

Via Facsimile and U.S. Mail  
Mail Stop 6010

July 25, 2008

Michael T. Flavin, Ph.D.  
Chairman and Chief Executive Officer  
Advanced Life Sciences Holdings, Inc.  
1440 Davey Road  
Woodridge, IL 60517

**Re: Advanced Life Sciences Holdings, Inc.  
Form 10-K for the Fiscal Year Ended December 31, 2007  
File No. 0-51436**

Dear Dr. Flavin:

We have reviewed your filing and have the following comments. We have limited our review to only your financial statements and related disclosures and do not intend to expand our review to other portions of your documents. In our comment, we ask you to provide us with information to better understand your disclosure. Our comment also requests you to revise disclosure, the information you provide should show us what the revised disclosure will look like and identify the annual or quarterly filing, as applicable, in which you intend to first include it. If you do not believe that revised disclosure is necessary, explain the reason in your response. After reviewing the information provided, we may raise additional comments and/or request that you amend your filing.

Please understand that the purpose of our review process is to assist you in your compliance with the applicable disclosure requirements and to enhance the overall disclosure in your filing. We look forward to working with you in these respects. We welcome any questions you may have about our comments or any other aspect of our review. Feel free to call us at the telephone numbers listed at the end of this letter.

Form 10-K for the year ended December 31, 2007

Item 9A. Controls and Procedures, page 55

1. You disclose your conclusion that your disclosure controls and procedures at December 31, 2007 were “effectively designed” to ensure that information you are required to disclose under the Exchange Act is accumulated and communicated to management to allow timely decisions regarding required disclosure. However, you do not appear to conclude on whether your disclosure

controls and procedures are operating effectively. Please confirm for us that your historical disclosure controls and procedures were effective in both design and operation. In addition, please revise your disclosure to indicate your conclusion on the effectiveness of the design and operation of your disclosure controls and procedures.

Please respond to this comment within 10 business days or tell us when you will provide us with a response. Please submit a letter that keys your response to our comment and provides the requested information. Detailed letters greatly facilitate our review. Please furnish your letter to us via EDGAR under the form type label CORRESP.

We urge all persons who are responsible for the accuracy and adequacy of the disclosure in the filing to be certain that the filing includes all information required under the Securities Exchange Act of 1934 and that they have provided all information investors require for an informed investment decision. Since the company and its management are in possession of all facts relating to a company's disclosure, they are responsible for the accuracy and adequacy of the disclosures they have made.

In connection with responding to our comments, please provide, in your letter, a statement from the company acknowledging that:

- the company is responsible for the adequacy and accuracy of the disclosure in the filing;
- staff comments or changes to disclosure in response to staff comments do not foreclose the Commission from taking any action with respect to the filing; and
- the company may not assert staff comments as a defense in any proceeding initiated by the Commission or any person under the federal securities laws of the United States.

In addition, please be advised that the Division of Enforcement has access to all information you provide to the staff of the Division of Corporation Finance in our review of your filing or in response to our comments on your filing.

If you have any questions, please contact Mark Brunhofer, Senior Staff Accountant, at (202) 551-3638. In this regard, do not hesitate to contact me, at (202) 551-3679.

Sincerely,

Jim B. Rosenberg  
Senior Assistant Chief  
Accountant