

Mail Stop 4720

December 8, 2009

William M. Caldwell, IV
Advanced Cell Technology, Inc.
381 Plantation Street
Worcester, MA 01605

**Re: Advanced Cell Technology, Inc.
Registration Statement on Form S-1
Filed November 19, 2009
File No. 333-163202**

Dear Mr. Caldwell:

We have limited our review of the above referenced registration statement to only the issues identified herein. 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.

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 S-1 filed November 19, 2009

General

1. We note that you are registering shares underlying warrants issued or to be issued to Optimus Capital Partners, LLC. It is unclear whether the warrants overlying the shares you are registering are currently outstanding or if they will be issued when you give notice of the first tranche. Please revise your disclosure to clarify this point. Also, please revise your disclosure to explain the business purpose of the exchange of the warrants to be issued with the first tranche for warrants previously issued on November 2, 2009.

2. We note the following statement on both page 52, the substance of which also appears on page 54: “In September 2008, we *were ordered* by the Circuit Court...for Sarasota County, Florida to settle certain past due accounts payable in the amount of \$82,317 due to CEOCast, Inc. for past due investor relations services (emphasis added).” It appears from publicly available court records that the court did not in fact order a settlement but that the company voluntarily entered into a settlement that was later approved by the court pursuant to a court order. It appears that the form of payment and the number of shares was determined through your negotiations with Outboard and that the court did not determine the amount or form of payment. Please revise your disclosure to more clearly describe the sequence of events. Additionally, to the extent that you had any relationship with Outboard Investments or entered into other transactions with Outboard Investments, either prior to this transaction or subsequent to this transaction, please describe these relationships and/or transactions.

* * *

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:

- 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

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- 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.

Please contact Laura Crotty at (202) 551-3563, Suzanne Hayes, Legal Branch Chief, at (202) 551-3675, or myself at (202) 551-3715 with any questions.

Sincerely,

Jeffrey P. Riedler
Assistant Director

cc: Thomas A. Rose, Esq.
Sichenzia Ross Friedman Ference LLP
61 Broadway, 32nd Floor
New York, New York 10006