

Mail Stop 6010

December 21, 2005

Dr. Anthony Armini  
President and Chief Executive Officer  
Implant Sciences Corporation  
107 Audubon Road  
Wakefield, MA 01880

**Re: Implant Sciences Corporation  
Registration Statement on Form S-3  
Filed November 22, 2005  
File No. 333-129911**

Dear Dr. Armini:

We have limited our review of your filing to those issues we have addressed in our comments. 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. In some of our comments, we may ask you to provide us with information so we may better understand your disclosure. After reviewing this information, we may raise additional comments.

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-3

General

1. Please note that we are completing a review of your Form 10-KSB and will issue comments on that filing shortly.
2. Please update the disclosure throughout the filing to reflect your financial condition and accumulated deficit as of September 30, 2005, and to incorporate by reference your latest Form 10-QSB.

Fee Table

3. We note the additional investment rights have not been exercised by the holders and the shares are not outstanding. Please revise the registration statement to remove the shares to be issued upon exercise of the investment rights. You may register those shares for resale after the holders of the investment rights have made their investment decision to exercise the rights and have received the shares.
4. We also note that the registrant is required to begin redeeming the preferred stock beginning on January 1, 2006, and that it must redeem and pay accrued dividends *with cash* in the event that the closing price of the common stock for a prescribed period is less than the fixed conversion price of \$6.80. Given the terms of this mandatory redemption provision, it does not appear that the purchaser of the preferred stock is at market risk or that registration of the conversion shares and dividends is appropriate. If you believe this is a valid PIPE transaction, provide a *detailed* legal analysis to support your position.

Selling Stockholders, page 15

5. Please explain how you determined the maximum number of shares underlying the preferred stock and the number of shares issuable as dividends on the preferred stock.
6. We note the brief discussion of the various financings entered into that relate to the shares being registered for resale. Relocate the disclosure under a separate caption, and revise to explain in more detail the material terms of each of those transactions. For example (and these are only a few examples), explain in more detail how much cash you received in the preferred stock issuance and what the reference to “repayment” means. Explain how the note issued on July 6, 2005, relates to the subsequent preferred stock issuance.
7. Please tell us whether any of the selling shareholders are broker-dealers or affiliates of a broker-dealer. Any selling shareholder who is a broker-dealer must be identified in the prospectus as an underwriter and is not eligible to rely on Rule 144 promulgated under the Securities Act. In addition, each selling shareholder who is an affiliate of a broker-dealer must be identified in the prospectus as an underwriter unless you disclose, if true, that:
  - The selling shareholder purchased the shares being registered for resale in the ordinary course of business, and

- At the time of the purchase, the selling shareholder had no agreements or understandings, directly or indirectly, with any person to distribute the securities.

Please revise accordingly.

8. Please identify the natural persons that beneficially own the securities held by the entities named in the table.

Legal Matters, page 24

9. Please file the opinion of Ellenoff Grossman & Schole as an exhibit to the registration statement.

Part II

Item 17. Undertakings

10. Please include the undertaking set forth in Item 512(a) of Regulation S-K. Please note the December 1, 2005 effective date of Release 33-8591, which revises certain portions of Item 512.

Closing Comments

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
- 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 Adélaja Heyliger at (202) 551-3636 or me at (202) 551-3617 with any other questions.

Sincerely,

Peggy A. Fisher  
Assistant Director

cc: via facsimile  
David Selengut, Esq.  
Ellenoff Grossman & Schole LLP