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November 24, 2010

Mr. Jeffery Riedler
Assistant Director
Division of Corporation Finance
U.S. Securities and Exchange Commission
100 F. Street, N.E.
Washington, D.C. 20549

RE: Protalix BioTherapeutics, Inc.
Form 10-K for the Fiscal Year ended December 31, 2009
Filed February 26, 2010
File No. 001-33357

Ladies and Gentlemen:

On behalf of our client, Protalix BioTherapeutics, Inc., a Florida corporation (the "Company"), transmitted herewith are responses to the Staff's comments to the Company's Annual Report on Form 10-K for the fiscal year ended December 31, 2009 (the "2009 Form 10-K"), which comments were set forth in the Staff's letter dated November 16, 2010 (the "Comment Letter") to David Aviezer, Ph.D., the Company's Chief Executive Officer. References to the Company in this response letter include the Company and its wholly-owned subsidiary, Protalix Ltd., unless stated otherwise. The Staff presented its original comments to the Company in a letter to Dr. Aviezer dated September 22, 2010 ("Original Letter"), and the Company responded to the Original Letter with a response letter from this firm dated October 12, 2010 (the "Original Response"). For ease of reference, we have noted the Staff's comments in bold faced type and the responses in regular type.

Item 1. Business

1. **We note that your responses to comments 1, 3 and 6 state that the annual maintenance fees were granted confidential treatment. It appears that these requests were granted without the benefit of staff review. Please disclose the amounts of these payments or tell us why you believe the amount of these payments is not material information.**

Response: In response to this comment, the Company intends to disclose the amount of the annual license maintenance fees under its license agreements with both the Yissum Research and Development Company and the Yeda Research and Development Company Limited in its next Annual Report on Form 10-K and all other applicable filings under the Securities Act of 1933,

and the Securities Exchange Act of 1934. The Company respectfully notes that there are no annual maintenance fees under its license agreement with Icon Genetics AG. In Exhibit A and Exhibit B to this letter, we have provided, on the Company's behalf, revised examples of the disclosure that the Company intends to make in its next annual report in response to this comment. These exhibits will replace Exhibit A and Exhibit B to the Original Response. In each of Exhibit A and Exhibit B, the Company has added a sentence regarding the annual fees payable under the applicable license agreement. The Company has also provided a revised Exhibit D to clarify certain disclosure regarding the Company's obligation to pay royalties under the applicable license agreement.

Item 11. Executive Compensation

Compensation Discussion and Analysis, page 65

2. **We note your response to our prior comment 9. Your response is unclear as you state that the Compensation Committee has established a bonus plan for "certain milestones" and that the Compensation Committee determines awards on a "discretionary basis." If the Compensation Committee identified and communicated goals to be used to determine whether a bonus is paid and the amount of the bonus, please disclose all goals set by the Committee, identify which goals were achieved and explain how the level of achievement was used to determine the amount of each officer's bonus. If there were no predetermined goals and the awards were based solely on the discretion of the Committee and the Committee based its discretion on the achievements identified, please clarify that there were no predetermined goals.**

Response: In February 2010, the Company's Board of Directors, acting upon a resolution of a majority of the independent directors, awarded bonuses payable to the Company's named executive officers in two tranches. The first tranche was awarded and payable at the discretion of the Board of Directors and without the consideration of any predetermined goals. The second tranche of bonus payments are payable upon the Company's achievement of certain milestones relating to the progress towards the anticipated commercialization of taliglucerase alfa, but are not based upon any predetermined, individual goals communicated to any executive officer. The Company has revised the language in Exhibit F to clarify the proposed disclosure. Exhibit F will replace Exhibit F to the Original Response.

The Company notes that in September, 2010, the Company made its first shipment of taliglucerase alfa, the first milestone in the second tranche of the milestone-based bonus payments. Promptly after the achievement of that milestone, the Company paid the entire allocated amount to each named executive officer, respectively. The Company intends to include disclosure regarding the final bonus payments made in 2010 in its Annual Report on Form 10-K for the year ending December 31, 2010.

* * *

Please call the undersigned at the telephone number set forth above or Joseph Magnas at 212-336-4170 with any question or comment you may have regarding the responses set forth herein. In addition, please send all written correspondence directly to the undersigned and Joseph Magnas of Morrison & Foerster LLP, 1290 Avenue of the Americas, New York, New York 10104, telecopy 212-468-7900, with copies to David Aviezer, Ph.D., the Company's President and Chief Executive Officer, at 2 Snunit Street, Science Park, P.O.B. 455, Carmiel 20100, Israel, telecopy +972-4-988-9489.

Sincerely,

/s/ James R. Tanenbaum

cc: David Aviezer, Ph.D.
Yossi Maimon

Exhibit A

In August 2007, Protalix Ltd. licensed the rights to certain technology under a research and license agreement with Yissum Research and Development Company, or Yissum, and the Boyce Thompson Institute, Inc., or Boyce Thompson. Pursuant to the agreement, we are developing a proprietary plant cell-based acetylcholinesterase (AChE) and its molecular variants for the use in several therapeutic and prophylactic indications, as well as in a biodefense program and an organophosphate-based pesticide treatment program. Under the terms of the agreement, Yissum and Boyce Thompson granted us an exclusive, worldwide right and license to certain technology, including patents and certain patent applications relating to AChE for the therapeutic and prophylactic indications as well as an exclusive license not limited to such indications with respect to certain of those patents and patent applications. As consideration for the license, we are obligated to pay Yissum and Boyce Thompson, collectively, an annual, non-refundable initial maintenance fee of $20,000, commencing on the fourth anniversary of the execution of the agreement, which is subject to a 12% annual increase. In addition, we are obligated to make royalty payments equal to varying low, single-digit percentages of net sales of products under the agreement. These royalty rates are evaluated on a country-by-country basis, and are subject to reduction if a third party commercializes a competing product or commercializes an authorized generic version of the applicable product, subject to certain conditions. We also have the right to grant sublicenses relating to the licensed technology under the agreement, subject to the payment of sublicensing fees. The fees payable in connection with any sublicense are equal to varying percentages, in the low-teens through the low-twenties, of the consideration we receive in connection with the sublicense, depending on the level of clinical development of the product at the time we enter into the sublicense. Last, we are obligated to pay Yissum and Boyce Thompson, collectively, milestone payments equal to $700,000, in the aggregate, upon the achievement of certain milestones under the license agreement.

The license agreement remains in effect until the expiration of all obligations to Yissum and Boyce Thompson under the agreement, determined on a country-by-country basis. We have the right to terminate the agreement for any reason upon 60 days' prior written notice to Yissum and Boyce Thompson. Subject to certain conditions, Yissum and Boyce Thompson may terminate the agreement immediately upon written notice to us in connection with certain events relating to bankruptcy, lapses in our insurance coverage, failures to defend against third party claims or claims we may make regarding the validity or enforceability of any licensed patent. We or Yissum and Boyce Thompson may terminate the agreement within 60 days after receiving written notice if the non-terminating party passes a resolution for a voluntary wind up, if a receiver or liquidator is appointed for the non-terminating party, or the non-terminating party enters into an insolvency or bankruptcy proceeding. In addition, either party may terminate the agreement due to a material breach by the other party if the breaching party is unable to cure the breach within 60 days after receiving written notice of the breach from the non-breaching party. Any termination of the agreement will result in a loss of our rights to the licensed technology, which will revert back to Yissum and Boyce Thompson.

Exhibit B

In March 2006, Protalix Ltd. entered into a research and license agreement with the Yeda Research and Development Company Limited, or Yeda, the technology transfer arm of the Weizmann Institute of Science. Under the terms of the agreement, Yeda agreed to use its technology to design a next generation of glucoceribrosidase (GCD) for the treatment of Gaucher disease that can be expressed using our ProCellEx protein expression system and that may have certain benefits over the first generation treatments used today. The technology licensed from Yeda provides a methodology for the rational design of an improved drug for the treatment of Gaucher disease by enzyme replacement therapy, based on the three-dimensional crystal structure of glucoceribrosidase (GCD) that was solved by scientists from the Weizmann Institute of Science. Yeda has granted us an exclusive worldwide license to use their technology and discoveries for the development, production and sale of enzymatically active mutations of glucoceribrosidase (GCD) and derivatives thereof for the treatment of Gaucher disease. Under the terms of the agreement, we are required to take all necessary steps to develop and commercialize the products subject to the agreement.

As consideration for the license, we agreed to pay Yeda a fixed research budget amount, subject to certain conditions. We have since completed the research phase of the arrangement with Yeda. Accordingly, we are no longer making any research-related payments to Yeda under the agreement. In addition, we are obligated to make an annual non-refundable license fee of $10,000 during the term of the agreement, commencing on the fifth anniversary of the execution of the agreement until, and including, the 19th anniversary thereof. We are also obligated to make royalty payments equal to varying low, single-digit percentages of net sales of products under the agreement. Sublicenses relating to the licensed technology may be granted under the agreement, subject to the payment of sublicensing fees. The fee for any sublicense is equal to a percentage, ranging from the low-teens through the low-twenties, of the consideration we receive in connection with the sublicense, depending on the level of clinical and regulatory development of the products under the agreement at the time we enter into the sublicense.

The license agreement remains in effect until the earlier of the expiration of the last patent licensed under the agreement or if there are no commercial sales of any products for a continuous period of 20 years. Yeda may modify the exclusivity component of the agreement by written notice to us and without our consent. Yeda may terminate the agreement by written notice to us if we fail to satisfy any one or more specified milestones, and we fail to cure any such failure within a certain time period after we receive the notice. Yeda is not entitled to exercise this termination right if we demonstrate that we are making all necessary efforts to achieve such milestones, that our inability to satisfy the milestones is due to factors beyond our control, and that the total delay with respect to any one milestone does not exceed 12 months and the total cumulative delay in respect of all milestones has not exceeded 30 months. Yeda may also terminate the agreement if we contest the validity of any of the patents included in the agreement. We or Yeda may terminate the agreement due to a material breach by the other party if the breach is unable to be cured or, if curable, the breach is not cured within 21 days after the breaching party's receipt of written notice of the breach from the non-breaching party. In addition, either party may terminate the agreement in connection with certain events relating to a wind up or bankruptcy.

Exhibit D

In April 2005, Protalix Ltd. entered into a license agreement with Icon Genetics AG, or Icon, pursuant to which we received an exclusive worldwide license to develop, test, use and commercialize Icon's technology to express certain proteins in our ProCellEx protein expression system. Under the terms of the agreement, we are also entitled to a non-exclusive worldwide license to make and have made other proteins expressed by using Icon's technology in our technology. As consideration for the license, we are obligated to make royalty payments equal to varying low, single-digit percentages of net sales of products by us, our affiliates, or any sublicensees under the agreement. In addition, we are obligated to make milestone payments equal to $350,000, in aggregate, upon the achievement of certain milestones.

The license agreement remains in effect until the earlier of the expiration of the last patent under the agreement or, if all of the patents under the agreement expire, 20 years after the first commercial sale of any product under the agreement. Icon may terminate the agreement upon written notice to us that we are in material breach of our obligations under the agreement and we are unable to remedy such within 30 days after we receive such notice. Further, Icon may terminate the agreement in connection with certain events relating to a wind up or bankruptcy, if we make a general assignment for the benefit of our creditors, or if we cease to conduct operations for a certain period. Icon may also terminate the exclusivity granted to us by written notice if we fail to reach certain milestones within a designated period of time. Notwithstanding the termination date of the agreement, our obligation to pay royalties under the agreement to Icon may expire prior to the termination of this agreement, subject to certain conditions.

Exhibit F

Annual Bonus. The Compensation Committee has the authority to award discretionary annual bonuses to our executive officers. For 2010, the Compensation Committee has established a formal bonus plan for certain milestones, as described below. The discretionary annual bonus awards are intended to compensate officers for achieving financial, clinical, regulatory and operational goals and for achieving individual annual performance objectives. For any given year, the compensation objectives vary, but relate generally to strategic factors such as developments in our clinical path, the execution of a license agreement for the commercialization of product candidates, the establishment of key strategic collaborations, the build-up of our pipeline and financial factors such as raising capital. Bonuses are awarded generally based on corporate performance, with adjustments made within a range for individual performance, at the discretion of our Compensation Committee. Our Compensation Committee determines, on a discretionary basis, the size of the entire bonus pool and the amount of the actual award to each named executive officer.

Our Compensation Committee will select, in its discretion, the executive officers of our company or our subsidiary who are eligible to receive bonuses for any given year. Any bonus granted by the Compensation Committee will generally be paid in the first quarter of the year, unless such bonus was, by its terms, made payable upon the achievement of a specific milestone. The Compensation Committee has not fixed a minimum or maximum award for any executive officer's annual discretionary bonus, unless specified in the officer's employment agreement.

Each of our executive officers is eligible for a discretionary annual bonus under his or her employment agreement. The Compensation Committee determined the discretionary annual bonus to be paid to our executive officers for performance in 2009 and in 2008. The Compensation Committee has not fixed a minimum or a maximum amount for any officer's annual discretionary bonus, nor is any executive officer entitled to a minimum or maximum bonus amount under his or her employment agreement.

On February 25, 2010, our Board of Directors, acting upon the resolution of a majority of our independent directors, decided to pay bonuses to our executive officers and other employees in two tranches. The aggregate amount of all of the bonuses awarded or reserved for award by the Board of Directors pursuant to the resolution was approximately $2.6 million. The first tranche of bonus payments awarded in February 2010 to our named executive officers and other employees was for approximately $1.1 million in the aggregate. These bonuses were made on a discretionary basis to acknowledge and compensate our executive officers for their contributions towards the completion of our phase III clinical trial of our lead product candidate, taliglucerase alfa, the upgrade of our manufacturing facility during the years 2008 and 2009, and specifically with the execution of the license and supply agreement with Pfizer relating to taliglucerase alfa. The decision to grant the awards constituting the first tranche of bonuses in 2010 was not based on any predetermined goal set for any named executive officer. However, in making this compensation decision, the Compensation Committee took into account the Board of Directors' decision to refrain from awarding bonuses to our executive officers and others in 2009 due to the general market conditions and our cash balance at that time. Of the approximately $1.1 million made available for the first tranche of the bonuses, our Board of Directors awarded Dr. Aviezer $500,000; Dr. Shaaltiel $160,000; Dr. Brill Almon $160,000; and Mr. Maimon $160,000. These bonus payments were made in March 2010.

The remaining $1.5 million approved by our Board of Directors in February 2010 was reserved for future payment to our named executive officers and other employees. The second tranche of bonus payments will generally become payable upon the achievement of the milestones described in the following tables, if at all:

First shipment of taliglucerase alfa

Named Executive Officer	Anticipated Bonus Amount
David Aviezer, Ph.D., MBA	—
Yoseph Shaaltiel, Ph.D.	$100,000
Einat Brill Almon, Ph.D.	$ 20,000
Yossi Maimon	$ 20,000
Total	**$140,000**

Approval of taliglucerase alfa by the FDA

Named Executive Officer	Anticipated Bonus Amount
David Aviezer, Ph.D., MBA	$400,000
Yoseph Shaaltiel, Ph.D.	$140,000
Einat Brill Almon, Ph.D.	$140,000
Yossi Maimon	$140,000
Total	$820,000

Other than the achievement of the corporate milestones set forth above, the anticipated amounts allocated to each executive officer were not based upon any predetermined goals with respect to any individual named executive officer. Further, no individual goals have been communicated to any individual named executive officer with respect to the eventual payment of the bonuses. The remaining approximately $500,000 was allocated to other employees, subject to the same criteria.