



COMPUGEN LTD.
NOTICE OF ANNUAL GENERAL MEETING OF SHAREHOLDERS
TO BE HELD ON APRIL 15, 2010

Notice is hereby given that the Annual General Meeting (the “**Meeting**”) of the shareholders of Compugen Ltd. (the “**Company**”), an Israeli company, will be held at the Company’s offices at 72 Pinchas Rosen Street, Tel Aviv, Israel, on April 15, 2010 at 10:00 AM (Israel time) for the following purposes:

1. To elect Prof. Ruth Arnon, Mr. Martin Gerstel, Mr. Dov Hershberg and Mr. Alex Kotzer as members of the Board of Directors of the Company and to re-elect Prof. Yair Aharonowitz, Dr. Arie Ovadia and Prof. Joshua Shemer as external directors of the Company;
2. To approve certain compensation and the grant of stock options to our Chairman of the Board of Directors;
3. To approve the increase of the authorized share capital of the Company from five hundred thousand New Israeli Shekels (NIS 500,000) divided into fifty million (50,000,000) Ordinary Shares of a nominal value of NIS 0.01 each (each, an "Ordinary Share"), to one million New Israeli Shekels (NIS 1,000,000) divided into one hundred million Ordinary Shares, and a corresponding amendment of the Articles of Association of the Company;
4. To appoint Kost, Forer, Gabbay & Kasierer (a member of Ernst and Young Global) as the independent auditors of the Company for the 2010 fiscal year and to authorize the audit committee to determine their remuneration; and
5. To transact such other business as may properly come before the Meeting.

Shareholders of record at the close of business on March 9, 2010, are entitled to notice of, and to vote at the Meeting. All shareholders are cordially invited to attend the Meeting in person. Shareholders who do not expect to attend the Meeting in person are requested to mark, date, sign and mail the enclosed proxy as promptly as possible in the enclosed stamped envelope. Beneficial owners who hold their shares through members of the Tel Aviv Stock Exchange (“**TASE**”) may either vote their shares in person at the Meeting by presenting a certificate signed by a member of the TASE which complies with the Israel Companies Regulations (Proof of Ownership for Voting in General Meetings)-2000, as proof of ownership of the shares, or send such certificate along with a duly executed proxy to the Company at 72 Pinchas Rosen Street, Tel Aviv 69512, Israel, Attention: General Counsel.

The Company urges all of its shareholders to review our Annual Report on Form 20-F and our periodic reports on Form 6K, which are available on our website at www.cgen.com. However, if you wish to be mailed a copy of our Annual Report on Form 20-F or any other of our public filings, please send us a request through our website or call Investor Relations at +972-3-765-8585.

We thank you for your cooperation.

By Order of the Board of Directors,

/S/ Mr. Martin Gerstel

Mr. Martin Gerstel, Chairman of the Board
Tel Aviv, Israel
March 9, 2010

PROXY STATEMENT

COMPUGEN LTD.

72 Pinchas Rosen Street

Tel Aviv 69512, Israel

ANNUAL GENERAL MEETING OF SHAREHOLDERS

TO BE HELD ON APRIL 15, 2010

The enclosed proxy is being solicited by the board of directors (the “**Board of Directors**”) of Compugen Ltd. (the “**Company**” or “**Compugen**”) for use at the 2010 Annual General Meeting of Shareholders (the “**Meeting**”) to be held on April 15, 2010, or at any postponement or adjournment thereof. The record date for determining shareholders entitled to notice of and to vote at the Meeting is established as of the close of business on March 9, 2010.

As of March 9, 2010, we had 33,119,432 ordinary shares outstanding, each of nominal value of 0.01 New Israeli Shekels (the “**Ordinary Shares**”).

We expect to solicit proxies by mail and to mail this proxy statement and the accompanying proxy card to shareholders on or about March 10, 2010. We will bear the cost of the preparation and mailing of these proxy materials and the solicitation of proxies. We will, upon request, reimburse banks, brokerage houses, other institutions, nominees, and fiduciaries for their reasonable expenses in forwarding solicitation materials to beneficial owners. Upon the receipt of a properly executed proxy in the form enclosed, the persons named as proxies therein will vote the Ordinary Shares covered thereby in accordance with the instructions of the shareholder executing the proxy. With respect to the proposals set forth in the accompanying Notice of Meeting, a shareholder may vote in favor of or against any of the proposals or may abstain from voting on any of the proposals. Shareholders should specify their choices on the accompanying proxy card. If no specific instructions are given with respect to the matters to be acted upon, the shares represented by a signed proxy will be voted FOR the proposals set forth in the accompanying Notice of Meeting. We are not currently aware of any other matters to be presented at the Meeting.

Any shareholder returning the accompanying proxy may revoke such proxy at any time prior to its exercise by: (i) giving written notice to us of such revocation at least twenty-four (24) hours before the commencement of the Meeting or adjourned Meeting; (ii) voting in person at the Meeting or requesting the return of the proxy at the Meeting; or (iii) executing and delivering to us a later-dated proxy. Written revocations and later-dated proxies should be sent to the Company at 72 Pinchas Rosen Street, Tel Aviv 69512, Israel, Attention: General Counsel. Each form of proxy which is properly executed and returned to the Company prior to the Meeting will be voted in the manner instructed by the shareholder executing it or, if no instructions are given, will be voted in favor of all of the matters to be presented at the Meeting, as described herein. In addition, the shares will be voted with respect to any other proposals in accordance with the recommendations of the Board of Directors. Subject to the provisions of the Company’s Articles of Association, all proxies must be received by the Company’s transfer agent or at the Company’s mailing address listed above at least 24 hours prior to the Meeting to be validly included in the tally of Ordinary Shares voted at the Meeting.

Each Ordinary Share is entitled to one vote on each matter to be voted on at the Meeting. Subject to the terms of applicable law, two or more shareholders present, personally or by proxy, who hold or represent together at least 33.33% of the voting rights of our issued share capital will constitute a quorum for the Meeting. If within an hour from the time scheduled for the Meeting a quorum is not present, the Meeting shall stand adjourned for one week, to April 22, 2010, at the same hour and place, without it being necessary to notify the shareholders. If a quorum is not present at the adjourned date of the Meeting, subject to the terms of applicable law, any two shareholders present shall constitute a quorum.

Each of Proposals 1, 2, 3 and 4 to be presented at the Meeting requires the affirmative vote of shareholders present in person or by proxy and holding Ordinary Shares amounting in the aggregate to at least a majority of the votes actually cast with respect to each such proposal. However, Proposal 1, as it relates to the appointment of Prof. Yair Aharonowitz, Dr. Arie Ovadia and Prof. Joshua Shemer as external directors pursuant to the Companies Law, requires both (a) the affirmative vote of shareholders present in person or by proxy and

holding Ordinary Shares amounting in the aggregate to at least a majority of the votes actually cast with respect to such proposal, and (b) either: (i) said majority include at least one-third of the voting power of the non-controlling shareholders who are present in person or by proxy and who vote on such proposal; or (ii) the total votes cast in opposition to the proposal by the non-controlling shareholders does not exceed 1% of all the voting power in the Company.

PRINCIPAL SHAREHOLDERS

The following table and notes thereto sets forth certain information, as of December 31, 2009 regarding beneficial ownership (as defined in Rule 13d-3 under the Securities Exchange Act of 1934, as amended), of our Ordinary Shares by each person who is known by us to own beneficially more than 5% of our outstanding Ordinary Shares. The voting rights of our major shareholders do not differ from the voting rights of other holders of our Ordinary Shares. On such date, 32,867,912 Ordinary Shares were issued and outstanding.

Beneficial Owner	Number of Ordinary Shares Beneficially Owned	Percent of Ownership
ClearBridge Advisors, LLC ⁽¹⁾	2,833,047	8.62%
Morgan Stanley ⁽²⁾	2,133,966	6.49%
Martin Gerstel ⁽³⁾	1,853,268	5.64%

⁽¹⁾ This disclosure is based on information disclosed by ClearBridge Advisors, LLC on Form 13G/A, filed with the SEC on February 12, 2010 reflecting holdings as of December 31, 2009.

⁽²⁾ This disclosure is based on information disclosed by Morgan Stanley on Form 13G/A, filed with the SEC on February 12, 2010 reflecting shareholdings as of December 31, 2009.

⁽³⁾ Includes 550,000 shares held by Shomar Corporation, an affiliate of Mr. Martin S. Gerstel, 669,033 shares held by Merrill Lynch IRA for Martin Gerstel, of which Martin Gerstel is the beneficiary and 634,235 shares held in various brokerage accounts for the benefit of Martin Gerstel. This disclosure is based on information disclosed by Martin Gerstel directly to the Company on March 4, 2010.

MATTERS RELATING TO THE 2010 ANNUAL GENERAL MEETING

At the Meeting, the shareholders will be asked to vote on the following proposals:

PROPOSAL NO. 1

ELECTION OF DIRECTORS

Our Board of Directors is comprised of seven (7) members, three (3) of whom were elected on July 31, 2007 to be external directors and serve for a fixed term of three (3) years pursuant to the Israeli Companies Law – 1999 (the “**Companies Law**”) and are hereby being proposed for re-election. The additional four members of our Board of Directors that are not external directors are hereby being proposed for re-election until the next annual shareholders meeting of the Company.

Each of the nominees has consented to being named in this Proxy Statement and the Company is not aware of any reason why such person will not serve as a director. Information on each nominee for director is set forth below. The information is based upon the records of the Company and information provided by each nominee. If at the time of the Meeting, however, any of the below-named nominees should be unable or decline to serve as a director, the persons named as proxies herein will vote for such substitute nominee or nominees as the Board of Directors recommends, or will vote to allow the vacancy created thereby to remain open until filled by the Board of Directors.

Set forth below are the names of, and certain other information concerning, the nominees for election as directors at the Meeting:

Name	Age	Positions
Prof. Yair Aharonowitz	69	Director ⁽¹⁾
Prof. Ruth Arnon	75	Director
Martin S. Gerstel	68	Director and Chairman of the Board
Dov Hershberg	70	Director
Alex Kotzer	63	Director
Arie Ovadia, Ph.D	69	Director ⁽¹⁾
Prof. Joshua Shemer	61	Director ⁽¹⁾

(1) Qualifies as an external director pursuant to the Companies Law

Yair Aharonowitz, Ph.D. joined Compugen’s board of directors as an external director in July 2007. He is a Professor (Emeritus) of Microbiology and Biotechnology at Tel Aviv University (TAU). He was a visiting scientist at Oxford University, an Alberta Heritage Fellow at the University of Alberta, Edmonton, and a visiting professor at the Karolinska Institute and at the University of British Columbia. Professor Aharonowitz’s research interests include the molecular genetics and biosynthesis of antibiotics, molecular biology of microbial pathogens and the development of new targets for new antibiotics. He served as TAU Vice President and Dean for R&D, Chairman of the Department of Microbiology and Biotechnology and Chairman of the Institute of Biotechnology. He served as a member of the TAU Executive Council and is a member of the TAU Board of Governors. He served as the Chairman of Ramot Fund for Applied Research, as a member of TAU committee for strategic planning, on the TAU patent committee; he was a member of the National Committee for Biotechnology. He is a Fellow of the American Academy of Microbiology and a member of the Israeli Society of Microbiology.

Prof. Ruth Arnon joined Compugen's Board of Directors in May 2007. Formerly the Vice-President of the Weizmann Institute of Science (1988-1997), she is a noted immunologist, having joined the Institute in 1960. She served as Head of the Department of Chemical Immunology, Dean of the Faculty of Biology and Director of the Institute's MacArthur Center for Molecular Biology of Tropical Diseases. Prof. Arnon has made significant contributions to the fields of vaccine development, cancer research and to the study of parasitic diseases. Along with Prof. Michael Sela, she developed Copaxone® a drug for the treatment of multiple sclerosis which is presently marketed worldwide. Prof. Arnon is a member of the Israel Academy of Sciences and presently serves as its Vice President. She is an elected member of the European Molecular Biology Organization, served as President of the European Federation of Immunological Societies and as Secretary-General of the International Union of Immunological Societies. Her awards include the Robert Koch Prize in Medical Sciences, Spain's Jimenez Diaz Memorial Prize, France's Legion of Honor, the Hadassah World Organization's Women of Distinction Award, the Wolf Prize for Medicine, the Rothschild Prize for Biology, the Israel Prize and she received an Honorary Doctorate from Ben-Gurion University. Prof. Arnon is the Advisor for Science to the President of Israel and the incumbent of the Paul Ehrlich Chair in Immunochemistry.

Martin S. Gerstel has served as Compugen's Chairman of the Board of Directors since 1997, other than from January 2009 to March 2010, during which time he served as either CEO or co-CEO and, in both bases, as a member of the Board of Directors. Prior to Compugen, Mr. Gerstel was co-chairman and CEO of ALZA Corporation, which he helped found in 1968. Mr. Gerstel is the Chairman of Evogene Ltd., Keddem Bioscience, Mada Ltd., the co-founder and co-chairman of Itamar Medical, and serves as a director of Yissum Ltd., Yeda Ltd. and the U.S. Foundation for the National Medals of Science and Technology. He is a member of the Board of Governors and the Executive Committee of the Weizmann Institute of Science and the Board of Governors of The Hebrew University of Jerusalem, and is an advisor to the Burrill Life Science Funds and the board of the Israel-U.S. Binational Industrial Research and Development ("BIRD") Foundation. Mr. Gerstel holds a B.S. from Yale University and an MBA from Stanford University.

Dov Hershberg was appointed as a member of the Board of Directors and Chairman on February 9, 2009, prior to which he served as a consultant to the Board of Directors. Upon the election of Dr. Anat Cohen-Dayag as Compugen's President and Chief Executive Officer on March 1, 2010, Mr. Hershberg resigned as Chairman, but continues to serve as a Director. Mr. Hershberg managed the BIRD Foundation for nine years, until mid 2006. He is currently a founder and executive director of Powermat, a wireless electricity company and serves on the advisory board of the Merage Foundation. Prior to joining BIRD, Mr. Hershberg held various senior management positions in software development, marketing and sales. He was the founder and CEO, with colleagues from Stanford University, of Molecular Applications Group which created software in biomedical research. He spent eleven years at Digital Equipment Corporation in various senior management positions in product development, marketing and sales and worked as a mathematician in the Israeli Aircraft Industry. Mr. Hershberg holds graduate degrees in Mathematics, from the Hebrew University in Jerusalem, Israel and in Applied Mathematics and Operations Research from Columbia University in New York City.

Alex Kotzer joined Compugen in September 2005 as President and Chief Executive Officer, and a member of the Board of Directors, serving in those capacities until December 2008. Since retiring as President and CEO, Mr. Kotzer has continued as a member of the Board of Directors. He recently joined Regenera Pharma as CEO and Chairman of the Board. Prior to joining Compugen, Mr. Kotzer served for twelve years at Serono (now Merck Serono), a global biotechnology leader, headquartered in Switzerland. During his tenure at Serono, Mr. Kotzer held several senior positions, most recently as Vice President of Biotechnology Manufacturing. Previously, Mr. Kotzer was President and Chief Executive Officer of InterPharm, Serono's Israeli affiliate. Before joining Serono, he held a variety of managerial positions in the food and chemical industries. Mr. Kotzer received his B.Sc. in Chemical Engineering from the Technion, Israel Institute of Technology, of Haifa, Israel.

Arie Ovadia, Ph.D. joined Compugen's Board of Directors as an external director in July 2007. He advises major Israeli companies on finance, accounting and valuations, and is a member of the board of directors of several corporations, including Israel Discount Bank, Strauss Ltd., Israel Petrochemical Industries, ViryaNet and Elron Electronic Industries Ltd. He has taught at New York University, Temple University and, in Israel, at Tel Aviv and Bradford Universities. Dr. Ovadia served as a member of the Israeli Accounting Board, and is a 14-year member of the Israel Securities Authority. Dr. Ovadia holds an undergraduate degree and an MBA from Tel Aviv University, and earned his Ph.D. in economics from the Wharton School at the University of Pennsylvania.

Prof. Joshua Shemer joined Compugen's Board of Directors as an external Director in July 2007. He is Full Professor of Medicine at the Tel Aviv University and is currently Head of the School of Public Health at Tel Aviv University, a member of the Board of Directors of Maccabi Healthcare Services and Chairman of Assuta Medical Centers in Israel. In addition, he is Director of the Israeli Center for Technology Assessment in Health Care at the Gertner Institute for Epidemiology and Health Policy Research. Prof. Shemer is an Associate Editor at IMAJ and Harefuah, and a member of the Editorial Board of the International Journal of Technology Assessment in Health Care. Prof. Shemer teaches Medical Technology Management at the Faculty of Business Administration at Tel Aviv University. He was a member and former Chairman of the National Public Committee for Updating the National List of Health Services in Israel and the National Council for Trauma of the Israeli Ministry of Health. Prof. Shemer was formerly Director-General of the Ministry of Health and Surgeon General of the Israel Defense Forces Medical Corps. Most recently, Prof. Shemer was the Director-General of Maccabi Healthcare Services and today he is a member of the Board of Directors of EL AL airlines. He is a graduate of the Hebrew University and Hadassah School of Medicine and Board certified in Internal Medicine in Israel.

Compensation for Directors

All of our non-management directors receive certain cash payments, option grants, insurance coverage and indemnification from the Company in consideration for their membership in and service on the Board and committees thereof, as previously approved by the shareholders of the company. On February 28, 2010, Mr. Dov Hershberg provided the Board of Directors with a letter under which he voluntarily and irrevocably (i) waived all Compugen stock options held by him solely to the extent that such options would vest after December 31, 2010; and (ii) waived any and all additional cash or additional stock options that would otherwise be due to him as a director of the Company for service prior to January 1, 2011.

External and Independent Directors

The Companies Law requires Israeli companies with shares that have been offered to the public either in or outside of Israel to appoint at least two external directors. No person may be appointed as an external director if that person or that person's relative, partner, employer, any person to whom that person reports, directly or indirectly, or any entity under the person's control, has or had, on or within the two years preceding the date of that person's appointment to serve as an external director, had any affiliation with the company or any entity controlling, controlled by or under common control with the company. The term affiliation includes:

- an employment relationship;
- a business or professional relationship maintained on a regular basis;
- control; and
- service as an office holder.

No person may serve as an external director if that person's position or business activities create, or may create, a conflict of interest with that person's responsibilities as an external director or may otherwise interfere with his/her ability to serve as an external director. If, at the time external directors are to be appointed, all current members of the board of directors are of the same gender, then at least one external director must be of the other gender.

The Companies Law requires that at least one external director must have financial and accounting expertise and the other external directors must possess certain professional qualifications that are promulgated by regulations to the Companies Law. These regulations provide that external directors with financial and accounting expertise must possess a high level of understanding in accounting and business matters, to the extent that they are able to read and understand financial statements in depth and to facilitate a discussion regarding the manner in which financial data is presented. An external director with professional qualifications must have an academic degree in either economics, business administration, accounting, law, public administration, or he or she must have another academic degree, or must have completed other higher education studies related to the main business of the company, or he or she must have at least five years of experience in at least two of the following: (a) a senior position in the business administration of a corporation with a significant scope of business; (b) a senior position in the public service; or (c) a senior position relating to the company's main business. Each company's board of directors must determine each external director's qualifications based on his or her education, experience and skills regarding financial matters and knowledge of financial statements in accordance with the Companies Law and Israeli securities laws.

External directors are to be elected by a majority vote at a shareholders' meeting, provided that either:

- A majority of shares voted at the meeting, including at least one-third of the shares held by non-controlling shareholders voted at the meeting, vote in favor of election of the director; abstaining votes shall not be counted in this vote, or
- The total number of shares held by non-controlling shareholders voted against the election of the director does not exceed one percent of the aggregate voting rights in the company.

The initial term of an external director is three years and such term may be extended for one, and only one, additional three years' term.

External directors may be removed only by a court, upon determination that the external directors to be so removed ceased to meet the statutory qualifications for their appointment or if they violate their duty of loyalty to the company; or by the same percentage of shareholders, acting through a shareholders' meeting, as is required for their election, or if the board of directors has determined that the external directors to be so removed ceased to meet the statutory qualifications for their appointment or if they violate their duty of loyalty to the company. Such determination by the board of directors is to be made in the first meeting of the board of directors to be convened following learning of the said cessation or violation. Each committee of a company's board of directors must include at least one external director.

An external director is entitled to compensation as provided in regulations adopted under the Companies Law and is otherwise prohibited from receiving any other compensation, directly or indirectly, in connection with service provided as an external director or any other services to the company.

Professor Yair Aharonowitz, Dr. Arie Ovadia and Professor Joshua Shemer currently serve as our external directors under Israeli law and as our independent directors under Nasdaq Stock Market Listing Rules. They all serve on our audit committee.

In addition to the requirements of the Companies Law as described above, since our shares are listed on the Nasdaq Capital Market, a majority of our directors must be independent (as defined by the Nasdaq Stock Market Listing Rules), and our audit committee must be comprised of at least three members, all of whom must be independent (subject to limited exceptions).

The Board of Directors will present the following resolution at the Meeting:

“RESOLVED that Prof. Ruth Arnon, Mr. Martin Gerstel, Mr. Dov Hershberg and Mr. Alex Kotzer are hereby elected to serve as members of the Board of Directors of the Company for a period commencing on the date of the Meeting and until the next annual meeting of the shareholders of the Company or until their respective successors are duly elected and qualified; and

That each of Prof. Yair Aharonowitz, Dr. Arie Ovadia, and Prof. Joshua Shemer is hereby elected to serve as external director of the Company pursuant to the Companies Law, for a period commencing on the date of the Meeting and until the annual meeting of the shareholders of the Company to be held in the year 2013 and the due election of the respective successors.”

The election of all director nominees requires the affirmative vote of shareholders present in person or by proxy and holding Ordinary Shares amounting in the aggregate to at least a majority of the votes actually cast with respect to such proposal and, in addition, the election of Prof. Yair Aharonowitz, Dr. Arie Ovadia and Prof. Joshua Shemer as external directors requires that either: (i) said majority include at least one-third of the voting power of the non-controlling shareholders who are present in person or by proxy and who vote on such proposal; or (ii) the total votes cast in opposition to the proposal by the non-controlling shareholders does not exceed 1% of all the voting power in the Company.

The Board of Directors recommends that the shareholders vote “FOR” the election of each of Prof. Ruth Arnon, Mr. Martin Gerstel, Mr. Dov Hershberg and Mr. Alex Kotzer as directors of the Company and each of Prof. Yair Aharonowitz, Dr. Arie Ovadia and Prof. Joshua Shemer as external directors of the Company.

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PROPOSAL NO. 2

**APPROVAL OF CERTAIN COMPENSATION AND THE GRANT OF STOCK OPTIONS
TO OUR CHAIRMAN OF THE BOARD OF DIRECTORS**

Under Israeli law, the terms of service of the members of the Board of Directors of the Company (in any capacity that they have in the Company) require the approval of the Audit Committee, Board of Directors and shareholders of the Company, in such order. In exchange for services rendered by Mr. Martin Gerstel, as an active Chairman of the Board of the Company each of the Audit Committee and the Board of Directors of the Company has approved certain compensation, as set forth below.

The Audit Committee and the Board of Directors of the Company, have approved and recommended that the shareholders approve that Mr. Gerstel shall be entitled to receive, in his role as active Chairman, (i) a gross monthly salary of 42,000 NIS, effective as of January 1, 2010 (such 42,000 NIS is currently the equivalent of approximately \$11,350 and will remain at 42,000 NIS regardless of exchange rate fluctuations), and (ii) a grant of options to purchase 125,000 ordinary shares of the Company. Such options shall be granted at an exercise price of \$5.00 per share, and shall not vest prior to December 31, 2012 and thereafter shall vest on a monthly basis during calendar 2013 as follows: 1/12th shall vest on January 31, 2013 and an additional 1/12th shall vest on the last day of each of the remaining 11 months of such year, all subject to receipt of shareholders approval.

As described in the Proxy Statement for the Company's last shareholders meeting, held on October 29, 2009, Mr. Gerstel recommended to the Board that he not receive any cash compensation for his services as Co-CEO and a member of the Board of Directors during 2009, but that a cash bonus be considered for him in March 2010 as compensation for such services, based solely on the Company's performance during 2009 and subject to shareholders approval of any such bonus prior to payment. Notwithstanding the foregoing, upon approval by the shareholders of the proposed compensation set forth in the prior paragraph, Mr. Gerstel will irrevocably waive (i) receipt of any such cash bonus for 2009, and (ii) any other director fees or options to which he would otherwise be entitled to as Chairman or as a member of the Board of Directors of the Company.

The Board of Directors will present the following resolution at the Meeting:

"RESOLVED that following the approval and recommendation by the Audit Committee and the Board of Directors of the Company, the Company's Chairman of the Board of Directors shall receive a gross monthly salary of 42,000 NIS, effective as of January 1, 2010, and shall be granted options to purchase 125,000 ordinary shares of the Company at an exercise price of \$5.00 per share, both as set forth in Proposal 2 of the Proxy Statement of the Company dated March 9, 2010."

The affirmative vote of the holders of a majority of the voting power of the Company represented at the Meeting in person or by proxy and voting thereon is necessary for approval of this proposal.

The Board of Directors recommends that the shareholders vote "FOR" the approval of the monthly salary and the grant of stock options to the Company's Chairman of the Board of Directors

PROPOSAL NO. 3

INCREASE OF AUTHORIZED SHARE CAPITAL

Section 5 of the Amended and Restated Articles of Association of the Company states that "The share capital of the Company is NIS 500,000 (five hundred thousand New Israeli Shekels) divided into 50,000,000 (fifty million) Ordinary Shares of a nominal value of NIS 0.01 each (the "Ordinary Shares")."

The Company wishes to increase the authorized share capital of the Company to NIS 1,000,000 (one million New Israeli Shekels), divided into 100,000,000 (one hundred million) Ordinary Shares.

The Board of Directors will present the following resolution at the Meeting:

"RESOLVED that following the approval and recommendation by the Board of Directors of the Company, the Company's Amended and Restated Articles of Association are hereby further amended such that the Authorized Share Capital of the Company is now NIS 1,000,000 (one million New Israeli Shekels), divided into 100,000,000 (one hundred million) Ordinary Shares of a nominal value of NIS 0.01 each; and

FURTHER RESOLVED that Section 5 of the Amended and Restated Articles of Association of the Company shall be deleted in its entirety and replaced with the following:

"5. Authorized Share Capital

The share capital of the Company is NIS 1,000,000 (one million New Israeli Shekels) divided into 100,000,000 (one hundred million) Ordinary Shares of a nominal value of NIS 0.01 each (the "Ordinary Shares")."

The affirmative vote of the holders of a majority of the voting power of the Company represented at the Meeting in person or by proxy and voting thereon is necessary for approval of this proposal.

The Board of Directors recommends that the shareholders vote "FOR" the increase in authorized share capital of the Company as set forth in Proposal 3 of the Proxy Statement of the Company dated March 9, 2010."

PROPOSAL NO. 4

**TO APPOINT KOST, FORER, GABBAY & KASIERER (A MEMBER OF
ERNST AND YOUNG GLOBAL) AS THE INDEPENDENT AUDITORS OF THE
COMPANY FOR THE 2010 FISCAL YEAR AND TO AUTHORIZE THE AUDIT
COMMITTEE TO DETERMINE THEIR REMUNERATION.**

The audit committee of our Board of Directors has selected Kost Forer Gabbay & Kasierer, a member of Ernst & Young Global, as our independent registered public accounting firm to perform the audit of our consolidated financial statements for the fiscal year ending December 31, 2010.

Shareholder approval of the appointment of Kost Forer Gabbay & Kasierer as our independent registered public accounting firm for the fiscal year ending December 31, 2010 is required under the Companies Law. The Audit Committee of our Board of Directors believe that such appointment is appropriate and in the best interests of the company and its shareholders. Subject to the approval of this proposal, the Audit Committee will fix the remuneration of Kost Forer Gabbay & Kasierer in accordance with the volume and nature of their services to the Company.

The Board of Directors and the Audit Committee will present the following ordinary resolution at the Meeting:

“RESOLVED, that Kost Forer Gabbay & Kasierer be appointed as the Company’s independent registered public accounting firm for the fiscal year ending December 31, 2010, and that the Company’s Audit Committee shall be authorized to determine their remuneration in accordance with the volume and nature of their services.”

The affirmative vote of the holders of a majority of the voting power of the Company represented at the Meeting in person or by proxy and voting thereon is necessary for approval of this proposal.

The Board of Directors recommends that the shareholders vote FOR the approval of the appointment of Kost Forer Gabbay & Kasierer as our independent registered public accounting firm for the fiscal year ending December 31, 2010, and the authorization of our audit committee to determine their remuneration in accordance with the volume and nature of their services.

OTHER BUSINESS

The Board of Directors will present to the Meeting the Audited Consolidated Financial Statements of the Company for the year ended December 31, 2009.

Other than as set forth above, management knows of no business to be transacted at the Meeting; but, if any other matters are properly presented to the Meeting, the persons named in the enclosed form of proxy will vote upon such matters in accordance with their best judgment.

By Order of the Board of Directors,

/S/ Mr. Martin Gerstel

Mr. Martin Gerstel
Chairman of the Board
Tel Aviv, Israel
March 9, 2010

COMPUGEN LTD.

**THIS PROXY IS SOLICITED ON BEHALF OF THE BOARD OF DIRECTORS OF
COMPUGEN LTD. FOR THE ANNUAL GENERAL MEETING OF SHAREHOLDERS
TO BE HELD ON APRIL 15, 2010**

The undersigned, a holder of ordinary shares, par value NIS 0.01 per share ("Ordinary Shares"), of Compugen Ltd. ("Compugen" or the "Company"), acting with respect to all Ordinary Shares held by the undersigned, hereby appoints Martin Gerstel and Anat Cohen Dayag and each of them, as proxies for the undersigned, with full power of substitution, to vote all Ordinary Shares that the undersigned would be entitled to vote, with all powers the undersigned would possess if personally present, at the Annual General Meeting of Shareholders (the "Meeting") of Compugen to be held on April 15, 2010, at 10:00 a.m. (Israel time) at the principal executive offices of Compugen located at 72 Pinchas Rosen Street, Tel Aviv, Israel, and at any adjournments, postponements or rescheduling thereof, on the matters set forth on the reverse side. The proxies are further authorized to vote, in their discretion, upon such other business as may properly come before the Meeting or any adjournments, postponements or rescheduling thereof.

THE SHARES REPRESENTED BY THIS PROXY, WHEN PROPERLY EXECUTED, WILL BE VOTED AS DIRECTED, OR, IF NO DIRECTION IS GIVEN, WILL BE VOTED "FOR" THE PROPOSALS IN ITEMS 1, 2, 3 AND 4.

YOUR VOTE IS IMPORTANT! PLEASE MARK, SIGN AND DATE THIS PROXY ON THE REVERSE SIDE AND RETURN IT PROMPTLY IN THE ACCOMPANYING ENVELOPE

(CONTINUED AND TO BE SIGNED ON REVERSE SIDE)

1. Please Sign, Date, Detach and Mail in the Envelope Provided As Soon As Possible

A ☐ Please mark your votes as in this example.

ITEM 1. TO ELECT PROF. RUTH ARNON, MR. MARTIN GERSTEL, MR. DOV HERSHBERG AND MR. ALEX KOTZER AS MEMBERS OF THE BOARD OF DIRECTORS OF THE COMPANY AND TO RE-ELECT PROF. YAIR AHARONOWITZ, DR. ARIE OVADIA AND PROF. JOSHUA SHEMER AS EXTERNAL DIRECTORS OF THE COMPANY.

NOMINEES:

- | | |
|--|--|
| <input type="checkbox"/> FOR ALL NOMINEES | <input type="radio"/> PROF. RUTH ARNON (To Elect) |
| <input type="checkbox"/> WITHHOLD AUTHORITY FOR ALL NOMINEES | <input type="radio"/> MR. MARTIN GERSTEL (To Elect) |
| <input type="checkbox"/> FOR ALL EXCEPT (See instructions below) | <input type="radio"/> MR. DOV HERSHBERG (To Elect) |
| | <input type="radio"/> MR. ALEX KOTZER (To Elect) |
| | <input type="radio"/> PROF. YAIR AHARONOWITZ (To re-elect) |
| | <input type="radio"/> DR. ARIE OVADIA (To re-elect) |
| | <input type="radio"/> PROF. JOSHUA SHEMER (To re-elect) |

INSTRUCTIONS: to withhold authority to vote for any individual nominee(s), mark "FOR ALL EXCEPT" and fill in the circle next to each nominee you wish to withhold, as shown here: ☒

ITEM 2. TO APPROVE CERTAIN COMPENSATION AND THE GRANT OF STOCK OPTIONS TO THE CHAIRMAN OF THE BOARD OF DIRECTORS OF THE COMPANY.

FOR	AGAINST	ABSTAIN
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

ITEM 3. TO APPROVE THE INCREASE OF THE AUTHORIZED SHARE CAPITAL OF THE COMPANY FROM FIVE HUNDRED THOUSAND NEW ISRAELI SHEKELS (NIS 500,000) DIVIDED INTO FIFTY MILLION (50,000,000) ORDINARY SHARES OF A NOMINAL VALUE OF NIS 0.01 EACH (EACH, AN "ORDINARY SHARE"), TO ONE MILLION NEW ISRAELI SHEKELS (NIS 1,000,000) DIVIDED INTO ONE HUNDRED MILLION ORDINARY SHARES, AND A CORRESPONDING AMENDMENT OF THE ARTICLES OF ASSOCIATION OF THE COMPANY.

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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ITEM 4. TO APPOINT KOST, FORER, GABBAY & KASIERER (A MEMBER OF ERNST AND YOUNG GLOBAL) AS THE INDEPENDENT AUDITORS OF THE COMPANY FOR THE 2010 FISCAL YEAR AND TO AUTHORIZE THE AUDIT COMMITTEE TO DETERMINE THEIR REMUNERATION.

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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The undersigned acknowledges receipt of the Notice of Annual General Meeting of Shareholders and accompanying Proxy Statement.

Signature of Shareholder(s) _____ Dated _____, 2010

Note: Please date and sign exactly as the name appears. When signing as attorney, trustee, executor, administrator, guardian, corporate officer, etc., please give full title. If more than one trustee, all should sign. Joint owners must each sign.

I plan to attend the Meeting

☐

I do not plan to attend

☐