

Mail Stop 6010

March 16, 2006

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 reviewed your response letters dated February 24, 2006 and have the following additional 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.

S-3

General

1. Please file an amendment to your registration statement on EDGAR in response to our previous comments and the following comments. Also, revise the registration statement to ensure that the disclosure describes the material terms of the securities issued to Laurus. See our comments below to your Form 10-Q for the fiscal quarter ended September 30, 2005.

2. Please include as exhibits to the amended registration statement the legality opinion and an updated auditor's consent. We may have further comments upon our review of the complete amended filing.

Fee Table

3. We note your response to prior comment 3 and reissue the comment. As a general matter, you may not register for resale shares that are not outstanding. 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.

Selling Stockholders, page 15

4. We note your response to prior comment 8. Please identify the natural persons that have voting and/or dispositive power with respect to the securities held by the entities named in the table.

Legality Opinion

5. Revise to remove the AIR shares from the opinion since those shares cannot be registered at this time.

Form 10-Q for the period ending September 30, 2005

General

6. Please refer to prior comment 3. We note that you adjusted your balance sheet at September 30, 2005, in response to our comment and this adjustment was included in the Form 10-Q for the period ended December 31, 2005. Please amend your Form 10-Q for the period ended September 30, 2005 for the correction of the errors as appropriate. Consider the guidance provided in APB 20, paragraphs 36-37.
7. As a related matter, we believe that the disclosure about the error appearing in your Form 10-Q for the period ended December 31, 2005 does not provide a clear path between the originally filed and restated numbers. Please expand the quarterly data disclosure to provide disclosure showing the originally reported balance for each quarter, the effect of each individual restatement adjustment for each quarter and the as restated balances for each quarter. Any adjustments arising from our additional comment should also be repeated in this manner so that there is a clear path between the original and restated quarterly data.

Condensed Consolidated Balance Sheets, page 3

8. Please refer to prior comment 3 from our letter dated January 10, 2006. Please respond to the following comments regarding your preferred stock:
- We note in your response that you concluded that the convertible preferred stock is not conventional convertible, and therefore the conversion feature should be bifurcated and assessed under EITF 00-19, paragraphs 12-31. Therefore, it would appear that you would not account for any beneficial conversion under EITF 98-5 and 00-27. Please advise why the term “beneficial conversion feature” is being used on your balance sheet and statement of operations.
 - Tell us your consideration of whether the preferred stock should be considered a liability pursuant to Statement 150. For example, we note that you have classified a portion of the redeemable convertible preferred stock as a current liability. Please tell us why you believe this classification is appropriate. Cite the accounting literature upon which you relied. We also note that none of your obligations to the holder may be converted into common stock unless certain events occur, such as an effective registration statement.
 - Please clarify for us the actual volatility rate, discount rate and expected life used in determining the fair value at inception and December 31, 2005. We note that you assumed an expected life of 1.5 years. Please explain the reason why you used an expected term shorter than the contractual term. Please also tell us the stock price used as an input to the Black-Scholes Model and whether that price represented the actual quoted price on the appropriate measurement date.
 - We note that if you elect to pay the monthly redemption amounts in shares, the stated value of the Series D preferred stock adjusts accordingly. Please clarify the terms if you elect to pay your monthly payments in cash. Provide illustrating examples of how this operates and whether the payment reduces the number of outstanding preferred shares. Ensure your response and examples include a clear discussion of the different treatments if you elect to pay the monthly redemption in cash instead of stock.
 - Please revise your balance sheet and footnotes to state, if true, that the Series D preferred stock is redeemable.

Condensed and Consolidated Statements of Cash Flows, page 5

9. We note that you are presenting cash flows from financing activities of \$4.7 million related to the proceeds from the issuance of the Series D convertible preferred stock. We also note that you did not receive all of the proceeds, since \$3 million was used to pay-off the term note to Laurus. Revise the cash flow statement to properly disclose the non-cash financing activity or tell us why your current presentation is appropriate. Note only the cash portion should be presented in the statement of cash flows.

Note 8. Secured Term Note and Series D Financing, page 12

10. It appears that the Series D convertible preferred stock may contain other embedded derivatives. For example,
 - The dividend rate is subject to adjustment based on the market price of your common stock.
 - In the event of your delisting or a stop trade your dividend rate will increase to 15% and the Holder will have the right to redeem the stock at 130% of its outstanding stated value.

Please tell us whether these features represent embedded derivatives under SFAS 133 and why. If they are embedded derivatives, please analyze them under SFAS 133 and EITF 00-19. Also, please perform a thorough analysis of all the provision of your convertible preferred stock, The Master Security Agreement and the Stock Pledge Agreement in order to determine whether there are any other provisions that may be embedded derivatives which should be bifurcated and accounted for separately as derivatives pursuant to SFAS 133.

11. In this regard, please revise your disclose to describe in greater detail the significant terms of the Series D preferred stock. Significant terms include, but are not limited to, registration rights, settlement alternatives and the party that controls settlement and conversion rates, changes to conversion rates, as well as caps and floors on those rates, and agreements for security or collateral. Please also ensure your disclosure describes the nature of the redemption features and related accounting treatment. The disclosure should also address any embedded derivatives, including classification and valuation of each.
12. Please refer to prior comment 4 from our letter dated January 10, 2006. We note that you may incur liquidating damages each day equal to “1/30th of the product of: (A) the then outstanding principle amount of the Series D preferred stock multiplied by (B) .01” as a result of your failure to file, register and maintain an effective registration and keep listed or quoted with suspension from trading.

Please tell us and disclose in the notes to your financial statements all the significant terms of your registration rights agreements. Please also tell us and disclose in the filing whether or not there is a maximum penalty associated with these rights.

13. We note that the registration rights agreement dated September 30, 2004 with Laurus includes both the common stock underlying the Series D preferred stock and the associated warrants. We also note that the EITF recently deliberated the impact of these liquidated damages clauses and the effect on the accounting and classification of instruments subject to the scope of EITF 00-19 in EITF 05-4 *The Effect of a Liquidated Damages Clause on a Freestanding Financial Instrument Subject to Issue No. 00-19*. The EITF has not reached a consensus on this issue and has deferred deliberation until the FASB addresses certain questions which could impact a conclusion on this issue. However, in the meantime, please tell us how you considered the guidance in EITF 05-4 and the different views on this issue as outlined in Issue Summary No. 1 to EITF 05-4 in analyzing the accounting and classification of your warrants and the registration rights agreement.

Management's Discussion and Analysis, page 15

Critical Accounting Policies

14. Revise the critical accounting policies section of MD&A to clearly disclose the methodology and significant estimates/assumptions used to value the derivatives.

Item 4 Controls and Procedures, page 22

15. We note that you describe actions that will be taken by Implant Sciences to remediate the internal control deficiency disclosed in your Form 10-KSB. It appears that the actions to be taken were not initiated during the quarter ended September 30, 2005. Please tell us how you conclude that the disclosure controls were effective for the period ending September 30, 2005.

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.

Dr. Anthony Armini
Implant Sciences Corporation
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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.

You may contact Dennis Hult at (202) 551-3618 or Angela Crane at (202) 551-3554 if you have questions regarding comments on the financial statements and related matters. Please contact Adélaja Heyliger at (202) 551-3636 or me at (202) 551-3800 with any other questions.

Sincerely,

Peggy A. Fisher
Assistant Director

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