

Overview

Targacept is developing a diverse pipeline of innovative NNR TherapeuticsTM 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 being co-developed with AstraZeneca and is in Phase 3 clinical trials as an adjunct treatment for major depressive disorder. Targacept leverages its scientific leadership and proprietary drug discovery platform PentadTM to generate novel small molecule product candidates to fuel its pipeline and attract significant collaborations with global pharmaceutical companies.

Deep Pipeline - Areas of Large Unmet Medical Need

| | | Preclinical | Phase 1 | Phase 2 | Phase 3 | Market |
|----------------------------------|-------------------|-------------|---------|---------|---------|-------------|
| Major Depressive Disorder | | | | | | |
| Adjunct Treatment | TC-5214 | | | | | AstraZeneca |
| Switch Monotherapy | TC-5214 | | | | | AstraZeneca |
| Cognitive Disorders | | | | | | |
| Residual Phase Schizophrenia | TC-5619 | | | | | |
| ADHD | TC-5619 | | | | | |
| Alzheimer's Disease | TC-5619 | | | | | |
| ADHD / Alzheimer's Disease | AZD3480 (TC-1734) | | | | | AstraZeneca |
| Alzheimer's Disease | AZD1446 (TC-6683) | | | | | AstraZeneca |
| Inflammatory Disorders | | | | | | |
| Asthma | TC-6987 | | | | | |
| Type 2 Diabetes | TC-6987 | | | | | |

Program Highlights

Clinical-stage pipeline of first-in-class small molecule product candidates targeting large commercial opportunities

TC-5214

A nicotinic channel modulator in co-development with AstraZeneca as an adjunct treatment for patients with major depressive disorder who do not respond adequately to initial SSRI/SNRI therapy. Global Phase 3 studies, known collectively as the RENAISSANCE Program, initiated in June 2010, with a goal of an NDA filing in the second half of 2012.

TC-5619

An $\alpha 7$ NNR modulator with potentially broad application across multiple cognitive disorders. Two Phase 2 studies complete. Planning underway for a Phase 2b study in residual phase schizophrenia, which includes both cognitive dysfunction and negative symptoms of schizophrenia, with additional development in either or both of Alzheimer's disease and ADHD also under consideration.

AZD3480 and AZD1446

Novel $\alpha 4\beta 2$ NNR modulators subject to a global collaboration with AstraZeneca. For AZD3480, initiation by Targacept of a Phase 2 study in Alzheimer's disease and decision by AstraZeneca regarding potential further development in ADHD both expected in the second half of 2011. Decision by AstraZeneca regarding potential further development of AZD1446 expected in the third quarter of 2011.

TC-6987

An $\alpha 7$ NNR modulator in Phase 2 development for inflammatory disorders. Initial studies in asthma and type 2 diabetes designed to guide selection of indications for which product candidate is best suited for later-stage development ongoing, with goal to complete both by the end of 2011.

PRIMARY THERAPEUTIC FOCUS

Diseases and disorders of the nervous system

THERAPEUTIC TARGETS

Neuronal nicotinic receptors

STRATEGIC COLLABORATIONS

AstraZeneca AB (two)

- TC-5214 (major depressive disorder)
- Cognitive disorders (includes ADHD, Alzheimer's disease, etc.)

EXECUTIVE TEAM

J. Donald deBethizy, Ph.D.

President and
Chief Executive Officer

Merouane Bencherif, M.D., Ph.D.

Senior Vice President,
Preclinical Research

Jeffrey P. Brennan

Senior Vice President, Business
and Commercial Development
and Chief Business Officer

William S. Caldwell, Ph.D.

Senior Vice President, Drug
Discovery and Development

Geoffrey C. Dunbar, M.D.

Senior Vice President, Clinical
Development and Regulatory Affairs
and Chief Medical Officer

Karen A. Hicks

Vice President, Human Resources

Mauri K. Hodges, C.P.A., C.C.P.

Vice President, Finance and
Corporate Systems and Controller

Alan A. Musso, C.P.A., C.M.A.

Senior Vice President, Finance and
Administration, Chief Financial
Officer and Treasurer

Peter A. Zorn, Esq.

Senior Vice President, Legal Affairs,
General Counsel and Secretary

INVESTOR INFORMATION

NASDAQ Symbol: TRGT

Shares Outstanding at 3/31/11:
29.1 million

Cash and Investments at 3/31/11:
\$230.3 million

Pentad™ – Proprietary Drug Design Platform to Sustain Pipeline

Pentad combines sophisticated computer-based molecular design methodologies and extensive biological data from a library of diverse compounds developed and collected over more than 25 years. This information is used to enhance research and development efficiency by identifying and prioritizing NNR Therapeutics that may have a greater likelihood of clinical success.

About Neuronal Nicotinic Receptors

Neuronal nicotinic receptors, which Targacept refers to as NNRs, are located throughout the nervous system and act as 'volume knobs.' NNRs play a key role in a variety of biological processes including memory, attention, mood, pain, inflammation, movement and cell survival.

Target Indications for Targacept's NNR Therapeutics

- Major depressive disorder
- Residual phase schizophrenia (negative symptoms + cognitive dysfunction)
- Alzheimer's disease
- ADHD
- Inflammatory disorders, such as asthma and type 2 diabetes
- Gastrointestinal disorders
- Parkinson's disease
- Smoking cessation

Targacept's NNR Therapeutics Target Significant Underserved Medical Needs

| | Prevalence ¹ | Global Sales |
|------------------------------|---------------------------|-----------------------------|
| Major depressive disorder | 42.4 million | \$ 20 billion ² |
| Residual phase schizophrenia | 4.6 million | No approved products |
| ADHD | 44.9 million | \$ 4.2 billion ³ |
| Alzheimer's disease | 9.7 million | \$ 5.6 billion ³ |
| Asthma | 30.2 million | \$11.9 billion |
| Diabetes | 29.6 million ⁴ | \$30.1 billion |

Contact Information

Investor Contact:

Alan Musso
SVP, Finance and Administration & CFO
Targacept, Inc.
Phone: 336.480.2186
alan.musso@targacept.com

Media Contact:

Michelle Linn
President
Linnden Communications
Phone: 508.362.3087
Mobile: 774.696.3803
linnmich@comcast.net

Targacept, Inc.

200 East First Street
Suite 300
Winston-Salem, NC 27101-4165
Phone: 336.480.2100
Facsimile: 336.480.2107
www.targacept.com

Forward-Looking Statements

This Corporate Fact Sheet 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: the progress or scope of development of TC-5214, TC-5619, AZD3480, AZD1446 and TC-6987, or the timing for initiation or completion of or availability of results from any clinical trial or for submission or approval of any regulatory filing (such as an NDA for TC-5214); the timing for an advancement decision by AstraZeneca with respect to AZD3480 or AZD1446; the competitive position of any Targacept product candidate or the commercial opportunity in any target indication; 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 the risks and uncertainties described 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 that Targacept faces, the results or events indicated by any forward-looking statement may not occur. Targacept cautions you not to place undue reliance on any forward-looking statement. Any forward-looking statement in this Corporate Fact Sheet represents Targacept's views only as of the date of this Corporate Fact Sheet 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. In addition, market and industry statistics contained in this Corporate Fact Sheet are based on information available to Targacept that it believes to be reliable but has not independently verified.

1. In world's seven major pharmaceutical markets (France, Germany, Italy, Japan, Spain, the United Kingdom and the United States) in 2009 (Patient Base, a database of epidemiology available through Decision Resources, Inc., May 2010).
2. Report of Datamonitor (October 2009) (amount shown includes all antidepressant sales in absence of an estimate for sales as adjunct therapy).
3. The CNS Market Outlook to 2013 (Business Insights, September 2008).
4. Includes type 1 and type 2 diabetes.

BOARD OF DIRECTORS

Mark Skaletsky (Chairman)
Chairman and CEO
Fenway Pharmaceuticals

M. James Barrett, Ph.D.
General Partner
New Enterprise Associates

Charles A. Blixt, Esq.
Former General Counsel (Retired)
Reynolds American

Julia R. Brown
Former Executive Vice President
and Advisor to the CEO (Retired)
Amylin Pharmaceuticals

G. Steven Burrill
CEO
Burrill & Company

J. Donald deBethizy, Ph.D.
President and CEO
Targacept

Errol B. De Souza, Ph.D.
President and CEO
Biodel

Alan W. Dunton, M.D.
Pharmaceutical/Biotechnology
Consultant
Danerius

John P. Richard
Managing Director
Georgia Venture Partners

Ralph Snyderman, M.D.
Chancellor Emeritus and James B.
Duke Professor of Medicine
Duke University