

FORM 6-K
SECURITIES AND EXCHANGE COMMISSION

Washington, D.C. 20549

Report of Foreign Private Issuer

Pursuant to rule 13a-16 or 15d-16 of the Securities Exchange Act of 1934
for the month of February 2010

Compugen Ltd.
(Translation of registrant's name in English)

72 Pinchas Rosen Street, Tel-Aviv 69512, Israel
(Address of principal executive offices)

Indicate by check mark whether the registrant files or will file annual reports under cover Form 20-F or Form 40-F.

Form 20-F X

Form 40-F

On February 2, 2010, Compugen Ltd. (the "Registrant") issued a Press Release, filed as Exhibit 1 to this Report on Form 6-K, which is hereby incorporated by reference herein.

SIGNATURE

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, thereunto duly authorized.

Compugen Ltd.
(Registrant)
By: Ms. Dikla Czaczkes Axselbrad
Title: Chief Financial Officer
Date: February 2, 2010



Compugen Discovers Novel Protein for Treatment of Autoimmune Diseases

CGEN-15001 demonstrates potent decrease
in disease state in multiple sclerosis animal model

Novel parent molecule was both discovered, and predicted to be member of the B7/CD28
co-stimulatory protein family, through use of *in silico* LEADS Platform

Tel Aviv, Israel, February 2, 2010 --- Compugen Ltd. (NASDAQ: CGEN) announced today the discovery and experimental validation of CGEN-15001 for the treatment of autoimmune disorders. CGEN-15001 is the extracellular region of a previously unknown membrane protein in the B7/CD28 family. The existence and potential utility of the newly discovered parent protein from which CGEN-15001 is derived was predicted *in silico* utilizing Compugen's LEADS Platform and other proprietary algorithms.

Autoimmune diseases develop when defects in the immune system lead the body to attack its own cells, tissues, and organs and include more than 80 chronic, and often disabling, illnesses. Among the most common autoimmune diseases are rheumatoid arthritis, systemic lupus erythematosus, multiple sclerosis, inflammatory bowel disease, and type 1 diabetes. Collectively, autoimmune diseases are among the most prevalent diseases, affecting an estimated 25 million people in the U.S.

CGEN-15001 is a novel soluble recombinant fusion protein corresponding to the extracellular region of the Compugen discovered parent protein. The discovery of the parent protein, which is a membrane protein, was accomplished through the incorporation in Compugen's LEADS Platform of additional algorithms specifically designed to predict novel members of the B7/CD28 family of co-stimulatory proteins. This approach relied on Compugen's proprietary understandings and modeling of genomic structure, gene expression, protein structural domains, and cellular localization. Compugen has filed for patent coverage on both the parent protein, which potentially has other medical uses such as a target for antibody therapeutics, and CGEN-15001.

The *in vivo* validation of CGEN-15001 utilized a mouse model of multiple sclerosis, relapsing-remitting experimental autoimmune encephalomyelitis (R-EAE). In this model, administration of CGEN-15001 resulted in potent amelioration of the disease state. These results indicate that CGEN-15001 could have therapeutic utility for the treatment of multiple sclerosis and other autoimmune diseases, such as rheumatoid arthritis, systemic lupus erythematosus, inflammatory bowel disease, and type 1 diabetes. Earlier *in vitro* studies validated the predicted functional activity of CGEN-15001 as a new member of the B7/CD28 family proteins.

Professor Stephen Miller from Northwestern University, a leading scientist in this field who supervised the studies, stated, "Our studies have indicated robust disease suppressing activity for CGEN-15001 in the SJL R-EAE model, a recognized mouse model for multiple sclerosis. These studies have also demonstrated that CGEN-15001 has the unique ability to inhibit proliferation, differentiation, and cytokine production of pro-inflammatory Th1 and Th17 responses while at the same time sparing or actually promoting regulatory Th2-derived cytokines. As far as I am aware, this potentially very beneficial pattern of inhibiting Th1/Th17

while promoting Th2 responses is unique among the reagents targeting the B7 family of co-stimulatory molecules that have been published to date.”

Compugen’s VP R&D, Dr. Zurit Levine stated, “We are extremely pleased by this further demonstration of the unique discovery capability that has been created at Compugen. In view of its recognized potential in the largely unmet and critical field of immune regulation, the B7/CD28 co-stimulation protein family has been an area of extensive research for a number of years. In our opinion, in addition to providing Compugen with a very attractive product candidate, the predictive discovery and experimental validation of a previously unknown member of this extensively researched protein family represents a major milestone in the transition from experimentally based therapeutic discovery to *in silico* prediction and selection.”

About the B7/CD28 protein family

Members of the B7/CD28 family have been intensively studied over the past decade and have brought much excitement to the field of immune regulation. The activation and development of an adaptive immune response is initiated by the engagement of a T-cell antigen receptor by an antigenic peptide-MHC complex. The outcome of this engagement is determined by both positive and negative co-stimulatory signals, generated mainly by the interaction between the B7 family and their receptor CD28 family. A growing body of evidence indicates that the dysfunction of immune regulation contributes to the development of autoimmune diseases. Positive and negative co-stimulatory pathways play critical roles in immune regulation and are considered potential targets for modulating chronic inflammation in autoimmune diseases. To date, one soluble recombinant fusion protein, that selectively blocks the co-stimulatory signal mediated by the B7/CD28 pathway, has been cleared for marketing in the U.S. for the treatment of moderate to severe rheumatoid arthritis, and is in clinical trials for other autoimmune indications. In addition, a number of clinical and preclinical studies of this protein family are underway at various companies.

About LEADS

The LEADS platform provides a comprehensive predictive view of the human transcriptome, proteome and peptidome, and serves as a rich infrastructure for the discovery of novel genes, transcripts and proteins. It includes extensive gene information and annotation, such as splice variants, antisense genes, SNPs, novel genes and RNA editing. At the protein level, LEADS provides full protein annotation, including homologies, domain information, subcellular localization, peptide prediction and novelty status.

About Compugen

Compugen is a leading drug and diagnostic product candidate discovery company. Unlike traditional high throughput trial and error experimental based discovery, Compugen’s discovery efforts are based on *in silico* (by computer) prediction and selection utilizing a growing number of field focused proprietary discovery platforms accurately modeling biological processes at the molecular level. Compugen’s growing number of collaborations with major pharmaceutical and diagnostic companies cover both (i) the licensing of product candidates discovered by Compugen during the validation of its discovery platforms and in its internal research, and (ii) “discovery on demand” agreements where existing or new Compugen discovery platforms are utilized to predict and select product candidates as required by our partner. In 2002, Compugen established an affiliate, Evogene Ltd. (www.evogene.com) (TASE: EVGN.TA), to utilize certain of the Company’s *in silico* predictive discovery capabilities in agricultural biotechnology. For additional information, please visit Compugen's corporate website at www.cgen.com.

This press release may contain "forward-looking statements" within the meaning of the Private Securities Litigation Reform Act of 1995. These statements include words such as “may”, “expects”, “anticipates”, “believes”, and “intends”, and describe opinions about future events. These forward-looking statements involve known and unknown risks and uncertainties that may

cause the actual results, performance or achievements of Compugen to be materially different from any future results, performance or achievements expressed or implied by such forward-looking statements. Some of these risks are: changes in relationships with collaborators; the impact of competitive products and technological changes; risks relating to the development of new products; and the ability to implement technological improvements. These and other factors are identified and more fully explained under the heading "Risk Factors" in Compugen's annual reports filed with the Securities and Exchange Commission.

Company contact:

Marjie Hadad

Global Media Liaison

Compugen Ltd.

Email: marjie@cgen.com

Tel: +972-54-536-5220