prospectus supplement that contains specific information about the terms of that offering.

This prospectus does not contain all of the information included in the registration statement. For a more complete understanding of the offering of the shares of our common stock, you should refer to the registration statement, including its exhibits. Each prospectus supplement may also add to, update or supersede information contained or incorporated by reference in this prospectus. However, no prospectus supplement will fundamentally change the terms that are set forth in this prospectus or offer a security that is not registered and described in this prospectus at the time the registration statement becomes effective. This prospectus, together with the documents incorporated by reference into this prospectus and as supplemented by the prospectus supplement applicable to an offering, includes all material information relating to that offering. You should carefully read this prospectus, the applicable prospectus supplement, the information and documents incorporated herein by reference and the additional information under the heading “Where You Can Find More Information” before making an investment decision.

You should rely only on the information contained or incorporated by reference in this prospectus, as supplemented by the applicable prospectus supplement. We have not authorized anyone to provide you with information different from that contained or incorporated by reference in this prospectus or a prospectus supplement. No dealer, salesperson or other person is authorized to give any information or to represent anything not contained or incorporated by reference in this prospectus or a prospectus supplement. You must not rely on any unauthorized information or representation. This prospectus is an offer to sell only the securities offered hereby, but only under circumstances and in jurisdictions where it is lawful to do so. You should assume that the information in this prospectus or any prospectus supplement is accurate only as of the date on the front of the document and that any information we have incorporated herein by reference is accurate only as of the date of the document that is incorporated by reference, regardless of the time of delivery of this prospectus or a prospectus supplement or any sale of a security.

This prospectus may not be used to consummate sales of common stock, unless it is accompanied by a prospectus supplement. To the extent there are inconsistencies between any prospectus supplement, this prospectus and any documents incorporated by reference in this prospectus, the document with the most recent date will control.

Unless the context otherwise requires, “Targacept,” “the Company,” “we,” “us,” “our” and similar names refer to Targacept, Inc.

TARGACEPT, INC.

We are a biopharmaceutical company engaged in the design, discovery and development of NNR Therapeutics, a new class of drugs for the treatment of multiple diseases and disorders of the central nervous system. Our NNR Therapeutics selectively target neuronal nicotinic receptors, or NNRs. NNRs are found on nerve cells throughout the nervous system and serve as key regulators of nervous system activity.

We trace our scientific lineage to a research program initiated by R.J. Reynolds Tobacco Company in 1982 to study the activity and effects of nicotine, a compound that interacts non-selectively with all nicotinic receptors. Based on years of focused research in the NNR area, we believe that compounds that interact selectively with specific NNR subtypes have the potential to achieve positive medical effects by modulating their activity. We have built an extensive patent estate covering the structure or therapeutic use of small molecules designed to regulate the central nervous system by selectively affecting specific NNR subtypes.

We currently have four clinical-stage product candidates and three preclinical product candidates. Our lead product candidate is a novel small molecule that we have historically referred to as TC-1734 and that our strategic collaborator, AstraZeneca, refers to as AZD3480. AZD3480 (TC-1734) modulates the activity of the $\alpha 4\beta 2$ NNR. In December 2005, we entered into a collaborative research and license agreement with AstraZeneca AB for the development and worldwide commercialization of AZD3480 (TC-1734) as a treatment for Alzheimer's disease, cognitive deficits in schizophrenia and potentially other conditions characterized by cognitive impairment such as attention deficit hyperactivity disorder, commonly referred to as ADHD, age associated memory impairment, commonly referred to as AAMI, and mild cognitive impairment, commonly referred to as MCI. We currently expect that AstraZeneca will initiate two Phase II clinical trials of AZD3480 (TC-1734) in mid-2007, one in mild to moderate Alzheimer's disease and one in cognitive deficits in schizophrenia, and that both trials will be completed by the end of 2008.

Our most advanced product candidates, in addition to AZD3480 (TC-1734), are described below.

- *TC-2216.* TC-2216 is a product candidate that we are developing as a monotherapy for depression and anxiety disorders. TC-2216 modulates the activity of the $\alpha 4\beta 2$ NNR. We are currently conducting a Phase I single rising dose clinical trial of TC-2216 to evaluate its safety and tolerability and to assess its pharmacokinetic profile in healthy volunteers.
- *Mecamylamine hydrochloride and TC-5214.* In 2006, we completed a Phase II clinical trial of mecamylamine hydrochloride as an augmentation treatment to citalopram hydrobromide, a commonly prescribed treatment for depression marketed as Celexa in the United States, for major depression. We refer to this treatment combination as TRIDMAC. Mecamylamine hydrochloride is the active ingredient in Inversine, our only product approved by the U.S. Food and Drug Administration, or FDA, for marketing. TC-5214 is one of the molecular components, known as enantiomers, of mecamylamine hydrochloride. We have not yet conducted a clinical trial of TC-5214, but expect that we will elect to advance TC-5214 into clinical development as an augmentation treatment for major depression in lieu of further development of mecamylamine hydrochloride.
- *TC-2696.* TC-2696 is a product candidate that we are developing currently as a treatment for acute post-operative pain. Depending on clinical trial results, available resources and other considerations, we may pursue development of TC-2696 in the future for other classes of pain in addition to or instead of acute post-operative pain. TC-2696 modulates the activity of the $\alpha 4\beta 2$ NNR. We are currently conducting a Phase II clinical trial of TC-2696 to assess its pain relieving effects in third molar extraction patients.
- *TC-5619.* TC-5619 is a preclinical product candidate that modulates the $\alpha 7$ NNR. We believe compounds that selectively target the $\alpha 7$ NNR may have application in the treatment of conditions such as schizophrenia, cognitive impairment and inflammation. We currently plan to initiate clinical development of TC-5619 in the second quarter of 2007.

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- *TC-6499*. *TC-6499* is a preclinical product candidate that we plan to develop initially as a treatment for neuropathic pain. We are currently conducting manufacturing activities necessary to support the initiation of clinical development of this product candidate.

In addition, under our agreement with AstraZeneca, we and AstraZeneca are conducting a preclinical research collaboration designed to discover and develop additional compounds that, like AZD3480 (*TC-1734*), act on the $\alpha 4\beta 2$ NNR. AstraZeneca is responsible for funding the research collaboration, which began in January 2006 and has a planned term of four years.

In addition to our $\alpha 4\beta 2$ research collaboration with AstraZeneca, we have a preclinical program focused on identifying and developing compounds that selectively target the $\alpha 7$ NNR and other preclinical programs in areas in which we believe drugs that target specific NNR subtypes can be exploited for medical benefit, such as smoking cessation (and other addictions), obesity and Parkinson's disease.

Our drug discovery activities utilize sophisticated proprietary computer-based molecular design methodologies and extensive biological data for a library of diverse compounds developed and collected over more than 20 years. We refer to these technologies collectively as Pentad. We used Pentad to design or optimize AZD3480 (*TC-1734*), *TC-2696*, *TC-2216*, *TC-5619* and *TC-6499*.

We were incorporated in Delaware in 1997 as a wholly owned subsidiary of R.J. Reynolds Tobacco Company. In August 2000, we became an independent company when we issued and sold stock to venture capital investors. Our principal executive offices are located at 200 East First Street, Suite 300, Winston-Salem, North Carolina 27101 and our telephone number is (336) 480-2100.

Our internet address is www.targacept.com. The information contained on, or that can be accessed through, our website is not incorporated by reference into this prospectus or any prospectus supplement and does not constitute a part of this prospectus or any prospectus supplement. We have included our website address as a factual reference and do not intend it as an active link to our website.

Our trademarks include Targacept[®], Inversine[®], Pentad[™], NNR Therapeutics[™], TRIDMAC[™] and AMPLIXA[™]. Other service marks, trademarks and trade names appearing in this prospectus or any prospectus supplement are the property of their respective owners.

RISK FACTORS

Investing in our common stock involves risk. Prior to making a decision about investing in our common stock, you should carefully consider all of the information contained or incorporated by reference in this prospectus or the applicable prospectus supplement. In particular, you should carefully consider the risks, uncertainties and assumptions discussed under the heading “Risk Factors” in our most recent annual report on Form 10-K, which is on file with the SEC and incorporated herein by reference, and in subsequent filings that we make with the SEC, as well as any discussion of risks contained in the applicable prospectus supplement. The risks and uncertainties we have described are not the only ones we face. Additional risks and uncertainties not presently known to us or that we currently deem immaterial may also affect our operations.

CAUTIONARY NOTE REGARDING FORWARD-LOOKING STATEMENTS

This prospectus, each prospectus supplement and the documents we file or have filed with the SEC that are incorporated herein by reference include forward-looking statements within the meaning of Section 27A of the Securities Act of 1933, as amended, which we refer to as the Securities Act, or Section 21E of the Securities Exchange Act of 1934, as amended, which we refer to as the Exchange Act. For this purpose, any statements contained in this prospectus, any prospectus supplement or any of the documents we file or have filed with the SEC that are incorporated herein by reference regarding the progress, timing and scope of the research and development of our product candidates or related regulatory filings or clinical trials, our development plans for the treatment combination that we refer to as TRIDMAC, our future operations, financial position, revenues or costs, or our strategies, prospects, plans, expectations or objectives, other than statements of historical fact, are forward-looking statements made under the provisions of The Private Securities Litigation Reform Act of 1995. In some cases, words such as “may,” “will,” “could,” “would,” “should,” “expect,” “intend,” “plan,” “anticipate,” “believe,” “estimate,” “predict,” “project,” “potential,” “continue,” “ongoing” or other comparable words identify forward-looking statements. Actual results, performance or experience may differ materially from those expressed or implied by forward-looking statements as a result of various important factors, including our critical accounting policies and risks and uncertainties relating to:

- our dependence on the success of our collaboration with AstraZeneca;
- the amount and timing of resources that AstraZeneca devotes to the development of AZD3480 (TC-1734);
- AstraZeneca’s right in the future to terminate the preclinical research collaboration that we and AstraZeneca are currently conducting prior to the end of the planned four-year term;
- the position of applicable regulatory authorities with regard to a treatment combination that includes mecamlamine hydrochloride, which is a mixture of two different enantiomers that are mirror images of each other and have the same chemical but potentially different biological properties, known as a racemate, as compared to one of its constituent enantiomers such as TC-5214;
- the results of clinical trials and non-clinical studies and assessments with respect to our current and future product candidates in development;
- the conduct of such trials, studies and assessments, including the performance of third parties that we engage to execute them and difficulties or delays in the completion of patient enrollment or data analysis;
- the timing and success of submission, acceptance and approval of regulatory filings;
- our ability to obtain substantial additional funding;
- our ability to establish additional strategic collaborations;
- our ability to obtain, maintain and enforce patent and other intellectual property protection for our product candidates and discoveries; and

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- the performance of third-party manufacturers with which we contract to provide a supply of our product candidates.

These and other risks and uncertainties are described in more detail under the caption “Risk Factors” in our most recent annual report on Form 10-K and in subsequent filings that we make with the SEC, and may also be described in the applicable prospectus supplement. As a result of the risks and uncertainties, the results or events indicated by the forward-looking statements may not occur. We caution you not to place undue reliance on any forward-looking statement.

Any forward-looking statements in this prospectus, any prospectus supplement or any of the documents we file or have filed with the SEC that are incorporated herein by reference represent our views only as of the respective dates of those documents and should not be relied upon as representing our views as of any subsequent date. We anticipate that subsequent events and developments may cause our views to change. Although we may elect to update these forward-looking statements publicly at some point in the future, whether as a result of new information, future events or otherwise, we specifically disclaim any obligation to do so, except as required by applicable law. Our forward-looking statements do not reflect the potential impact of any future acquisitions, mergers, dispositions, joint ventures or investments we may make.

USE OF PROCEEDS

Unless otherwise indicated in the prospectus supplement applicable to an offering, we intend to use any net proceeds from the sale of our common stock to fund our operations and for other general corporate purposes, such as working capital, development of our clinical and preclinical product candidates, intellectual property protection and enforcement, capital expenditures, investments and acquisitions. Pending use of the net proceeds as described above, we intend to invest the net proceeds in short-term, interest-bearing, investment grade securities.

PLAN OF DISTRIBUTION

We may offer the common stock from time to time pursuant to underwritten public offerings, negotiated transactions, block trades or a combination of these methods. We may sell the common stock (1) through underwriters or dealers, (2) through agents or (3) directly to one or more purchasers, or through a combination of such methods. We may distribute the common stock from time to time in one or more transactions at:

- a fixed price or prices, which may be changed;
- market prices prevailing at the time of sale;
- prices related to the prevailing market prices; or
- negotiated prices.

The applicable prospectus supplement will describe the terms of the offering of our common stock, including:

- the number of shares of common stock we are offering;
- the name or names of any underwriters;
- any securities exchange or market on which the common stock may be listed;
- the purchase price or other consideration to be paid in connection with the sale of our common stock being offered and the proceeds we will receive from the sale;
- any over-allotment options pursuant to which the underwriters may purchase additional shares of common stock from us;
- any underwriting discounts or agency fees and other items constituting underwriters' or agents' compensation; and
- any discounts or concessions allowed or reallocated or paid to dealers.

We may directly solicit offers to purchase the common stock. We may also designate agents to solicit offers to purchase the common stock from time to time. We will name in a prospectus supplement any agent involved in the offer or sale of our common stock.

If we utilize a dealer in the sale of the common stock being offered by this prospectus, we will sell the common stock to the dealer, as principal. The dealer may then resell the common stock to the public at varying prices to be determined by the dealer at the time of resale.

If we utilize an underwriter in the sale of the common stock being offered, we will execute an underwriting agreement with the underwriter at the time of sale. In connection with the sale of the common stock, we, or the purchasers of our common stock for whom the underwriter may act as agent, may compensate the underwriter in the form of underwriting discounts or commissions. The underwriter may sell the common stock to or through

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dealers, and the underwriter may compensate those dealers in the form of discounts, concessions or commissions. Subject to certain conditions, the underwriters will be obligated to purchase all of the shares of common stock offered by the prospectus supplement. We may change from time to time the public offering price and any discounts or concessions allowed or reallocated or paid to dealers.

Underwriters, dealers and agents participating in the distribution of the common stock may be deemed to be underwriters within the meaning of the Securities Act, and any discounts and commissions received by them and any profit realized by them on resale of the common stock may be deemed to be underwriting discounts and commissions. We may enter into agreements to indemnify underwriters, dealers and agents against civil liabilities, including liabilities under the Securities Act, or to contribute to payments they may be required to make in respect thereof.

Shares of our common stock sold pursuant to the registration statement of which this prospectus is a part will be authorized for quotation and trading on The Nasdaq Global Market. One or more underwriters may make a market in our common stock, but no underwriter will be obligated to do so and any underwriter may discontinue market making at any time without notice. We cannot give any assurance as to liquidity of the trading market for our common stock.

To facilitate an offering of the common stock, certain persons participating in the offering may engage in transactions that stabilize, maintain or otherwise affect the price of our common stock. This may include over-allotments or short sales of the common stock, which involve the sale by persons participating in the offering of more shares of common stock than we sell to them. In these circumstances, these persons would cover the over-allotments or short positions by making purchases in the open market or by exercising their over-allotment option. In addition, these persons may stabilize or maintain the price of the common stock by bidding for or purchasing the common stock in the open market or by imposing penalty bids, whereby selling concessions allowed to underwriters or dealers participating in the offering may be reclaimed if the shares of common stock sold by them are repurchased in connection with stabilization transactions. The effect of these transactions may be to stabilize or maintain the market price of our common stock at a level above that which might otherwise prevail in the open market. These transactions, if commenced, may be discontinued at any time.

Any underwriters who are qualified market makers on The Nasdaq Global Market may engage in passive market making transactions in the common stock on The Nasdaq Global Market in accordance with Rule 103 of Regulation M during the business day prior to the pricing of the offering, before the commencement of offers or sales of the common stock. Passive market makers must comply with applicable volume and price limitations and must be identified as passive market makers. In general, a passive market maker must display its bid at a price not in excess of the highest independent bid for such security; however, if all independent bids are lowered below the passive market maker's bid, the passive market maker's bid must then be lowered when certain purchase limits are exceeded.

In compliance with guidelines of the National Association of Securities Dealers, or NASD, the maximum consideration or discount to be received by any NASD member or independent broker dealer may not exceed 8% of the aggregate amount of the securities offered pursuant to this prospectus and any applicable prospectus supplement.

Underwriters, dealers and agents may engage in other transactions with us, or perform other services for us, in the ordinary course of their business. We will describe such relationships in the applicable prospectus supplement, naming the underwriter and the nature of any such relationship.

LEGAL MATTERS

Mintz, Levin, Cohn, Ferris, Glovsky and Popeo, P.C., Boston, Massachusetts, will pass upon the validity of the issuance of the common stock offered by this prospectus.

EXPERTS

The financial statements of Targacept, Inc. appearing in Targacept, Inc.'s Annual Report (Form 10-K) for the year ended December 31, 2006 have been audited by Ernst & Young LLP, independent registered public accounting firm, as set forth in their report thereon included therein, and incorporated herein by reference. Such financial statements are, and audited financial statements to be included in subsequently filed documents will be, incorporated herein in reliance upon the reports of Ernst & Young LLP pertaining to such financial statements (to the extent covered by consents filed with the SEC) given on the authority of such firm as experts in accounting and auditing.

WHERE YOU CAN FIND MORE INFORMATION

We are subject to the reporting requirements of the Exchange Act and file annual, quarterly and current reports, proxy statements and other information with the SEC. You may read and copy these reports, proxy statements and other information at the SEC's public reference facilities at 100 F Street, N.E., Room 1580, Washington, D.C. 20549. You can request copies of these documents by writing to the SEC and paying a fee for the copying cost. Please call the SEC at 1-800-SEC-0330 for more information about the operation of the public reference facilities. SEC filings are also available at the SEC's website at <http://www.sec.gov>. Our common stock is listed on The Nasdaq Global Market, and you can read and inspect our filings at the offices of the National Association of Securities Dealers, Inc. at 1735 K Street, Washington, D.C. 20006.

This prospectus is only part of a registration statement on Form S-3 that we have filed with the SEC under the Securities Act and therefore omits certain information contained in the registration statement. We have also filed exhibits with the registration statement that are excluded from this prospectus, and you should refer to the applicable exhibit for a complete description of any statement referring to any contract or other document. You may inspect a copy of the registration statement, including the exhibits, without charge, at the public reference room or obtain a copy from the SEC upon payment of the fees prescribed by the SEC.

The reports, proxy statements and other information that we file with the SEC are available to you free of charge through the Investor Relations page of our website, www.targacept.com, as soon as reasonably practicable after they have been electronically filed with, or furnished to, the SEC. We have included our website address as a factual reference and do not intend it as an active link to our website.

INCORPORATION OF DOCUMENTS BY REFERENCE

The SEC allows us to "incorporate by reference" information from other documents that we file, which means that we can disclose important information in this prospectus by referring to those documents. The information incorporated by reference is considered to be part of this prospectus and will automatically add to, update and, if applicable, supersede the information in this prospectus. We incorporate by reference into this prospectus the documents listed below:

- our Annual Report on Form 10-K for the fiscal year ended December 31, 2006, filed on March 22, 2007;
- our Quarterly Report on Form 10-Q for the quarter ended March 31, 2007, filed on May 11, 2007;
- our Current Reports on Form 8-K filed on January 16, 2007 and January 26, 2007;
- the description of our common stock contained in our Registration Statement on Form 8-A filed on April 6, 2006; and
- all filings that we make pursuant to Sections 13(a), 13(c), 14 or 15(d) of the Exchange Act after the date of the filing of the registration statement on Form S-3 of which this prospectus is a part and prior

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to the termination or completion of any offering of securities under this prospectus and all applicable prospectus supplements (except, in each case, for information contained in any such filing that is furnished and not “filed” under the Exchange Act), which filings will be deemed to be incorporated by reference in this prospectus, as supplemented by the applicable prospectus supplement, and to be a part hereof from the respective dates of such filings.

The SEC file number for each of the documents listed above is 000-51173.

We will provide without charge to each person, including any beneficial owner, to whom a copy of this prospectus is delivered, upon the request of any such person, a copy of any or all of the information incorporated herein by reference (exclusive of exhibits to such documents, unless such exhibits are specifically incorporated by reference herein). Requests, whether written or oral, for such copies should be directed to Targacept, Inc., 200 East First Street, Suite 300, Winston-Salem, North Carolina 27101, Attn: Chief Financial Officer, (336) 480-2100.

PART II
INFORMATION NOT REQUIRED IN PROSPECTUS

Item 14. Other Expenses of Issuance and Distribution

The following table sets forth an itemization of the various expenses, all of which we will pay, in connection with the issuance and distribution of the common stock being registered. All of the amounts shown are estimated except the SEC Registration Fee.

SEC Registration Fee	\$ 2,303.00
NASD Filing Fee	13,000.00
Printing and Engraving Fees	30,000.00
Legal Fees and Expenses	70,000.00
Accounting Fees and Expenses	35,000.00
Miscellaneous	30,000.00
Total	<u>\$ 180,303.00</u>

Item 15. Indemnification of Directors and Officers

Our Fourth Amended and Restated Certificate of Incorporation, as may be amended and in effect from time to time, which we refer to as the Certificate, provides that our directors shall not be personally liable to us or our stockholders for monetary damages for any breach of fiduciary duty as a director, except for liability for breach of the director's duty of loyalty to us or our stockholders, for acts or omissions not in good faith or involving intentional misconduct or a knowing violation of law, for payment of dividends or approval of stock purchases or redemptions that are prohibited by the General Corporation Law of the State of Delaware, as amended, which we refer to as the DGCL, or for any transaction from which the director derived an improper personal benefit. Under the DGCL, our directors have a fiduciary duty to us that is not eliminated by this provision of the Certificate and, in appropriate circumstances, equitable remedies such as injunctive or other forms of non-monetary relief will remain available. This provision also does not affect our directors' responsibilities under any other laws, such as federal securities laws or state or federal environmental laws.

Section 145 of the DGCL empowers a corporation to indemnify its directors and officers against expenses (including attorneys' fees), judgments, fines and amounts paid in settlements actually and reasonably incurred by them in connection with any action, suit or proceeding brought by third parties by reason of the fact that they were or are directors or officers of the corporation, if they acted in good faith, in a manner they reasonably believed to be in or not opposed to the best interests of the corporation and, with respect to any criminal action or proceeding, had no reasonable cause to believe that their conduct was unlawful. The DGCL provides further that the indemnification permitted thereunder shall not be deemed exclusive of any other rights to which the directors and officers may be entitled under the corporation's bylaws, any agreement, a vote of stockholders or otherwise. The Certificate provides that, to the fullest extent permitted by Section 145 of the DGCL, we shall indemnify any person who is or was a director or officer of us, or is or was serving at our request as a director, officer or trustee of another corporation, partnership, joint venture, trust, employee benefit plan or other enterprise, against the expenses, liabilities or other matters referred to in or covered by Section 145 of the DGCL. Our bylaws provide that we will indemnify any person who was or is a party or threatened to be made a party to any proceeding by reason of the fact that such person is or was a director or officer of us or is or was serving at our request as a director, officer or trustee of another corporation, partnership, joint venture, trust, employee benefit plan or other enterprise to the fullest extent permitted by the DGCL. In addition, we have entered into agreements with each of our directors and officers under which, among other things, we have agreed to indemnify the director or officer against expenses incurred in any proceeding, including any action by us, in which the director or officer was, is or is threatened to be made a party or a participant by reason of his or her status as a present or former director, officer, employee or agent of us or, at our request, any other corporation, partnership, joint venture, trust,

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employee benefit plan or other enterprise. At present, there is no pending litigation or proceeding involving any director or officer as to which indemnification will be required or permitted and we are not aware of any threatened litigation or proceeding that may result in a claim for such indemnification.

Section 145 of the DGCL also empowers a corporation to purchase insurance for its officers and directors for such liabilities. We maintain liability insurance for our officers and directors.

Any underwriting agreements that we may enter into will likely provide for the indemnification of us, our controlling persons, our directors and certain of our officers by the underwriters against certain liabilities, including liabilities under the Securities Act.

Item 16. Exhibits

The exhibits to this registration statement are listed in the Exhibit Index to this registration statement, which Exhibit Index is hereby incorporated by reference.

Item 17. Undertakings

(a) The undersigned registrant hereby undertakes:

(1) To file, during any period in which offers or sales are being made, a post-effective amendment to this registration statement:

(i) To include any prospectus required by Section 10(a)(3) of the Securities Act of 1933;

(ii) To reflect in the prospectus any facts or events arising after the effective date of the registration statement (or the most recent post-effective amendment thereof) which, individually or in the aggregate, represent a fundamental change in the information set forth in the registration statement. Notwithstanding the foregoing, any increase or any decrease in volume of securities offered (if the total dollar value of securities offered would not exceed that which was registered) and any deviation from the low or high end of the estimated maximum offering range may be reflected in the form of prospectus filed with the Commission pursuant to Rule 424(b) if, in the aggregate, the changes in volume and price represent no more than a 20% change in the maximum aggregate offering price set forth in the "Calculation of Registration Fee" table in the effective registration statement; and

(iii) To include any material information with respect to the plan of distribution not previously disclosed in the registration statement or any material change to such information in the registration statement;

provided, however, that paragraphs (a)(1)(i), (a)(1)(ii) and (a)(1)(iii) do not apply if the information required to be included in a post-effective amendment by those paragraphs is contained in reports filed with or furnished to the Commission by the registrant pursuant to section 13 or section 15(d) of the Securities Exchange Act of 1934 that are incorporated by reference in the registration statement, or is contained in a form of prospectus filed pursuant to Rule 424(b) that is a part of the registration statement.

(2) That, for the purpose of determining any liability under the Securities Act of 1933, each such post-effective amendment shall be deemed to be a new registration statement relating to the securities offered therein, and the offering of such securities at that time shall be deemed to be the initial *bona fide* offering thereof.

(3) To remove from registration by means of a post-effective amendment any of the securities being registered which remain unsold at the termination of the offering.

(4) That, for the purpose of determining liability under the Securities Act of 1933 to any purchaser:

(i) Each prospectus filed by the registrant pursuant to Rule 424(b)(3) shall be deemed to be part of the registration statement as of the date the filed prospectus was deemed part of and included in the registration statement; and

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(ii) Each prospectus required to be filed pursuant to Rule 424(b)(2), (b)(5), or (b)(7) as part of a registration statement in reliance on Rule 430B relating to an offering made pursuant to Rule 415(a)(1)(i), (vii), or (x) for the purpose of providing the information required by section 10(a) of the Securities Act of 1933 shall be deemed to be part of and included in the registration statement as of the earlier of the date such form of prospectus is first used after effectiveness or the date of the first contract of sale of securities in the offering described in the prospectus. As provided in Rule 430B, for liability purposes of the issuer and any person that is at that date an underwriter, such date shall be deemed to be a new effective date of the registration statement relating to the securities in the registration statement to which that prospectus relates, and the offering of such securities at that time shall be deemed to be the initial *bona fide* offering thereof. Provided, however, that no statement made in a registration statement or prospectus that is part of the registration statement or made in a document incorporated or deemed incorporated by reference into the registration statement or prospectus that is part of the registration statement will, as to a purchaser with a time of contract of sale prior to such effective date, supersede or modify any statement that was made in the registration statement or prospectus that was part of the registration statement or made in any such document immediately prior to such effective date.

(5) That, for the purpose of determining liability of the registrant under the Securities Act of 1933 to any purchaser in the initial distribution of the securities, in a primary offering of securities of the undersigned registrant pursuant to this registration statement, regardless of the underwriting method used to sell the securities to the purchaser, if the securities are offered or sold to such purchaser by means of any of the following communications, the undersigned registrant will be a seller to the purchaser and will be considered to offer or sell such securities to such purchaser:

- (i) Any preliminary prospectus or prospectus of the undersigned registrant relating to the offering required to be filed pursuant to Rule 424;
- (ii) Any free writing prospectus relating to the offering prepared by or on behalf of the undersigned registrant or used or referred to by the undersigned registrant;
- (iii) The portion of any other free writing prospectus relating to the offering containing material information about the undersigned registrant or its securities provided by or on behalf of the undersigned registrant; and
- (iv) Any other communication that is an offer in the offering made by the undersigned registrant to the purchaser.

(b) The undersigned registrant hereby undertakes that, for purposes of determining any liability under the Securities Act of 1933, each filing of the registrant's annual report pursuant to Section 13(a) or Section 15(d) of the Securities Exchange Act of 1934 (and, where applicable, each filing of an employee benefit plan's annual report pursuant to Section 15(d) of the Securities Exchange Act of 1934) that is incorporated by reference in the registration statement shall be deemed to be a new registration statement relating to the securities offered therein, and the offering of such securities at that time shall be deemed to be the initial *bona fide* offering thereof.

(c) Insofar as indemnification for liabilities arising under the Securities Act of 1933 may be permitted to directors, officers and controlling persons of the registrant, the registrant has been advised that in the opinion of the Securities and Exchange Commission such indemnification is against public policy as expressed in the Act and is, therefore, unenforceable. In the event that a claim for indemnification against such liabilities (other than the payment by the registrant of expenses incurred or paid by a director, officer or controlling person of the registrant in the successful defense of any action, suit or proceeding) is asserted by such director, officer or controlling person in connection with the securities being registered, the registrant will, unless in the opinion of its counsel the matter has been settled by controlling precedent, submit to a court of appropriate jurisdiction the question whether such indemnification by it is against public policy as expressed in the Act and will be governed by the final adjudication of such issue.

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/s/ ERROL B. DE SOUZA
Errol B. De Souza

Director

May 25, 2007

/s/ ALAN W. DUNTON
Alan W. Dunton

Director

May 25, 2007

/s/ ELAINE V. JONES
Elaine V. Jones

Director

May 25, 2007

/s/ JOHN P. RICHARD
John P. Richard

Director

May 25, 2007

EXHIBIT INDEX

Exhibit Number	Description
4.1	Fourth Amended and Restated Certificate of Incorporation of the Company (incorporated by reference to Exhibit 4.1 to the Company's Registration Statement on Form S-8, as filed with the SEC on May 8, 2006 (Registration No. 333-133881))
4.2	Bylaws of the Company (incorporated by reference to Exhibit 4.2 to the Company's Registration Statement on Form S-8, as filed with the SEC on May 8, 2006 (Registration No. 333-133881))
4.3	Specimen common stock certificate (incorporated by reference to Exhibit 4.1 to Amendment No. 3 to the Company's Registration Statement on Form S-1/A, as filed with the SEC on March 16, 2006 (Registration No. 333-131050))
4.4(a)	Third Amended and Restated Investor Rights Agreement, dated as of May 12, 2004, by and among the Company and certain stockholders of the Company (incorporated by reference to Exhibit 4.2(a) to the Company's Registration Statement on Form S-1, as filed with the SEC on January 17, 2006 (Registration No. 333-131050))
4.4(b)	Amendment No. 1, dated December 6, 2004, to Third Amended and Restated Investor Rights Agreement, dated May 12, 2004 (incorporated by reference to Exhibit 4.2(b) to the Company's Registration Statement on Form S-1, as filed with the SEC on January 17, 2006 (Registration No. 333-131050))
4.4(c)	Amendment No. 2, dated March 16, 2006, to Third Amended and Restated Investor Rights Agreement, dated May 12, 2004 (incorporated by reference to Exhibit 4.2(c) to Amendment No. 4 to the Company's Registration Statement on Form S-1/A, as filed with the SEC on March 24, 2006 (Registration No. 333-131050))
5.1	Opinion of Mintz, Levin, Cohn, Ferris, Glovsky and Popeo, P.C. with respect to the legality of the shares of common stock being registered
23.1	Consent of Ernst & Young LLP
23.2	Consent of Mintz, Levin, Cohn, Ferris, Glovsky and Popeo, P.C. (included in the opinion filed as Exhibit 5.1)
24.1	Power of Attorney (included on the signature page)

May 25, 2007

Targacept, Inc.
200 East First Street, Suite 300
Winston-Salem, NC 27101

Ladies and Gentlemen:

We have acted as counsel to Targacept, Inc., a Delaware corporation (the "Company"), in connection with the preparation and filing with the Securities and Exchange Commission (the "Commission") of a Registration Statement on Form S-3 (the "Registration Statement"), pursuant to which the Company is registering under the Securities Act of 1933, as amended (the "Securities Act"), up to \$75,000,000 aggregate principal amount of its common stock, \$0.01 par value per share (the "Common Stock"), which may be sold by the Company from time to time.

In connection with this opinion, we have examined the Company's Fourth Amended and Restated Certificate of Incorporation, the Company's Restated Bylaws, such other records of the corporate proceedings of the Company and certificates of the Company's officers as we have deemed relevant, and the Registration Statement and the exhibits thereto.

In our examination, we have assumed the genuineness of all signatures, the legal capacity of natural persons, the authenticity of all documents submitted to us as originals, the conformity to original documents of all documents submitted to us as certified or photostatic copies and the authenticity of the originals of such copies.

Based upon the foregoing, we are of the opinion that the Common Stock, when (i) specifically authorized for issuance by the Company's Board of Directors or an authorized committee thereof (the "Authorizing Resolutions"), (ii) the Registration Statement, as finally amended (including all post-effective amendments), has become effective under the Securities Act, (iii) an appropriate Prospectus Supplement with respect to the applicable shares of Common Stock has been prepared, delivered and filed in compliance with the Securities Act and the applicable rules and regulations thereunder, (iv) if the applicable shares of Common Stock are to be sold pursuant to an Underwriting Agreement, such Underwriting Agreement with respect to the applicable shares of Common Stock has been duly authorized, executed and delivered by the Company and the other parties thereto, (v) the Common Stock has been issued and sold as contemplated by the Registration Statement, and (vi) the Company has received the consideration provided for in the Authorizing Resolutions, the Common Stock will be validly issued, fully paid and nonassessable.

Our opinion is limited to the General Corporation Law of the State of Delaware (including the applicable provisions of the Delaware Constitution and the reported judicial decisions interpreting such laws) and the federal laws of the United States, and we express no opinion with respect to the laws of any other jurisdiction. To the extent that any applicable document is stated to be governed by the laws of another jurisdiction, we have assumed for purposes of this opinion that the laws of such jurisdiction are identical to the state laws of the State of Delaware.

Mintz, Levin, Cohn, Ferris, Glovsky and Popeo, P.C.

BOSTON | WASHINGTON | NEW YORK | STAMFORD | LOS ANGELES | PALO ALTO | SAN DIEGO | LONDON

Please note that we are opining only as to the matters expressly set forth herein, and no opinion should be inferred as to any other matters. This opinion is based upon currently existing statutes, rules, regulations and judicial decisions, and we disclaim any obligation to advise you of any change in any of these sources of law or subsequent legal or factual developments which might affect any matters or opinions set forth herein.

We hereby consent to the filing of this opinion with the Commission as an exhibit to the Registration Statement in accordance with the requirements of Item 601(b)(5) of Regulation S-K under the Securities Act and to the use of this Firm's name therein and in the Prospectus under the caption "Legal Matters." In giving such consent, we do not hereby admit that we are in the category of persons whose consent is required under Section 7 of the Securities Act or the rules and regulations of the Commission.

Very truly yours,

/s/ Mintz, Levin, Cohn, Ferris, Glovsky and Popeo, P.C.

MINTZ, LEVIN, COHN, FERRIS, GLOVSKY AND POPEO,
P.C.

CONSENT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

We consent to the reference to our firm under the caption "Experts" in the Registration Statement (Form S-3) and related Prospectus of Targacept, Inc. for the registration of \$75,000,000 of its common stock and to the incorporation by reference therein of our report dated March 20, 2007, with respect to the financial statements of Targacept, Inc. included in its Annual Report (Form 10-K) for the year ended December 31, 2006, filed with the Securities and Exchange Commission.

/s/ Ernst & Young LLP

Greensboro, North Carolina
May 23, 2007