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

FORM 8-K

CURRENT REPORT

Pursuant to Section 13 or 15(d) of the Securities Exchange Act of 1934

Date of Report (Date of earliest event reported): October 7, 2010

TARGACEPT, INC.

(Exact name of registrant as specified in its charter)

Delaware	**000-51173**	**56-2020050**
(State or other jurisdiction of incorporation)	**(Commission File Number)**	**(IRS Employer Identification No.)**

200 East First Street, Suite 300 **Winston-Salem, North Carolina** **(Address of principal executive offices)**	**27101** **(Zip Code)**

(336) 480–2100
Registrant's telephone number, including area code

Check the appropriate box below if the Form 8-K filing is intended to simultaneously satisfy the filing obligation of the registrant under any of the following provisions:

☐ Written communications pursuant to Rule 425 under the Securities Act (17 CFR 230.425)

☐ Soliciting material pursuant to Rule 14a-12 under the Exchange Act (17 CFR 240.14a-12)

☐ Pre-commencement communications pursuant to Rule 14d-2(b) under the Exchange Act (17 CFR 240.14d-2(b))

☐ Pre-commencement communications pursuant to Rule 13e-4(c) under the Exchange Act (17 CFR 240.13e-4(c))

Item 8.01 Other Events.

On October 7, 2010, Targacept, Inc. issued a press release announcing top-line results from a Phase 2 clinical trial of its product candidate AZD1446 in adults with attention deficit/hyperactivity disorder and providing an update on the status of the development program for AZD1446. The full text of the press release is attached as Exhibit 99.1 to this Current Report on Form 8-K.

Item 9.01 Financial Statements and Exhibits.

(d) Exhibits

Exhibit Number	Description
99.1	Press release dated October 7, 2010

SIGNATURES

Pursuant to the requirements of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned hereunto duly authorized.

TARGACEPT, INC.

Date: October 7, 2010

/S/ PETER A. ZORN

Peter A. Zorn
Senior Vice President, Legal Affairs, General Counsel and Secretary

EXHIBIT INDEX

Exhibit Number	Description
99.1	Press release dated October 7, 2010

Exhibit 99.1

Targacept Announces Top-Line Results of Phase 2 Trial of AZD1446 in Adults with ADHD and Provides Update on Status of AZD1446 Development Program

Winston-Salem, NC – October 7, 2010 – Targacept, Inc. (NASDAQ: TRGT) today announced top-line results from a Phase 2 clinical trial of AZD1446 conducted by AstraZeneca in adults with attention deficit/hyperactivity disorder (ADHD). The study was one of several early clinical studies designed by AstraZeneca to obtain, in addition to safety and tolerability information, a signal of efficacy to guide dosing in potential later-stage development of AZD1446 in either or both of Alzheimer's disease and ADHD. AZD1446 is a selective modulator of the alpha4beta2 neuronal nicotinic receptor and was licensed by Targacept to AstraZeneca pursuant to a 2005 collaboration agreement.

The study was a multi-center, randomized, double-blind, placebo-controlled, cross-over trial that assessed the efficacy, safety and pharmacokinetics of two weeks of treatment with AZD1446 as compared to placebo. Each subject was classified as a user of nicotine products or a non-user of nicotine products. Non-nicotine users received placebo and two out of three oral AZD1446 dose regimens, and nicotine users received placebo and two oral AZD1446 dose regimens.

In the trial, AZD1446 did not improve core symptoms of ADHD, as compared to placebo, as measured by the primary outcome measure, the Conners' Adult ADHD Rating Scale-Investigator Rated Total ADHD Symptoms score (CAARS-INV). Based on this finding, Targacept does not expect AstraZeneca to progress AZD1446 as a treatment for ADHD. A decision by AstraZeneca as to potential future development of AZD1446 in Alzheimer's disease is expected in the coming months.

Positive results were obtained in the study on three of five tasks of the CogState computerized test battery, secondary outcome measures designed to assess important cognitive functions such as learning and memory. Non-nicotine using subjects who received 80mg of AZD1446 once daily showed an improvement on the Groton Maze Learning Task ($p=0.031$) and the International Shopping List Task – Immediate Recall ($p=0.007$). Non-nicotine using subjects who received 80mg of AZD1446 three times daily showed an improvement on the International Shopping List Task – Immediate Recall ($p=0.010$) and the International Shopping List Task – Delayed Recall ($p=0.086$). The p-values reported are not statistically adjusted for multiplicity. AZD1446 did not demonstrate similar superiority at any dose on any of these measures in the nicotine user dataset. Other secondary outcome measures of the study did not demonstrate a drug effect.

AZD1446 was generally well tolerated in the study, and no serious adverse events were reported. Further analyses of the full dataset from the trial are ongoing.

"While we are disappointed in the results on the primary outcome measure in this ADHD trial, we are encouraged by the memory and learning findings from the CogState test battery and believe they support further study of AZD1446 as a treatment for Alzheimer's disease," said J. Donald deBethizy, Ph.D., Targacept's President and Chief Executive Officer.

In addition to the trial in adults with ADHD, the AZD1446 program includes three other early clinical studies intended to inform a decision by AstraZeneca as to potential future development in Alzheimer's disease. Two of these studies have completed. In a four-week trial designed primarily to evaluate the safety and tolerability of AZD1446 when administered with donepezil, the most commonly prescribed Alzheimer's disease treatment, to Alzheimer's disease patients, AZD1446 exhibited a safety and

tolerability profile acceptable for further development. As expected with a short dosing period and small number of subjects, AZD1446 did not show an effect on surrogate measures of cognition and global function in the study. In a separate trial designed to explore the effects of a single dose of AZD1446 in healthy volunteers with drug-induced cognitive impairment, pro-cognitive signals were observed on various secondary outcome measures, but neither AZD1446 nor the positive comparator donepezil demonstrated a statistically significant effect on the study's primary outcome measure. Results from a fourth trial, designed to evaluate the pharmacodynamic effect of AZD1446 and donepezil on brain response in Alzheimer's disease patients as assessed by electroencephalography (EEG), are expected early next year.

About the Phase 2 Trial in Adults with ADHD

The Phase 2 clinical trial in adults with ADHD was a double blind, placebo controlled cross-over study conducted by AstraZeneca at six sites in the United States. A total of 79 patients aged 18 to 65 years were randomized to study treatment, including 27 nicotine users and 52 non-nicotine users. Nicotine users received in random order 80mg of AZD1446 once daily, 80mg of AZD1446 three times daily and placebo, in each case for two weeks. Non-nicotine users received in random order two of the following three dosing regimens – 80mg of AZD1446 once daily, 80mg of AZD1446 three times daily and 10mg AZD1446 three times daily – as well as placebo, in each case for two weeks. For both groups, consecutive dosing periods were separated by a three-week washout period, for a total study duration of twelve weeks. As a result of the cross-over design, each patient served as his or her own control.

About AZD1446

AZD1446 is a selective modulator of the alpha4beta2 neuronal nicotinic receptor. The compound was discovered by Targacept scientists as part of a now-completed research collaboration conducted with AstraZeneca under a 2005 collaboration agreement.

About Targacept

Targacept is developing a diverse pipeline of innovative NNR Therapeutics(TM) for difficult-to-treat diseases and disorders of the nervous system. NNR Therapeutics selectively modulate the activity of specific neuronal nicotinic receptors, a unique class of proteins that regulate vital biological functions that are impaired in various disease states. Targacept's lead program, TC-5214, is in Phase 3 development as an adjunct treatment for major depressive disorder. Targacept leverages its scientific leadership and proprietary drug discovery platform Pentad(TM) to generate novel small molecule product candidates to fuel its pipeline and attract significant collaborations with global pharmaceutical companies. Targacept is committed to Building Health, Restoring Independence(TM) for patients. For more information, please visit www.targacept.com.

Forward-Looking Statements

This press release includes "forward-looking statements" made under the provisions of the Private Securities Litigation Reform Act of 1995. Forward-looking statements include statements other than statements of historical fact regarding, without limitation: future development of AZD1446 in Alzheimer's disease, ADHD or at all; the timing for a decision by AstraZeneca as to whether to conduct any future development of AZD1446 in Alzheimer's disease; the timing for completion of or for availability of results from the ongoing study of AZD1446; the benefits or competitive position of AZD1446; or Targacept's plans, expectations or future operations, financial position, revenues, costs or

expenses. Actual results, performance or experience may differ materially from those expressed or implied by any forward-looking statement as a result of various important factors, including, without limitation, risks and uncertainties relating to: the significant control that AstraZeneca has over the development of AZD1446, including as to whether to conduct further development of AZD1446 in Alzheimer's disease, ADHD or at all; the conduct and results of clinical trials and non-clinical studies and assessments of AZD1446, including the performance of third parties engaged to execute such trials, studies and assessments, delays resulting from any changes to the applicable protocols and difficulties or delays in the completion of subject enrollment or data analysis; the risk that any positive findings in a completed clinical trial of AZD1446 may not be replicated in future clinical trials; and the timing and success of submission, acceptance and approval of regulatory filings. These and other risks and uncertainties are described in greater detail under the heading "Risk Factors" in Targacept's most recent Annual Report on Form 10-K and in other filings that it makes with the Securities and Exchange Commission. As a result of the risks and uncertainties, the results or events indicated by the forward-looking statements may not occur. Targacept cautions you not to place undue reliance on any forward-looking statement.

In addition, any forward-looking statement in this press release represents Targacept's views only as of the date of this press release and should not be relied upon as representing its views as of any subsequent date. Targacept disclaims any obligation to update any forward-looking statement, except as required by applicable law.

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