



DIVISION OF
CORPORATION FINANCE

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

September 19, 2012

Via E-mail

Declan Daly
Chief Financial Officer
Fibrocell Science, Inc.
405 Eagleview Boulevard
Exton, PA 19341

**Re: Fibrocell Science, Inc.
Registration Statements on Form S-1
Filed September 7, 2012
File No. 333-183792**

Dear Mr. Daly:

We have limited our review of your registration statement to those issues we have addressed in our comments.

Please respond to this letter by amending your registration statement and providing the requested information. Where you do not believe our comments apply to your facts and circumstances or do not believe an amendment is appropriate, please tell us why in your response.

After reviewing any amendment to your registration statement and the information you provide in response to these comments, we may have additional comments.

General

1. Please revise your disclosure throughout the filing to indicate the total number of shares that are being registered and offered pursuant to each of the four registration statements filed on September 7 (in addition to the instant registration statement, File Nos. 333-183791, 333-183793 and 333-183794) in the aggregate. This disclosure should include previously registered shares remaining unsold and the additional shares being registered as a result of anti-dilution features of the existing warrants as described above pursuant to Section 3(b).

Cover Page

2. Please revise the prospectus cover page to indicate the total number of shares being offered for sale pursuant to Rule 429 which is the total number of unsold shares being carried forward from the prior registration statements plus the additional shares to be registered. As you indicate in your explanatory note, the registration statement,

“(i) carries forward from the June 2010 Prior Registration Statement 7,366,666 shares of our common stock, which includes 2,599,996 shares of our common stock issuable upon the exercise of certain warrants held by certain of the named selling stockholders and (ii) registers an 6,135,984 additional shares of our common stock.” Accordingly, the total shares registered should reflect the sum of those amounts. Further, please advise us as to whether any shares from the February 2010 Prior Registration Statement are being carried forward on this registration statement, and, if they are, revise your explanatory note and cover page accordingly. Additionally, throughout the prospectus, where you refer to the number of shares offered in the registration statement such reference should provide the number that is the sum of all carried forward and newly registered shares.

Prospectus Summary, page 1

3. Please expand your disclosure to disclose the aggregate number of shares that could be issued under all existing conversion rights and pursuant to all outstanding options or warrants, the number of such shares in the aggregate registered for resale and the potential adverse effects on the market that may result upon exercise of all such rights and/or resale of all such shares. Additionally, please include similar disclosure of the aggregate share amounts in your risk factor titled “We have a significant number of warrants and convertible preferred stock outstanding...” on page 9 and expand your discussion to include associated risks to current shareholders and potential investors.

Recent Developments, page 2

Underlying Shares – Warrants, page 2

4. Please revise the bulleted disclosure with respect to the shares underlying the warrants issued in connection with the Series A Offering and the Series D Offering to reflect the total number of shares underlying such warrants rather than the additional shares registered pursuant to the anti-dilution provision.

Shareholder Meeting, page 2

5. Please update your disclosure on page 2 and throughout the filing to reflect the results of the shareholder meeting held September 13, 2012 regarding shareholder approval of the proposal to increase your authorized stock from 250,000,000 to 1,100,000,000 and the proposal to approve an amendment to the Company’s Certificate of Incorporation to effect a reverse stock split. In light of these results, please disclose the number of shares issued and outstanding, the number reserved for issuance under all outstanding convertibles, options, warrants, contractual obligations or otherwise and the current number authorized but unreserved. Further, please disclose whether a reverse stock split was accomplished and, if so, disclose the ratio determined by the board.

Selling Security Holders, page 57

6. Please expand your disclosure to add a separate table which identifies Selling Stockholders that will register shares for resale pursuant to two or more registration statements and indicates the total number of shares to be offered for resale in the aggregate and the resulting approximate percentage of shares to be owned after the offering assuming resale of the aggregate amount to be offered.

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.

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.

Declan Daly
Fibrocell Science, Inc.
September 19, 2012
Page 4

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

cc: Via E-mail
Cavas S. Pavri
Cozen O'Connor