

Mail Stop 6010

May 25, 2007

Mr. William M. Caldwell, IV
Chief Executive Officer
Advanced Cell Technology, Inc.
1201 Harbor Bay Parkway
Alameda, CA 94502

**Re: Advanced Cell Technology, Inc.
Amendment No. 1 to Form SB-2
Amendment no. 1 filed April 6, 2007
File No. 333-140265**

Dear Mr. Caldwell:

We have limited our review of your filing to those issues we have addressed in our comments. Where indicated, we think you should revise your document in response to these comments. If you disagree, we will consider your explanation as to why our comment is inapplicable or a revision is unnecessary. Please be as detailed as necessary in your explanation. In some of our comments, we may ask you to provide us with information so we may better understand your disclosure. After reviewing this information, we may raise additional comments.

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.

Cover page

1. Your cover pages states that the prospectus relates to the resale of up to 13,516,367 shares of common stock underlying (i) convertible debentures issued in 2006, (ii) common stock purchase warrants issued in 2006, (iii) common stock purchase warrants issued to a broker-dealer as commissions paid, (iv) convertible debentures issued in 2005, and (v) common stock purchase warrants issued in 2005. According to this statement the total number of shares being registered

- relating to the September 2005 and September 2006 September Financings is 13,516,367. However, the disclosure of the "Dollar Value of Underlying Securities Registered for Resale in this Prospectus" appears to indicate that you are registering 13,516,367 shares relating to the September 2006 financing and an additional 9,685,326 shares relating to the September 2005 financing. Please revise your registration statement to clarify.
2. If the shares previously registered pursuant to Registration Statement No. 333-129019 are the shares underlying the convertible debentures issued in the September 2005 financing, please explain the discrepancy between the 20,397,296 shares included in this prospectus and the 9,685,326 shares included in the September 2005 Financing Table on page 32.

Dollar Value of Underlying Securities Registered for Resale in this Prospectus, page 32

3. We note the footnote stating that the number of common shares underlying the 2005 debentures does not include the number of shares registered for resale in excess of the actual number of shares underlying the 2005 debentures, in accordance with your contractual obligations. If you are referring to your obligation to register 130% of the securities underlying the debentures, we believe these excess shares should be included in the table.
4. The footnote following the September 2006 Financing is confusing as it states that the shares included in the September 2006 Financing table include shares available for resale upon conversion and/or redemption of the 2005 Debentures. However, it appears that these shares are also available in the September 2005 Financing table. Please explain.

Potential Profits on Conversion of 2005 Debentures and 2006 Debentures, page 34

5. Please revise the September 2005 Financing Table to use the amended conversion price and the market price on the date of the amendment. Similarly, revise the table in "total Potential Profit from other Securities" to use the amended exercise price and the market price on the date of the amendment.

Comparison of Registered Shares to Outstanding Shares, page 41

6. The column titled "Number of Shares of Common Stock Registered for Resale by Selling Security Holders or Affiliates of Selling Security Holders Still Held by the Same" should include the shares that were registered for the selling shareholder in prior registration statements, as disclosed in the column titled "Number of Shares of Common Stock Registered for Resale by Selling Security Holders of Affiliates if Selling Security Holders in Prior Registration Statements," that are still held by the selling security holders. Therefore, since there were no shares of common stock registered for these selling security holders prior to the September 2005

- Financing, it is unclear how the number of shares held could be any number other than 0 for the table relating to the September 2005 Financing. Similarly, the column titled "Number of Shares of Common Stock Sold in Registered Resale Transactions by Selling Security Holders or Affiliates of Selling Security Holders" should be 0 for the September 2005 Financing. Please revise accordingly.
7. Additionally, the shares included in September 2005 Financing table and the September 2006 Financing table under the column titled "Number of Common Shares Registered for Resale by Selling Security Holders or Affiliates of Selling Security Holders Still Held by the Same should include shares of common stock underlying any outstanding convertible securities, options or warrants. Please revise your tables accordingly.

Method of Determining the Number of Shares Registered in this Prospectus, page 45

8. We note your revised disclosure but believe that it merely states a floor rather than how the number of shares to be registered was determined. For example, we note the registration rights agreement filed as an exhibit to your September 19, 2005 Form 8-K required that you register 130% of the shares underlying the debentures. Please revise to provide more information as to how you determined the number of shares to be registered.

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As appropriate, please amend your registration statement in response to these comments. You may wish to provide us with marked copies of the amendment to expedite our review. Please furnish a cover letter with your amendment that keys your responses to our comments and provides any requested information. Detailed cover letters greatly facilitate our review. Please understand that we may have additional comments after reviewing your amendment and responses to our comments.

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 Act of 1933 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.

Notwithstanding our comments, in the event the company requests acceleration of the effective date of the pending registration statement, it should furnish a letter, at the time of such request, acknowledging that:

Mr. Caldwell
Advanced Cell Technology, Inc.
May 25, 2007
Page 4

- should the Commission or the staff, acting pursuant to delegated authority, declare the filing effective, it does not foreclose the Commission from taking any action with respect to the filing;
- the action of the Commission or the staff, acting pursuant to delegated authority, in declaring the filing effective, does not relieve the company from its full responsibility for the adequacy and accuracy of the disclosure in the filing; and
- the company may not assert staff comments and the declaration of effectiveness 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 connection with our review of your filing or in response to our comments on your filing.

We will consider a written request for acceleration of the effective date of the registration statement as confirmation of the fact that those requesting acceleration are aware of their respective responsibilities under the Securities Act of 1933 and the Securities Exchange Act of 1934 as they relate to the proposed public offering of the securities specified in the above registration statement. We will act on the request and, pursuant to delegated authority, grant acceleration of the effective date.

We direct your attention to Rules 460 and 461 regarding requesting acceleration of a registration statement. Please allow adequate time after the filing of any amendment for further review before submitting a request for acceleration. Please provide this request at least two business days in advance of the requested effective date.

If you have any questions, please call Mary Fraser, Attorney-Advisor at (202)-551-3609, Suzanne Hayes, Legal Branch Chief, at (202) 551-3675, or me at (202) 551-3715.

Sincerely,

Jeffrey Riedler
Assistant Director

cc: Christopher E. Howard, Esq.
Pierce Atwood LLP
One Monument Square
Portland, ME 04101

Mr. Caldwell
Advanced Cell Technology, Inc.
May 25, 2007
Page 5