



DIVISION OF
CORPORATION FINANCE

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

August 21, 2012

Via E-mail

Gary Rabin
Chief Executive Officer and Chairman
Advanced Cell Technology, Inc.
33 Locke Drive
Marlborough, Massachusetts 01752

Re: Advanced Cell Technology, Inc.
Form 10-K for the Fiscal Year Ended December 31, 2011
Filed March 1, 2012
File No. 000-50295

Dear Mr. Rabin:

We have reviewed your filing and have the following comments. In our comments, we ask that you provide us information so we may better understand your disclosures.

Please respond to this letter within 10 business days by providing the requested information or by advising us when you will provide the requested response. If you do not believe a comment applies to your facts and circumstances, please tell us why in your response. Please furnish us a letter on EDGAR under the form type label CORRESP that keys your responses to our comments.

After reviewing any information you provide in response to our comments, we may have additional comments.

Compensation Discussion and Analysis, page 54

1. We note your disclosure that your CEO, Mr. Rabin, received an annual incentive bonus, which is calculated by reference to the 10-day volume weighted average price of the Company's common stock, as set forth in Mr. Rabin's employment agreement. Cross-reference to Mr. Rabin's employment agreement is not sufficient. Please provide proposed disclosure to be included in an amendment to Form 10-K that includes a full description of the terms of annual incentive bonus award, including the formula by which awards are determined, and how the amounts awarded were calculated.
2. We note that you have omitted the Grants of Plan-based Award table required under Item 402(d) of Regulation S-K, despite your payment of plan-based annual incentive awards, plan-based stock awards, and plan-based option awards to NEOs in 2011. We also note that in our prior comment letter dated July 28, 2010, we similarly highlighted your omission of the Grants of Plan-based Award table from your Form 10-K for 2009. Please

provide proposed disclosure to be included in an amendment to Form 10-K that includes the Grant of Plan-based Awards table and the disclosure required under Item 402(d) of Regulation S-K.

3. We note that your CEO and Chief Scientific Officer would receive compensation in the event of termination or change in control under their respective employment agreements. Please provide proposed disclosure to be included in an amendment to Form 10-K that includes the following information as required by Item 402(j) of Regulation S-K:
 - Explanation of the specific circumstances or events that would trigger payment to your CEO and CSO (e.g., describe what events would constitute termination without cause and termination following change in control); and,
 - Quantification of the estimated payments that would be provided to your CEO and CSO under each covered circumstance assuming that the triggering events took place on the last business day of your last completed fiscal year.

Item 8. Financial Statements and Supplementary Data
Notes to Consolidated Financial Statements
Investment In Joint Venture, page F-12

4. Please tell us how you complied with ASC 323-10-35 in accounting for your investment in SCRMI. Please address the following:
 - How you accounted for your contribution of the use of leased facility, equipment and personnel and the authoritative literature you relied on that supports your accounting; and
 - Confirm to us that you made no other payments to SCRMI in 2009, 2010 and 2011 other than the \$820,000 payments in 2011, and that you otherwise did not fund losses in those years and are not liable for any of SCRMI's debt directly or indirectly.

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 Exchange Act of 1934 and all applicable Exchange 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.

In responding to our comments, please provide a written 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.

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Please contact James Peklenk, Staff Accountant, at (202) 551-3661 or Lisa Vanjoske, Assistant Chief Accountant, at (202) 551-3614 if you have any questions regarding the processing of your response as well as any questions regarding the comment on the financial statements and related matters. You may contact Bryan Pitko, Staff Attorney, at (202) 551-3203 with questions regarding any of the other comments. In this regard, do not hesitate to contact me at (202) 551-3679.

Sincerely,

/s/ Jim B. Rosenberg

Jim B. Rosenberg
Senior Assistant Chief Accountant