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

Form 6-K

REPORT OF FOREIGN PRIVATE ISSUER PURSUANT TO RULE 13a-16 OR 15d-16
UNDER THE SECURITIES EXCHANGE ACT OF 1934

For the month of September 2013

Commission File Number 000-30902

COMPUGEN LTD.

(Translation of registrant's name into 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 of Form 20-For Form 40-F:

Form 20-F ☑ Form 40-F ☐

Indicate by check mark if the registrant is submitting the Form 6-K in paper as permitted by Regulation S-T Rule 101(b)(1): ☐

Indicate by check mark if the registrant is submitting the Form 6-K in paper as permitted by Regulation S-T Rule 101(b)(7): ☐

Compugen Ltd.

On September 17, 2013, the Company issued a press release disclosing experimental data for CGEN-15049, one of nine novel immune checkpoint proteins predicted by the Company to date through the use of its unique predictive discovery infrastructure. A copy of the press release is filed as Exhibit 99.1 to this Form 6-K and incorporated by reference herein.

The information contained in this Report, including the exhibits hereto, is hereby incorporated by reference into the Company's Registration Statement on Form F-3, File No. 333-171655 and 333-185910.

Exhibits

Exhibit Number	**Description of Exhibit**
99.1	Press Release, dated September 17, 2013.

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 thereunto duly authorized.

COMPUGEN LTD.

Date: September 17, 2013

By: /s/ Dikla Czaczkes Axselbrad

Dikla Czaczkes Axselbrad
Chief Financial Officer

Exhibit 99.1

For Immediate Release

Compugen Target for Cancer Immunotherapy Shown to Affect Multiple Immune Cell Types Involved in Tumor Progression

CGEN-15049 immune checkpoint protein expressed on wide variety of cancers

Tel Aviv, Israel, September 17, 2013 --- Compugen Ltd. (NASDAQ: CGEN) today disclosed experimental data for CGEN-15049, one of nine novel immune checkpoint proteins predicted by the Company to date through the use of its unique predictive discovery infrastructure. The experimental data demonstrate CGEN-15049's expression on a wide variety of cancers, and its functional effects on the activities of multiple types of immune cells that play critical roles in the immune system's response against the tumor. These two characteristics identify CGEN-15049 as a promising target for the treatment of various cancers using monoclonal antibody therapy in order to block its inhibition of immune response against the tumor.

CGEN-15049 has demonstrated the ability to regulate an impressive array of different types of immune cells, therefore offering unique potential as a target for monoclonal antibody immunotherapy for many types of cancers and further contributing to the diversity of Compugen's Pipeline Program candidates. More specifically, *in vitro* studies have shown that CGEN-15049 both inhibits Natural Killer cells, which are important for innate immune responses, and modulates the activity of types of T cells that constitute a crucial component of the adaptive anti-tumor immune response. In this respect, CGEN-15049 inhibits cytotoxic T lymphocytes, which normally act to recognize and kill tumor cells, and promotes inducible regulatory T cells, which play a central role in creating the immunosuppressive tumor microenvironment that reduce the ability of the immune system to fight the tumor.

In addition to its functional effect on multiple types of immune cells, CGEN-15049 is also expressed on a wide variety of cancers with high clinical unmet need, such as lung, ovarian, breast, colorectal, gastric, prostate and liver cancers. Notably, its expression can be detected both within the tumor epithelium of the cancers as well as on immune cells infiltrating these cancers. This expression pattern within the tumor microenvironment, combined with its immunomodulatory activity on immune cells involved in tumor progression, suggest a role for CGEN-15049 in suppressing anti-tumor immune response. Therefore, inhibition of CGEN-15049 activity by monoclonal antibody therapy, in certain cancer types, is predicted to result in allowing the activation of an anti-tumor immune response and potentially eliminating the tumor itself.

Anat Cohen-Dayag, Ph.D., President and CEO of Compugen, said, “A novel immune checkpoint protein offers the potential for development of multiple therapeutic products for both immunology and oncology, depending on its mode of action and function. Also, it is believed that different checkpoints are likely to be expressed on different cancers and within a specific type of cancer, in different patient populations. Therefore, identifying multiple cancer-associated immune checkpoints is of significant interest in allowing for the treatment of larger patient populations. Having discovered a number of such proteins in our first focused discovery effort, we have been investing significant efforts in an ongoing process to validate and differentiate the roles of these proteins and their therapeutic potential to further increase their value to our Company.”

Dr. Cohen-Dayag, continued, “Last month we announced a collaboration agreement covering the development and commercialization of monoclonal antibody therapeutics for cancer immunotherapy against two of these nine Compugen-discovered immune checkpoints, named CGEN-15001T and CGEN-15022. In addition, as previously disclosed, two fusion protein product candidates, CGEN-15001 and CGEN-15021, based on these same two immune checkpoints, are progressing in our Pipeline Program for possible therapeutic applications in immunology. Today’s announcement relates to encouraging experimental results with respect to the potential for a third disclosed Compugen-discovered immune checkpoint, CGEN-15049 for use in cancer immunotherapy.”

Dr. Cohen-Dayag concluded, “As we now focus our predictive capabilities on our second focused discovery program, which as previously disclosed involves the discovery of targets for antibody drug conjugate cancer therapy, we are pleased to see the continuing progress in our Pipeline Program of additional early stage product candidates for both oncology and immunology, resulting from our first effort of this kind.”

About Blockage of Immune Checkpoint Proteins for Cancer Immunotherapy
It is increasingly appreciated that tumors utilize immune-inhibitory proteins, termed immune checkpoints, which are expressed both on tumor cells and on immune cells, in order to evade the immune system and continue growing. These immune checkpoint proteins down-regulate the immune system, thus preventing activation of immune cells against the tumor cells.

Natural Killer (NK) cells, Cytotoxic T Lymphocytes (CTLs), and inducible regulatory T cells (iTregs) are key immune cells in the natural immune responses against tumors, and all are modulated by immune checkpoint proteins.

NK cells are the “front line troops” of the innate immune system, constantly on patrol to recognize and destroy pathogens in general, including tumor cells. CTLs are major players in the immune response to specifically detect and destroy tumor cells. In addition, these and other T cells endow the immune system with long-lasting and protective cellular memory in preparation for future assaults by tumor cells. iTregs are immunosuppressive cells accumulating in the tumor microenvironment and in the circulation of patients with cancer, and are responsible for suppression of the anti-tumor capacity of the immune system.

Clinical studies employing monoclonal antibodies against immune checkpoints, such as PD-1 and CTLA4, to block their inhibitory activities, have shown durable responses. As a result, antibodies targeting immune checkpoints are being referred to as “the next frontier” in the treatment of cancer.

About Compugen
Compugen is a leading drug discovery company focused on therapeutic proteins and monoclonal antibodies to address important unmet needs in the fields of immunology and oncology. The Company utilizes a broad and continuously growing integrated infrastructure of proprietary scientific understandings and predictive platforms, algorithms, machine learning systems and other computational biology capabilities for the *in silico* (by computer) prediction and selection of product candidates, which are then advanced in its Pipeline Program. The Company's business model includes collaborations covering the further development and commercialization of selected product candidates from its Pipeline Program and various forms of research and discovery agreements, in both cases providing Compugen with potential milestone payments and royalties on product sales or other forms of revenue sharing. In 2012, Compugen established operations in California for the development of oncology and immunology monoclonal antibody therapeutic candidates against Compugen drug targets. For additional information, please visit Compugen's corporate website at http://www.cgen.com/.

This press release contains “forward-looking statements” within the meaning of the Private Securities Litigation Reform Act of 1995. These statements, include words such as “may,” “expects,” “anticipates,” “potential,” “believes,” and “intends,” and describe opinions about future events. Forward-looking statements in this press release include, but are not limited to, statements relating to the potential of CGEN-15049 as a novel immune checkpoint target for treatment of various cancers using monoclonal antibody therapy and that inhibition of CGEN-15049 activity by monoclonal antibody therapy, in certain cancer types, is predicted to result in allowing the activation of an anti-tumor immune response and potentially eliminating the tumor itself. 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 and other factors are discussed in the "Risk Factors" section of Compugen’s Annual Report on Form 20-F for the year ended December 31, 2012 as filed with the Securities and Exchange Commission. In addition, any forward-looking statements represent Compugen’s views only as of the date of this release and should not be relied upon as representing its views as of any subsequent date. Compugen does not assume any obligation to update any forward-looking statements unless required by law.

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