



**6,000,000
Ordinary Shares**

We have entered into a sales agreement with Cantor Fitzgerald & Co. relating to our ordinary shares offered by this prospectus supplement and the accompanying prospectus. In accordance with the terms of the sales agreement, we may offer and sell an aggregate of up to 6,000,000 of our ordinary shares, nominal value NIS 0.01 per share, from time to time through Cantor Fitzgerald & Co., as our sales agent, provided that gross proceeds from this offering may not exceed \$40,000,000.

Under the terms of the sales agreement, we may also sell our ordinary shares to Cantor Fitzgerald & Co., as principal for its own account, at a price agreed upon at the time of sale. If we sell shares to Cantor Fitzgerald & Co. as principal, we will enter into a separate agreement setting forth the terms of such transaction, and we will describe the agreement in a separate prospectus supplement or pricing supplement.

Our ordinary shares are listed on the Nasdaq Capital Market and the Tel Aviv Stock Exchange under the symbol "CGEN." The last reported sale price of our ordinary shares on the Nasdaq Capital Market on August 30, 2011 was \$3.63 per share. The last reported sale price of our ordinary shares on the Tel Aviv Stock Exchange on August 30, 2011 was NIS 12.75 per share.

Sales of our ordinary shares, if any, under this prospectus supplement and the accompanying prospectus may be made in sales deemed to be "at-the-market" equity offerings as defined in Rule 415 promulgated under the Securities Act of 1933, as amended, including sales made directly on or through the Nasdaq Capital Market, the principal trading market for our ordinary shares, sales made to or through a market maker other than on an exchange or otherwise, in negotiated transactions at market prices prevailing at the time of sale or at prices related to such prevailing market prices, and/or any other method permitted by law.

Cantor Fitzgerald & Co. will be entitled to compensation at a fixed commission rate of 3.0% of gross sales. In connection with the sale of our ordinary shares on our behalf, Cantor Fitzgerald & Co. may be deemed to be an "underwriter" within the meaning of the Securities Act of 1933, as amended, and the compensation of Cantor Fitzgerald & Co. may be deemed to be underwriting commissions or discounts.

Investing in our ordinary shares involves a high degree of risk. Before buying our ordinary shares, you should carefully consider the risk factors described in "Risk Factors" beginning on page S-3 of this prospectus supplement and incorporated by reference herein.

Neither the Securities and Exchange Commission nor any state securities commission has approved or disapproved of these securities or determined if this prospectus supplement and the accompanying prospectus is truthful or complete. Any representation to the contrary is a criminal offense.



The date of this prospectus supplement is September 1, 2011.

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ABOUT THIS PROSPECTUS SUPPLEMENT

Unless expressly stated otherwise, all references in this prospectus supplement and the accompanying prospectus to “the Company,” “Compugen,” “we,” “us,” “our,” or similar references mean Compugen Ltd. and its subsidiaries on a consolidated basis.

This document is in two parts. The first part is this prospectus supplement, which describes the terms of this offering of our ordinary shares and supplements information contained in the accompanying prospectus and the documents incorporated by reference into the accompanying prospectus. The second part is the accompanying prospectus, which gives more general information about us and the ordinary shares we may offer from time to time under our shelf registration statement. To the extent there is a conflict between the information contained in this prospectus supplement, on the one hand, and the information contained in the accompanying prospectus or any document incorporated by reference therein, on the other hand, the information in this prospectus supplement shall control.

We have not authorized any dealer, salesperson or other person to give any information or to make any representation other than those contained or incorporated by reference in this prospectus supplement and the accompanying prospectus. You should not rely upon any information or representation not contained or incorporated by reference in this prospectus supplement or the accompanying prospectus. This prospectus supplement and the accompanying prospectus do not constitute an offer to sell or the solicitation of an offer to buy ordinary shares, nor do this prospectus supplement and the accompanying prospectus constitute an offer to sell or the solicitation of an offer to buy ordinary shares in any jurisdiction to any person to whom it is unlawful to make such offer or solicitation in such jurisdiction. You should not assume that the information contained in this prospectus supplement and the accompanying prospectus is accurate on any date subsequent to the date set forth on the front of any such document or that any information we have incorporated by reference is correct on any date subsequent to the date of any such document incorporated by reference, even though this prospectus supplement and any accompanying prospectus is delivered or ordinary shares are sold on a later date.

OFFERING SUMMARY

Ordinary shares offered by us pursuant to this prospectus supplement	Up to 6,000,000 shares
Ordinary shares to be outstanding after this offering	40,321,160 shares
Manner of Offering	"At-the-market" offering that may be made from time to time through our agent, Cantor Fitzgerald & Co. See "Plan of Distribution" on page S-9.
Offering Price and Proceeds	Variable at-the-market pricing, with aggregate gross proceeds not to exceed \$40,000,000
Use of proceeds	We intend to use the net proceeds from this offering for general corporate purposes and to provide additional working capital. See "Use of Proceeds" on page S-8.
Nasdaq Capital Market symbol	CGEN
Risk factors	This investment involves a high degree of risk. See "Risk Factors" beginning on page S-3 of this prospectus supplement.

The number of ordinary shares to be outstanding after this offering assumes the issuance of the full 6,000,000 shares that may be offered hereunder and is based on 34,321,160 shares outstanding as of August 30, 2011 and excludes (i) share options representing the right to purchase a total of 5,445,306 ordinary shares, at a weighted average exercise price of \$2.89, (ii) warrants representing the right to purchase a total of 500,000 ordinary shares, at an exercise price of \$6.00 per share, in each case outstanding as of that date, and (iii) Baize Investments (Israel) Ltd. ("Baize") right to exchange its right to receive future research and development payments for 833,334 ordinary shares.

Our principal executive offices are located at 72 Pinchas Rosen Street, Tel Aviv 69512, Israel. Our telephone number is +972-3-765-8585 and our facsimile number is +972-3-765-8555.

MATERIAL CHANGES

In connection with our Funding Agreement with Baize, we decided not to seek further investments of a similar type from third parties and, therefore, we did not exercise our right to extend the June 30, 2011 deadline for obtaining an aggregate of at least \$15,000,000 of such further investments. Such extension would have required issuing to Baize a warrant for 83,333 additional ordinary shares, on the same terms as the original warrant, for each such month of extension.

RISK FACTORS

The risks set forth below supplement risks previously disclosed by us. Before making an investment decision, you should carefully consider the risks described below and in our most recent Annual Report on Form 20-F, or any updates in our Reports on Form 6-K, together with all of the other information appearing in this prospectus supplement and the accompanying prospectus or incorporated by reference into the accompanying prospectus and this prospectus supplement, in light of your particular investment objectives and financial circumstances. The risks so described are not the only risks facing our company. Additional risks not presently known to us or that we currently deem immaterial may also impair our business operations. Our business, financial condition and results of operations could be materially adversely affected by any of these risks. The trading price of our securities could decline due to any of these risks, and you may lose all or part of your investment. The following risks are presented as of the date of this prospectus supplement and we expect that these will be updated from time to time in our reports filed with the SEC, which will be incorporated herein by reference. Please refer to these subsequent reports for additional information relating to the risks associated with investing in our ordinary shares.

This prospectus supplement, the accompanying prospectus and the incorporated documents also contain forward-looking statements that involve risks and uncertainties. Our actual results could differ materially from those anticipated in these forward-looking statements as a result of certain factors, including the risks mentioned below. Forward-looking statements included in this prospectus supplement are based on information available to us on the date hereof, and all forward-looking statements in documents incorporated by reference are based on information available to us as of the date of such documents. We disclaim any intent to update any forward-looking statements.

We are focusing our discovery activities on therapeutic protein and monoclonal antibody drug targets for use in oncology and immunology, including both auto-immune and inflammatory conditions. If we fail to create product candidates of industry interest in these fields, or to focus on the most promising discoveries, our business will likely be materially harmed.

In spite of the broad applicability of our discovery infrastructure, we have chosen to focus our discovery activities on therapeutic protein and monoclonal antibody drug targets for use in oncology and immunology, including both auto-immune and inflammatory conditions. In line with this decision, during 2010 we began planning and initiating our Pipeline Program to both substantially increase the number of product candidates in these areas of focus in our validation pipeline, and to advance selected molecules beyond the animal disease model proof of concept. There are many risks associated with this decision, including the risk involved in not using all of our capabilities and the risks inherent in choosing fields with such a very high degree of competition and historical failure rate. If for these or other reasons we fail to create product candidates of industry interest in these fields, or focus on advancing the most promising discoveries, our business will be materially harmed.

Our business model consists of three commercialization pathways, each of which is at an early stage of implementation and none of which has to date provided significant revenues. If we are unable to achieve success with these three pathways or to enter into agreements with sufficient future returns, our business will be materially harmed.

The success of our business model relies on providing, through licensing agreements and other forms of collaboration, drug product candidates to leading pharmaceutical, and biotechnology companies. In all cases, our objective is that these collaborations will be “product oriented”, with us having the right to receive advance payments or research revenues, milestone payments and revenue-sharing amounts from all products developed and commercialized by third parties based on our product candidates. Our areas of focus are therapeutic proteins and monoclonal antibody drugs for oncology and immunology. Underlying this business model is the continuing enhancement and expansion of our unique and broadly applicable *in silico* predictive discovery infrastructure. The first commercial pathway now being implemented is the seeking of collaborations for the further development and commercialization of certain product candidates in our Pipeline Program, currently consisting of approximately 30 product candidates. The second pathway relates to collaborations for “discovery on demand” of future product candidates in areas of interest to our partner. The third pathway covers various forms of third party funded arrangements for the further development and commercialization of discoveries that are outside the Company’s areas of focus and were in most part made by the company during the development and validation stages of our predictive discovery infrastructure. We are now in discussions with respect to arrangements in each of these commercial pathways, but there can be no assurance that these discussions will result in any such arrangements. In addition, each of these commercialization pathways is at an early stage of implementation and none of which has to date provided significant revenues. If we are unable to achieve success with these three pathways or to enter into agreements with sufficient future returns, our business will be materially harmed.

Our share price and trading volume have been volatile and may be volatile in the future, which could limit investors' ability to sell shares at a profit and our ability to successfully raise funds pursuant to this offering or in a future financing.

Since January 1, 2009, our stock price on the Nasdaq Capital Market has traded from a low of \$0.39 to a high of \$5.86, and trading volume is volatile from time to time. The volatile price and the periodically volatile trading volume of our stock may make it difficult for investors to predict the value of their investment, and whether to sell shares at a profit at any given time or to plan purchases and sales in advance. A variety of factors may affect the market price of our ordinary shares, including:

- negative global macroeconomic developments
- our success (or lack thereof) in our new Pipeline Program and in entering into collaboration agreements and achieving certain developmental milestones thereunder;
- our need to raise additional capital and our success or failure in doing so;
- achievement or failure in obtaining regulatory approvals by our competitors or us;
- announcements of technological innovations or new commercial products by us or our competitors;
- developments concerning proprietary rights, including patents;
- developments concerning our existing or new collaborations;
- regulatory developments in the United States, Israel and other countries;
- delay or failure by us or our partners in initiating, completing or analyzing pre-clinical or clinical trials or the unsatisfactory design or results of such trials;
- period -to -period fluctuations in our revenues and other results of operations;
- changes in financial estimates by securities analysts;
- our inability to disclose the commercial terms of, or progress under, our collaborations;
- our ability (or lack thereof) to show and accurately predict revenues; and
- sales of our ordinary shares.

We are not, and will not, be able to control many of these factors, and we believe that period-to-period comparisons of our financial results will not necessarily be indicative of our future performance.

In addition, the stock market in general, and the market for biotechnology companies in particular, has been experiencing extreme price and volume fluctuations that may be unrelated or disproportionate to the operating performance of individual companies. These broad market and industry factors may seriously impact the market price of our ordinary shares, regardless of our operating performance.

Furthermore, the market prices of equity securities of companies that have a significant presence in Israel may also be affected by the changing security situation in the Middle East and particularly in Israel. As a result, these companies may experience difficulties in raising additional financing required to effectively operate and grow their businesses. Such difficulties, and the volatility of the securities market in general, and our share price in particular, may affect our ability to raise capital pursuant to this offering or in a future financing.

We cannot assure you that we will be able to raise equity sufficient to meet our capital and operating needs.

We cannot assure you of the number of ordinary shares, if any, we will sell of the 6,000,000 ordinary shares we are offering pursuant to this prospectus supplement, or at what prices we will be able to sell our shares. Furthermore, even if we were to sell all the shares we are now offering at current market prices, we cannot assure you that the net proceeds would be sufficient to satisfy our capital and operating needs until such time as we generate sufficient cash flows from operations to satisfy these needs. In such case, we may not be able to raise additional equity capital or obtain debt financing, if necessary.

Investors may experience significant dilution as a result of this offering.

If we sell all 6,000,000 of our ordinary shares offered pursuant to this prospectus supplement, we will have approximately 40,321,160 ordinary shares outstanding, excluding an aggregate of 5,445,306 ordinary shares underlying outstanding share options, an aggregate of 500,000 ordinary shares underlying outstanding warrants, and, a possible conversion by Baize of its right to receive future research and development payments, into 833,334 ordinary shares, which represents in the aggregate an increase of approximately 19.8% in our currently issued and outstanding ordinary shares. Because the sales of the ordinary shares offered hereby will be made directly into the market or in negotiated transactions, the prices at which we sell these shares will vary and these variations may be significant. Purchasers of the shares we sell, as well as our existing shareholders, will experience significant dilution if we sell shares at prices significantly below the price at which such purchasers or shareholders invested.

There may be future sales or other dilution of our equity, which may adversely affect the market price of our ordinary shares.

We may issue additional ordinary shares. The issuance of any additional ordinary shares could be substantially dilutive to shareholders. The market price of our ordinary shares could decline as a result of sales of our ordinary shares made after this offering or the perception that such sales could occur. Because our decision to issue securities in any future offering will depend on market conditions and other factors beyond our control, we cannot predict or estimate the amount, timing or nature of our future offerings. Thus, our shareholders bear the risk of our future offerings reducing the market price of our ordinary shares and diluting their interests in us.

Our management will have broad discretion over the use of the net proceeds from this offering.

We currently anticipate spending the net proceeds of this offering for general corporate purposes and to provide additional working capital. We cannot specify with certainty how we will use the net proceeds. Accordingly, our management will have considerable discretion in the application of the net proceeds and you will not have the opportunity, as part of your investment decision, to assess whether the proceeds are being used appropriately. The net proceeds may be used for corporate purposes that do not increase our operating results or market value. Until the net proceeds are used, they may be placed in investments that do not produce income or that lose value.

PRICE RANGE OF OUR SHARES

The following table lists the high and low reported sales price for our ordinary shares, for the periods indicated, on Nasdaq. Our ordinary shares were listed on the Nasdaq Global Market through June 16, 2009. Since June 17, 2009, our ordinary shares have been listed on the Nasdaq Capital Market:

Calendar Period	Price Per Share In US\$	
	High	Low
Annual		
2006	5.22	2.10
2007	3.40	1.56
2008	2.80	0.34
2009	5.86	0.39
2010	5.32	3.04
Fiscal Quarters		
2009		
First Quarter	1.00	0.39
Second Quarter	2.25	0.63
Third Quarter	3.37	1.73
Fourth Quarter	5.86	2.30
2010		
First Quarter	5.32	3.80
Second Quarter	5.30	3.26
Third Quarter	4.85	3.04
Fourth Quarter	5.18	3.72
2011		
First Quarter	5.80	4.64
Second Quarter	5.15	3.75
Third Quarter (through August 30, 2011)	4.45	3.32
Most Recent Six Months		
March 2011	5.27	4.64
April 2011	5.15	4.48
May 2011	4.86	4.31
June 2011	4.37	3.75
July 2011	4.45	3.87
August 2011 (through August 30, 2011)	4.44	3.32

On August 30, 2011, the closing price of our ordinary shares on the Nasdaq Capital Market was \$3.63.

The following table lists the high and low reported sales price for our ordinary shares, for the periods indicated, on the Tel Aviv Stock Exchange:

Calendar Period	Price Per Share In US\$*	
	High	Low
Annual		
2006	5.30	2.38
2007	3.53	1.64
2008	2.81	0.42
2009	6.06	0.42
2010	5.64	3.08
Fiscal Quarters		
2009		
First Quarter	0.79	0.42
Second Quarter	2.17	0.64
Third Quarter	3.19	1.67
Fourth Quarter	6.06	2.39
2010		
First Quarter	5.64	3.81
Second Quarter	5.35	3.30
Third Quarter	4.87	3.08
Fourth Quarter	5.20	3.69
2011		
First Quarter	5.92	4.64
Second Quarter	5.21	3.80
Third Quarter (through August 30, 2011)	4.29	3.27
Most Recent Six Months		
March 2011	5.31	4.64
April 2011	5.21	4.59
May 2011	4.89	4.15
June 2011	4.36	3.80
July 2011	4.29	3.90
August 2011(through August 30, 2011)	4.27	3.27

On August 30, 2011, the closing price of our ordinary shares on the Tel Aviv Stock Exchange was \$3.57.

* The currency in which our stock is traded on the Tel Aviv Stock Exchange is the New Israeli Shekel. The above dollar amounts represent a conversion from New Israeli Shekels to dollar amounts in accordance with the dollar - New Israeli Shekel conversion rate as of the relevant date of trade.

CAPITALIZATION AND INDEBTEDNESS

The table below sets forth our capitalization and indebtedness as of June 30, 2011, and as adjusted to give effect to the sale of 6,000,000 ordinary shares at an assumed offering price of \$3.63 per share, which was the closing price of our ordinary shares on August 30, 2011, after deducting estimated offering expenses. The research and funding arrangement with Baize is reported as indebtedness on our balance sheet.

	June 30, 2011 Actual	As Adjusted
	(in thousands)	
Indebtedness:		
Research and development funding arrangement	3,304	3,304
Total Indebtedness	3,304	3,304
Shareholder's Equity:		
Ordinary Shares, NIS 0.01 nominal value:		
100,000,000 shares authorized and 34,294,454 shares issued and outstanding; 40,294,454 shares as adjusted ¹	93	110
Additional paid in capital	193,204	214,185
Accumulated other comprehensive income	5,056	5,056
Accumulated deficit	(172,537)	(172,537)
Total Shareholders' Equity	25,816	46,814

¹Does not include (i) share options representing the right to purchase a total of 5,445,306 ordinary shares, at a weighted average exercise price of \$2.89, as of August 30, 2011 (ii) warrants representing the right to purchase a total of 500,000 ordinary shares, at an exercise price of \$6.00 per share, outstanding as of that date, and (iii) the possible conversion by Baize of its right to receive future research and development payments into 833,334 ordinary shares.

USE OF PROCEEDS

We currently intend to use the net proceeds from the sale of the securities offered pursuant to this prospectus supplement for general corporate purposes and working capital requirements. Pending use of the proceeds, we intend to invest the proceeds in short-term money market funds with portfolios of investment grade corporate and government securities.

DILUTION

Our net tangible book value as of June 30, 2011 was approximately \$25.8 million, or \$0.75 per ordinary share. Net tangible book value per share is calculated by subtracting our total liabilities from our total tangible assets, and dividing this amount by the number of ordinary shares outstanding. After giving effect to the sale by us of the full 6,000,000 ordinary shares that may be offered in this offering at an assumed offering price of \$3.63 per share, which was the closing price of our ordinary shares on August 30, 2011, and after deducting estimated sales commissions and offering expenses payable by us, our as-adjusted net tangible book value as of June 30, 2011 would have been approximately \$46.8 million, or \$1.16 per ordinary share. This represents an immediate increase in the net tangible book value of \$0.41 per share to our existing shareholders and an immediate and substantial dilution to new investors of \$2.47 per share from the assumed offering price. The following table illustrates this hypothetical per share dilution:

Assumed offering price per share	\$	3.63
Net tangible book value per share as of June 30, 2011	\$	0.75
Increase in net tangible book value per share attributable to this offering	\$	0.41
Adjusted net tangible book value per share after giving effect to this offering	\$	1.16
Dilution per share to new investors in this offering	\$	2.47

The foregoing dilution information assumes an offering price equal to the closing price for our ordinary shares as of August 30, 2011. The actual price at which we sell shares in this offering may be higher or lower than this assumed price. For each \$1.00 increase or decrease in the assumed offering price, the per-share dilution would be \$0.14 more and \$0.14 less, respectively, than the figures in the above table.

PLAN OF DISTRIBUTION

We have entered into a Controlled Equity Offering SM Sales Agreement with Cantor Fitzgerald & Co., which we also refer to throughout this prospectus supplement as Cantor, under which we may issue and sell up to 6,000,000 of our ordinary shares from time to time through Cantor as our sales agent, with gross offering proceeds of up to \$40,000,000. The form of the sales agreement will be filed as an exhibit to a report on Form 6-K to be incorporated into this prospectus supplement by reference. The sales, if any, of shares made under the sales agreement will be made on the Nasdaq Capital Market by means of ordinary brokers' transactions at market prices, in block transactions or as otherwise agreed to by Cantor and us. We may instruct Cantor not to sell ordinary shares if the sales cannot be effected at or above the price designated by us from time to time. We or Cantor may suspend the offering of ordinary shares upon notice and subject to other conditions set forth in the sales agreement. As an agent, Cantor will not engage in any transactions that stabilize the price of our ordinary shares.

We will pay Cantor commissions for its services in acting as agent in the sale of our ordinary shares. Cantor will be entitled to compensation at a fixed commission rate of 3.0% of gross sales. We estimate that the total expenses for the offering, excluding compensation payable to Cantor under the terms of the sales agreement, will be approximately \$129,144, which includes certain expense reimbursements payable to Cantor.

Settlement for sales of ordinary shares will occur on the third business day following the date on which any sales are made, or on some other date that is agreed upon by us and Cantor in connection with a particular transaction, in return for payment of the net proceeds to us. There is no arrangement for funds to be received in an escrow, trust or similar arrangement.

Cantor will act as sales agents on a reasonable efforts basis. In connection with the sale of our ordinary shares on our behalf, Cantor will, with respect to sales effected in an "at the market offering," be deemed to be an "underwriter" within the meaning of the Securities Act of 1933, as amended, or the Securities Act, and the compensation of Cantor may be deemed to be underwriting commissions or discounts. We have agreed to provide indemnification and contribution to Cantor against certain civil liabilities, including liabilities under the Securities Act. We have also agreed to reimburse Cantor for certain other specified expenses in the amount of up to \$50,000.

Under the terms of the sales agreement, we may also sell ordinary shares to Cantor as principal for its own account, at a price agreed upon at the time of sale. If we sell shares to Cantor as principal, we will enter into a separate agreement setting forth the terms of such transaction, and we will describe the agreement in a separate prospectus supplement or pricing supplement.

The offering pursuant to the sales agreement will terminate upon the earlier of (i) the sale of all ordinary shares subject to the agreement or (ii) termination of the sales agreement as set forth therein.

Cantor and its affiliates may in the future provide various investment banking, commercial banking and other financial services to us or our affiliates, for which services they may in the future receive customary fees. To the extent required by Regulation M promulgated under the Securities Exchange Act of 1934, as amended, Cantor will not engage in any market making activities involving our ordinary shares while the offering is ongoing under this prospectus supplement.

EXPENSES

We are paying all of the expenses of the issuance of our securities under this prospectus supplement, including administrative expenses, accounting fees and the legal fees of our counsel, and are reimbursing Cantor for certain expenses. We estimate these expenses to be approximately \$129,144, which at the present time include the following categories of expenses:

SEC filing fee	\$ 4,644*
FINRA filing fee	\$ 4,500
Legal fees and expenses	\$ 95,000
Accounting fees and expenses	\$ 20,000
Miscellaneous expenses	\$ 5,000
Total	\$ 129,144

* This amount was paid in full in connection with the filing of the registration statement on Form F-3.

LEGAL MATTERS

The validity of the ordinary shares being offered hereby will be passed upon for us by Meitar Liquornik Geva & Leshem Brandwein, Ramat-Gan, Israel. Kramer Levin Naftalis & Frankel LLP, New York, New York, is acting as our counsel in connection with United States securities laws. Cantor is being represented in connection with this offering by Reed Smith LLP, New York, New York.

Prospectus



\$40,000,000
Ordinary Shares
Rights
Warrants
Units

We may offer and sell from time to time in one or more offerings our ordinary shares rights, warrants and units having an aggregate offering price up to \$40,000,000.

Each time we sell securities pursuant to this prospectus, we will provide in a supplement to this prospectus the price and any other material terms of any such offering and the securities offered. Any prospectus supplement may also add, update or change information contained in the prospectus. You should read this prospectus and any applicable prospectus supplement, as well as the documents incorporated by reference or deemed incorporated by reference into this prospectus, carefully before you invest in any securities. **This prospectus may not be used to offer or sell securities unless accompanied by a prospectus supplement.**

Our ordinary shares are traded on the Nasdaq Capital Market and on the Tel Aviv Stock Exchange under the symbol "CGEN". The closing sale price of our ordinary shares on the Nasdaq Capital Market and on the Tel Aviv Stock Exchange on January 5, 2011, was \$5.05 and \$4.99 per share respectively. The currency in which our stock is traded on the Tel Aviv Stock Exchange is the New Israeli Shekel. The dollar amounts represent a conversion from New Israeli Shekels to dollar amounts in accordance with the dollar - New Israeli Shekel conversion rate as of the date of trade.

Investing in our securities involves a high degree of risk. Risks associated with an investment in our securities will be described in the applicable prospectus supplement and are and will be described in certain of our filings with the Securities and Exchange Commission, as described in "Risk Factors" on page 4.

The securities may be sold directly by us to investors including corporate partners in various programs of the Company, through agents designated from time to time or to or through underwriters or dealers, or through a combination of such methods. For additional information on the methods of sale, you should refer to the section entitled "Plan of Distribution." If any underwriters are involved in the sale of our securities with respect to which this prospectus is being delivered, the names of such underwriters and any applicable commissions or discounts will be set forth in a prospectus supplement. The net proceeds we expect to receive from such sale will also be set forth in a prospectus supplement.

Neither the Securities and Exchange Commission nor any state securities commission has approved or disapproved of these securities or passed upon the adequacy or accuracy of this prospectus. Any representation to the contrary is a criminal offense.

The date of this prospectus is January 21, 2011

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ABOUT THIS PROSPECTUS

This prospectus is part of a registration statement that we filed with the Securities and Exchange Commission, or the Commission, utilizing a “shelf” registration process. Under this shelf registration process, we may offer from time to time up to \$40,000,000 in the aggregate of our ordinary shares, rights, warrants or units, or combinations thereof, in one or more offerings. We will refer to our ordinary shares, rights, warrants and units collectively as the “securities” throughout this prospectus.

Each time we sell securities, we will provide you with a prospectus supplement that will describe the securities, the specific amounts, prices and terms of such offering. The prospectus supplement may also add, update or change information contained in this prospectus. You should read carefully both this prospectus and any prospectus supplement together with additional information described below under “Where You Can Find More Information and Incorporation by Reference.”

This prospectus does not contain all of the information provided in the registration statement that we filed with the Commission. For further information about us or our securities, you should refer to that registration statement, which you can obtain from the Commission as described below under “Where You Can Find More Information and Incorporation by Reference.”

You should rely only on the information contained or incorporated by reference in this prospectus or a prospectus supplement. We have not authorized any other person to provide you with different information. If anyone provides you with different or inconsistent information, you should not rely on it. This prospectus is not an offer to sell these securities and it is not soliciting an offer to buy these securities in any jurisdiction where the offer or sale is not permitted. You should not assume that the information contained in this prospectus and the accompanying prospectus supplement is accurate on any date subsequent to the date set forth on the front of the document or that any information that we have incorporated by reference is correct on any date subsequent to the date of the document incorporated by reference. Our business, financial condition, results of operations and prospects may have changed since those dates.

ABOUT COMPUGEN LTD.

Compugen is a drug and diagnostic discovery company that relies on an extensive infrastructure of computer-based (“*in silico*”) discovery capabilities to systematically predict and select novel product candidates in areas of high industry interest and unmet medical need. Following this *in silico* prediction and selection, the resulting novel molecules are synthesized and then validated utilizing traditional *in vitro* and *in vivo* experimental procedures. Our business model is to provide an increasing number of these validated product candidates to pharmaceutical, biotech and diagnostic companies under licensing and other commercialization arrangements whereby we are entitled to receive advance fees or research revenues, milestone payments and revenue-sharing amounts from the development and commercialization by such companies of products based on such candidate molecules.

From 1997 through 2005, most of our R&D efforts were directed towards establishing the required infrastructure of proprietary scientific understandings and predictive platforms, algorithms, machine learning systems and other computational biology tools to enable accurate and broadly applicable *in silico* drug and diagnostic candidate prediction and selection. Beginning in 2005, an increasing portion of our R&D activities was committed to utilizing these capabilities for product candidate discovery, while continuing to expand and enhance our *in silico* discovery infrastructure, which remains an on-going primary objective. During 2006, increasing efforts, mainly in the form of *in vitro* and *in vivo* studies, were undertaken in order to validate selected product candidates resulting from either our on-going infrastructure building activities or our initial use of the resulting discovery capabilities. In addition, we entered into various collaborations for some of these initial product candidates.

More recently, with the successful validation of an increasing number of our *in silico* predicted product candidates in well-established animal disease model and other experimental validation approaches, we began to focus our discovery efforts on unmet needs, primarily in the fields of immunology and oncology, and also initiated a program (the “Pipeline Program”) to both substantially increase the number of molecules in our validation pipeline and to increase the value of certain of our candidates by advancing selected molecules 12-18 months beyond proof of concept experimental validation. With respect to increasing the number of product candidates, during 2010, approximately 20 additional novel molecules entered our validation pipeline. With respect to advancing selected molecules, we anticipate that the candidates selected for these preclinical activities will continue to be primarily protein, peptide and monoclonal antibody therapeutics in the fields of immunology and oncology. To date, among the product candidates included in Pipeline Program are the following molecules, which are currently at various stages from *in silico* selection to post animal model validation:

- CGEN-471 - Drug target for monoclonal antibody based therapy for oncology
- CGEN-928 - Drug target for monoclonal antibody based therapy for multiple myeloma
- CGEN-1017 - Drug target for monoclonal antibody based therapy for oncology
- CGEN-1033 - Drug target for monoclonal antibody based therapy for oncology
- CGEN-15001 - Protein therapeutic for rheumatoid arthritis, multiple sclerosis and other autoimmune diseases
- CGEN-15001T - Drug target for monoclonal antibody based therapy for oncology
- CGEN-15011 - Protein therapeutic for autoimmune diseases
- CGEN-15011T - Drug target for monoclonal antibody based therapy for oncology
- CGEN-15021 - Protein therapeutic for autoimmune diseases
- CGEN-25007- Peptide therapeutic for autoimmune diseases
- CGEN-25017 - Peptide therapeutic for oncology, inflammatory and ocular diseases
- CGEN- 25028 - Peptide therapeutic for oncology
- CGEN- 25048 - Peptide therapeutic for oncology

Research and Discovery Activities: Our research and discovery activities consist of three primary and overlapping components. The first is our continuing effort to obtain deeper predictive understandings of important biological phenomena at the molecular level through the analysis and integration of biological data of various types such as DNA, RNA, protein and peptide sequences, gene expression data, protein network data, and drug-related data. The second utilizes these scientific understandings, in order to continuously expand and enhance our underlying discovery infrastructure through the development of predictive platforms, algorithms, machine learning systems and other computational biology tools. The third component is the utilization of this infrastructure, for ourselves and our partners, for the *in silico* prediction and selection of multiple novel molecules of interest as potential drugs, drug targets or diagnostics, followed by experimental *in vitro* and *in vivo* validation.

Therapeutic and Diagnostic Product Candidates: In utilizing our discovery infrastructure, we independently, or with a partner company, seek to predict, select and validate novel candidates that answer unmet medical needs and that may be suitable for further development as therapeutic or diagnostic products. Our discovery infrastructure is broadly applicable to numerous applications and fields in both diagnostics and therapeutics, with our current focus being therapeutics, and within therapeutics, the fields of oncology and immunology. Our therapeutic candidates are biologics and include peptide therapeutics, protein therapeutics and drug targets for monoclonal antibody therapy. Among these are novel peptides which modulate known clinically relevant targets and/or pathways, novel proteins which belong to clinically important protein families and/or pathways, and drug targets which reside on the cell surfaces of tissues involved with particular diseases, such as cancer. Although not a current focus for discovery by the Company, our novel diagnostic candidates include protein and nucleic based biomarkers which can indicate the presence or absence of a condition, such as a disease, or a person’s predisposition to either acquire a disease or to respond to a therapeutic treatment.

Business Model: Our business model relies on providing an increasing number of attractive drug and diagnostic product candidates to leading pharmaceutical, biotechnology, and diagnostic companies under various forms of collaborations. Underlying this business model is the continuing enhancement and expansion of our unique and broadly applicable *in silico* predictive discovery infrastructure. In all cases, our objective is that these collaborations be “product oriented”, with us having the right to receive advance payments or research revenues, milestone payments and revenue-sharing amounts from all products developed and commercialized by third parties based on our product candidates. Furthermore, these collaborations can be based not only on product candidates previously discovered by us, but also on product candidate “discovery on demand” in areas of interest to our partner, or combinations of the two. We have entered into several such “discovery on demand” agreements, but we have not yet recognized significant revenues from these initial agreements.

During 2010 we began planning and initiating our Pipeline Program to both substantially increase the number of product candidates in our validation pipeline, and to advance selected molecules beyond the animal disease model proof of concept. During the year approximately 20 additional molecules were added to our validation pipeline, and with respect to advancing certain molecules past the animal disease model proof of concept, we have selected the first set of such molecules; additional candidates will be selected from our validation pipeline and future discovery runs.

Our principal executive offices are located at 72 Pinchas Rosen Street, Tel Aviv, Israel 69512. Our telephone number is +972-3-765-8585 and our website address is www.cgen.com. The information on our website is not incorporated by reference into this prospectus and should not be relied upon with respect to this offering.

MATERIAL CHANGES

Since the filing of our most recent Annual Report on Form 20-F, we have entered into an agreement (the "Funding Agreement") dated December 29, 2010, with Baize Investments (Israel) Ltd. ("Baize"). Under the Funding Agreement, Baize has provided us with \$5,000,000 in support of our Pipeline Program. In exchange, Baize received (i) with respect to five designated molecules that are currently in the Pipeline Program, the right to receive ten percent (which amount may be reduced under certain circumstances) (the "Participation Payments") of certain cash consideration (including both development and post-marketing fees) that may be received by Compugen in the future pursuant to any licenses covering the development and commercialization of products developed from these five designated molecules, provided that, in all cases, any such Participation Payments are to be reduced by certain pass-through amounts; and (ii) warrants for 500,000 Compugen ordinary shares, exercisable at \$6.00 per share through June 30, 2013. Currently, all five designated molecules are in active research in the Pipeline Program, with their current status ranging from in silico selection to post animal model validation. In addition, Baize has the right, until June 30, 2013, to waive its right to receive Participation Payments, in exchange for 833,334 Compugen ordinary shares.

If, prior to June 30, 2011, we receive commitments from third parties for an investment in us of an aggregate of at least \$15,000,000, which investment includes financial participation rights in ten or more Compugen-discovered molecules (including at least three of the five designated in the Funding Agreement) (a "Subsequent Financing"), the Funding Agreement provides that Baize will be required to elect to either (i) exchange in total its rights to receive Participation Payments as described above for such consideration on the same terms and conditions as would be received by third parties for a \$5,000,000 investment in such Subsequent Financing, or (ii) waive in total its rights to receive Participation Payments as described above and have the \$5,000,000 investment amount refunded to it, or (iii) exercise its right, as described above, to waive its right to receive Participation Payments in exchange for 833,333 Compugen ordinary shares. The June 30, 2011 deadline for Compugen to receive the future commitments for a new investment may be extended by us on a month to month basis, but not past December 31, 2011, by issuing to Baize a warrant for 83,333 additional Compugen ordinary shares, on the same terms as the original warrant, for each such month of extension.

This transaction is also described in our report on Form 6-K filed with the Commission on December 30, 2010.

RISK FACTORS

Before making an investment decision, you should carefully consider the risks described under “Risk Factors” in the applicable prospectus supplement and in our most recent Annual Report on Form 20-F, or any updates in our Reports on Form 6-K, together with all of the other information appearing in this prospectus or incorporated by reference into this prospectus and any applicable prospectus supplement, in light of your particular investment objectives and financial circumstances. The risks so described are not the only risks facing our company. Additional risks not presently known to us or that we currently deem immaterial may also impair our business operations. Our business, financial condition and results of operations could be materially adversely affected by any of these risks. The trading price of our securities could decline due to any of these risks, and you may lose all or part of your investment.

NOTE REGARDING FORWARD-LOOKING STATEMENTS

This prospectus contains, and any accompanying prospectus supplement will contain, forward-looking statements within the meaning of Section 27A of the Securities Act of 1933, as amended, or the Securities Act, and Section 21E of the Securities Exchange Act of 1934, as amended, or the Exchange Act, and the Private Securities Litigation Reform Act of 1995. Also, documents that we incorporate by reference into this prospectus, including documents that we subsequently file with the Commission, will contain forward-looking statements. Forward-looking statements are those that predict or describe future events or trends and that do not relate solely to historical matters. You can generally identify forward-looking statements as statements containing the words “may,” “will,” “could,” “should,” “expect,” “anticipate,” “intend,” “estimate,” “believe,” “project,” “plan,” “assume” or other similar expressions, or negatives of those expressions, although not all forward-looking statements contain these identifying words. All statements contained or incorporated by reference in this prospectus and any prospectus supplement regarding our future strategy, future operations, projected financial position, proposed products, estimated future revenues, projected costs, future prospects, the future of our industry and results that might be obtained by pursuing management’s current plans and objectives are forward-looking statements.

You should not place undue reliance on our forward-looking statements because the matters they describe are subject to certain risks, uncertainties and assumptions that are difficult to predict. Our forward-looking statements are based on the information currently available to us and speak only as of the date on the cover of this prospectus, the date of any prospectus supplement, or, in the case of forward-looking statements incorporated by reference, the date of the filing that includes the statement. Over time, our actual results, performance or achievements may differ from those expressed or implied by our forward-looking statements, and such difference might be significant and materially adverse to our security holders. We undertake no obligation to update publicly any forward-looking statements, whether as a result of new information, future events or otherwise.

We have identified some of the important factors that could cause future events to differ from our current expectations and they are described in this prospectus and supplements to this prospectus under the caption “Risk Factors,” as well as in our most recent Annual Report on Form 20-F, including without limitation under the captions “Risk Factors” and “Operating and Financial Review and Prospects,” and in other documents that we may file with the Commission, all of which you should review carefully. Please consider our forward-looking statements in light of those risks as you read this prospectus and any prospectus supplement.

OFFER STATISTICS AND EXPECTED TIMETABLE

We may sell from time to time pursuant to this prospectus (as may be detailed in prospectus supplements) an indeterminate number of securities as shall have a maximum aggregate offering price of \$40,000,000. The actual per share price of the securities that we will offer pursuant hereto will depend on a number of factors that may be relevant as of the time of offer (see “Plan of Distribution” below).

PRICE RANGE OF OUR SHARES

The following table lists the high and low market prices for our ordinary shares, for the periods indicated, on Nasdaq. Our ordinary shares were listed on the Nasdaq Global Market through June 16, 2009. Since June 17, 2009, our ordinary shares have been listed on the Nasdaq Capital Market.

Calendar Period	Price Per Share In US\$	
	High	Low
Annual		
2006	5.22	2.10
2007	3.40	1.56
2008	2.80	0.34
2009	5.86	0.39
2010	5.32	3.04
Fiscal Quarters		
2009		
First Quarter	1.00	0.39
Second Quarter	2.25	0.63
Third Quarter	3.37	1.73
Fourth Quarter	5.86	2.30
2010		
First Quarter	5.32	3.80
Second Quarter	5.30	3.26
Third Quarter	4.85	3.04
Fourth Quarter	5.18	3.72
Most Recent Six Months		
July	4.30	3.04
August	4.48	3.57
September	4.85	3.66
October	5.18	4.37
November	4.64	3.72
December	5.03	3.82

On January 5, 2011, the closing price of our ordinary shares on the Nasdaq Capital Market was \$5.05.

The following table lists the high and low market prices for our ordinary shares, for the periods indicated, on the Tel-Aviv Stock Exchange:

Calendar Period	Price Per Share In US\$*	
	High	Low
Annual		
2006	5.30	2.38
2007	3.53	1.64
2008	2.81	0.42
2009	6.06	0.42
2010	5.64	3.08
Fiscal Quarters		
2009		
First Quarter	0.79	0.42
Second Quarter	2.17	0.64
Third Quarter	3.19	1.67
Fourth Quarter	6.06	2.39
2010		
First Quarter	5.64	3.81
Second Quarter	5.35	3.30
Third Quarter	4.87	3.08
Fourth Quarter	5.20	3.69
Most Recent Six Months		
July	4.27	3.08
August	4.38	3.50
September	4.87	3.66
October	5.20	4.48
November	4.74	3.69
December	5.01	3.75

On January 5, 2011, the closing price of our ordinary shares on the Tel-Aviv Stock Exchange was *\$4.99.

* The currency in which our stock is traded on the Tel Aviv Stock Exchange is the New Israeli Shekel. The above dollar amounts represent a conversion from New Israeli Shekels to dollar amounts in accordance with the dollar - New Israeli Shekel conversion rate as of the relevant date of trade.

REASONS FOR THE OFFER AND USE OF PROCEEDS

Our management will have broad discretion over the use of the net proceeds from the sale of our securities pursuant to this prospectus. Unless otherwise indicated in any accompanying prospectus supplement, we currently intend to use the net proceeds from the sale of the securities offered pursuant to this prospectus for general corporate purposes and working capital requirements. Pending use of the proceeds, we intend to invest the proceeds in short-term money market funds with portfolios of investment grade corporate and government securities.

DESCRIPTION OF ORDINARY SHARES

Our authorized share capital consists of 100,000,000 ordinary shares, par value NIS 0.01 per share. Holders of ordinary shares have one vote per share, and are entitled to participate equally in the payment of dividends and share distributions and, in the event of our liquidation, in the distribution of assets after satisfaction of liabilities to creditors. No preferred shares are currently authorized. All outstanding ordinary shares are validly issued and fully paid.

Transfer of Shares

Fully paid ordinary shares are issued in registered form and may be freely transferred under our Articles of Association unless the transfer is restricted or prohibited by another instrument.

Voting Rights

Our ordinary shares do not have cumulative voting rights in the election of directors. As a result, the holders of ordinary shares that represent more than 50% of the voting power represented at a shareholders meeting have the power to elect all of our directors, except the external directors whose election requires a special majority.

Holders of ordinary shares have one vote for each ordinary share held on all matters submitted to a vote of shareholders. Shareholders may vote in person or by proxy. These voting rights may be affected by the grant of any special voting rights to the holders of a class of shares with preferential rights that may be authorized in the future.

Under the Israeli Companies Law, or the Companies Law, unless otherwise provided in the Articles of Association or by applicable law, all resolutions of the shareholders require a simple majority and all shareholders' meetings require prior notice of at least 21 days. Our Articles of Association provide that, except with respect to matters which require the approval of a special majority under the Companies Law, all decisions may be made by a simple majority of the voting power represented at the meeting, in person, by proxy or by proxy card, and voting thereon.

Annual and Special General Meetings

We must hold our annual general meeting of shareholders each year no later than 15 months from the last annual meeting, at a time and place determined by the board of directors, upon at least 21 days' prior notice to our shareholders. The board of directors may, whenever it thinks fit, convene a special meeting as may be determined by the board of directors. The board of directors shall be obligated to convene a special meeting, as may be determined by the board of directors, upon requisition in writing in accordance with the Companies Law. Not less than 21 days' prior notice, or 35 days' prior notice to the extent required under regulations promulgated under the Companies Law, shall be given of every general meeting. Each such notice shall specify the place and the time of the meeting and the general nature of each item to be acted upon thereat, as well as any other information required by the Companies Law or any regulation promulgated thereunder, said notice to be given to all shareholders who will be entitled to attend and vote at such meeting and delivered or publicized in any manner permitted under the Companies Law.

The quorum required for a meeting of shareholders consists of at least two shareholders present in person or by proxy who hold or represent between them at least 33.3% of the issued share capital. A meeting adjourned for lack of a quorum generally is adjourned to the same day in the following week at the same time and place or any time and place as the directors designate in a notice to the shareholders. At the reconvened meeting, the required quorum consists of any two members present in person or by proxy.

Limitations on the Rights to Own Securities

The ownership or voting of ordinary shares by non-residents of Israel is not restricted in any way by our Articles of Association or the laws of the State of Israel, except that nationals of countries which are, or have been, in a state of war with the State of Israel, may not be recognized as owners of our shares.

Approval of Certain Transactions

The Companies Law codifies the fiduciary duties that office holders, including directors and executive officers, owe to a company. An office holder, as defined in the Companies Law, is a director, general manager, chief business manager, deputy general manager, vice general manager, executive vice president, vice president, other manager directly subordinate to the managing director or any other person assuming the responsibilities of any of the foregoing positions without regard to such person's title. An office holder's fiduciary duties consist of a duty of care and a duty of loyalty. The duty of loyalty includes avoiding any conflict of interest between the office holder's position in the company and his personal affairs, avoiding any competition with the company, avoiding exploitation of any business opportunity of the company in order to reap personal gain for himself or others, and revealing to the company any information or documents relating to the company's affairs which the office holder has received due to his position as an office holder. Under the Companies Law, all arrangements as to compensation of office holders who are not directors require approval of the board of directors, or a committee thereof or of persons to whom such power is delegated. Arrangements regarding the compensation of directors also require audit committee and shareholder approval, with the exception of compensation to external directors in the amounts specified in the regulations promulgated under the Companies Law.

The Companies Law requires that an office holder promptly disclose any personal interest that he or she may have and all related material information known to him or her, in connection with any existing or proposed transaction by the company. The disclosure must be made to our board of directors or shareholders prior to the meeting at which the transaction is to be discussed. In addition, if the transaction is an extraordinary transaction, as defined under the Companies Law, the office holder must also disclose any personal interest held by the office holder's spouse, siblings, parents, grandparents, descendants, spouse's descendants and the spouses of any of the foregoing, or by any corporation in which the office holder is a five percent (5%) or greater shareholder, or holder of five percent (5%) or more of the voting power, director or general manager or in which he or she has the right to appoint at least one director or the general manager. An extraordinary transaction is defined as a transaction not in the ordinary course of business, not on market terms, or that is likely to have a material impact on the company's profitability, assets or liabilities.

In the case of a transaction which is not an extraordinary transaction, after the office holder complies with the above disclosure requirement, only board of directors' approval is required unless the Articles of Association of the company provide otherwise. A transaction must not be adverse to the company's interest. If the transaction is an extraordinary transaction, then, in addition to any approval required by the Articles of Association, the transaction must also be approved by the audit committee and by the board of directors, and under specified circumstances, by a meeting of the shareholders. An office holder who has a personal interest in a matter that is considered at a meeting of the board of directors or the audit committee may not be present at this meeting or vote on this matter.

The Companies Law applies the same disclosure requirements to a controlling shareholder of a public company, which is defined as a shareholder who has the ability to direct the activities of a company, other than in circumstances where this power derives solely from the shareholder's position on the board of directors or any other position with the company, and includes a shareholder that holds 25% or more of the voting rights if no other shareholder owns more than 50% of the voting rights in the company. Extraordinary transactions with a controlling shareholder or in which a controlling shareholder has a personal interest, and the terms of compensation of a controlling shareholder who is an office holder, require the approval of the audit committee, the board of directors and the shareholders of the company.

The shareholders' approval must either include at least one-third of the disinterested shareholders who are present, in person or by proxy, at the meeting, or, alternatively, the total shareholdings of the disinterested shareholders who vote against the transaction must not represent more than one percent (1%) of the voting rights in the company.

In addition, a private placement of securities that will increase the relative holdings of a shareholder that holds five percent (5%) or more of the company's outstanding share capital, assuming the exercise by such person of all of the convertible securities into shares held by that person, or that will cause any person to become a holder of more than five percent (5%) of the company's outstanding share capital, requires approval by the board of directors and the shareholders of the company. However, subject to certain exceptions, shareholder approval will not be required if the aggregate number of shares issued pursuant to such private placement, assuming the exercise of all of the convertible securities into shares being sold in such a private placement, comprises less than twenty percent (20%) of the voting rights in a company prior to the consummation of the private placement.

Under the Companies Law, a shareholder has a duty to act in good faith towards the company and other shareholders and refrain from abusing his power in the company. Shareholders' voting powers includes their power to vote in the general meetings of shareholders on the following matters:

- any amendment to the Articles of Association;
- an increase of the company's authorized share capital;
- a merger; and
- approval of interested party transactions.

In addition, any controlling shareholder, any shareholder who knows it can determine the outcome of a shareholders vote and any shareholder who, under our Articles of Association, can appoint or prevent the appointment of an office holder, is under a duty to act with fairness towards the company. The Companies Law does not describe the substance of this duty. The Companies Law requires that specified types of transactions, actions and arrangements be approved as provided for in a company's articles of association and in some circumstances by the audit committee, by the board of directors and by the shareholders. In general, the vote required by the audit committee and the board of directors for approval of these matters, in each case, is a majority of the disinterested directors participating in a duly convened meeting.

Dividend and Liquidation Rights

We may declare a dividend to be paid to the shareholders of our ordinary shares according to their rights and interests in our profits. In the event of our liquidation, after satisfaction of liabilities to creditors, our assets will be distributed to the shareholders of our ordinary shares in proportion to the nominal value of their shareholdings. This right may be affected by the grant of preferential dividend or distribution rights to the shareholders of a class of shares with preferential rights that may be authorized in the future. Pursuant to Israel's securities laws, a company registering its shares for trade on the Tel Aviv Stock Exchange may not have more than one class of shares for a period of one year following registration, after which it is permitted to issue preference shares. Under the Companies Law, the declaration of a dividend does not require the approval of the shareholders of the company, unless the company's Articles of Association require otherwise. Our Articles of Association provide that the board of directors may declare and distribute dividends without the approval of the shareholders.

To date, we have not declared or distributed any dividend.

Anti-Takeover Provisions under Israeli Law

The Companies Law provides that an acquisition of shares in a public company must be made by means of a tender offer if, as a result of such acquisition, the purchaser would become shareholder with over 25% of the voting rights in the company. This rule does not apply if there is already another shareholder of the company with 25% or more of the voting rights. Similarly, the Companies Law provides that an acquisition of shares in a public company must be made by means of a tender offer if, as a result of the acquisition, the purchaser's shareholdings would entitle the purchaser to over 45% of the voting rights in the company, unless there is a shareholder with 50% or more of the voting rights in the company. These rules do not apply if the acquisition is made by way of a merger.

Finally, in general, Israeli tax law treats specified acquisitions less favorably than does U.S. tax law. However, Israeli tax law provides for tax deferral in specified acquisitions, including transactions where the consideration for the sale of shares is the receipt of shares of the acquiring company.

DESCRIPTION OF RIGHTS

General

We may issue rights to purchase any of our securities or any combination thereof. Rights may be issued independently or together with any other offered security and may or may not be transferable by the person purchasing or receiving the rights. In connection with any rights offering to our shareholders, we may enter into a standby underwriting arrangement with one or more underwriters pursuant to which such underwriters will purchase any offered securities remaining unsubscribed for after such rights offering. We may also appoint a rights agent that may act solely as our agent in connection with the rights that are sold. Any such agent will not assume any obligation or relationship of agency or trust with any of the holders of the rights. In connection with a rights offering to our shareholders, we will distribute certificates evidencing the rights and a prospectus supplement to our shareholders on the record date that we set for receiving rights in such rights offering.

The applicable prospectus supplement will describe the following terms of rights in respect of which this prospectus is being delivered:

- the title of such rights;
- the securities for which such rights are exercisable;
- the exercise price for such rights;
- the number of such rights issued with respect to each ordinary share;
- the extent to which such rights are transferable;
- if applicable, a discussion of the material income tax considerations applicable to the issuance or exercise of such rights;
- the date on which the right to exercise such rights shall commence, and the date on which such rights shall expire (subject to any extension);
- the extent to which such rights include an over-subscription privilege with respect to unsubscribed securities;
- if applicable, the material terms of any standby underwriting or other purchase arrangement, or any agency agreement, that we may enter into in connection with the rights offering; and
- any other terms of such rights, including terms, procedures and limitations relating to the exchange and exercise of such rights.

Exercise of Rights

Each right will entitle the holder of the right to purchase for cash such securities or any combination thereof at such exercise price as shall in each case be set forth in, or be determinable as set forth in, the prospectus supplement relating to the rights offered thereby. Rights may be exercised at any time up to the close of business on the expiration date for such rights set forth in the prospectus supplement. After the close of business on the expiration date, all unexercised rights will become void.

Rights may be exercised as set forth in the prospectus supplement relating to the rights offered thereby. Upon receipt of payment and the rights certificate properly completed and duly executed at the corporate trust office of the rights agent or any other office indicated in the prospectus supplement, we will forward, as soon as practicable, the securities purchasable upon such exercise. We may determine to offer any unsubscribed offered securities directly to persons other than shareholders, to or through agents, underwriters or dealers or through a combination of such methods, including pursuant to standby underwriting arrangements, as set forth in the applicable prospectus supplement.

DESCRIPTION OF WARRANTS

We may issue warrants to purchase any of our securities. We may issue warrants independently or together with any other securities offered by any prospectus supplement and the warrants may be attached to or separate from those securities. Any series of warrants may be issued under a separate warrant agreement, which may be entered into between us and a warrant agent specified in a prospectus supplement. Any such warrant agent will act solely as our agent in connection with the warrants of such series and will not assume any obligation or relationship of agency or trust with any of the holders of the warrants. We will set forth further terms of the warrants and any applicable warrant agreements in the applicable prospectus supplement relating to the issuance of any warrants, including, where applicable, the following:

- the title of the warrants;
- the aggregate number of the warrants;
- the number and type of securities purchasable upon exercise of the warrants;
- the designation and terms of the securities, if any, with which the warrants are issued and the number of the warrants issued with each such offered security;
- the date, if any, on and after which the warrants and the related securities will be separately transferable;
- the price at which, and form of consideration for which, each security purchasable upon exercise of the warrants may be purchased;
- the date on which the right to exercise the warrants will commence and the date on which the right will expire;
- the minimum or maximum amount of the warrants which may be exercised at any one time;
- any circumstances that will cause the warrants to be deemed to be automatically exercised; and
- any other material terms of the warrants.

DESCRIPTION OF UNITS

As specified in the applicable prospectus supplement, we may issue units consisting of our ordinary shares, rights, warrants or any combination of such securities. The applicable prospectus supplement will describe:

- the terms of the units and of the ordinary shares, rights and/or warrants comprising the units, including whether and under what circumstances the securities comprising the units may be traded separately;
- a description of the terms of any unit agreement governing the units or any arrangement with an agent that may act on our behalf in connection with the unit offering; and
- a description of the provisions for the payment, settlement, transfer or exchange of the units.

PLAN OF DISTRIBUTION

We may sell the offered securities on a negotiated or competitive bid basis to or through underwriters or dealers. We may also sell the securities directly to corporate partners in various programs of the Company, institutional investors or other purchasers or through agents. We will identify any underwriter, dealer, or agent involved in the offer and sale of the securities, and any applicable commissions, discounts and other terms constituting compensation to such underwriters, dealers or agents, in a prospectus supplement.

We may distribute our securities from time to time in one or more transactions:

- at a fixed price or prices, which may be changed;
- at market prices prevailing at the time of sale;
- at prices related to such prevailing market prices; or
- at negotiated prices.

Only underwriters named in the prospectus supplement are underwriters of our securities offered by the prospectus supplement.

If underwriters are used in the sale of our securities, such securities will be acquired by the underwriters for their own account and may be resold from time to time in one or more transactions, including negotiated transactions, at a fixed public offering price or at varying prices determined at the time of sale. Unless stated otherwise in a prospectus supplement, the obligation of any underwriters to purchase our securities will be subject to certain conditions and the underwriters will be obligated to purchase all of the applicable securities if any are purchased. If a dealer is used in a sale, we may sell our securities to the dealer as principal. The dealer may then resell the securities to the public at varying prices to be determined by the dealer at the time of resale. In effecting sales, dealers engaged by us may arrange for other dealers to participate in the resales.

We or our agents may solicit offers to purchase securities from time to time. Unless stated otherwise in a prospectus supplement, any agent will be acting on a best efforts basis for the period of its appointment. In addition, we may enter into derivative, sale or forward sale transactions with third parties, or sell securities not covered by this prospectus to third parties in privately negotiated transactions. If the applicable prospectus supplement indicates, in connection with such transaction, the third parties may, pursuant to this prospectus and the applicable prospectus supplement, sell securities covered by this prospectus and the applicable prospectus supplement. If so, the third party may use securities borrowed from us or others to settle such sales and may use securities received from us or others to close out any related short positions. We may also loan or pledge securities covered by this prospectus and the applicable prospectus supplement to third parties, who may sell the loaned securities or, in the event of default in the case of a pledge, sell the pledged securities pursuant to this prospectus and the applicable prospectus supplement. The third party in such transactions will be an underwriter and will be identified in the applicable prospectus supplement or in a post-effective amendment.

In connection with the sale of our securities, underwriters or agents may receive compensation (in the form of discounts, concessions or commissions) from us or from purchasers of securities for whom they may act as agents. Underwriters may sell securities to or through dealers, and such dealers may receive compensation in the form of discounts, concessions or commissions from the underwriters and/or commissions from the purchasers for whom they may act as agents. Underwriters, dealers and agents that participate in the distribution of our securities may be deemed to be “underwriters” as that term is defined in the Securities Act of 1933, or the Securities Act, and any discounts or commissions received by them from us and any profits on the resale of the shares by them may be deemed to be underwriting discounts and commissions under the Securities Act. Compensation as to a particular underwriter, dealer or agent might be in excess of customary commissions and will be in amounts to be negotiated in connection with transaction involving our securities. We will identify any such underwriter or agent, and we will describe any such compensation paid, in the related prospectus supplement. Maximum compensation to any underwriters, dealers or agents will not exceed any applicable FINRA limitations.

Underwriters, dealers and agents may be entitled, under agreements with us, to indemnification against and contribution toward certain civil liabilities, including liabilities under the Securities Act.

If stated in a prospectus supplement, we will authorize agents and underwriters to solicit offers by certain specified institutions or other persons to purchase our securities at the public offering price set forth in the prospectus supplement pursuant to delayed delivery contracts providing for payment and delivery on a specific date in the future. Institutions with whom such contracts may be made include commercial savings banks, insurance companies, pension funds, investment companies, educational and charitable institutions, and other institutions, but shall in all cases be subject to our approval. Such contracts will be subject only to those conditions set forth in the prospectus supplement, and the prospectus supplement will set forth the commission payable for solicitation of such contracts. The obligations of any purchase under any such contract will be subject to the condition that the purchase of the securities shall not be prohibited at the time of delivery under the laws of the jurisdiction to which the purchaser is subject. The underwriters and other agents will not have any responsibility in respect of the validity or performance of such contracts.

If underwriters or dealers are used in the sale, until the distribution of our securities is completed, Commission rules may limit the ability of any such underwriters and selling group members to bid for and purchase the securities. As an exception to these rules, representatives of any underwriters are permitted to engage in certain transactions that stabilize the price of the securities. Such transactions may consist of bids or purchases for the purpose of pegging, fixing or maintaining the price of the securities. If the underwriters create a short position in the securities in connection with the offering (in other words, if they sell more shares than are set forth on the cover page of the prospectus supplement), the representatives of the underwriters may reduce that short position by purchasing securities in the open market. The representatives of the underwriters also may elect to reduce any short position by exercising all or part of any over-allotment option we may grant to the underwriters, as described in the prospectus supplement. In addition, the representatives of the underwriters may impose a penalty bid on certain underwriters and selling group members. This means that if the representatives purchase securities in the open market to reduce the underwriters' short position or to stabilize the price of our securities, they may reclaim the amount of the selling concession from the underwriters and selling group members who sold those securities as part of the offering. In general, purchases of a security for the purpose of stabilizing or to reduce a short position could cause the price of the security to be higher than it might be in the absence of such purchases. The imposition of a penalty bid might also have the effect of causing the price of the securities to be higher than it would otherwise be. If commenced, the representatives of the underwriters may discontinue any of the transactions at any time. These transactions may be effected on any exchange on which our securities are traded, in the over-the-counter market, or otherwise.

In compliance with the guidelines of the Financial Industry Regulatory Authority ("FINRA"), the aggregate maximum discount, commission or agency fees or other items constituting underwriting compensation to be received by any FINRA member or independent broker-dealer will not exceed 8% of any offering pursuant to this prospectus and any applicable prospectus supplement, as the case may be.

Certain of the underwriters or agents and their associates may engage in transactions with and perform services for us or our affiliates in the ordinary course of their respective businesses.

EXPENSES

We are paying all of the expenses of the registration of our securities under the Securities Act, including registration and filing fees, printing and duplication expenses, administrative expenses, accounting fees and the legal fees of our counsel. We estimate these expenses to be approximately \$40,644 which at the present time include the following categories of expenses:

SEC registration fee	\$ 4,644
Legal fees and expenses	\$ 25,000
Accounting fees and expenses	\$ 10,000
Miscellaneous expenses	\$ 1,000
Total	\$ 40,644

In addition, we anticipate incurring additional expenses in the future in connection with the offering of our securities pursuant to this prospectus. Any such additional expenses will be disclosed in a prospectus supplement.

LEGAL MATTERS

The validity of the securities being offered hereby will be passed upon for us by Meitar Liguornik Geva & Leshem Brandwein, Ramat-Gan, Israel. Kramer Levin Naftalis & Frankel LLP, New York, New York, is acting as our counsel in connection with United States securities laws.

EXPERTS

The consolidated financial statements of Compugen Ltd. at December 31, 2009 and 2008, and for each of the three years in the period ended December 31, 2009, appearing in our Annual Report on Form 20-F for the year ended December 31, 2009 have been audited by Kost Forer Gabbay & Kasierer, a member of Ernst & Young Global independent registered public accounting firm, as set forth in their reports thereon included therein, and incorporated herein by reference. The financial statements for the year ended December 31, 2007 of our wholly-owned subsidiary, Keddem Bioscience Ltd., not separately presented in our Annual Report, were audited by Kesselman & Kesselman (C.P.A. Isr.), a member firm of PricewaterhouseCoopers International Limited, whose reports have also been incorporated in this prospectus by reference to our Annual Report on Form 20-F for the year ended December 31, 2009. The financial statements referred to above are included in reliance upon such reports given on the authority of such firms as experts in accounting and auditing.

WHERE YOU CAN FIND MORE INFORMATION AND INCORPORATION OF CERTAIN INFORMATION BY REFERENCE

We are an Israeli company and are a "foreign private issuer" as defined in Rule 3b-4 under the Exchange Act. As a result, (1) our proxy solicitations are not subject to the disclosure and procedural requirements of Regulation 14A under the Exchange Act, (2) transactions in our equity securities by our officers and directors are exempt from Section 16 of the Exchange Act, and (3) until November 4, 2002, we were not required to make our SEC filings electronically, so that many of those filings are not available on the Commission's website. However, since that date, we have been making all required filings with the Commission electronically, and these filings are available over the Internet as described below.

In addition, we are not required to file reports and financial statements with the Commission as frequently or as promptly as U.S. companies whose securities are registered under the Exchange Act. However, we file with the Commission an Annual Report on Form 20-F containing financial statements audited by an independent registered public accounting firm. We also furnish reports on Form 6-K containing unaudited financial information for the first three quarters of each fiscal year and other material information that we are required to make public in Israel, that we file with, and that is made public by, any stock exchange on which our shares are traded, or that we distribute, or that is required to be distributed by us, to our shareholders.

You can read and copy any materials we file with the Commission at its Public Reference Room at 100 F Street, N.E., Washington, D.C. 20549. You can obtain information about the operation of the Commission Public Reference Room by calling the Commission at 1-800-SEC-0330. The Commission also maintains a web site that contains information we file electronically with the Commission, which you can access over the Internet at <http://www.sec.gov>. You may also access the information we file electronically with the Commission through our website at <http://www.cgen.com>. The information contained on, or linked from our website does not form part of this prospectus.

This prospectus is part of a registration statement on Form F-3 filed by us with the Commission under the Securities Act. As permitted by the rules and regulations of the Commission, this prospectus does not contain all the information set forth in the registration statement and the exhibits thereto filed with the Commission. For further information with respect to us and the ordinary shares offered hereby, you should refer to the complete registration statement on Form F-3, which may be obtained from the locations described above. Statements contained in this prospectus or in any prospectus supplement about the contents of any contract or other document are not necessarily complete. If we have filed any contract or other document as an exhibit to the registration statement or any other document incorporated by reference in the registration statement, you should read the exhibit for a more complete understanding of the document or matter involved. Each statement regarding a contract or other document is qualified in its entirety by reference to the actual document.

We incorporate by reference in this prospectus the documents listed below, and any future Annual Reports on Form 20-F or Reports on Form 6-K (to that extent that such Form 6-K indicates that it is intended to be incorporated by reference herein) filed with the Commission pursuant to the Exchange Act prior to the termination of the offering. The documents we incorporate by reference are:

- our Annual Report on Form 20-F for the fiscal year ended December 31, 2009;
- our Reports on Form 6-K filed with the Commission on each of March 11, 2010, April 27, 2010, July 27, 2010, September 21, 2010, September 22, 2010, October 26, 2010 and December 30, 2010;
- our consolidated financial statements for the nine month period ending on September 30, 2010 as filed on Form 6-K on January 11, 2011.

The information we incorporate by reference is an important part of this prospectus, and later information that we file with the Commission will automatically update and supersede the information contained in this prospectus.

We shall provide you without charge, upon your written or oral request, a copy of any of the documents incorporated by reference in this prospectus, other than exhibits to such documents which are not specifically incorporated by reference into such documents. Please direct your written or telephone requests to us at Compugen Ltd., 72 Pinchas Rosen Street, Tel Aviv, Israel 69512; +972-765-8585, Attention: Dikla Czaczkes Axselbrad, Chief Financial Officer.

ENFORCEABILITY OF CIVIL LIABILITIES

Service of process upon us and upon our directors and officers and the experts named in this prospectus, most of whom reside outside the United States, may be difficult to obtain within the United States. Furthermore, because substantially all of our assets and substantially all of our directors and officers are located outside the United States, any judgment obtained in the United States against us or any of our directors and officers may not be collectible within the United States.

There is doubt as to the enforceability of civil liabilities under the Securities Act and the Exchange Act in original actions instituted in Israel. However, subject to specified time limitations, an Israeli court may declare a foreign civil judgment enforceable if it finds that:

- the judgment was rendered by a court which was, according to the laws of the state of the court, competent to render the judgment,

- the judgment is no longer appealable,
- the obligation imposed by the judgment is enforceable according to the rules relating to the enforceability of judgments in Israel and the substance of the judgment is not contrary to public policy, and
- the judgment is executory in the state in which it was given.

Even if the above conditions are satisfied, an Israeli court will not enforce a foreign judgment if it was given in a state whose laws do not provide for the enforcement of judgments of Israeli courts (subject to exceptional cases) or if its enforcement is likely to prejudice the sovereignty or security of the State of Israel.

An Israeli court also will not declare a foreign judgment enforceable if:

- the judgment was obtained by fraud.
- there was no due process,
- the judgment was rendered by a court not competent to render it according to the laws of private international law in Israel,
- the judgment is at variance with another judgment that was given in the same matter between the same parties and which is still valid, or
- at the time the action was brought in the foreign court a suit in the same matter and between the same parties was pending before a court or tribunal in Israel.

If a foreign judgment is enforced by an Israel court, it generally will be payable in Israeli currency. Judgment creditors must bear the risk of unfavorable exchange rates.