

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 September 2011

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 September 13, 2011, 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: September 13, 2011



Compugen Announces Validation of Two Immune System Modulating Drug Candidates

Novel immunomodulatory proteins demonstrate significant therapeutic potential for autoimmune diseases

New drug candidates based on two B7/CD28-like proteins discovered through use of Compugen's Protein Family Members Discovery Platform

Tel Aviv, Israel and New York City, Sept. 13, 2011 --- Speaking today at the Rodman & Renshaw Annual Global Investment Conference in New York City, Martin Gerstel, chairman of Compugen Ltd. ([NASDAQ: CGEN](#)), reviewed the current status of the Company and announced the validation of two therapeutic product candidates, CGEN-15021 and CGEN-15091, in various autoimmune disease animal models. These two molecules are soluble proteins based on two B7/CD28-like proteins recently discovered by Compugen. In view of its key role in modulating immune response, the B7/CD28 family of proteins is of high interest in medical research and to the pharmaceutical industry, and these newly discovered molecules share key characteristics with this protein family. In addition to the potential use of CGEN-15021 and CGEN-15091 as protein therapeutics for multiple autoimmune diseases, the two proteins they are based on are predicted to have utility as drug targets for monoclonal antibody therapy in oncology.

CGEN-15021 and CGEN-15091 are both soluble fusion proteins, each combining the extracellular domain of one of the newly discovered B7/CD28-like proteins and an Fc antibody fragment. Fusion to an Fc antibody fragment is an established methodology to create soluble long-acting therapeutic proteins. The results being announced today relate to the recent validation of CGEN-15021 in animal disease models of both multiple sclerosis and rheumatoid arthritis, and of CGEN-15091 in an animal disease model of multiple sclerosis. In each of these disease models, the Compugen fusion proteins demonstrated dramatic therapeutic effects in ameliorating disease symptoms. In addition, in earlier *in vitro* experiments, CGEN-15021 and CGEN-15091 exhibited inhibition of T cell activation, confirming their predicted role in the modulation of the immune system.

In his presentation, (which has been posted on Compugen's website: www.cgen.com), Mr. Gerstel stated, "The discovery process for these two immunomodulatory proteins is an excellent example of the power and uniqueness of the broad based scientific infrastructure for predictive discovery that has been established at Compugen over the past decade. This infrastructure now allows the rapid development of accurate *in silico* capabilities for the prediction of innovative therapeutic solutions in selected areas of unmet medical need. In this case, we initially directed these capabilities to the B7/CD28 protein family, a protein family of very high industry interest due to its key role in regulating immune responses, and one with significant therapeutic potential in major pathological conditions, such as autoimmune diseases, transplantation and cancer."

Mr. Gerstel continued, "Within approximately six months, we had integrated multiple components of our infrastructure capabilities to develop the Protein Family Members Discovery Platform, which during its initial discovery process, predicted nine new proteins sharing characteristics with

the B7/CD28 protein family. The first three of these nine, consisting of the previously disclosed CGEN-15001 which is currently moving forward in our Pipeline Program, and the two proteins for which positive *in vivo* results are being announced today, have now been validated in established animal disease models. In addition, we subsequently extended this discovery capability beyond the B7/CD28 family, as well as developing additional capabilities for the discovery of other types of immune related proteins, some of which are now beginning the validation process.”

Mr. Gerstel continued, “With respect to today’s disclosure, the *in vitro* validation experiments and the *in vivo* study in a multiple sclerosis animal model of CGEN-15021 and CGEN-15091 were part of Compugen’s long-term research agreement with Prof. Stephen Miller’s laboratory at Northwestern University. The *in vivo* validation of CGEN-15021 in a rheumatoid arthritis model was conducted at Dr. Richard Williams’ laboratory at the Kennedy Institute of Rheumatology, Oxford University. Having long-term relationships with leading scientists at academic laboratories with well established assays and animal models, enables Compugen to quickly and efficiently validate its new discoveries.”

Mr. Gerstel concluded, “We enthusiastically look forward to the further development of these very attractive drug candidates, and to the ongoing application of our unique capabilities to additional areas of unmet medical need.”

About the B7/CD28 Protein Family of positive and negative co-stimulatory proteins

Members of the B7/CD28 families 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 with 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 members of the B7 family ligands and their receptors, members of the 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 prototype 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 for therapeutic agents targeting these protein families are underway at various companies.

About Compugen

Compugen is a leading therapeutic product candidate discovery company, currently focused on biologics-based therapy to address important unmet needs in the fields of immunology and oncology, either for Compugen or its partners. Unlike traditional high throughput trial and error experimental based drug candidate discovery, Compugen’s discovery efforts are based on systematic and continuously improving *in silico* (by computer) product candidate prediction and selection followed by experimental validation, with selected product candidates being advanced in its Pipeline Program to the pre-IND stage. Compugen’s *in silico* predictive models utilize a broad and continuously growing infrastructure of proprietary scientific understandings and predictive

platforms, algorithms, machine learning systems and other computational biology capabilities. The Company's business model primarily involves collaborations covering the further development and commercialization of Compugen-discovered product candidates and various forms of "discovery on demand" arrangements, in both cases providing Compugen with potential milestone payments and royalties on product sales or other forms of revenue sharing. In 2002, Compugen established an affiliate, Evogene Ltd. (www.evogene.com) (TASE: EUGN.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.

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