



DIVISION OF
CORPORATION FINANCE

UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
WASHINGTON, D.C. 20549

February 18, 2011

Mr. Gary Rabin
Principal Executive Officer, Financial Officer, and
Accounting Officer
Advanced Cell Technology, Inc.
33 Locke Drive
Marlborough, Massachusetts 01752

**Re: Advanced Cell Technology, Inc.
Registration Statement on Form S-1
Filed February 14, 2011
File No. 333-172258**

Dear Mr. Rabin:

We have limited our review of your registration statement to those issues we have addressed in our comments. In some of our comments, we may ask you to provide us with information so we may better understand your disclosure.

Please respond to this letter by amending your registration statement and providing the requested information. If you do not believe our comments apply to your facts and circumstances or do not believe an amendment is appropriate, please tell us why in your response.

After reviewing any amendment to your registration statement and the information you provide in response to these comments, we may have additional comments.

FORM S-1

General

1. Please amend your registration statement to include audited financial statements for the most recently completed fiscal year as required by Items 3-12(b) and 3-01(c) of Regulation S-X.

JMJ Notes Transaction, page 7

2. We note your discussion here and in the selling security holders section on page 26 that the prospectus covers shares underlying warrants, however you have listed approximately 1.7 million warrants that apparently terminated on December 31, 2010. Please update the discussion to eliminate the warrants that have terminated or revise the discussion to reflect the shares that were obtained upon exercise of the warrants prior to termination.

Series C Preferred Shares Transaction, page 9

3. Please explain how the 30 million shares issuable upon exercise of the Socius warrant were calculated.
4. Please define the term “initial investment shares” and explain how you determined there were 25 million initial investment shares.
5. Please explain how the 156.250 million shares issuable as additional “investment shares” were calculated.
6. Please explain how you determined that 7,812,500 shares of common would be issuable upon payment of the commitment fee. In addition, please clarify whether these shares are in lieu of the \$1.25 million commitment fee or in addition to the fee owed.
7. Please describe the recourse available to the company in the event Socius does not comply with its obligations under the warrant or purchase agreements.
8. We note the statement “the Socius Warrant was issued to Socius on December 30, 2010 (the “Closing Date”) pursuant to a letter agreement dated January 10, 2011, Socius and the Company agreed that the Socius Warrant obligates Socius to purchase up to 30,000,000 shares of Common Stock pursuant to the Series C Purchase Agreement.” Please expand the discussion to explain why the warrant was issued prior to the letter agreement. In addition, please discuss whether the terms and obligations under the warrant and letter agreement are fixed or changeable.
9. Please confirm, if true, that when the company requests Socius to purchase a tranche of Series C preferred shares, Socius must also purchase within 60 days common shares in an amount equal to the dollar amount of the tranche notice.

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 the information the Securities Act of 1933 and all applicable Securities Act rules require. 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 you request acceleration of the effective date of the pending registration statement please provide a written statement from the company 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;

Mr. Gary Rabin
Advanced Cell Technology, Inc.
February 18, 2011
Page 3

- 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.

Please refer to Rules 460 and 461 regarding requests for acceleration. 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. Please allow adequate time for us to review any amendment prior to the requested effective date of the registration statement.

Please contact John Krug, Senior Counsel, at (202) 551-3862, or me at (202) 551-3715 with any questions.

Sincerely,

Jeffrey Riedler
Assistant Director

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