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December 23, 2008

Mr. Todd E. Hardiman
Associate Chief Accountant
Division of Corporation Finance
United States Securities and Exchange Commission
100 F. Street, N.E.
Washington, D.C. 20549

RE: Protalix BioTherapeutics, Inc.
Annual Report on Form 10-K, filed March 17, 2008
for the Fiscal Year Ended December 31, 2007
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, 2007 (the "Form 10-K"), which comments were delivered by the Staff to the Company's counsel by way of a telephone call on December 4, 2008.

For ease of reference, we have noted the Staff's comments in bold faced type and the responses in regular type.

The staff requested a description of the Company's analysis of the accounting for the options and restricted stock issued by the Company in the reverse recapitalization of December 31, 2006. The analysis should cover both the vested and unvested options and restricted stock issued on that date.

RESPONSE: On December 31, 2006, the Company, which was then named Orthodontix, Inc., completed the acquisition of Protalix Ltd., a privately-held Israeli biotechnology company. The acquisition was effected through the merger (the "Merger") of the Company's wholly-owned subsidiary, Protalix Acquisition Co., Ltd., with Protalix Ltd. At the closing of the Merger, the former shareholders of Protalix Ltd. received shares of the Company's common stock, par value \$.001 per share (the "Common Stock"), in exchange for all of their ordinary shares of Protalix Ltd. in a proportion equal to approximately 61 shares of Common Stock for each ordinary share of Protalix Ltd. At and as of the closing of the Merger, the former shareholders of Protalix Ltd.

received a number of shares of Common Stock equal to more than 99% of the outstanding shares of Common Stock. As a result, Protalix Ltd. is now the Company's wholly-owned subsidiary. For accounting purposes, the Merger was treated as a recapitalization of Protalix Ltd.

The Stock Option Plan of Protalix Ltd. that was in effect prior to the Merger provided that if Protalix Ltd. merged or consolidated with another corporation, all outstanding options granted by Protalix Ltd. would automatically become fully vested unless they are assumed or substituted by the successor entity. With respect to the Merger, the Company agreed to assume all of the outstanding options issued by Protalix Ltd. to both employees and non-employees prior to the closing of the Merger. In accordance with the terms and conditions of the Merger Agreement and Plan of Reorganization made and entered into in connection with the Merger, all of the outstanding options and warrants of Protalix Ltd. at the closing were exchanged for options and warrants of the Company. In connection with the exchange, the Company issued options and warrants to purchase 9,004,061 shares of Common Stock.

All of the options issued by the Company in exchange for options of Protalix Ltd. in connection with the Merger were identical to the options they replaced except that the number of shares of Common Stock underlying each option, and the per share exercise price of the options, were adjusted based upon the ratio used in the Merger to determine how many shares of Common Stock were to be issued for each ordinary share of Protalix Ltd. surrendered. The aggregate exercise price remained unchanged and there were no changes to the vesting schedule and terms of any option issued by the Company pursuant to the terms and conditions of the Merger.

For accounting purposes, the Company treated the exchange of the options and warrants as a modification of the surrendered options and warrants. According to Statement of Financial Accounting Standards No. 123(R) ("Statement 123R"), modifications to the terms of an award are treated as an exchange of the original award for a new award, and result in the incurrence of additional compensation cost for that incremental value. The incremental value is equal to the difference between (a) the fair value of the modified award and (b) the value of the original award immediately before its terms are modified. In calculating the incremental value of the modification, the Company found that there was no change in the fair value of the options as a result of the Merger. Accordingly, the Company did not record any incremental costs due to the issuance of stock options in connection with the exchange of the Protalix Ltd. option in connection with the Merger.

The following table provides the data analyzed by the Company in its determination that there was no difference in the fair value of the options surrendered in connection with the Merger and the options issued in replacement of such surrendered options. All figures are in thousands, except per share data.

	Immediately before the Merger	Immediately after the Merger (1)
Value of Ordinary Shares of Protalix Ltd.	\$91.59	\$1.50
Exercise Price range (\$) (1)	0.01-59.40	0.001-0.97
Number of Options (2)	147,412	9,004,061

- (1) There were five different exercise prices that applied to the outstanding options.
- (2) The data does not include options to purchase 2,712,792 shares of Common Stock that were granted immediately after the closing of the Merger with an exercise price equal to \$16.70. None of such options were exercisable as of December 31, 2006.

All other assumptions regarding dividend yield, expected volatility, risk-free interest rate and expected life remained the same.

The following table provides the data relating to the options issued in connection with the closing of the Merger.

	<u>Vested</u>	<u>Unvested</u>
Employees	1,670,132	2,474,685
Non-Employees	3,377,058	1,482,186(1)

- (1) The data does not include options to purchase 2,712,792 shares of Common Stock that were granted immediately after the closing of the Merger with an exercise price equal to \$16.70. None of such options were exercisable as of December 31, 2006.

The fair value of the Company did not change as compared before and after the Merger as the Company (Orthodontix, Inc., at the time of the Merger) was not an operating entity, did not have any assets or liabilities, other than approximately \$877,000 in net assets, and was quoted on the OTC Bulletin Board, which is not a major exchange. In addition, neither the Common Stock that was issued in exchange for ordinary shares of Protalix Ltd., nor the Common Stock underlying the stock options issued in connection with the Merger were registered with the Securities and Exchange Commission. Rather, as of December 31, 2006, all such shares of Common Stock were subject to trading restrictions.

In accordance with Emerging Issues Task Force Issue (“EITF”) Topic No. D-90, the Company did not record any increase in its equity as a result of exchange transaction. It should be noted that since the Merger was treated as a recapitalization for accounting purposes, all of the financial statements of the Company are those of the predecessor company, Protalix Ltd. The sole exception is the share capital line item in the balance sheets. In addition, the Company’s capital accounts do not include any amounts assigned to share-based payments not yet recorded as expenses.

Virtually all of the total share-based compensation expense recorded by the Company during fiscal year 2007 resulted from the following two grants to non-employees recorded in 2007:

- On January 1, 2006, Protalix Ltd. issued to two entities affiliated with the Chairman of the Company’s Board of Directors, Eli Hurvitz, options to purchase 1,753,027 shares of Common Stock. The per share exercise price of the options is 0.01 New Israeli Shekels (NIS). The options vest as follows: 10% of the options vested at the date of the

appointment (January 1, 2006) and an additional 10% of the options vest at the end of each three-month period thereafter, provided that Mr. Hurvitz continues to serve as the Chairman of the Board. The Chairman is not an employee of the Company. Accordingly, the accounting model followed by the Company in connection with this grant is EITF 96-18. The Company recorded stock compensation expense of \$1,085,000; \$4,731,000; \$877,000; and \$596,000 for the four quarters of 2007, respectively. The per share common stock value used in the foregoing calculations was \$6.19, \$26.99, \$5.00 and \$3.40, respectively.

- On December 31, 2006, immediately after the closing of the Merger, the Company issued to a consultant options to purchase 387,542 shares of Common Stock in consideration for services to be provided to the Company. Unlike the other options, this option was not issued to replace options issued by Protalix Ltd. prior to the Merger. The options originally vested in five equal increments commencing upon the date that the Common Stock being listed by the American Stock Exchange and on the next four six-month anniversaries of such date. On February 28, 2007, the vesting schedule of the options was modified as follows: 40% of the options shall vest on March 1, 2008 and an additional 15% of the options vest in four equal installments on each of the following dates: June 30, 2008, December 31, 2008, June 30, 2009, and September 30, 2009. The modification had no effect on the accounting records of the Company. The per share exercise price of the options is \$16.70 per share.

The Company elected to recognize the stock-based compensation expense related to these awards using the straight-line attribution method. The Company considered the following factors in determining the attribution method to apply:

- 1) EITF 96-18, Issue 3, provides that changes in the fair value of outstanding awards to nonemployees between interim reporting dates should be attributed in accordance with the methods illustrated in Financial Interpretation 28. The Company believes that EITF 96-18, Issue 3, relates to the requirement to remeasure the awards for changes in fair value between interim reporting dates and does not prescribe the attribution method that must be used.
- 2) Effective as of January 1, 2006, for purposes of the Company's financial statements, FIN 28 was superseded by Statement 123R. Paragraph 42 of Statement 123R allows companies to make a policy election about whether to recognize compensation cost for an employee award with only service conditions that has a graded vesting schedule on a straight-line method over the requisite service period for each separately vesting portion of the award as if the award was, in substance, multiple awards, or on a straight-line basis over the requisite service period of the last separately vesting portion of the award.
- 3) While Statement 123R applies to employee awards, Statement 123R may also be applied to non-employee awards when such non-employee awards have a service only condition. Staff Accounting Bulletin (SAB) 107 states as follows:

Statement 123R does not supersede any of the authoritative literature that specifically addresses accounting for share-based payments with

nonemployees. For example, Statement 123R does not specify the measurement date for share-based payment transactions with nonemployees when the measurement of the transaction is based on the fair value of the equity instruments issued. For determining the measurement date of equity instruments issued in share-based transactions with nonemployees, a company should refer to Emerging Issues Task Force (“EITF”) Issue No. 96-18, Accounting for Equity Instruments That Are Issued to Other Than Employees for Acquiring, or in Conjunction with Selling, Goods or Services.

With respect to questions regarding nonemployee arrangements that are not specifically addressed in other authoritative literature, the staff believes that the application of guidance in Statement 123R would generally result in relevant and reliable financial statement information. As such, the staff believes it would generally be appropriate for entities to apply the guidance in Statement 123R by analogy to share-based payment transactions with nonemployees unless other authoritative accounting literature more clearly addresses the appropriate accounting, or the application of the guidance in Statement 123R would be inconsistent with the terms of the instrument issued to a nonemployee in a share-based payment arrangement.

Since EITF 96-18 does not prescribe the attribution model to apply for a graded vesting award, the Company elected to use straight-line attribution for the options granted to nonemployees based upon the guidance set forth in Statement 123R. The Company does not believe that there is any other authoritative accounting literature that more clearly addresses the appropriate accounting of the nonemployee options. In addition, the Company does not believe that the guidance in Statement 123R is inconsistent with the terms of the options granted by the Company to nonemployees.

The Company applies the straight-line attribution accounting treatment as follows. Upon having vested in an individual tranche of an option granted to a nonemployee, the Company deems the nonemployee’s performance for that tranche to be completed. The Company also deems the vesting date for each tranche of an option to be the final measurement date of that tranche. Therefore, the Company does not remeasure vested tranches in subsequent periods. For individual tranches for which the applicable vesting/service period crossed interim periods (such as the options issued to the consultant), the Company remeasures the tranches until the final vesting date of the tranche.

The Company recognizes that other attribution methods may be acceptable methods for the calculation of the stock-based compensation expense of awards to nonemployees. However, the Company believes that the method described above conforms not only with the applicable accounting literature but also with the substance of the arrangements.

As indicated in the letter dated October 16, 2008, the Company applied the simplified method for the expected term of the stock options. Had the Company applied the contractual term of the options rather than the simplified method, the recorded compensation expense would have been

approximately \$143,000 and \$420,000 more for each of fiscal year 2007 and the first three quarters of 2008, respectively. The Company does not believe that either of these amounts are material for accounting purposes.

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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