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**UNITED STATES  
SECURITIES AND EXCHANGE COMMISSION**  
WASHINGTON, D.C. 20549

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**FORM S-8**  
REGISTRATION STATEMENT  
UNDER THE  
SECURITIES ACT OF 1933

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**COMPUGEN LTD.**

(Exact Name of Registrant as Specified in its charter)

**Israel**  
(State or Other Jurisdiction of  
Incorporation or Organization)

**N/A**  
(I.R.S. Employer  
Identification No.)

**72 Pinchas Rosen Street  
Tel Aviv, 6951294  
Israel**

(Address, Including Zip Code, of Principal Executive Offices)

**Compugen Ltd. 2010 Share Incentive Plan**  
(Full Title of the Plan)

**Anat Cohen-Dayag, Ph.D.  
President and Chief Executive Officer  
Compugen Ltd.  
72 Pinchas Rosen Street  
Tel Aviv, 6951294 Israel  
Phone: +972-3-765-8585  
Fax: +972-3-765-8555**

(Name, Address, including Zip Code, and Telephone Number, including Area Code, of Agent for Service)

**Copies to:**

**Brian Keane, Esq.  
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72 Pinchas Rosen Street  
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Tel: 972-3-765-8585  
Fax: 972-3-765-8555**

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, or a smaller reporting company. See the definitions of "large accelerated filer," "accelerated filer" and "smaller reporting company" in Rule 12b-2 of the Exchange Act. (Check one):

Large accelerated filer

Accelerated filer

Non-accelerated filer

Smaller reporting company

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**CALCULATION OF REGISTRATION FEE**

Title of Each Class Of Securities To Be Registered	Amount To Be Registered <sup>(1)</sup>	Proposed Maximum Offering Price Per Share	Proposed Maximum Aggregate Offering Price	Amount Of Registration Fee
Ordinary Shares, nominal (par) value NIS 0.01 per share	3,000,000 <sup>(2)</sup>	\$ 7.78 <sup>(3)</sup>	\$ 23,340,000 <sup>(3)</sup>	\$ 2,712.11

- (1) Pursuant to Rule 416 under the Securities Act of 1933, as amended (the "Securities Act"), this registration statement shall also cover any additional ordinary shares that may become issuable by reason of any stock dividend, stock split, recapitalization or other similar transaction effected without receipt of consideration that increases the number of outstanding ordinary shares of the registrant.
- (2) Represents an additional 3,000,000 ordinary shares issuable under the Compugen Ltd. 2010 Share Incentive Plan (the "2010 Plan"), over and above the number of ordinary shares issuable under the 2010 Plan that were previously registered under the Securities Act.
- (3) Pursuant to Rule 457(h)(1) under the Securities Act, the proposed maximum offering price per security and the proposed maximum aggregate offering price are based on the average of the high and low sale prices per share of the registrant's ordinary shares as reported by The Nasdaq Global Market on June 5, 2015.

#### EXPLANATORY NOTE

This Registration Statement relates to an increase of an additional 3,000,000 ordinary shares, nominal (par) value NIS 0.01 per share, of Compugen Ltd. (the "Registrant") that are being issued and sold, or may be issued and sold, upon exercise of options or other awards granted by the Registrant to participants in the 2010 Plan, as approved at the Annual General Meeting of Shareholders held on August 7, 2014.

Reference is made to the Registrant's Registration Statements on Form S-8 filed with the Securities and Exchange Commission (the "Commission") on September 7, 2010 (Registration No. 333-169239 (the "Prior Registration Statement")), pursuant to which a total of 8,645,436 ordinary shares issuable under the 2010 Plan were registered under the Securities Act. Pursuant to General Instruction E to Form S-8, the contents of the Prior Registration Statement are hereby incorporated by reference in their entirety, except as otherwise updated or modified by this Registration Statement.

#### PART II

#### INFORMATION REQUIRED IN THE REGISTRATION STATEMENT

##### ITEM 3. INCORPORATION OF DOCUMENTS BY REFERENCE.

The following documents filed by the Registrant with the Commission pursuant to the Securities Exchange Act of 1934, as amended (the "Exchange Act") are hereby incorporated herein by reference and made a part hereof:

- (i) The Registrant's Annual Report on Form 20-F for the fiscal year ended December 31, 2014, filed with the Commission on March 12, 2015 (File No. 000-30902); and
- (ii) The Registrant's Reports of Foreign Private Issuer on Form 6-K, as filed with the Commission on March 19, 2015, May 5, 2015, May 27, 2015 and June 8, 2015 (File No. 000-30902)
- (iii) The description of the Registrant's Ordinary Shares in the Registrant's Registration Statement on Form 8-A (File No. 000-30902) filed with the Commission under the Securities Exchange Act of 1934, as amended (the "Exchange Act"), on August 2, 2000, including any amendment or report filed for the purpose of updating such description.

All documents subsequently filed by the Registrant with the Commission pursuant to Sections 13(a), 13(c), 14 and 15(d) of the Exchange Act, after the date of this Registration Statement and prior to the filing of a post-effective amendment which indicates that all securities offered have been sold or which deregisters all securities then remaining unsold, and all Reports of Foreign Private Issuer on Form 6-K submitted by the Registrant to the Commission during such period, or portions thereof that are identified in such forms as being incorporated into this Registration Statement, shall be deemed to be incorporated by reference in this Registration Statement and to be a part hereof from the date of filing such documents. Any document, or any statement contained in a document, incorporated or deemed to be incorporated by reference herein shall be deemed to be modified or superseded for purposes of this Registration Statement to the extent that a document or statement contained herein, or in any other subsequently filed document that also is deemed to be incorporated by reference herein, modifies or supersedes such document or statement. Any statement so modified or superseded shall not be deemed, except as so modified or superseded, to constitute a part of this Registration Statement. Subject to the foregoing, all information appearing in this Registration Statement is qualified in its entirety by the information appearing in the documents incorporated by reference.

**ITEM 8. EXHIBITS.**

The following is a list of exhibits filed as a part of this Registration Statement which are incorporated herein:

EXHIBIT NO.	EXHIBIT
5.1	Opinion of Tulchinsky Stern Marciano Cohen Levitski & Co., Law Offices
23.1	Consent of Kost Forer Gabbay & Kasierer, a Member of Ernst & Young Global
23.2	Consent of Tulchinsky Stern Marciano Cohen Levitski & Co., Law Offices (included in Exhibit 5.1).
24.1	Power of Attorney (included in the signature pages to this Registration Statement)

## SIGNATURES

*The Registrant.* Pursuant to the requirements of the Securities Act of 1933, the Registrant certifies that it has reasonable grounds to believe that it meets all of the requirements for filing on Form S-8 and has duly caused this Registration Statement to be signed on its behalf by the undersigned, thereunto duly authorized, in City of Tel Aviv, State of Israel, on June 11, 2015.

COMPUGEN LTD.

By: /s/ Anat Cohen-Dayag  
Anat Cohen-Dayag, Ph.D.  
Chief Executive Officer and President

Each person whose signature appears below constitutes and appoints Anat Cohen-Dayag, Ph.D., Ari Krashin and Donna Gershowitz, and each of them singly, his true and lawful attorneys-in-fact and agents, with full power of substitution and resubstitution in each of them singly, for him and in his name, place and stead, and in any and all capacities, to sign any and all amendments (including post-effective amendments) to this Registration Statement of Compugen Ltd. and to file the same, with all exhibits thereto and other documents in connection therewith, with the Securities and Exchange Commission, granting to the attorneys-in-fact and agents, and each of them, full power and authority to do and perform each and every act and thing requisite or necessary to be done in or about the premises, as full to all intents and purposes as he might or could do in person, hereby ratifying and confirming all that the attorneys-in-fact and agents or any or each of them or their substitute may lawfully do or cause to be done by virtue hereof.

Pursuant to the requirements of the Securities Act of 1933, this Registration Statement has been signed by the following persons in the capacities and on the dates indicated.

<b><u>Signature</u></b>	<b><u>Title(s)</u></b>	<b><u>Date</u></b>
<u>/s/ Anat Cohen-Dayag</u> Anat Cohen-Dayag, Ph.D.	Chief Executive Officer and President and Director (principal executive officer)	June 11, 2015
<u>/s/ Ari Krashin</u> Ari Krashin	Chief Financial Officer (principal financial and accounting officer)	June 11, 2015
<u>/s/ Martin S. Gerstel</u> Martin S. Gerstel	Chairman of the Board	June 11, 2015
<u>/s/ Prof. Yair Aharonowitz</u> Prof. Yair Aharonowitz	Director	June 11, 2015
<u>/s/ Prof. Ruth Arnon</u> Prof. Ruth Arnon	Director	June 11, 2015
<u>/s/ Dov Hershberg</u> Dov Hershberg	Director	June 11, 2015
<u>/s/ Arie Ovadia, Ph.D.</u> Arie Ovadia, Ph.D.	Director	June 11, 2015
<u>/s/ Prof. Joshua Shemer</u> Prof. Joshua Shemer	Director	June 11, 2015

**INDEX TO EXHIBITS**

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טולצ'ינסקי שטרן מרציאנו כהן לויצקי ושות'

TULCHINSKY STERN MARCIANO COHEN LEVITSKI & CO.

משרד עורכי דין | LAW OFFICES

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Menachem Tulchinsky, Adv.  
Doron Stern, Adv.  
Amir Levitski, Adv.  
David Cohen, Adv.  
Isaac Marciano, Adv. (C.P.A.)  
Yossi Ratnovsky, Adv. (C.P.A.)  
Alon Tabak Aviram, Adv. \*  
Daniel Chinn, Adv.  
Baruch Perl, Adv.  
Glenn (Gershon) Shalom Winter, Adv.\*  
Uriel Barak, Adv.\*  
Asaf Ben-Zeev, Adv.  
Assaf Benmelech, Adv.  
Michal Markovitz Blachar, Adv.  
Ofer Dolinsky, Adv.  
Dafna Achiam Tal, Adv.  
Alon Karniel, Adv.  
Ayelet Broditzky, Adv.  
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Liat Sass, Adv.  
Lana Tavor, Adv.  
Alon Fiul, Adv.

Galia Suesskind-Spiegel, Adv.  
Shimrit Lifshitz Shachal, Adv.  
Efrat Shuster, Adv.  
Avital Mandel Hara, Adv.  
Uri Neshet, Adv.  
Amit Hirsch, Adv.  
Tamar Neshet, Adv.  
Ilan Sapir, Adv.  
Aviad Avergil, Adv.  
Liron Levi Gabay, Adv.  
Elad Mirvis, Adv.  
Avital Sela, Adv.  
Lior Etgar, Adv.  
Ariel Shanon, Adv.  
Itamar Shahar, Adv.  
Benjamin Bekkerman, Adv.  
Itamar Shoham, Adv.  
Tal Levy, Adv.  
Ohad Gamliel, Adv.  
Yair Eliash, Adv.  
Ofer Ben Dayan, Adv.  
Mayan Miller, Adv.

גליה זיסקינד-שפיגל, עו"ד  
שימריט ליפשיץ שחל, עו"ד  
אפרת שוסטר, עו"ד  
אביטל מנדל הרה, עו"ד  
אורי נשר, עו"ד  
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אלעד מירויס, עו"ד  
אביטל סלע, עו"ד  
ליאור אתגר, עו"ד  
אריאל שנון, עו"ד  
אתמר שחר, עו"ד  
בנימין בקרמן, עו"ד  
אתמר שוהם, עו"ד  
טל לוי, עו"ד  
אוהד גמליאל, עו"ד  
יאיר אליאש, עו"ד  
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מעין מילר, עו"ד

מנחם טולצ'ינסקי, עו"ד  
דורון שטרן, עו"ד  
אמיר לויצקי, עו"ד  
דיויד כהן, עו"ד  
יצחק מרציאנו, עו"ד (ר"ח)  
יוסי רטנובסקי, עו"ד (ר"ח)  
אלון טבק אברם, עו"ד \*  
דניאל צ'ין, עו"ד  
ברוך פרל, עו"ד  
ג'רשון שלום וינטר, עו"ד \*  
אוריאל ברק, עו"ד \*  
אסף בן-זאב, עו"ד  
אסף בנמלך, עו"ד  
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הדס פורז, עו"ד  
ליאת סאס, עו"ד  
לנה תבור, עו"ד  
אלון פיול, עו"ד

\*Member of the N.Y. Bar Association

June 11, 2015

Compugen Limited  
72 Pinchas Rosen St.  
Tel-Aviv 69512

Ladies and Gentlemen,

We refer to the Registration Statement on Form S-8 (the "**Registration Statement**") to be filed by Compugen Ltd., a company organized under the laws of the State of Israel (the "**Company**"), with the United States Securities and Exchange Commission under the United States Securities Act of 1933, as amended (the "**Act**"), relating to the registration of 3,000,000 ordinary shares, nominal value NIS 0.01 each (the "**Shares**"), authorized for issuance pursuant to the Compugen Ltd. 2010 Share Incentive Plan (the "**Plan**").

As Israeli counsel to the Company in connection with the registering of the Shares pursuant to the Registration Statement, we have examined originals or copies, certified or otherwise identified to our satisfaction, of such corporate records, consents, resolutions, minutes and other documents provided to us by the Company as we have deemed necessary or appropriate in order to enable us to express the opinions hereinafter set forth. Insofar as the opinions expressed herein involve factual matters, we have relied exclusively (without independent factual investigation or verification) upon certificates of, and other communications with, officers and employees of the Company and upon certificates of public officials.

In making the examination described above, we have assumed the genuineness of all signatures, the capacity of natural persons, the authenticity and completeness of all documents submitted to us as originals, the conformity to original documents of all documents submitted to us as certified, photostatic or facsimile copies, the authenticity of the originals of such documents and the legal capacity and due authenticity of all persons executing such documents. We have assumed the same to have been properly given and to be accurate, we have assumed the truth of all facts communicated to us by the Company, and we have assumed that all consents, resolutions and minutes of meetings of the Company's board of directors, of committees thereof and of the shareholders which have been provided to us are true and accurate and have been properly prepared in accordance with the Company's incorporation documents and all applicable laws.

Based upon the foregoing and in reliance thereon, we are of the opinion that all necessary corporate proceedings by the Company have been duly taken to authorize the issuance of the Shares pursuant to the Plan and the Shares, when, and if, issued and paid for (or deemed paid for) in accordance with the terms and conditions of the respective awards and the Plan will be duly authorized, validly issued, fully paid and non-assessable.

The opinions expressed herein are limited to matters governed by the laws of the State of Israel, and we express no opinion with respect to the laws of any other country, state or jurisdiction or with respect to any matter governed by such laws. This opinion is expressly limited to the matters set forth above, and we render no opinion, whether by implication or otherwise, to any other matters.

The opinions set forth herein are made as of the date hereof and are subject to, and may be limited by, future changes in the factual matters set forth herein, and we undertake no duty to advise you of any such changes. The opinions expressed herein are based upon the law in effect (and published or otherwise generally available) on the date hereof, and we assume no obligation to revise or supplement these opinions should such law be changed by legislative action, judicial decision or otherwise.

We hereby consent to the filing of this opinion as an exhibit to the Registration Statement. In giving this consent, we do not admit that we are in the category of persons whose consent is required under Section 7 of the Act or the rules and regulations promulgated thereunder.

This opinion shall be governed by the laws of the State of Israel, and exclusive jurisdiction with respect thereto under all and any circumstances, and under all and any proceedings shall be vested only and exclusively with the courts of Tel Aviv in the State of Israel. This opinion is rendered to you subject to, based and in reliance on your agreement to comply with the exclusive choice of law and jurisdiction contained herein and to refrain under all and any circumstances from initiating any proceedings or taking any legal action relating to this opinion outside of the State of Israel.

Yours sincerely,  
/s/ Tulchinsky Stern Marciano Cohen, Levitski & Co., Law Offices  
Tulchinsky Stern Marciano Cohen, Levitski & Co., Law Offices

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**CONSENT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM**

We hereby consent to the incorporation by reference in the Registration Statements on Form S-8 of Compugen Ltd. pertaining to the Compugen Ltd. 2010 Share Incentive Plan, of our reports dated March 12, 2015, with respect to the consolidated financial statements of Compugen Ltd., and the effectiveness of internal control over financial reporting of Compugen Ltd. included in its Annual Report on Form 20-F for the year ended December 31, 2014, filed with the Securities and Exchange Commission.

Tel Aviv, Israel  
June 11, 2015

/s/ KOST FORER GABBAY & KASIERER  
KOST FORER GABBAY & KASIERER  
A Member of Ernst & Young Global

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