



DIVISION OF
CORPORATION FINANCE

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

October 6, 2011

Via E-mail

Zami Aberman
Chief Executive Officer
Pluristem Therapeutics Inc.
MATAM Advanced Technology Park
Building No. 20
Haifa 31905 Israel

**Re: Pluristem Therapeutics Inc.
Registration Statement on Form S-3
Filed September 26, 2011
File No. 333-177009**

Dear Mr. Aberman:

We have limited our review of your registration statement to the issue we have addressed in our comment below.

Please respond to this letter by providing the requested information. Where you do not believe our comment applies to your facts and circumstances, please tell us why in your response.

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

We note that you do not appear eligible to conduct a primary offering under General Instruction I.B.1. to Form S-3. Please advise us as to your eligibility to conduct a primary offering on Form S-3 under General Instruction I.B.6. in light of the securities offered in the previous 12 months pursuant to your prospectus dated January 11, 2011 (File No. 333-171334). Your analysis should include the calculation of your current non-affiliate public float, calculated in accordance with Instruction 1 to General Instruction I.B.6., and the value of all take-down offerings made pursuant to the January 11, 2011 prospectus.

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.

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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;
- 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 Karen Ubell at (202) 551-3873 or me at (202) 551-3715 with any questions.

Sincerely,

/s/ Jeffrey Riedler

Jeffrey Riedler
Assistant Director