

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 December 2009

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 December 28, 2009, 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: December 28, 2009



Compugen Discovers Drug Target for Treatment of Epithelial Tumors

**Existence and utility of CGEN-671 predicted *in silico* through use of
Compugen's Monoclonal Antibody Targets Discovery Platform**

New Drug Target is splice variant of known cancer drug target

Tel Aviv, Israel, December 28, 2009 --- Compugen Ltd. (NASDAQ: CGEN) announced today the discovery and experimental validation of CGEN-671, a new drug target for multiple epithelial tumors. CGEN-671 is a membrane splice variant of CD55, a known drug target for gastric cancer for which monoclonal antibody (mAb) therapeutics are in clinical development by others. The potential application of CGEN-671 as a drug target was initially predicted *in silico* by Compugen through the use of its Monoclonal Antibody Targets Discovery Platform; the predicted molecule was then validated experimentally in multiple epithelial tumors. Epithelial tumors, also referred to as carcinomas, account for approximately 85% of all cancers, including the ten most prevalent cancers in the western world, such as breast, colorectal, lung, ovary, prostate and skin. Compugen has filed patent applications covering this novel splice variant and its various therapeutic and diagnostic utilities.

Initial experimental studies confirmed the existence of the predicted CGEN-671 transcript (mRNA) and demonstrated that, compared with normal tissue samples, it is highly expressed in colon carcinoma tissue. Furthermore, in these mRNA experiments, CGEN-671's expression level in various healthy tissues was up to 200 times lower than the expression level of the previously known cancer target CD55, suggesting that the Compugen discovered splice variant should be a superior drug target candidate for cancer treatment. In addition, the *in silico* prediction of CGEN-671 identified a unique sequence present in CGEN-671's extracellular domain that is not present in CD55. This sequence allows for the development of antibodies that specifically bind to CGEN-671 and do not recognize CD55.

Recently concluded immunohistochemistry (IHC) studies, by independent pathologists using CGEN-671 specific antibodies, further confirmed the predicted potential for CGEN-671 to serve as a therapeutic mAb target for colorectal, breast and lung cancer. In these studies, it was shown that CGEN-671 was over expressed in more than 75% of the tissue sections derived from the colorectal cancer samples and had a very low expression in most samples of normal colon tissue. Similar results were seen in breast cancer, where 75% of the tumor samples demonstrated significant over expression. In lung cancer, 50% of the tumor samples had over expression compared with normal tissues. These IHC results from diseased and healthy tissue sections strongly suggest significant potential for CGEN-671 as a drug target for clinical development of various types of mAb drug therapy for colorectal, breast and lung carcinomas, and possibly for additional epithelial derived tumors.

Dr. Anat Cohen-Dayag, president and co-CEO of Compugen stated, "We are extremely pleased to see Compugen's continuing success in utilizing its predictive platforms to discover previously unknown candidate molecules in key areas of unmet medical need. Also, of major significance for us is the fact that we have reached the point where we are now using multiple predictive capabilities in combination to accomplish this. The very exciting discovery and validation of CGEN-671 being announced today as well as the oncology target that is the subject of our recently announced

collaboration with Bayer Schering Pharma, are excellent examples of the unique capabilities obtained by combining synergistic predictive platforms, in these cases, alternative splicing and the identification of targets for monoclonal antibodies. In addition, the product candidate discovery platform that led to these oncology target discoveries, along with dozens of other potential mAb drug targets now at various stages of validation, use both LEADS and MED, two of our most sophisticated infrastructure platforms. After more than a decade building these capabilities, it is of course very gratifying to begin to see the results of these efforts.”

About Epithelial Tumors

Epithelial tumors, also referred to as carcinomas, account for approximately 85% of all cancers, including the ten most prevalent cancers in the western world, such as breast, colorectal, lung, ovary, prostate and skin. Epithelial cells are the cover and lining of every surface or cavity of the body. As well as covering the outside of the body, epithelial cells cover all body organs, e.g., the organs of the digestive system. They also line the body cavities, such as the inside of the chest cavity and the abdominal cavity. There are different types of epithelial cells, and all can develop into different types of epithelial cancers.

According to the Cancer Statistics Branch of the NCI in the SEER Cancer Statistics Review in the United States, breast, lung and colorectal cancer are the three most prevalent cancers in the US, with more than 100,000 new cases diagnosed yearly for each. Lung cancer is the leading cause of cancer related deaths in the US, with more than 150,000 deaths each year; colorectal and breast cancer are ranked second and third, respectively, with more than 40,000 deaths in the US annually for each.

About Compugen’s Monoclonal Antibody Targets Discovery Platform

Compugen’s Antibody Therapeutic Targets Discovery Platform relies heavily on Compugen’s LEADS and MED capabilities, two computational biology infrastructure platforms that serve as core components for the development of Compugen’s discovery platforms. The LEADS platform provides a comprehensive 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, RNA editing, etc. At the protein level, LEADS provides full protein annotation including homologies, domain information, subcellular localization, peptide prediction, and novelty status. The MED Platform is an integrated database composed of the results from more than 40,000 public and proprietary microarray experiments, normalized and organized into approximately 1,400 therapeutically relevant conditions (i.e. normal tissues, malignant tissues, tissues from drug treated patients, etc.). Utilizing a sophisticated query interface, the proprietary MED platform allows the simultaneous examination of the expression of genes and pathways across all 1,400 conditions and tissues as well as all 40,000 microarray experiments.

In addition to incorporating MED and LEADS, the mAb Targets Discovery Platform utilizes multiple data sources and algorithms to predict a large number of novel membrane proteins that can serve as targets for antibody therapeutics, such as for various cancer and autoimmune diseases. The selection of appropriate candidates from this large body of predicted membrane proteins is accomplished using sub-modules of algorithms and other computational tools developed specifically for each disease state or protein family.

About CD55

CD55, also known as decay-accelerating factor (DAF), is a GPI anchored membrane protein. Binding of CD55 to complement proteins accelerates their decay, and thus disrupts the cascade and prevents damage to host cells. A monoclonal antibody (mAb) targeting CD55 is in clinical development by others for gastric cancer.

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 a partner. In 2002, Compugen established an affiliate, Evogene Ltd. (www.evogene.com) (TASE: EVGN), 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