

Mail Stop 6010

September 27, 2006

Neil H. Riordan
Medistem Laboratories, Inc.
2027 East Cedar Street, Suite 102
Tempe, Arizona 85281

**Re: Medistem Laboratories, Inc.
Registration Statement on Form SB-2
File Number 333-137493**

Dear Mr. Riordan:

This is to advise you that we have limited our review of the above referenced registration statement to only the issues identified below. We will make no further review of this filing.

We note that your disclosure in footnote 3 to the Calculation of Registration Fee table that the shares you are registering include 15,428,574 shares. However, it does not appear these shares are accounted for in the Selling Shareholder table you have on page 12. Please revise your Selling Shareholder table to include the 15,428,574 shares you include in the Registration Fee table or advise us accordingly. If these shares are not yet outstanding, please remove the resale portion of these shares from your registration statement as you cannot register the resale of shares that are not currently outstanding.

* * *

We urge all persons who are responsible for the accuracy and adequacy of the disclosure in the filings reviewed by the staff to be certain that they have provided all information investors require for an informed 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
- the company may not assert this action 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 a 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.

Please contact Song P. Brandon at (202) 551-3621 or me at (202) 551-3710 with any questions.

Sincerely,

Jeffrey P. Riedler
Assistant Director

cc: Gregory R. Hall, Esq.
Squire, Sanders & Dempsey LLP
Two Renaissance Square
40 North Central Avenue, Suite 2700
Phoenix, Arizona 85004-4498