

Protalix BioTherapeutics, Inc.

Form 424B5

March 17, 2011

Table of Contents

The information in this preliminary prospectus supplement is not complete and may be changed. The preliminary prospectus supplement and the accompanying prospectus are not an offer to sell these securities and are not soliciting an offer to buy these securities in any jurisdiction where the offer or sale is not permitted

**Filed Pursuant to Rule 424(b)(5)
Registration No. 333-171615**

SUBJECT TO COMPLETION, DATED MARCH 17, 2011

**PRELIMINARY PROSPECTUS SUPPLEMENT
(To Prospectus Dated January 13, 2011)**

Shares

Common Stock

We are selling shares of our common stock.

We have granted the underwriters a 30-day option to purchase up to additional shares of our common stock to cover over-allotments.

Our common stock is listed on the NYSE Amex under the symbol **PLX** and on the Tel Aviv Stock Exchange under the trading symbol **PLX**. On March 16, 2011, the last reported sale price of our common stock was \$6.21 per share on the NYSE Amex and NIS 22.66 per share on the Tel Aviv Stock Exchange.

Investing in our common stock involves risks. See **Risk Factors beginning on page S-6 of this prospectus supplement.**

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

	Per Share	Total
Public Offering Price	\$	\$
Underwriting Discount	\$	\$
Proceeds to Protalix BioTherapeutics (before expenses)	\$	\$

The underwriters expect to deliver the shares to purchasers on or about March , 2011 through the book-entry facilities of The Depository Trust Company.

Joint Book-Running Managers

Citi **Barclays Capital**

March , 2011

You should rely only on the information contained in or incorporated by reference in this prospectus supplement and the accompanying prospectus. We have not authorized anyone to provide you with different information. If anyone provides you with different or inconsistent information, you should not rely on it. We are not, and the underwriters are not, making an offer to sell these securities in any state or jurisdiction where the offer or sale is not permitted. You should not assume that the information contained in this prospectus supplement or the accompanying prospectus is accurate as of any date other than the date on the front of this prospectus supplement or the accompanying prospectus. Persons outside the United States who come into possession of this prospectus supplement must inform themselves about, and observe, any restrictions relating to the offering of the common stock and the distribution of this prospectus supplement outside the United States.

TABLE OF CONTENTS

Prospectus Supplement

	Page
<u>About This Prospectus Supplement</u>	S-ii
<u>Prospectus Supplement Summary</u>	S-1
<u>The Offering</u>	S-5
<u>Risk Factors</u>	S-6
<u>Cautionary Statement Regarding Forward-Looking Statements</u>	S-10
<u>Use of Proceeds</u>	S-12
<u>Price Range of Common Stock</u>	S-13
<u>Capitalization</u>	S-15
<u>Dilution</u>	S-16
<u>Certain U.S. Federal Income and Estate Tax Consequences to Non-U.S. Holders of Common Stock</u>	S-17
<u>Underwriting</u>	S-20
<u>Legal Matters</u>	S-25
<u>Experts</u>	S-25
<u>Where You Can Find More Information</u>	S-25
<u>Incorporation of Certain Documents by Reference</u>	S-26

Prospectus

	Page
Cautionary Statement Regarding Forward-Looking Statements	1
About This Prospectus	2
Our Business	2
Risk Factors	4
Use of Proceeds	5

Dilution	5
Securities We May Offer	5
Description of Common Stock	6
Plan of Distribution	7
Where You Can Find More Information	9
Incorporation of Certain Documents by Reference	9
Legal Matters	10
Experts	10

Table of Contents

ABOUT THIS PROSPECTUS SUPPLEMENT

This prospectus supplement is a supplement to the accompanying prospectus dated January 13, 2011 that is also a part of this document. This prospectus supplement and the accompanying prospectus are part of a registration statement that we filed with the Securities and Exchange Commission, or the SEC, using a shelf registration process. Under the shelf registration process, from time to time, we may sell any of the securities described in the accompanying prospectus in one or more offerings. In this prospectus supplement, we provide you with specific information about this offering. This prospectus supplement, the accompanying prospectus and the documents incorporated by reference herein and therein include important information about us, our common stock and other information you should know before investing in our common stock. This prospectus supplement also adds, updates and changes information contained in the accompanying prospectus. To the extent that any statement that we make in this prospectus supplement is inconsistent with the statements made in the accompanying prospectus or in any document incorporated by reference that was filed with the SEC before the date of this prospectus supplement, the statements made in the accompanying prospectus, or such an earlier filing, as applicable, are deemed modified or superseded by the statements made in this prospectus supplement. You should read both this prospectus supplement and the accompanying prospectus as well as the additional information described in this prospectus supplement under the headings *Where You Can Find More Information* on page S-25 and *Incorporation of Certain Documents by Reference* on page S-26 before investing in our common stock.

For purposes of this prospectus supplement and the accompanying prospectus, references to the terms *Protalix*, *we*, *us* and *our* refer to Protalix BioTherapeutics, Inc. and its consolidated subsidiaries, unless the context otherwise requires.

All references in this prospectus supplement to \$, U.S. Dollars and dollars are to United States dollars.

This prospectus supplement, the accompanying prospectus and the information incorporated by reference herein and therein include trademarks, service marks and trade names owned by us or other companies. All trademarks, service marks and trade names included or incorporated by reference into this prospectus supplement or the accompanying prospectus are the property of their respective owners.

Table of Contents

PROSPECTUS SUPPLEMENT SUMMARY

The following summary highlights certain information contained elsewhere in this prospectus supplement, the accompanying prospectus, any free writing prospectus that we have authorized to use and the documents incorporated by reference herein and in the accompanying prospectus. This summary does not contain all the information you will need in making your investment decision. You should carefully read this entire prospectus supplement, the accompanying prospectus, any free writing prospectus that we have authorized to use and the documents incorporated by reference herein and in the accompanying prospectus. You should pay special attention to the Risk Factors section of this prospectus supplement and the financial statements and other information incorporated by reference herein and in the accompanying prospectus supplement.

Our Business

We are a biopharmaceutical company focused on the development and commercialization of recombinant therapeutic proteins based on our proprietary ProCellEx[™] protein expression system, or ProCellEx. Using our ProCellEx system, we are developing a pipeline of proprietary and biosimilar or generic versions of recombinant therapeutic proteins based on our plant cell-based expression technology that target large, established pharmaceutical markets and that rely upon known biological mechanisms of action. Our initial commercial focus has been on complex therapeutic proteins, including proteins for the treatment of genetic disorders, such as Gaucher disease and Fabry disease. We believe our ProCellEx protein expression system will enable us to develop proprietary recombinant proteins that are therapeutically equivalent or superior to existing recombinant proteins currently marketed for the same indications. Because we are primarily targeting biologically equivalent versions of highly active, well-tolerated and commercially successful therapeutic proteins, we believe our development process is associated with relatively less risk compared to other biopharmaceutical development processes for completely novel therapeutic proteins.

Taliglucerase alfa, our proprietary, lead product candidate, is a recombinant form of glucocerebrosidase (GCD) that we are developing for the treatment of Gaucher disease patients using our ProCellEx protein expression system. Gaucher disease is a rare and serious lysosomal storage disorder with severe and debilitating symptoms. Patients of Gaucher disease suffer from mutations in or deficiencies of GCD, which is an enzyme that is naturally found in human cells. In July 2007, we reached an agreement with the U.S. Food and Drug Administration, or the FDA, on the final design of our pivotal phase III clinical trial of taliglucerase alfa through the FDA's special protocol assessment process (SPA). We completed the phase III clinical trial of taliglucerase alfa for the treatment of Gaucher disease in September 2009 and, on October 15, 2009, we announced positive top-line results from the trial. We originally filed a New Drug Application (NDA) for taliglucerase alfa on December 9, 2009, and in January 2010 the FDA requested additional data regarding the chemistry, manufacturing and controls (CMC) section of the NDA. We provided the requested data to the FDA in April 2010, and in July 2010 we received notification from the FDA that it had accepted the filing of our NDA and assigned a Prescription Drug User Fee Act (PDUFA) date of February 25, 2011 to taliglucerase alfa for the treatment of Gaucher disease. In addition to the NDA, in November 2010 we submitted a marketing application to the Israeli Ministry of Health, or the Israeli MOH, and a Marketing Authorization Application (MAA) to each of the European Medicines Agency, or the EMEA, and ANVISA, the National Sanitary Vigilance Agency, an agency of the Brazilian Ministry of Health, or the ANVISA, for taliglucerase alfa for the treatment of Gaucher disease.

On February 25, 2011, we announced that the FDA issued a Complete Response Letter, or a CRL, regarding our NDA for taliglucerase alfa for the treatment of Gaucher disease. A CRL is issued by the FDA's Center for Drug Evaluation and Research when the review of a file is completed and questions remain that preclude the approval of the NDA in its current form. The main questions raised by the FDA regarding the NDA relate to the clinical and CMC sections. In

the clinical section of the CRL, the FDA requested additional data from the ongoing switchover trial and the long-term extension trial. At the time the NDA was submitted, full data from these trials was not available. In the CMC section of the CRL, the FDA requested information regarding testing specifications and assay validation. The FDA did not request additional clinical studies in the CRL. The marketing application submitted to the Israeli MOH and the MAAs submitted to each of the EMEA and ANVISA include certain data now being requested by the FDA in the CRL as those applications were

S-1

Table of Contents

submitted approximately a year after we filed our NDA and after we had collected additional data from our ongoing trials. We are working with Pfizer Inc., or Pfizer, our commercialization partner, to respond to the CRL. We have already begun preparing our response to the CRL, with Pfizer's cooperation, and intend to request a meeting with the FDA as soon as possible to clarify the path to regulatory approval.

In February 2010, the Israeli MOH completed a successful good manufacturing practices (GMP) audit of our manufacturing facilities in Carmiel, Israel. The audit was performed as part of the Israeli MOH's evaluation of our manufacturing process for taliglucerase alfa. On February 20, 2011, we received a letter from the FDA notifying us that the FDA had completed its review of the Establishment Inspection Report in connection with the FDA's inspection of our facility in Carmiel, Israel, and that the FDA had classified our facility as acceptable.

In addition to our recently completed phase III clinical trial, we initiated a double-blind, follow-on extension study as part of the trial during the second quarter of 2008. We also initiated a home care treatment program for patients enrolled in the extension study and, in December 2008, we initiated a nine-month, worldwide, multi-center, open-label, switch-over clinical study evaluating the safety and efficacy of switching Gaucher patients currently treated under the current standard of care to treatment with taliglucerase alfa. Patients in these trials are still being treated with taliglucerase alfa. The current standard of care for Gaucher patients is enzyme replacement therapy with Cerezyme, which is produced by Genzyme Corporation and, until the recent approval of VPRIV by Shire plc in February 2010, was the only approved enzyme replacement therapy for Gaucher disease. Enzyme replacement therapy is a medical treatment in which recombinant enzymes are infused into patients in whom the enzyme is lacking or dysfunctional. Taliglucerase alfa has an amino acid, glycan and three-dimensional structure that is very similar to Cerezyme, which is a mammalian cell expressed version of the same protein. We believe taliglucerase alfa may prove more cost-effective than the currently marketed alternatives due to the cost benefits of expression through our ProCellEx protein expression system. Although the FDA did not originally require the switch-over study in the SPA as a prerequisite for approval of taliglucerase alfa, the FDA has now requested data from the switchover trial in the CRL. In December 2009, we filed a proposed pediatric investigation plan to the Pediatric Committee of the EMEA which was approved during the first quarter of 2010 and have since initiated the study. In November 2010, we announced positive preliminary data from the first 15 patients that completed the switchover clinical study of taliglucerase alfa. Only pediatric patient enrollment remains open for this study.

On November 30, 2009, Protalix Ltd., our wholly-owned subsidiary, and Pfizer entered into an exclusive license and supply agreement pursuant to which Pfizer was granted an exclusive, worldwide license to develop and commercialize taliglucerase alfa. Under the terms and conditions of the Pfizer agreement, Protalix Ltd. retained the right to commercialize taliglucerase alfa in Israel. In connection with the execution of the Pfizer agreement, Pfizer made an upfront payment to Protalix Ltd. of \$60.0 million in connection with the execution of the agreement and subsequently paid Protalix Ltd. an additional \$5.0 million upon its filing of a proposed pediatric investigation plan to the Pediatric Committee of the EMEA. Protalix Ltd. is also eligible to receive potential milestone payments totaling \$50.0 million for the successful achievement of other regulatory milestones. Pfizer and Protalix Ltd. will also share future revenues and expenses for the development and commercialization of taliglucerase alfa on a 60% and 40% basis, respectively, and have also agreed to a specific allocation of the responsibilities for the continued development efforts for taliglucerase alfa.

In July 2009, following a request by the FDA, we submitted a treatment protocol to the FDA in order to address an expected shortage of the current enzyme replacement therapy approved for Gaucher disease. The treatment protocol was approved by the FDA in August 2009, and we are continuing to treat patients in the United States under this protocol. In September 2009, the FDA's Office of Orphan Product Development granted taliglucerase alfa Orphan Drug Status. In January 2010, the Committee for Orphan Medicinal Products (COMP) of the EMEA, after reviewing all relevant clinical data, recommended that the European Commission grant Orphan Drug designation to taliglucerase alfa for the treatment of Gaucher disease. The Orphan Drug designation in the United States for taliglucerase alfa for

the treatment of Gaucher disease provides special status to taliglucerase alfa provided that it meets certain criteria. As a result of the Orphan Drug designation, we are qualified for the tax credit and marketing incentives of the Orphan Drug Act of 1983. A marketing application for a prescription drug product that has been designated as a drug for a rare disease or condition is

S-2

Table of Contents

not subject to a prescription drug user fee unless the application includes an indication for other than a rare disease or condition.

On July 13, 2010, we announced that the French regulatory authority had granted an Autorisation Temporaire d'Utilisation (ATU), or Temporary Authorization for Use, for taliglucerase alfa for the treatment of Gaucher disease. An ATU is the regulatory mechanism used by the French Health Products and Safety Agency to make non-approved drugs available to patients in France when a genuine public health need exists. This ATU allows patients with Gaucher disease in France to receive treatment with taliglucerase alfa before marketing authorization for the product is granted in the European Union. Payment for taliglucerase alfa has been secured through government allocations to hospitals. Recently, the French Ministry of Health announced again that there is a shortage of enzyme replacement therapy for Gaucher disease, and we are currently providing taliglucerase alfa to patients under the ATU. In addition to the United States, France and Brazil, taliglucerase alfa is also currently being provided to Gaucher disease patients under special access agreements or Named Patient provisions in the rest of the world.

On August 10, 2010, Pfizer entered into a \$30 million short-term supply agreement with the Ministry of Health of Brazil pursuant to which Protalix and Pfizer have provided taliglucerase alfa to the Ministry of Health of Brazil for the treatment of patients with Gaucher disease. Revenue generated from the Ministry of Health of Brazil will be recorded by Pfizer, and we are entitled to our share of the revenue in accordance with the terms and conditions of the Pfizer agreement. In addition, we and the Ministry of Health of Brazil are in discussions relating to a possible long-term supply agreement that contemplates, among other matters, providing certain components of our manufacturing technology to the Ministry of Health of Brazil for implementation by it in Brazil. We are currently unable to assess whether these discussions will result in an agreement and we can make no assurance that we will be able to enter into such an agreement on favorable terms, if at all. In any event, we do not expect to enter into a long-term supply agreement with the Ministry of Health of Brazil until we receive marketing approval of taliglucerase alfa from the FDA or ANVISA, if at all.

In addition to taliglucerase alfa, we are developing an innovative product pipeline using our ProCellEx protein expression system. Our product pipeline currently includes, among other candidates, (1) PRX-102, a therapeutic protein candidate for the treatment of Fabry disease, a rare, genetic lysosomal disorder in humans, (2) PRX-105, a plant cell expressed pegylated recombinant acetylcholinesterase product candidate for biodefense and other indications, (3) pr-antiTNF, a plant cell expressed recombinant fusion protein made from the soluble form of the human TNF receptor (TNFR) and an antibody portion, which is being developed as a treatment of certain immune diseases such as rheumatoid arthritis, juvenile idiopathic arthritis, ankylosing spondylitis, psoriatic arthritis and plaque psoriasis, (4) an orally administered glucocerebrosidase enzyme for treating Gaucher patients utilizing the oral delivery of the recombinant enzyme produced within carrot cells and (5) additional undisclosed therapeutic proteins, all of which are currently being evaluated in animal studies. In March 2010, we initiated a preliminary phase I clinical trial of PRX-105 which we completed in June 2010. We are currently preparing for further efficacy trials of this product candidate in larger animals. In our preclinical studies we utilized an analogue to nerve gas. However, we anticipate that we will use live nerve gas rather than an analogue in the proposed additional efficacy trials in animals. In December 2010, we held a pre-investigational new drug, or IND, meeting with the FDA with respect to PRX-102. We expect to submit an IND to the FDA within the next 12 months in connection with an anticipated phase I/II study of PRX-102 and to initiate the trial once the IND is approved, if at all. We have also scheduled a pre-IND meeting with the FDA regarding our antiTNF program for March 2011.

Except for the license we have granted to Pfizer, we hold the worldwide commercialization rights to our proprietary development candidates and we intend to establish an internal, commercial infrastructure and targeted sales force to market taliglucerase alfa in Israel and our other products, if approved, in North America, the European Union and in other significant markets, including Israel. In addition, we plan to continue evaluating potential strategic marketing partnerships.

Table of Contents

Our Corporate Information

We are incorporated under the laws of the State of Florida. Our principal executive offices are located at 2 Snunit Street, Science Park, POB 455, Carmiel, 20100 Israel, and our telephone number is +972 (4) 988-9488. Our website is www.protalix.com. The information on or accessible through our website does not constitute part of this prospectus supplement or the accompanying prospectus and should not be relied upon in connection with making any investment in our securities.

S-4

Table of Contents

The Offering

Issuer	Protalix BioTherapeutics, Inc.
Common Stock Offered by Us	_____ shares (or _____ shares if the underwriters exercise their over-allotment option in full).
Common Stock to be Outstanding After This Offering	_____ shares (or _____ shares if the underwriters exercise their over-allotment option in full).
Use of Proceeds	We expect the net proceeds from this offering to us will be approximately \$ _____ million (or \$ _____ million if the underwriters exercise their option to purchase additional shares in full), after deducting the underwriting discount and estimated offering expenses payable by us. We currently expect to use the net proceeds primarily to fund clinical trials for our product candidates, to fund our research and development activities, to enhance our manufacturing capacity and for working capital and general corporate purposes. See Use of Proceeds.
Risk Factors	Before investing in our common stock, you should carefully read and consider the Risk Factors beginning on page S-6 of this prospectus supplement.
Trading Symbol for Our Common Stock	Our common stock is listed on each of the NYSE Amex and the Tel Aviv Stock Exchange under the symbol PLX.

The number of shares of common stock to be outstanding after this offering is based on 81,248,472 shares outstanding as of December 31, 2010, and excludes as of such date:

7,806,671 shares of common stock issuable upon the exercise of outstanding stock options as of December 31, 2010, at a weighted average exercise price of \$3.73 per share; and

an aggregate of 3,064 shares of common stock reserved for future issuance under our 2006 Stock Incentive Plan.

Unless otherwise indicated, this prospectus supplement assumes no exercise by the underwriters of their over-allotment option.

Table of Contents

RISK FACTORS

*Investing in our securities involves a high degree of risk. You should carefully consider the specific risks described below and the risks described in our Annual Report on Form 10-K for the fiscal year ended December 31, 2010, which are incorporated by reference in this prospectus supplement and the accompanying prospectus in their entirety, together with the other information in this prospectus supplement, the accompanying prospectus and the information and documents incorporated by reference, before making an investment decision. See the section of this prospectus supplement entitled *Where You Can Find More Information*. Any of the risks we describe below or in the information incorporated herein by reference could cause our business, financial condition and results of operations to suffer. The market price of our common stock could decline if one or more of these risks and uncertainties develop into actual events. You could lose all or part of your investment.*

We may not obtain the necessary U.S. or worldwide regulatory approvals to commercialize our drug candidates in a timely manner, if at all, which would have a material adverse effect on our business, financial condition and results of operations.

We will need FDA approval to commercialize our drug candidates in the United States and approvals from foreign regulators to commercialize our drug candidates elsewhere. In order to obtain FDA approval of any of our drug candidates, we must submit to the FDA an NDA or a Biologic License Application (BLA) demonstrating that the drug candidate is safe for humans and effective for its intended use. This demonstration requires significant research and animal tests, which are referred to as preclinical studies, as well as human tests, which are referred to as clinical trials. In the European Union, we must submit an MAA to the EMEA. Satisfaction of the FDA's and foreign regulatory authorities' regulatory requirements typically takes many years, and depends upon the type, complexity and novelty of the drug candidate and requires substantial resources for research, development and testing. In December 2009, we completed the filing of an NDA for taliglucerase alfa for the treatment of Gaucher disease and received a PDUFA date of February 25, 2011, and in November 2010, we submitted a marketing application to the Israeli MOH and an MAA to each of the EMEA and ANVISA for taliglucerase alfa.

In February 2011, we received a CRL from the FDA regarding our NDA for taliglucerase alfa for the treatment of Gaucher disease. The main questions raised by the FDA regarding the NDA relate to clinical and chemistry, manufacturing and controls (CMC). In the clinical section of the CRL, the FDA requested additional data from the ongoing switchover trial and the long-term extension trial relating to taliglucerase alfa. At the time the NDA was submitted, full data from these trials was not available. In the CMC section of the CRL, the FDA requested information regarding testing specifications and assay validation. The FDA did not request additional clinical studies in the CRL. We intend to request a meeting with the FDA as soon as possible to clarify the path to regulatory approval. Until we have further clarifications from the FDA regarding the CRL, we can not provide any details regarding our response to the CRL. In addition, there can be no assurance that the FDA will not make any additional request regarding our NDA. In the past, the FDA has made additional requests to other applicants after the delivery of a CRL. Any additional requests from the FDA relating to the NDA may delay or preclude our response to the CRL. Even if we comply with all of the FDA's requests in the CRL or otherwise, if any, the FDA may ultimately reject the NDA, or fail to approve the NDA in a timely manner, which would have a material adverse effect on our business, financial condition and results of operations.

Under FDA regulations, there are two forms of resubmission of an NDA after receipt of a CRL. A class 1 resubmission of an NDA following receipt of a CRL starts a new two-month review cycle. A class 2 resubmission of an NDA starts a new six-month review cycle. At this time, we do not know how the FDA will classify resubmission we will be required to make in responding to the CRL. If it is classified as a class 2 resubmission, the FDA's review of

the resubmission may result in a longer delay in the approval of taliglucerase alfa, if at all, which would have a material adverse effect on our business, financial condition and results of operations.

S-6

Table of Contents

Our research and clinical efforts may not result in drugs that the FDA or foreign regulatory authorities consider safe for humans and effective for indicated uses, which would have a material adverse effect on our business, financial condition and results of operations. After clinical trials are completed for any drug candidate, if at all, the FDA and foreign regulatory authorities have substantial discretion in the drug approval process of the drug candidate in their respective jurisdictions and may require us to conduct additional clinical testing or to perform post-marketing studies which would cause us to incur additional costs. Incurring such costs could have a material adverse effect on our business, financial condition and results of operations.

The approval process for any drug candidate may also be delayed by changes in government regulation, future legislation or administrative action or changes in policy of the FDA and comparable foreign authorities that occur prior to or during their respective regulatory reviews of such drug candidate. Delays in obtaining regulatory approvals with respect to any drug candidate may:

delay commercialization of, and our ability to derive product revenues from, such drug candidate;

delay the regulatory-related milestone payments we anticipate receiving from Pfizer;

require us to perform costly procedures with respect to such drug candidate; or

otherwise diminish any competitive advantages that we may have with respect to such drug candidate.

Even if we comply with all the requests of the FDA and comparable foreign authorities, the authorities may ultimately reject the NDA or other filing or submission we filed for taliglucerase alfa or one or more of the NDAs or other filing or submission we file in the future, if any, or we might not obtain regulatory clearance in a timely manner for taliglucerase alfa or any of our other product candidates. Companies in the pharmaceutical and biotechnology industries have suffered significant setbacks in advanced or late-stage clinical trials, even after obtaining promising earlier trial results or in preliminary findings or other comparable authorities for such clinical trials. Further, even if favorable testing data is generated by the clinical trials of a drug product, the FDA, EMEA or other regulatory authority may not accept or approve an NDA, MAA or other comparable submission, as applicable, filed by a pharmaceutical or biotechnology company for the drug product. Failure to obtain approval of the FDA or comparable foreign authorities of any of our drug candidates in a timely manner, if at all, will severely undermine our business, financial condition and results of operation by reducing our potential marketable products and our ability to generate corresponding product revenues.

We currently depend heavily on the success of taliglucerase alfa, our lead product candidate. Any failure to commercialize taliglucerase alfa, or the experience of significant delays in doing so, will have a material adverse effect on our business, financial condition and results of operations.

We have invested a significant portion of our efforts and financial resources in the development of taliglucerase alfa. Our ability to generate product revenue depends heavily on the successful development and commercialization of taliglucerase alfa. In November 2009, we granted to Pfizer an exclusive worldwide license to develop and commercialize taliglucerase alfa, except in Israel. We retained such rights in Israel. The successful commercialization of taliglucerase alfa will depend on several factors, including the following:

promptly and successfully completing our response to the CRL;

obtaining marketing approvals from the FDA and other foreign regulatory authorities;

successful completion of our ongoing studies of taliglucerase alfa;

maintaining the cGMP compliance of our manufacturing facility or establishing manufacturing arrangements with third parties;

the successful audit of our facilities by the FDA, the Israeli MOH and other foreign regulatory authorities;

Pfizer's efforts under the Pfizer agreement;

our development of a successful sales and marketing organization for taliglucerase in Israel;

S-7

Table of Contents

the availability of reimbursement to patients from healthcare payors for our drug products, if approved;

a continued acceptable safety and efficacy profile of our product candidates following approval; and

other risks described in these risk factors and those set forth in our Annual Report on Form 10-K for the year ended December 31, 2010.

Any failure to commercialize taliglucerase alfa or the experience of significant delays in doing so will have a material adverse effect on our business, financial condition and results of operations.

A substantial number of shares may be sold in the market following this offering, which may depress the market price for our common stock.

Sales of a substantial number of shares of our common stock in the public market following this offering, either on the NYSE Amex or the Tel Aviv Stock Exchange, could cause the market price of our common stock to decline. Upon completion of this offering, based on our shares outstanding as of December 31, 2010, we will have outstanding an aggregate of shares of common stock, assuming no exercise of outstanding options. A substantial majority of the outstanding shares of our common stock are, and all of the shares sold in this offering upon issuance will be, freely tradable without restriction or further registration under the Securities Act of 1933, as amended, or the Securities Act, unless these shares are owned or purchased by affiliates as that term is defined in Rule 144 under the Securities Act. In addition, we have also registered all common stock that we may issue under our 2006 Stock Incentive Plan, and as of December 31, 2010, a total of 7,806,671 shares of our common stock are issuable upon exercise of outstanding options granted by us, at a weighted average exercise price of \$3.73 per share, and a total of 3,064 shares of common stock remain available for future for issuance under such plan. As a result, these shares can be freely sold in the public market upon issuance, subject to restrictions under the securities laws. In addition, four of our executive officers have entered into trading plans established under Rule 10b5-1 under the Securities Act that allow for sales of approximately 1.3 million shares upon receipt of FDA approval of taliglucerase alfa, if at all.

We may use the net proceeds of this offering in ways with which you may disagree.

We intend to use the net proceeds of this offering to raise capital to fund clinical trials for our product candidates, to fund our research and development activities, to enhance our manufacturing capacity and for working capital and general corporate purposes. As of the date of this prospectus supplement, we cannot specify with certainty all of the particular uses of the proceeds from this offering. Accordingly, we will have significant discretion in the use of the net proceeds of this offering. It is possible that we may allocate the proceeds differently than investors in this offering desire or that we will fail to maximize our return on these proceeds. We may, subsequent to this offering, modify our intended use of the offering proceeds to pursue strategic opportunities that may arise, such as potential acquisition opportunities. You will be relying on the judgment of our management with regard to the use of the net proceeds of this offering, and you will not have the opportunity, as part of your investment decision, to assess whether the proceeds are being used appropriately. Our failure to apply the net proceeds of this offering effectively could have a material adverse effect on our business or the commercialization of taliglucerase alfa, if approved by the FDA, and cause the price of our common stock to decline.

You will experience immediate dilution in the net tangible book value of the shares of our common stock you purchase as a result of this offering.

If you purchase shares of our common stock in this offering, you will pay more for your shares than the net tangible book value per share of our common stock as of December 31, 2010. As a result, the value of your investment based

on the net tangible book value per share of our common stock will be less than what it would have been had you and all of the existing stockholders paid the same amount per share of common stock as you will pay in this offering. Since the price per share of our common stock being offered is substantially higher than the net tangible book value per share of our common stock, you will suffer substantial dilution in the net tangible book value of the common stock you purchase in this offering. The

S-8

Table of Contents

exercise of outstanding options into common stock and future issuances by us of equity or convertible debt may result in further dilution to your investment in our common stock. See Dilution.

You may experience future dilution as a result of future equity offerings or other equity issuances.

In order to raise additional capital, we may in the future offer and issue additional shares of our common stock or other securities convertible into or exchangeable for our common stock. We cannot assure you that we will be able to sell shares or other securities in any other offering at a price per share that is equal to or greater than the price per share paid by investors in this offering, and investors purchasing shares or other securities in the future could have rights superior to existing stockholders. The price per share at which we sell additional shares of our common stock or other securities convertible into or exchangeable for our common stock in future transactions may be higher or lower than the price per share in this offering. As of December 31, 2010, an aggregate of 3,064 shares of common stock were reserved and available for future grant under our 2006 Stock Incentive Plan. Also as of such date, options to purchase 7,806,671 shares of our common stock were outstanding. You will incur dilution upon the grant of any shares pursuant to such plan, upon vesting of any stock awards under any such plan, or upon exercise of any such outstanding options.

Table of Contents

CAUTIONARY STATEMENT REGARDING FORWARD-LOOKING STATEMENTS

The statements set forth and incorporated by reference in this prospectus supplement and the accompanying prospectus, which are not historical, constitute forward looking statements within the meaning of Section 27A of the Securities Act and Section 21E of the Securities Exchange Act of 1934, as amended, or the Exchange Act, including statements regarding the expectations, beliefs, intentions or strategies for the future. When used in this prospectus supplement and the accompanying prospectus, or in any document incorporated by reference in this prospectus supplement or the accompanying prospectus, the terms anticipate, believe, estimate, expect, intend, could, potential, predict, project, should, will, would and words or phrases of similar import, as they relate to us, or our subsidiaries or our management, are intended to identify forward-looking statements, although not all forward-looking statements contain these words. We intend that all forward-looking statements be subject to the safe-harbor provisions of the Private Securities Litigation Reform Act of 1995. Forward-looking statements include, but are not limited to, statements about our expectations as to regulatory approvals, submissions of regulatory filings, market opportunity for our product candidates, goals as to product candidate development and timeliness of our clinical trials.

Forward-looking statements are subject to many risks and uncertainties that could cause our actual results to differ materially from any future results expressed or implied by the forward-looking statements. Example of the risks and uncertainties include, but are not limited to, the following:

delays in our response to the CRL we received from the FDA relating to our NDA for taliglucerase alfa;

delays in the FDA's review of any response to the CRL, if any;

delays in the approval or the potential rejection of any applications we file with the FDA or other regulatory authorities, including the NDA we have filed with the FDA, the marketing application we submitted to the Israeli MOH and the MAA we have submitted to each of the EMEA and ANVISA for taliglucerase alfa;

the inherent risks and uncertainties in developing the types of drug platforms and products we are developing;

delays in our preparation and filing of applications for regulatory approval in the United States, the European Union, Israel, Brazil and elsewhere;

any lack of progress of our research and development (including the results of our clinical trials);

our ability to establish and maintain strategic license, collaboration and distribution arrangements and to manage our relationships with Pfizer, Teva Ltd. or with any other collaborator, distributor or partner;

our ability to obtain on a timely basis sufficient patient enrollment in our clinical trials;

the impact of development of competing therapies and/or technologies by other companies;

risks relating to biogeneric legislation and/or healthcare reform in the United States or elsewhere;

our ability to obtain additional financing required to fund our research programs and the expansion of our manufacturing capabilities;

the risk that we will not be able to develop a successful sales and marketing organization in a timely manner, if at all;

our ability to enter into supply arrangements with the Ministry of Health of Brazil or other parties and to supply drug product pursuant to such arrangements;

potential product liability risks, and risks of securing adequate levels of product liability and clinical trial insurance coverage;

S-10

Table of Contents

the availability of reimbursement to patients from health care payors for any of our product candidates, if approved;

the possibility of infringing a third party's patents or other intellectual property rights;

the uncertainty of obtaining patents covering our products and processes and in successfully enforcing our intellectual property rights against third parties; and

the possible disruption of our operations due to terrorist activities and armed conflict, including as a result of the disruption of the operations of regulatory authorities, our subsidiaries, our manufacturing facilities and our customers, suppliers, distributors, collaborative partners, licensees and clinical trial sites.

In February 2011, we received a CRL from the FDA regarding our NDA for taliglucerase alfa for the treatment of Gaucher disease. The main questions raised by the FDA regarding the NDA relate to the clinical and CMC sections. In the clinical section of the CRL, the FDA requested additional data from each of the switchover trial and the long-term extension trial. In the CMC section of the CRL, the FDA requested information regarding testing specifications and assay validation. The FDA did not request additional clinical studies in the CRL. Until we have further clarifications from the FDA regarding the CRL, there can be no assurance that the FDA will not make any additional request regarding our NDA. In the past, the FDA has made additional requests to other applicants after the delivery of a CRL. Any additional requests from the FDA relating to the NDA may delay or preclude our response to the CRL. Even if we comply with all of the FDA's requests in the CRL, or otherwise if any, the FDA may ultimately reject the NDA, or fail to approve the NDA in a timely manner, which would have a material adverse effect on our business, financial condition and results of operations. In addition, if we are required to make a class 2 resubmission in response to the CRL, the FDA's review of the resubmission may result in a longer delay in the approval of taliglucerase alfa, if at all, which would have a material adverse effect on our business, financial condition and results of operations. Our efforts to respond to the CRL, and any development with the FDA with respect to our response, may result in changes to our current expectations as reflected in our forward-looking statements.

These forward-looking statements reflect our current views with respect to future events and are based on assumptions and subject to risks and uncertainties. Given these uncertainties, you should not place undue reliance on these forward-looking statements. These and other risks and uncertainties are detailed under the heading "Risk Factors" beginning on page S-6 of this prospectus supplement, in our Annual Report on Form 10-K for the year ended December 31, 2010, Section 1A, under the heading "Risk Factors," and described from time to time in our future reports to be filed with the SEC.

Any or all of our forward-looking statements are only predictions and reflect our views as of the date they are made with respect to future events and financial performance and we undertake no obligation to update or revise, nor do we have a policy of updating or revising, any forward-looking statement to reflect events or circumstances after the date on which the statement is made or to reflect the occurrence of unanticipated events, except as may be required under applicable law.

Table of Contents

USE OF PROCEEDS

We estimate that the net proceeds we will receive from this offering will be approximately \$ million (or approximately \$ million if the underwriters exercise in full their option to purchase shares of common stock), after deducting the underwriting discount and estimated offering expenses payable by us.

We currently expect to use the net proceeds of this offering to fund clinical trials for our product candidates; to fund our research and development activities; to enhance our manufacturing capacity; and for working capital and general corporate purposes.

The foregoing information is based on our current business plan. As of the date of this prospectus supplement, we cannot specify with certainty all of the particular uses of the net proceeds of this offering. We may find it necessary to shift funds reserved for one category of uses to another purpose. For example, we may, subsequent to this offering, pursue strategic opportunities that may arise, such as potential acquisition opportunities, although we have no current plans, commitments or agreements to do so as of the date of this prospectus supplement. We have broad discretion and may find it necessary or advisable to re-allocate portions of the net proceeds of this offering. The amounts and timing of our actual expenditures will depend on numerous factors, including the status of the FDA's, the EMEA's and other regulatory authorities' review of taliglucerase alfa, our product development and commercialization efforts, our sales and marketing activities, the amount of cash used by our operations and our assessment of the ability to add long-term shareholder value through potential strategic opportunities. Investors will be relying on the judgment of our management regarding the application of these net proceeds. Pending these uses, we intend to invest the net proceeds of the offering in short-term bank deposits or marketable securities.

Table of Contents**PRICE RANGE OF COMMON STOCK**

Our common stock began trading on the NYSE Amex on March 12, 2007 under the symbol PLX. The following table sets forth, for the periods indicated, the high and low closing prices for our common stock, as reported by the NYSE Amex for the periods indicated.

	Price Range	
	High	Low
Annual:		
2010	\$ 10.00	\$ 5.84
2009	\$ 12.14	\$ 1.80
2008	\$ 3.70	\$ 0.96
Quarterly:		
First Quarter 2011 (through March 16)	\$ 10.46	\$ 6.21
Fourth Quarter 2010	\$ 10.00	\$ 8.40
Third Quarter 2010	\$ 9.00	\$ 5.99
Second Quarter 2010	\$ 7.00	\$ 5.84
First Quarter 2010	\$ 7.70	\$ 6.56
Fourth Quarter 2009	\$ 12.14	\$ 6.62
Third Quarter 2009	\$ 8.31	\$ 4.51
Second Quarter 2009	\$ 5.24	\$ 2.10
First Quarter 2009	\$ 2.89	\$ 1.80
Fourth Quarter 2008	\$ 2.17	\$ 0.96
Third Quarter 2008	\$ 3.06	\$ 2.08
Second Quarter 2008	\$ 3.70	\$ 2.56
First Quarter 2008	\$ 3.59	\$ 2.59
Most Recent Six Months:		
March 2011 (through March 16)	\$ 7.04	\$ 6.21
February 2011	\$ 10.43	\$ 7.05
January 2011	\$ 10.46	\$ 9.44
December 2010	\$ 9.99	\$ 8.67
November 2010	\$ 10.00	\$ 8.40
October 2010	\$ 9.96	\$ 8.85
September 2010	\$ 9.00	\$ 7.68

Table of Contents

Our common stock began trading on the Tel Aviv Stock Exchange on September 6, 2010 under the symbol PLX. The following table sets forth, for the periods indicated, the high and low closing prices for our common stock in Israeli New Shekels (NIS) and U.S. dollars. U.S. dollar per share of common stock amounts are calculated using the U.S. dollar representative rate of exchange on the date to which the high or low market price is applicable, as reported by the Bank of Israel.

	Price Range (NIS)		Price Range (\$)	
	High	Low	High	Low
Annual:				
2010 (from September 6)	NIS 36.14	NIS 30.95	\$ 9.98	\$ 8.29
Quarterly:				
First Quarter 2011 (through March 16)	NIS 38.12	NIS 21.82	\$ 10.43	\$ 6.13
Fourth Quarter 2010	NIS 36.14	NIS 31.04	\$ 9.98	\$ 8.50
Third Quarter 2010 (from September 6)	NIS 32.36	NIS 30.95	\$ 8.62	\$ 8.29
Most Recent Six Months:				
March 2011 (through March 16)	NIS 25.51	NIS 21.82	\$ 7.04	\$ 6.13
February 2011	NIS 38.12	NIS 26.80	\$ 10.37	\$ 7.40
January 2011	NIS 37.31	NIS 33.10	\$ 10.43	\$ 8.99
December 2010	NIS 35.80	NIS 31.88	\$ 9.97	\$ 8.75
November 2010	NIS 36.14	NIS 31.04	\$ 9.98	\$ 8.50
October 2010	NIS 35.78	NIS 32.58	\$ 9.84	\$ 8.98
September 2010 (from September 6)	NIS 32.36	NIS 30.95	\$ 8.62	\$ 8.29

S-14

Table of Contents**CAPITALIZATION**

The following table presents our capitalization as of December 31, 2010:

on an actual basis; and

on an as adjusted basis to reflect the sale of shares of common stock at the public offering price of \$ per share, the receipt by us of net proceeds of approximately \$ million, after deducting the underwriting discount and the estimated offering expenses payable by us.

This table should be read in conjunction with our financial statements and the notes thereto incorporated by reference herein and the accompanying prospectus.

	As of December 31, 2010	
	Actual	As Adjusted
	(in thousands, except share data)	
Liabilities:		
Accounts payable and accruals (trade and other)	\$ 14,340	\$
Short-term deferred revenues	4,563	
Long-term deferred revenues	55,486	
Liability for employee rights upon retirement	1,663	
Total liabilities	76,052	
Shareholders' equity:		
Common stock, par value \$.001 per share; 150,000,000 authorized shares, 81,248,472 issued and outstanding shares, actual; issued and outstanding shares, as adjusted	\$ 81	\$
Additional paid-in capital	124,044	
Accumulated deficit	(135,448)	
Total shareholders' equity (capital deficiency)	(11,323)	
Total capitalization	\$ 64,729	\$

The number of as adjusted shares of common stock in the above table excludes, as of December 31, 2010:

7,806,671 shares of common stock issuable upon the exercise of outstanding stock options as of December 31, 2010, at a weighted average exercise price of \$3.73 per share; and

an aggregate of 3,064 shares of common stock reserved for future issuance under our 2006 Stock Incentive Plan.

Table of Contents**DILUTION**

If you invest in our common stock, your interest will be diluted immediately to the extent of the difference between the public offering price per share of our common stock and the as adjusted net tangible book value per share of common stock after this offering.

The net tangible book value (deficit) of our common stock as of December 31, 2010 was approximately \$(11.3) million, or approximately \$(0.14) per share. Net tangible book value per share represents the amount of our total tangible assets less total liabilities divided by the total number of shares of our common stock outstanding.

Dilution per share to new investors represents the difference between the amount per share paid by purchasers for our common stock in this offering and the net tangible book value per share of our common stock immediately following the completion of this offering.

After giving effect to the sale of shares of common stock offered by this prospectus supplement at the public offering price of \$ per share in connection with this offering and after deducting the underwriting discount and estimated offering expenses payable by us, our as adjusted net tangible book value as of December 31, 2010 would have been approximately \$ million, or approximately \$ per share. This represents an immediate increase in net tangible book value of approximately \$ per share to our existing stockholders and an immediate dilution in as adjusted net tangible book value of approximately \$ per share to purchasers of our common stock in this offering, as illustrated by the following table:

Public offering price per share		\$
Net tangible book value (deficit) per share as of December 31, 2010	\$ (0.14)	
Increase in per share attributable to investors purchasing our common stock in this offering	\$	
As adjusted net tangible book value per share as of December 31, 2010 after giving effect to this offering		\$
Dilution per share to investors purchasing our common stock in this offering		\$

If the underwriters exercise in full their option to purchase additional shares of common stock at the public offering price of \$ per share, the as adjusted net tangible book value after this offering would be approximately \$ per share, representing an increase in net tangible book value of approximately \$ per share to existing stockholders and immediate dilution in net tangible book value of approximately \$ per share to new investors purchasing our common stock in this offering at the public offering price.

The number of shares of common stock to be outstanding after this offering is based on 81,248,472 shares outstanding as of December 31, 2010 and excludes as of such date:

7,806,671 shares of common stock issuable upon the exercise outstanding stock options as of December 31, 2010, at a weighted average exercise price of \$3.73 per share; and

an aggregate of 3,064 shares of common stock reserved for future issuance under our 2006 Stock Incentive Plan.

To the extent that outstanding options are exercised, you will experience further dilution. In addition, we may choose to raise additional capital due to market conditions or strategic considerations even if we believe we have sufficient funds for our current or future operating plans. To the extent that additional capital is raised through the sale of equity or convertible debt securities, the issuance of these securities could result in further dilution to our stockholders.

S-16

Table of Contents

**CERTAIN U.S. FEDERAL INCOME AND ESTATE TAX CONSEQUENCES TO
NON-U.S. HOLDERS OF COMMON STOCK**

The following is a summary of certain U.S. federal income tax consequences of the purchase, ownership, and disposition of common stock by a non-U.S. holder (as defined below) that acquires our common stock in this offering and holds it as a capital asset. This discussion is based upon the Internal Revenue Code of 1986, as amended, which we refer to as the Code, effective U.S. Treasury regulations, and judicial decisions and administrative interpretations thereof, all as of the date hereof and all of which are subject to change, possibly with retroactive effect. The foregoing are subject to differing interpretations which could affect the tax consequences described herein. This discussion does not address all aspects of U.S. federal income taxation that may be applicable to investors in light of their particular circumstances, or to investors subject to special treatment under U.S. federal income tax laws, such as financial institutions, insurance companies, tax-exempt organizations, entities that are treated as partnerships for U.S. federal income tax purposes, dealers in securities or currencies, expatriates, persons deemed to sell common stock under the constructive sale provisions of the Code, and persons that hold common stock as part of a straddle, hedge, conversion transaction, or other integrated investment. Furthermore, this discussion does not address any state, local or foreign tax laws.

You are urged to consult your tax advisors regarding the U.S. federal, state, local, and foreign income and other tax consequences of the purchase, ownership, and disposition of our common stock, including the consequences under any applicable tax treaty.

For purposes of this summary, you are a non-U.S. holder if you are a beneficial owner of common stock that, for U.S. federal income tax purposes, is not:

an individual that is a citizen or resident of the United States;

a corporation, other entity treated as a corporation for U.S. federal income tax purposes, or partnership that is created or organized under the laws of the United States, any state thereof, or the District of Columbia;

an estate the income of which is subject to U.S. federal income taxation regardless of its source; or

a trust, provided that, (1) a court within the United States is able to exercise primary supervision over its administration or one or more U.S. persons (as defined in the Code) have the authority to control all substantial decisions of that trust, or (2) the trust has made an election under the applicable Treasury regulations to be treated as a U.S. person.

If a partnership (including any entity or arrangement treated as a partnership for U.S. federal income tax purposes) owns our common stock, the U.S. federal income tax treatment of a partner in the partnership generally will depend upon the status of the partner and the activities of the partnership. Partners in a partnership that owns our common stock should consult their tax advisors as to the particular U.S. federal income tax consequences applicable to them.

Dividends

Except as described below, if you are a non-U.S. holder of common stock, dividends paid to you are subject to withholding of U.S. federal income tax at a 30% rate or at a lower rate if you are eligible for the benefits of an income tax treaty that provides for a lower rate. Even if you are eligible for a lower treaty rate, we and other payors will generally be required to withhold at a 30% rate (rather than the lower treaty rate) on dividend payments to you, unless

you have furnished to us or another payor:

a valid Internal Revenue Service Form W-8BEN or an acceptable substitute form upon which you certify, under penalties of perjury, your status as (or, in the case of a U.S. alien holder that is a partnership or an estate or trust, such forms certifying the status of each partner in the partnership or beneficiary of the estate or trust as) a non- U.S. person and your entitlement to the lower treaty rate with respect to such payments; or

S-17

Table of Contents

in the case of payments made outside the United States to an offshore account (generally, an account maintained by you at an office or branch of a bank or other financial institution at any location outside the United States), other documentary evidence establishing your entitlement to the lower treaty rate in accordance with U.S. Treasury regulations.

Special certification and other requirements apply to certain non-U.S. holders that are pass-through entities rather than companies or individuals.

If you are eligible for a reduced rate of U.S. withholding tax under a tax treaty, you may obtain a refund of any amounts withheld in excess of that rate by filing a refund claim with the U.S. Internal Revenue Service.

If dividends paid to you are effectively connected with your conduct of a trade or business within the United States, and you have not claimed the dividends are eligible for any treaty benefits as income that is not attributable to a permanent establishment that you maintain in the United States, we and other payors generally are not required to withhold tax from the dividends, provided that you have furnished to us or another payor a valid Internal Revenue Service Form W-8ECI or an acceptable substitute form upon which you certify, under penalties of perjury, that you are a non-U.S. person, and the dividends are effectively connected with your conduct of a trade or business within the United States and are includible in your gross income. Effectively connected dividends are taxed at rates applicable to U.S. persons on a net income basis. If you are a corporate non-U.S. holder, effectively connected dividends that you receive may, under certain circumstances, be subject to an additional branch profits tax at a 30% rate or at a lower rate if you are eligible for the benefits of an income tax treaty that provides for a lower rate.

Disposition of Common Stock

If you are a non-U.S. holder, you generally will not be subject to U.S. federal income tax on gain from U.S. sources that you recognize on a disposition of our common stock unless:

the gain is effectively connected with your conduct of a trade or business in the United States, and the gain is attributable to a permanent establishment that you maintain in the United States, if that is required by an applicable income tax treaty as a condition for subjecting you to U.S. taxation on a net income basis;

you are an individual and you are present in the United States for 183 or more days in the taxable year of the disposition; or

we have been a United States real property holding corporation, or USRPHC, for U.S. federal income tax purposes at any time within the shorter of the five-year period preceding your disposition of our common stock or your holding period for our common stock.

Effectively connected gains are taxed at rates applicable to U.S. persons on a net income tax basis. If you are a corporate non-U.S. holder, effectively connected gains that you recognize may also, under certain circumstances, be subject to an additional branch profits tax at a 30% rate or at a lower rate if you are eligible for the benefits of an income tax treaty that provides for a lower rate.

An individual non-U.S. holder described in the second bullet point above will only be subject to U.S. federal income tax on the gain from the sale of our common stock to the extent such gain is deemed to be from U.S. sources, which will generally only be the case where the individual's tax home is in the United States. An individual's tax home is generally considered to be located at the individual's regular or principal (if more than one regular) place of business. If the individual has no regular or principal place of business because of the nature of the business, or because the

individual is not engaged in carrying on any trade or business, then the individual's tax home is his regular place of abode. If an individual non-U.S. holder is described in the second bullet point above, and the individual non-U.S. holder's tax home is in the United States, then the non-U.S. holder may be subject to a flat 30% tax on the gain derived from the disposition, which gain may be offset by U.S.-source capital losses.

S-18

Table of Contents

We believe we currently are not, and we do not anticipate becoming, a USRPHC for U.S. federal income tax purposes. However, because the determination of whether we are a USRPHC depends on the fair market value of our United States real property interests relative to the fair market value of our other trade or business assets and our foreign real property interests, there can be no assurance that we will not become a USRPHC in the future. Even if we are or become a USRPHC, as long as our common stock is regularly traded on an established securities market, such common stock will be treated as a United States real property interest with respect to you only if you actually or constructively held more than 5% of such regularly traded common stock during the applicable period.

Federal Estate Taxes

Common stock held by a non-U.S. holder at the time of death generally will be included in the holder's gross estate for U.S. federal estate tax purposes, unless an applicable estate tax treaty provides otherwise.

Information Reporting and Backup Withholding

We must report annually to the Internal Revenue Service and to each non-U.S. holder the amount of dividends paid to such holder and the tax withheld with respect to such dividends, regardless of whether withholding was required. Copies of the information returns reporting such dividends and withholding may also be made available to the tax authorities in the country in which the non-U.S. holder resides under the provisions of an applicable income tax treaty.

A non-U.S. holder will be subject to backup withholding for dividends paid to such holder unless such holder certifies under penalty of perjury that it is a non-U.S. holder (and the payor does not have actual knowledge or reason to know that such holder is a U.S. person as defined under the Code), or such holder otherwise establishes an exemption.

Information reporting and, depending on the circumstances, backup withholding will apply to the proceeds of a sale of our common stock within the United States or conducted through certain U.S.-related financial intermediaries, unless the beneficial owner certifies under penalty of perjury that it is a non-U.S. holder (and the payor does not have actual knowledge or reason to know that the beneficial owner is a U.S. person as defined under the Code), or such owner otherwise establishes an exemption.

Any amounts withheld under the backup withholding rules may be allowed as a refund or a credit against a non-U.S. holder's U.S. federal income tax liability provided the required information is furnished to the Internal Revenue Service.

Legislation Affecting Taxation of Common Stock Held By or Through Foreign Entities

Legislation was enacted on March 18, 2010 that will, effective for payments made after December 31, 2012, impose a 30% U.S. withholding tax on dividends paid by U.S. issuers and on the gross proceeds from the disposition of stock paid to a foreign financial institution, unless such institution enters into an agreement with the U.S. Treasury to collect and provide to the U.S. Treasury substantial information regarding U.S. account holders with such institution, including certain account holders that are foreign entities with U.S. owners. The legislation also generally imposes a withholding tax of 30% on dividends paid by U.S. issuers and on the gross proceeds from the disposition of stock paid to a non-financial foreign entity unless such entity provides the withholding agent with a certification that it does not have any substantial U.S. owners or a certification identifying the direct and indirect substantial U.S. owners of the entity. Under certain circumstances, a holder may be eligible for refunds or credits of such taxes. Investors are urged to consult with their own tax advisors regarding the possible implications of this recently enacted legislation on their investment in the common stock.

Table of Contents

UNDERWRITING

Citigroup Global Markets Inc. and Barclays Capital Inc. are acting as joint book-running managers of the offering. Subject to the terms and conditions stated in the underwriting agreement dated the date of this prospectus supplement, each underwriter named below has severally agreed to purchase, and we have agreed to sell to that underwriter, the number of shares set forth opposite the underwriter's name.

Underwriter	Number of Shares
Citigroup Global Markets Inc.	
Barclays Capital Inc.	
 Total	

The underwriting agreement provides that the obligations of the underwriters to purchase the shares included in this offering are subject to approval of legal matters by counsel and to other conditions. The underwriters are obligated to purchase all the shares (other than those covered by the over-allotment option described below) if they purchase any of the shares.

Shares sold by the underwriters to the public will initially be offered at the public offering price set forth on the cover of this prospectus supplement. Any shares sold by the underwriters to securities dealers may be sold at a discount from the public offering price not to exceed \$ per share. If all the shares are not sold at the public offering price, the underwriters may change the offering price and the other selling terms.

If the underwriters sell more shares than the total number set forth in the table above, we have granted to the underwriters an option, exercisable for 30 days from the date of this prospectus supplement, to purchase up to additional shares at the public offering price less the underwriting discount. The underwriters may exercise the option solely for the purpose of covering over-allotments, if any, in connection with this offering. To the extent the option is exercised, each underwriter must purchase a number of additional shares approximately proportionate to that underwriter's initial purchase commitment. Any shares issued or sold under the option will be issued and sold on the same terms and conditions as the other shares that are the subject of this offering.

We and our officers and directors have agreed that, for a period of 90 days from the date of this prospectus supplement, we and they will not, without the prior written consent of Citigroup Global Markets Inc. and Barclays Capital Inc., dispose of or hedge any shares or any securities convertible into or exchangeable for our common stock. Citigroup Global Markets Inc. and Barclays Capital Inc. in their sole discretion may release any of the securities subject to these lock-up agreements at any time without notice. The foregoing restrictions do not apply to certain transactions, including:

transactions relating to shares of common stock or other securities acquired in the open market after the completion of the offering;

bona fide gifts;

bona fide gifts, sales or other dispositions of shares of any class of our capital stock, in each case that are made exclusively between and among the undersigned or members of the undersigned's immediate family (or a trust to their benefit), or affiliates of the undersigned, including its partners (if a partnership) or members (if a limited liability company);

the exercise of warrants or the exercise of stock options granted pursuant to our stock option/incentive plans or otherwise outstanding on the date hereof; provided, that the restrictions shall apply to shares of common stock issued upon such exercise or conversion; and

the establishment of any contract, instruction or plan (individually, a Plan and collectively, Plans) that satisfies all of the requirements of Rule 10b5-1(c)(1)(i)(B) under the Exchange Act; provided, however, that no sales of common stock or securities convertible into, or exchangeable or exercisable for, common stock, shall be made pursuant to a Plan prior to the expiration of the lock-up period (as the same may be extended pursuant to the provisions hereof).

Table of Contents

Notwithstanding the foregoing, if (i) during the last 17 days of the 90-day restricted period, we issue an earnings release or material news or a material event relating to our company occurs; or (ii) prior to the expiration of the 90-day restricted period, we announce that we will release earnings results during the 16-day period beginning on the last day of the 90-day restricted period, the restrictions described above shall continue to apply until the expiration of the 18-day period beginning on the issuance of the earnings release or the occurrence of the material news or material event.

The shares are listed on the NYSE Amex and on the Tel Aviv Stock Exchange, both under the symbol PLX.

The following table shows the underwriting discount that we are to pay to the underwriters in connection with this offering. These amounts are shown assuming both no exercise and full exercise of the underwriters' over-allotment option.

	Paid by the Company	
	No Exercise	Full Exercise
Per share	\$	\$
Total	\$	\$

In connection with the offering, the underwriters may purchase and sell shares in the open market. Purchases and sales in the open market may include short sales, purchases to cover short positions, which may include purchases pursuant to the over-allotment option, and stabilizing purchases.

Short sales involve secondary market sales by the underwriters of a greater number of shares than they are required to purchase in the offering.

Covered short sales are sales of shares in an amount up to the number of shares represented by the underwriters' over-allotment option.

Naked short sales are sales of shares in an amount in excess of the number of shares represented by the underwriters' over-allotment option.

Covering transactions involve purchases of shares either pursuant to the over-allotment option or in the open market after the distribution has been completed in order to cover short positions.

To close a naked short position, the underwriters must purchase shares in the open market after the distribution has been completed. A naked short position is more likely to be created if the underwriters are concerned that there may be downward pressure on the price of the shares in the open market after pricing that could adversely affect investors who purchase in the offering.

To close a covered short position, the underwriters must purchase shares in the open market after the distribution has been completed or must exercise the over-allotment option. In determining the source of shares to close the covered short position, the underwriters will consider, among other things, the price of shares available for purchase in the open market as compared to the price at which they may purchase shares through the over-allotment option.

Stabilizing transactions involve bids to purchase shares so long as the stabilizing bids do not exceed a specified maximum.

Purchases to cover short positions and stabilizing purchases, as well as other purchases by the underwriters for their own accounts, may have the effect of preventing or retarding a decline in the market price of the shares. They may also cause the price of the shares to be higher than the price that would otherwise exist in the open market in the absence of these transactions. The underwriters may conduct these transactions on the NYSE Amex, in the over-the-counter market or otherwise. If the underwriters commence any of these transactions, they may discontinue them at any time.

The underwriters may, from time to time, engage in transactions with and perform services for us in the ordinary course of their business for which they may receive customary fees and reimbursement of expenses.

S-21

Table of Contents

We have agreed to indemnify the underwriters against certain liabilities, including liabilities under the Securities Act, or to contribute to payments the underwriters may be required to make because of any of those liabilities.

Notice to Prospective Investors in the European Economic Area

In relation to each member state of the European Economic Area that has implemented the Prospectus Directive (each, a relevant member state), with effect from and including the date on which the Prospectus Directive is implemented in that relevant member state (the relevant implementation date), an offer to the public of shares of our common stock described in this prospectus supplement may not be made to the public in that relevant member state prior to the publication of a prospectus in relation to the shares of our common stock that has been approved by the competent authority in that relevant member state or, where appropriate, approved in another relevant member state and notified to the competent authority in that relevant member state, all in accordance with the Prospectus Directive, except that, with effect from and including the relevant implementation date, an offer of shares of our common stock may be made to the public in that relevant member state at any time:

to any legal entity which is a qualified investor as defined in the Prospectus Directive;

to fewer than 100 or, if the Relevant Member State has implemented the relevant provision of the 2010 PD Amending Directive, 150, natural or legal persons (other than qualified investors as defined in the Prospectus Directive), as permitted under the Prospectus Directive, subject to obtaining the prior consent of the underwriters for any such offer; or

in any other circumstances falling within Article 3(2) of the Prospectus Directive.

For purposes of this provision, the expression an offer to the public in any relevant member state means the communication in any form and by any means of sufficient information on the terms of the offer and any shares of our common stock to be offered so as to enable an investor to decide to purchase or subscribe for shares of our common stock, as the expression may be varied in that member state by any measure implementing the Prospectus Directive in that member state, and the expression Prospectus Directive means Directive 2003/71/EC (and amendments thereto, including the 2010 PD Amending Directive, to the extent implemented in the Relevant Member State), and includes any relevant implementing measure in each relevant member state and the expression 2010 PD Amending Directive means Directive 2010/73/EU.

This EEA selling restriction is in addition to any other selling restrictions set out in this prospectus supplement.

Notice to Prospective Investors in the United Kingdom

This prospectus supplement and the accompanying prospectus are only being distributed to, and is only directed at, persons in the United Kingdom that are qualified investors within the meaning of Article 2(1)(e) of the Prospectus Directive that are also (i) investment professionals falling within Article 19(5) of the Financial Services and Markets Act 2000 (Financial Promotion) Order 2005 (the Order) or (ii) high net worth entities, and other persons to whom it may lawfully be communicated, falling within Article 49(2)(a) to (d) of the Order (each such person being referred to as a relevant person). This prospectus supplement, the accompanying prospectus and their contents are confidential and should not be distributed, published or reproduced (in whole or in part) or disclosed by recipients to any other persons in the United Kingdom. Any person in the United Kingdom that is not a relevant person should not act or rely on this document or any of its contents.

Notice to Prospective Investors in France

Neither this prospectus supplement, the accompanying prospectus nor any other offering material relating to the shares described in this prospectus supplement and the accompanying prospectus has been submitted to the clearance procedures of the *Autorité des Marchés Financiers* or of the competent authority of another member state of the European Economic Area and notified to the *Autorité des Marchés Financiers*. The shares have not been offered or sold and will not be offered or sold, directly or indirectly, to the public in France.

S-22

Table of Contents

Neither this prospectus supplement, the accompanying prospectus nor any other offering material relating to the shares has been or will be:

released, issued, distributed or caused to be released, issued or distributed to the public in France; or

used in connection with any offer for subscription or sale of the shares to the public in France.

Such offers, sales and distributions will be made in France only:

to qualified investors (*investisseurs qualifiés*) and/or to a restricted circle of investors (*cercle restreint d'investisseurs*), in each case investing for their own account, all as defined in, and in accordance with articles L.411-2, D.411-1, D.411-2, D.734-1, D.744-1, D.754-1 and D.764-1 of the French *Code monétaire et financier*;

to investment services providers authorized to engage in portfolio management on behalf of third parties; or

in a transaction that, in accordance with article L.411-2-II-1°-or-2°-or 3° of the French *Code monétaire et financier* and article 211-2 of the General Regulations (*Règlement Général*) of the *Autorité des Marchés Financiers*, does not constitute a public offer (*appel public à l'épargne*).

The shares may be resold directly or indirectly, only in compliance with articles L.411-1, L.411-2, L.412-1 and L.621-8 through L.621-8-3 of the French *Code monétaire et financier*.

Notice to Prospective Investors in Hong Kong

The shares may not be offered or sold in Hong Kong by means of any document other than (i) in circumstances which do not constitute an offer to the public within the meaning of the Companies Ordinance (Cap. 32, Laws of Hong Kong), or (ii) to professional investors within the meaning of the Securities and Futures Ordinance (Cap. 571, Laws of Hong Kong) and any rules made thereunder, or (iii) in other circumstances which do not result in the document being a prospectus within the meaning of the Companies Ordinance (Cap. 32, Laws of Hong Kong) and no advertisement, invitation or document relating to the shares may be issued or may be in the possession of any person for the purpose of issue (in each case whether in Hong Kong or elsewhere), which is directed at, or the contents of which are likely to be accessed or read by, the public in Hong Kong (except if permitted to do so under the laws of Hong Kong) other than with respect to shares which are or are intended to be disposed of only to persons outside Hong Kong or only to professional investors within the meaning of the Securities and Futures Ordinance (Cap. 571, Laws of Hong Kong) and any rules made thereunder.

Notice to Prospective Investors in Japan

The shares offered in this prospectus supplement have not been registered under the Securities and Exchange Law of Japan. The shares have not been offered or sold and will not be offered or sold, directly or indirectly, in Japan or to or for the account of any resident of Japan, except (i) pursuant to an exemption from the registration requirements of the Securities and Exchange Law and (ii) in compliance with any other applicable requirements of Japanese law.

Notice to Prospective Investors in Singapore

This prospectus supplement and the accompanying prospectus have not been registered as a prospectus with the Monetary Authority of Singapore. Accordingly, this prospectus supplement and the accompanying prospectus and any other document or material in connection with the offer or sale, or invitation for subscription or purchase, of the shares

may not be circulated or distributed, nor may the shares be offered or sold, or be made the subject of an invitation for subscription or purchase, whether directly or indirectly, to persons in Singapore other than (i) to an institutional investor under Section 274 of the Securities and Futures Act, Chapter 289 of Singapore (the SFA), (ii) to a relevant person pursuant to Section 275(1), or any person pursuant to Section 275(1A), and in accordance with the conditions specified in Section 275 of the SFA or

S-23

Table of Contents

(iii) otherwise pursuant to, and in accordance with the conditions of, any other applicable provision of the SFA, in each case subject to compliance with conditions set forth in the SFA.

Where the shares are subscribed or purchased under Section 275 of the SFA by a relevant person which is:

a corporation (which is not an accredited investor (as defined in Section 4A of the SFA)) the sole business of which is to hold investments and the entire share capital of which is owned by one or more individuals, each of whom is an accredited investor; or

a trust (where the trustee is not an accredited investor) whose sole purpose is to hold investments and each beneficiary of the trust is an individual who is an accredited investor,

shares, debentures and units of shares and debentures of that corporation or the beneficiaries' rights and interest (howsoever described) in that trust shall not be transferred within six months after that corporation or that trust has acquired the shares pursuant to an offer made under Section 275 of the SFA except:

to an institutional investor (for corporations, under Section 274 of the SFA) or to a relevant person defined in Section 275(2) of the SFA, or to any person pursuant to an offer that is made on terms that such shares, debentures and units of shares and debentures of that corporation or such rights and interest in that trust are acquired at a consideration of not less than S\$200,000 (or its equivalent in a foreign currency) for each transaction, whether such amount is to be paid for in cash or by exchange of securities or other assets, and further for corporations, in accordance with the conditions specified in Section 275 of the SFA;

where no consideration is or will be given for the transfer; or

where the transfer is by operation of law.

Notice to Prospective Investors in Israel

This prospectus supplement and the accompanying prospectus are not, and under no circumstances are to be construed as an advertisement or a public offering of securities in Israel. Any public offer or sale of securities in Israel may be made only in accordance with the Israeli Securities Act-1968 (which requires, inter alia, the filing of a prospectus in Israel or an exemption therefrom).

Table of Contents

LEGAL MATTERS

Certain legal matters with respect to the common stock will be passed upon for us by Morrison & Foerster LLP, New York, New York. Latham & Watkins LLP, San Diego, California, is counsel for the underwriters in connection with this offering.

EXPERTS

The financial statements and management's assessment of the effectiveness of internal control over financial reporting (which is included in Management's Report on Internal Control over Financial Reporting) incorporated in this prospectus supplement and the accompanying prospectus by reference to the Annual Report on Form 10-K for the year ended December 31, 2010 have been so incorporated in reliance on the reports of Kesselman & Kesselman, independent registered public accounting firm, and a member firm of PricewaterhouseCoopers International Limited, each member firm of which is a separate legal entity, given on the authority of said firm as experts in auditing and accounting.

WHERE YOU CAN FIND MORE INFORMATION

This prospectus supplement and the accompanying prospectus are part of a registration statement on Form S-3 that we filed with the SEC under the Securities Act. This prospectus supplement and the accompanying prospectus do not contain all of the information included in the registration statement. We have omitted certain parts of the registration statement in accordance with the rules and regulations of the SEC. For further information, we refer you to the registration statement, including its exhibits and schedules. Statements contained in this prospectus supplement and the accompanying prospectus about the provisions or contents of any contract, agreement or any other document referred to are not necessarily complete. Please refer to the actual exhibit for a more complete description of the matters involved.

We file annual, quarterly and current reports, proxy statements and other information with the SEC. Our SEC filings, including the registration statement and exhibits, are available to the public at the SEC's website at <http://www.sec.gov>. You may also read, without charge, and copy the documents we file, at the SEC's public reference rooms at 100 F Street, N.E., Room 1580, Washington, D.C. 20549. You can request copies of these documents by writing to the SEC and paying a fee for the copying cost. Please call the SEC at 1-800-SEC-0330 for further information on the public reference rooms. In addition, since we are also listed on the Tel Aviv Stock Exchange, we submit copies of all our filings with the SEC to the Israeli Securities Authority and the Tel Aviv Stock Exchange. Such copies can be retrieved electronically through the Tel Aviv Stock Exchange's internet messaging system (www.maya.tase.co.il) and through the MAGNA distribution site of the Israeli Securities Authority (www.magna.isa.gov.il).

We maintain an Internet site at www.protalix.com. Webcasts of presentations we make at certain conferences may also be available on our website from time to time. We have not incorporated by reference into this prospectus supplement or the accompanying prospectus the information on our website, and you should not consider any of the information posted on or hyper-linked to our website to be a part of this prospectus supplement or the accompanying prospectus.

Table of Contents

INCORPORATION OF CERTAIN DOCUMENTS BY REFERENCE

The SEC allows us to incorporate by reference the information we file with the SEC, which means we can disclose important information to you by referring you to those documents. The information we incorporate by reference is an important part of this prospectus supplement, and certain information that we will later file with the SEC will automatically update and supersede this information. We incorporate by reference the documents listed below as well as any future filings made with the SEC under Sections 13(a), 13(c), 14 or 15(d) of the Exchange Act after the date of this prospectus supplement until we sell all of the securities under this prospectus supplement, except that we do not incorporate any document or portion of a document that is furnished to the SEC, but not deemed filed. The following documents filed with the SEC are incorporated by reference in this prospectus supplement and the accompanying prospectus:

our Annual Report on Form 10-K for the year ended December 31, 2010 filed with the SEC on February 23, 2011;

our Current Reports on Form 8-K filed with the SEC on January 19, 2011; January 24, 2011; January 27, 2011; and February 25, 2011;

the description of our common stock included in our registration statement on Form 8-A12B (File No. 001-33357) filed with the SEC on March 9, 2007, including any amendment or reports filed for the purpose of updating such description.

Copies of these filings are available at no cost on our website, www.protalix.com. In addition, you may request a copy of these filings and any amendments thereto at no cost, by writing or telephoning us. Those copies will not include exhibits to those documents unless the exhibits are specifically incorporated by reference in the documents or unless you specifically request them. You may also request copies of any exhibits to the registration statement at no cost. Please direct your request to:

Yossi Maimon
2 Snunit Street
Science Park
POB 455
Carmiel, Israel 20100
+972-4-988-9488

S-26

Table of Contents

PROSPECTUS

\$150,000,000

Common Stock

We may, from time to time, offer to sell shares of our common stock. The aggregate public offering price of the securities that we may offer through this prospectus will be up to \$150,000,000.

We will provide the specific terms of the securities offered by us in supplements to this prospectus, which we will deliver together with the prospectus at the time of sale. This prospectus may not be used to sell securities unless accompanied by a prospectus supplement. Please read this prospectus and the applicable prospectus supplement carefully before you invest in any of our securities.

We may, from time to time, offer and sell these securities directly or through one or more underwriters, agents or dealers, through underwriting syndicates managed or co-managed by one or more underwriters, or directly to purchasers, on or off the NYSE Amex at prevailing market prices or at privately negotiated prices, on a continuous or delayed basis.

Our common stock is listed on the NYSE Amex under the symbol **PLX** and on the Tel Aviv Stock Exchange under the symbol **PLX**. On January 6, 2011, the last reported sale price of our common stock was \$10.46 per share on the NYSE Amex and NIS 36.75 per share on the Tel Aviv Stock Exchange.

Investing in our securities involves risks. Risks associated with an investment in our securities will be described in the applicable prospectus supplement and certain of our filings with the Securities and Exchange Commission, as described under the caption **Risk Factors on page 4.**

None of the Securities and Exchange Commission, the Israeli Securities Authority or 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 13, 2011

TABLE OF CONTENTS

<u>Cautionary Statement Regarding Forward-Looking Statements</u>	1
<u>About This Prospectus</u>	2
<u>Our Business</u>	2
<u>Risk Factors</u>	4
<u>Use of Proceeds</u>	5
<u>Dilution</u>	5
<u>Securities We May Offer</u>	5
<u>Description of Common Stock</u>	6
<u>Plan of Distribution</u>	7
<u>Where You Can Find More Information</u>	9
<u>Incorporation of Certain Documents by Reference</u>	9
<u>Legal Matters</u>	10
<u>Experts</u>	10

No dealer, salesman or other person has been authorized to give any information or to make any representations in connection with the offer made by this prospectus or any prospectus supplement other than those contained in, or incorporated by reference in, this prospectus or any prospectus supplement, and if given or made, such information or representations must not be relied upon as having been authorized by us or any underwriter, agent or dealer. We or an authorized underwriter, agent or dealer may also furnish you with a free writing prospectus relating to the applicable securities. This prospectus, any prospectus supplement or any free writing prospectus does not constitute an offer to sell or a solicitation of any offer to buy any securities in any jurisdiction to any person to whom it is unlawful to make an offer or solicitation in such jurisdiction. The delivery of this prospectus, any prospectus supplement or any free writing prospectus at any time does not imply that the information contained herein or therein is correct as of any time subsequent to their respective dates.

Table of Contents

CAUTIONARY STATEMENT REGARDING FORWARD-LOOKING STATEMENTS

The statements set forth and incorporated by reference in this prospectus, which are not historical, constitute forward looking statements within the meaning of Section 27A of the Securities Act of 1933, as amended, and Section 21E of the Securities Exchange Act of 1934, as amended, including statements regarding the expectations, beliefs, intentions or strategies for the future. When used in this prospectus, or in any document incorporated by reference in this prospectus, the terms anticipate, believe, estimate, expect and intend and words or phrases of similar import, as relate to us, or our subsidiaries or our management, are intended to identify forward-looking statements. We intend that all forward-looking statements be subject to the safe-harbor provisions of the Private Securities Litigation Reform Act of 1995. Forward-looking statements are subject to many risks and uncertainties that could cause our actual results to differ materially from any future results expressed or implied by the forward-looking statements.

Examples of the risks and uncertainties include, but are not limited to, the following:

the inherent risks and uncertainties in developing drug platforms and products of the type we are developing;

delays in our preparation and filing of applications for regulatory approval;

delays in the approval or the potential rejection of any applications we file with the U.S. Food and Drug Administration, or the FDA, or other regulatory authorities, including the New Drug Application (NDA) we have filed with the FDA and the Marketing Authorization Application (MAA) we have submitted to the European Medicines Agency, or the EMEA, for taliglucerase alfa;

any lack of progress of our research and development (including the results of clinical trials we are conducting);

obtaining on a timely basis sufficient patient enrollment in our clinical trials;

the impact of development of competing therapies and/or technologies by other companies;

our ability to obtain additional financing required to fund our research programs;

the risk that we will not be able to develop a successful sales and marketing organization in a timely manner, if at all;

our ability to establish and maintain strategic license, collaboration and distribution arrangements and to manage our relationship with Pfizer Inc., Teva Ltd. or with any other collaborator, distributor or partner;

potential product liability risks, and risks of securing adequate levels of product liability and clinical trial insurance coverage;

the availability of reimbursement to patients from health care payors for any of our product candidates, if approved;

the possibility of infringing a third party's patents or other intellectual property rights;

the uncertainty of obtaining patents covering our products and processes and in successfully enforcing our intellectual property rights against third parties; and

the possible disruption of our operations due to terrorist activities and armed conflict, including as a result of the disruption of the operations of regulatory authorities, our subsidiaries, our manufacturing facilities and our customers, suppliers, distributors, collaborative partners, licensees and clinical trial sites.

In addition, companies in the pharmaceutical and biotechnology industries have suffered significant setbacks in advanced or late-stage clinical trials, even after obtaining promising earlier trial results or preliminary findings for such clinical trials. Even if favorable testing data is generated in clinical trials of a drug product, the FDA might not accept or approve an NDA, and the EMEA may not accept an MAA, filed or

Table of Contents

submitted by a pharmaceutical or biotechnology company for the drug product. These and other risks and uncertainties are detailed in our Annual Report on Form 10-K for the year ended December 31, 2009, Section 1A, under the heading Risk Factors, and described from time to time in our future reports to be filed with the Securities and Exchange Commission, or SEC.

Any or all of our forward-looking statements are only predictions and reflect our views as of the date they are made with respect to future events and financial performance and we undertake no obligation to update or revise, nor do we have a policy of updating or revising, any forward-looking statement to reflect events or circumstances after the date on which the statement is made or to reflect the occurrence of unanticipated events, except as may be required under applicable law.

ABOUT THIS PROSPECTUS

This prospectus is part of a registration statement that we filed with the SEC using a shelf registration process. Under this shelf registration process, we may sell shares of common stock in one or more offerings, up to a total dollar amount of \$150,000,000.

This prospectus provides you with a general description of the securities we may offer under this prospectus. Each time we sell securities, we will provide a prospectus supplement that will contain specific information about the terms of that offering. The prospectus supplement may also add, update or change information contained in this prospectus.

The SEC allows us to incorporate by reference certain information that we file with it, which means that we can disclose important information to you by referring you to those documents. The information incorporated by reference is considered to be part of this prospectus, and information that we file later with the SEC will update automatically, supplement and/or supersede this information. Any statement contained in a document incorporated or deemed to be incorporated by reference in this prospectus shall be deemed to be modified or superseded for purposes of this prospectus to the extent that a statement contained in this prospectus or in any other document which also is or is deemed to be incorporated by reference in this prospectus modifies or supersedes such statement. Any such statement so modified or superseded shall not be deemed, except as so modified or superseded, to constitute a part of this prospectus. You should read the detailed information regarding our company, our common stock and our financial statements and the notes to those statements appearing elsewhere in this prospectus or incorporated herein by reference.

You should read both this prospectus and the applicable prospectus supplement together with additional information from the sources described under the caption Where You Can Find More Information in this prospectus. You should not assume that the information in this prospectus, the prospectus supplements, any free writing prospectus or any document incorporated by reference is accurate as of any date subsequent to their respective dates.

You should rely only on the information provided or incorporated by reference in this prospectus, any free writing prospectus and any prospectus supplement, as applicable. We have not authorized anyone to provide you with different information.

References in this prospectus to our company, we, our, and us refer to Protalix BioTherapeutics, Inc.

OUR BUSINESS

We are a biopharmaceutical company focused on the development and commercialization of recombinant therapeutic proteins based on our proprietary ProCellEx™ protein expression system, or ProCellEx. Using our ProCellEx system, we are developing a pipeline of proprietary, biosimilar or generic versions of recombinant therapeutic proteins based

on our plant cell-based expression technology that target large, established pharmaceutical markets and that rely upon known biological mechanisms of action. Our initial commercial focus has been on complex therapeutic proteins, including proteins for the treatment of genetic disorders, such as Gaucher disease and Fabry disease. We believe our ProCellEx protein expression system will enable us to

Table of Contents

develop proprietary recombinant proteins that are therapeutically equivalent or superior to existing recombinant proteins currently marketed for the same indications. Because we are primarily targeting biologically equivalent versions of highly active, well-tolerated and commercially successful therapeutic proteins, we believe our development process is associated with relatively less risk compared to other biopharmaceutical development processes for completely novel therapeutic proteins.

Our lead product development candidate is taliglucerase alfa for the treatment of Gaucher disease, which we are developing using our ProCellEx protein expression system. Gaucher disease is a rare and serious lysosomal storage disorder with severe and debilitating symptoms. Taliglucerase alfa is our proprietary recombinant form of glucocerebrosidase (GCD), an enzyme naturally found in human cells that is mutated or deficient in patients with Gaucher disease. In July 2007, we reached an agreement with the U.S. Food and Drug Administration, or the FDA, on the final design of our pivotal phase III clinical trial of taliglucerase alfa, through the FDA's special protocol assessment (SPA) process. The phase III clinical trial was completed in September 2009 and, on October 15, 2009, we announced positive top-line results from the trial. On December 9, 2009, we filed our New Drug Application (NDA) for taliglucerase alfa for the treatment of Gaucher disease, and in January 2010 the FDA requested additional data regarding the Chemistry, Manufacturing and Controls (CMC) section of the NDA. We provided the requested data in April 2010 and in July 2010 we received notification from the FDA that it had accepted the filing of the NDA and assigned a PDUFA date of February 25, 2011 to taliglucerase alfa. In addition, in November 2010 we submitted a Marketing Authorization Application to the European Medicines Agency, or EMEA, for taliglucerase alfa for the treatment of Gaucher disease.

In March 2010, the Israeli Ministry of Health completed a successful audit of our manufacturing facilities in Carmiel, Israel. The audit was performed as part of the Ministry of Health's evaluation of our manufacturing process for taliglucerase alfa.

In addition to our recently completed phase III clinical trial of taliglucerase alfa, during the third quarter of 2008, we initiated a double-blind, follow-on extension study as part of the trial. We also initiated a home care treatment program for patients enrolled in the extension study and in December 2008, we initiated a nine-month, worldwide, multi-center, open-label, switch-over clinical study evaluating the safety and efficacy of switching Gaucher patients currently treated under the current standard of care to treatment with taliglucerase alfa. The current standard of care for Gaucher patients is enzyme replacement therapy with Cerezyme™ which is produced by Genzyme Corporation and, until the recent approval of VPRIV™ by Shire plc in February 2010, the only approved enzyme replacement therapy for Gaucher disease. Enzyme replacement therapy is a medical treatment in which recombinant enzymes are injected into patients in whom the enzyme is lacking or dysfunctional. The switch-over study is not a prerequisite for approval of taliglucerase alfa by the FDA. In December 2009 we filed a proposed pediatric investigation plan to the Pediatric Committee of the EMEA which was approved during the second quarter of 2010. In November 2010, we announced positive preliminary data from the first 15 patients that completed the switch-over clinical study of taliglucerase alfa.

On November 30, 2009, Protalix Ltd. and Pfizer Inc., or Pfizer, entered into an exclusive license and supply agreement pursuant to which Pfizer was granted an exclusive, worldwide license to develop and commercialize taliglucerase alfa. Under the terms and conditions of the Pfizer agreement, Protalix Ltd. retained the right to commercialize taliglucerase alfa in Israel. In connection with the execution of the Pfizer agreement, Pfizer made an upfront payment to Protalix Ltd. of \$60.0 million in connection with the execution of the agreement and subsequently paid Protalix Ltd. an additional \$5.0 million upon our filing of a proposed pediatric investigation plan to the Pediatric Committee of the EMEA. Protalix Ltd. is also eligible to receive potential milestone payments totaling \$50.0 million for the successful achievement of other developmental milestones and to payments equal to 40% of the net profits earned on Pfizer's sales of taliglucerase alfa, if any. Pfizer and Protalix Ltd. have agreed to a specific allocation of the responsibilities for the continued development efforts for taliglucerase alfa.

In July 2009, following a request by the FDA, we submitted a treatment protocol to the FDA in order to address an expected shortage of the current enzyme replacement therapy approved for Gaucher disease. The treatment protocol was approved by the FDA in August 2009. In September 2009, the FDA's Office of Orphan

Table of Contents

Product Development granted taliglucerase alfa Orphan Drug Status. In January 2010, the Committee for Orphan Medicinal Products (COMP) of the EMEA, after reviewing all relevant clinical data, recommended that the European Commission grant orphan drug designation to taliglucerase alfa for the treatment of Gaucher disease. The Orphan Drug designation in the United States for taliglucerase alfa for the treatment of Gaucher disease provides special status to taliglucerase alfa provided that it meets certain criteria. As a result of the orphan designation, we are qualified for the tax credit and marketing incentives of the Orphan Drug Act of 1983. A marketing application for a prescription drug product that has been designated as a drug for a rare disease or condition is not subject to a prescription drug user fee unless the application includes an indication for other than a rare disease or condition.

On July 13, 2010, we announced that the French regulatory authority had granted an Autorisation Temporaire d'Utilisation (ATU), or Temporary Authorization for Use, for taliglucerase alfa for the treatment of Gaucher disease. An ATU is the regulatory mechanism used by the French Health Products and Safety Agency to make non-approved drugs available to patients in France when a genuine public health need exists. This ATU allows patients with Gaucher disease in France to receive treatment with taliglucerase alfa before marketing authorization for the product is granted in the European Union. Payment for taliglucerase alfa has been secured through government allocations to hospitals.

On August 10, 2010, Pfizer entered into a \$30 million short-term supply agreement with the Ministry of Health of Brazil pursuant to which we and Pfizer will provide taliglucerase alfa to Gaucher disease patients in such country.

In addition to taliglucerase alfa, we are developing an innovative product pipeline using our ProCellEx protein expression system. Our product pipeline currently includes, among other candidates, therapeutic protein candidates for the treatment of Fabry disease, a rare, genetic lysosomal disorder in humans, an acetylcholinesterase enzyme-based therapy for biodefense, antiTNF, a plant cell expressed recombinant fusion protein made from the soluble form of the human TNF receptor (TNFR) which is being developed as a treatment of certain immune diseases such as rheumatoid arthritis, juvenile idiopathic arthritis and others, and additional undisclosed therapeutic proteins and intoxication treatments, all of which are currently being evaluated in animal studies. In March 2010, we initiated a phase I clinical trial of PRX-105, our plant cell expressed pegylated recombinant acetylcholinesterase product candidate for biodefense indications, which we completed in June 2010. We are currently preparing for further efficacy trials in larger animals.

Except for the license we have granted to Pfizer, we hold the worldwide commercialization rights to our proprietary development candidates and we intend to establish an internal, commercial infrastructure and targeted sales force to market taliglucerase alfa in Israel and our other products, if approved, in North America, the European Union and in other significant markets, including Israel. In addition, we are continuously evaluating potential strategic marketing partnerships.

Our common stock is listed on the NYSE Amex and, since September 6, 2010, on the Tel Aviv Stock Exchange, both under the symbol PLX.

ProCellEx™ is our trademark. Each of the other trademarks, trade names or service marks appearing in this prospectus belongs to its respective holder.

RISK FACTORS

Investing in our securities involves a high degree of risk. You should carefully consider the specific risks sets forth under the caption Risk Factors in the applicable prospectus supplement and under the captions Risk Factors in any of our filings with the SEC, including our Annual Report on Form 10-K for the year ended December 31, 2009 before making an investment decision. For additional information, please see the sources described under the caption Where

You Can Find More Information.

Table of Contents

USE OF PROCEEDS

We will retain broad discretion over the use of the net proceeds of the securities we offer hereby. Unless the applicable prospectus supplement states otherwise, the net proceeds from the securities we sell will be added to our general corporate funds and may be used for research and development expenses, clinical trials, establishing an internal sales force, acquisitions of new technologies or businesses, and general corporate and administrative purposes. Until the net proceeds have been used, they will be invested in short-term bank deposits or marketable securities. If we elect at the time of the issuance of the securities to make different or more specific uses of proceeds other than as described in this prospectus, the change in use of proceeds will be described in the applicable prospectus supplement.

DILUTION

We will set forth in a prospectus supplement the following information regarding any material dilution of the equity interests of investors purchasing securities in an offering under this prospectus:

the net tangible book value per share of our equity securities before and after the offering;

the amount of the increase in such net tangible book value per share attributable to the cash payments made by purchasers in the offering; and

the amount of the immediate dilution from the public offering price which will be absorbed by such purchasers.

SECURITIES WE MAY OFFER

Types of Securities

We may offer, from time to time, shares of common stock through this prospectus.

We will describe in a prospectus supplement, which we will deliver with this prospectus at the time of sale, the terms of the particular securities that we may offer in the future.

The aggregate initial offering price of all securities sold will not exceed \$150,000,000. When we sell securities, we will determine the amounts of securities we will sell and the prices and other terms on which we will sell them. We may sell securities to or through underwriters, through agents or dealers or directly to purchasers.

Additional Information

We will describe in a prospectus supplement, which we will deliver with this prospectus, the terms of the securities which we may offer in the future. In each prospectus supplement we will include the following information:

the amount of securities which we propose to sell;

the initial public offering price of the securities;

the names of the underwriters, agents or dealers, if any, through or to which we will sell the securities;

the compensation, if any, of those underwriters, agents or dealers;

if applicable, information about any securities exchange or automated quotation system on which the securities will be listed or traded;

material U.S. federal income tax considerations applicable to the securities;

any material risk factors associated with the securities;

payment of dividends, if any;

Table of Contents

voting or other rights, if any; and

any other material information about the offer and sale of the securities.

In addition, the prospectus supplement may add, update or change the information contained in this prospectus.

DESCRIPTION OF COMMON STOCK

We are a Florida corporation. The rights of our stockholders are governed by the Florida Business Corporation Act, or the FBCA, our amended and restated articles of incorporation and our amended and restated bylaws. The following summary of the material terms, rights and preferences of our capital stock is not complete. You should read our amended and restated articles of incorporation, which we refer to as our charter, and our bylaws, for more complete information before you purchase any of our securities. You should read these documents, copies of which are available from us upon request at the address set forth under the caption *Where You Can Find More Information*, in order to more fully understand the terms of our common stock.

General. Our charter provides that we may issue up to 150,000,000 shares of common stock, par value \$0.001 per share, and 100,000,000 shares of preferred stock, par value \$0.0001 per share, all of which preferred stock are undesignated. As of January 4, 2011, 81,269,472 shares of our common stock were issued and outstanding and no shares of preferred stock were issued and outstanding.

Holders of common stock are entitled to one vote for each share held on all matters submitted to a vote of stockholders and do not have cumulative voting rights. Accordingly, holders of a majority of the shares of common stock entitled to vote in any election of directors may elect all of the directors standing for election. Holders of common stock are entitled to receive dividends when, as and if declared by our board of directors out of funds legally available therefor.

In the event of our liquidation, dissolution or winding up, after payment of all of our debts and liabilities, the holders of our common stock are entitled to share ratably in all remaining assets available for distribution after the payment of debts and liabilities and after provision has been made for each class of stock, if any, having preferences over our common stock. Holders of our common stock, as such, have no preemptive or other rights and there are no redemption provisions applicable to our common stock. All of our outstanding shares of common stock are fully paid and nonassessable. The rights, preferences and privileges of holders of common stock are subject to, and may be adversely affected by, the rights of the holders of shares of any series of preferred stock that we may designate and issue in the future. In accordance with the rules of the Tel Aviv Stock Exchange, other than stock options under our 2006 Stock Option Plan, we may not issue any securities of any class or series different than the common stock that is listed on the Tel Aviv Stock Exchange for the 12-month period immediately succeeding our initial listing, which occurred on September 6, 2010. Subsequent to such 12-month period, the rules of the Tel Aviv Stock Exchange allow us to issue securities with preferential rights relating to dividends, but such other securities may not include voting rights.

Dividend Policy. We have never declared or paid any cash dividends on our capital stock. We currently intend to retain any future earnings to finance the growth and development of our business and therefore do not anticipate paying any cash dividends in the foreseeable future. Any future determination to pay cash dividends will be at the discretion of our board of directors and will depend upon our financial condition, operating results, capital requirements, covenants in our debt instruments (if any), and such other factors as our board of directors deems relevant.

Transfer Agent and Registrar. The transfer agent and registrar of our common stock is American Stock Transfer & Trust Company.

Options

As of January 4, 2011, options to purchase 7,785,671 shares of our common stock at a weighted average exercise price equal to \$3.72 per share were outstanding.

Table of Contents

Florida Anti-Takeover Law Governance and Certain Charter Provisions

We have elected not to be subject to the provisions of Sections 607.0901 and 607.0902 of the FBCA. Section 607.0902 of the FBCA prohibits the voting of shares in a publicly-held Florida corporation that are acquired in a control share acquisition unless the holders of a majority of the corporation's voting shares (exclusive of shares held by officers of the corporation, inside directors or the acquiring party) approve the granting of voting rights as to the shares acquired in the control share acquisition or unless the acquisition is approved by the corporation's Board of Directors. A control share acquisition is defined as an acquisition that immediately thereafter entitles the acquiring party to vote in the election of directors within each of the following ranges of voting power: (i) one-fifth or more but less than one-third of all voting power; (ii) one-third or more but less than a majority of all voting power; and (iii) more than a majority of all voting power.

Sections 607.0901 of the FBCA contains an affiliated transaction provision that prohibits a publicly-held Florida corporation from engaging in a broad range of business combinations or other extraordinary corporate transactions with an interested shareholder unless, among others: (i) the transaction is approved by a majority of disinterested directors before the person becomes an interested shareholder; (ii) the interested shareholder has owned at least 80% of the corporation's outstanding voting shares for at least five years; or (iii) the transaction is approved by the holders of two-thirds of the corporation's voting shares other than those owned by the interested shareholder. An interested shareholder is defined as a person who together with affiliates and associates beneficially owns more than 10% of the corporation's outstanding voting shares.

NYSE Amex and Tel Aviv Stock Exchange

Our common stock is listed on both the NYSE Amex and the Tel Aviv Stock Exchange under the symbol PLX.

PLAN OF DISTRIBUTION

We may sell the securities from time to time pursuant to underwritten public offerings, negotiated transactions, at the market offerings, block trades or a combination of these methods. We may sell the securities to or through underwriters or dealers, through agents, or directly to one or more purchasers.

We may distribute 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.

Unless stated otherwise in the applicable prospectus supplement, the obligations of any underwriter to purchase securities will be subject to certain conditions, and the underwriter 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 the 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.

We or our agents may solicit offers to purchase securities from time to time. Unless stated otherwise in the applicable prospectus supplement, any agent will be acting on a best efforts basis for the period of its appointment.

In connection with the sale of 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 securities may be deemed to be underwriters, as that term is defined in the Securities Act, and

Table of Contents

any discounts or commissions received by them from us and any profits on the resale of the securities by them may be deemed to be underwriting discounts and commissions under the Securities Act. We will identify any such underwriter or agent, and we will describe any compensation paid to them, in the related prospectus supplement.

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 the applicable prospectus supplement, we will authorize agents and underwriters to solicit offers by certain specified institutions or other persons to purchase securities at the public offering price set forth in the prospectus supplement under delayed delivery contracts providing for payment and delivery on a specified date in the future. Institutions with whom these contracts may be made include commercial and 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. These contracts will be subject only to those conditions set forth in the applicable prospectus supplement and the applicable prospectus supplement will set forth the commission payable for solicitation of these contracts. The obligations of any purchaser 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 these contracts.

The securities may or may not be listed on a national securities exchange or traded in the over-the-counter market, as set forth in the applicable prospectus supplement. No assurance can be given as to the liquidity of the trading market for any of our securities. Any underwriter may make a market in these securities. However, no underwriter will be obligated to do so, and any underwriter may discontinue any market making at any time, without prior notice.

If underwriters or dealers are used in the sale, until the distribution of the securities is completed, SEC rules may limit the ability of any 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. These 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 applicable securities in connection with any offering (in other words, if they sell more securities than are set forth on the cover page of the applicable prospectus supplement) the representatives of the underwriters may reduce that short position by purchasing securities in the open market. The representatives of the underwriters may also 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. The representatives of the underwriters may also 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 the securities, they may reclaim the amount of the selling concession from the underwriters and selling group members who sold those shares as part of the offering.

In general, purchases of a security for the purpose of stabilization or to reduce a short position could cause the price of the security to be higher than it might be in the absence of those purchases. The imposition of a penalty bid might also have an effect on the price of the securities to the extent that it discourages resales of the securities. The transactions described above may 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. In addition, the representatives of any underwriters may determine not to engage in those transactions or that those transactions, once commenced, may be discontinued without notice.

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.

In no event will the commission or discount received by any Financial Industry Regulatory Authority, or FINRA, member or independent broker-dealer participating in a distribution of securities exceed 8% of the

Table of Contents

aggregate principal amount of the offering of securities in which that FINRA member or independent broker-dealer participates.

WHERE YOU CAN FIND MORE INFORMATION

This prospectus is part of a registration statement on Form S-3 that we filed with the SEC under the Securities Act. You should rely only on the information contained in this prospectus or incorporated by reference in this prospectus. We have not authorized anyone else to provide you with different information. You should not assume that the information in this prospectus is accurate as of any date other than the date on the front cover of this prospectus, regardless of the time of delivery of this prospectus or any sale of securities.

We file annual, quarterly and current reports, proxy statements and other information with the SEC. Our SEC filings, including the registration statement and exhibits, are available to the public at the SEC's website at <http://www.sec.gov>. You may also read, without charge, and copy the documents we file, at the SEC's public reference rooms at 100 F Street, N.E., Room 1580, Washington, D.C. 20549. You can request copies of these documents by writing to the SEC and paying a fee for the copying cost. Please call the SEC at 1-800-SEC-0330 for further information on the public reference rooms. In addition, since we are also listed on the Tel Aviv Stock Exchange, we submit copies of all our filings with the SEC to the Israeli Securities Authority and the Tel Aviv Stock Exchange. Such copies can be retrieved electronically through the Tel Aviv Stock Exchange's internet messaging system (www.maya.tase.co.il) and through the MAGNA distribution site of the Israeli Securities Authority (www.magna.isa.gov.il).

We maintain an Internet site at www.protalix.com. Webcasts of presentations we make at certain conferences may also be available on our website from time to time. We have not incorporated by reference into this prospectus the information on our website, and you should not consider it to be a part of this prospectus.

This prospectus does not contain all of the information included in the registration statement. We have omitted certain parts of the registration statement in accordance with the rules and regulations of the SEC. For further information, we refer you to the registration statement, including its exhibits and schedules, which may be found at the SEC's website at <http://www.sec.gov>. Statements contained in this prospectus and any accompanying prospectus supplement about the provisions or contents of any contract, agreement or any other document referred to are not necessarily complete. Please refer to the actual exhibit for a more complete description of the matters involved.

INCORPORATION OF CERTAIN DOCUMENTS BY REFERENCE

The SEC allows us to incorporate by reference the information we file with the SEC, which means we can disclose important information to you by referring you to those documents. The information we incorporate by reference is an important part of this prospectus, and certain information that we will later file with the SEC will automatically update and supersede this information. We incorporate by reference the documents listed below as well as any future filings made with the SEC under Sections 13(a), 13(c), 14 or 15(d) of the Exchange Act from the date of the initial registration statement and prior to the effectiveness of this registration statement, and any filings made after the date of this prospectus until we sell all of the securities under this prospectus, except that we do not incorporate any document or portion of a document that is furnished to the SEC, but not deemed filed. The following documents filed with the SEC are incorporated by reference in this prospectus:

our Annual Report on Form 10-K for the year ended December 31, 2009;

our Quarterly Report on Form 10-Q for the quarters ended March 31, 2010; June 30, 2010; and September 30, 2010;

our Current Reports on Form 8-K filed with the SEC on January 14, 2010; February 2, 2010; February 5, 2010; February 11, 2010; March 3, 2010; March 9, 2010; March 17, 2010; April 27, 2010; May 18, 2010; June 8, 2010; July 12, 2010; July 13, 2010, August 16, 2010, August 30, 2010;

Table of Contents

September 7, 2010; September 13, 2010; October 25, 2010; November 2, 2010; November 10, 2010; and November 29, 2010;

our definitive Proxy Statement for our Annual Meeting of Shareholders held on November 7, 2010; and

the description of our common stock included in our Form 8-A filed with the SEC on March 9, 2007.

Copies of these filings are available at no cost on our website, www.protalix.com. In addition, you may request a copy of these filings and any amendments thereto at no cost, by writing or telephoning us. Those copies will not include exhibits to those documents unless the exhibits are specifically incorporated by reference in the documents or unless you specifically request them. You may also request copies of any exhibits to the registration statement at no cost. Please direct your request to:

**Yossi Maimon
2 Snunit Street
Science Park
POB 455
Carmiel, Israel 20100
+972-4-988-9488**

You should rely only on the information in this prospectus, any prospectus supplement, any applicable free writing prospectus and the documents that are incorporated by reference. We have not authorized anyone else to provide you with different information. We are not offering these securities in any state where the offering is prohibited by law. You should not assume that the information in this prospectus, any prospectus supplement, any applicable free writing prospectus or any incorporated document is accurate as of any date other than the date of the document.

LEGAL MATTERS

The validity of the issuance of the shares of common stock offered hereby will be passed upon for us by Morrison & Foerster LLP, New York, New York.

EXPERTS

The financial statements and management's assessment of the effectiveness of internal control over financial reporting (which is included in Management's Report on Internal Control over Financial Reporting) incorporated in this Prospectus by reference to the Annual Report on Form 10-K for the year ended December 31, 2009 have been so incorporated in reliance on the reports of Kesselman & Kesselman, independent registered public accounting firm, and a member of PricewaterhouseCoopers International Limited, each member firm of which is a separate legal entity, given on the authority of said firm as experts in auditing and accounting.

Table of Contents

Shares

Common Stock

PRELIMINARY PROSPECTUS SUPPLEMENT

March , 2011

Joint Book-Running Managers

**Citi
Barclays Capital**