



DIVISION OF  
CORPORATION FINANCE

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

January 20, 2011

John P. Gandolfo  
Chief Financial Officer  
600 Cruiser Lane  
Belgrade, Montana 59714

**Re: Bacterin International Holdings, Inc.  
Amended Registration Statement on Form S-1  
Filed January 7, 2011  
File No. 333-169620**

Dear Mr. Gandolfo:

We have reviewed your amended registration statement on Form S-1 filed on January 7, 2011 and have the following comments. In some of our comments, we may ask you to provide us with information so we may better understand your disclosure.

Please respond to this letter by amending your registration statement and providing the requested information. If 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.

Results of Operations

Comparison of Nine Months Ended September 30, 2010 and September 30, 2009

Cost of tissue sales, page 18

1. Please revise the discussion you provided in response to comment five to explain why you did not write off biologics inventories until they expired. Your discussion should clarify why you were unable to estimate the inventories expiring and support why it was not necessary to recognize it earlier.

Financial Statements for the Quarterly Period Ended September 30, 2010

(12) Stock-Based Compensation, page F-11

2. Please tell us where you have disclosed the feature that triggered the derivative accounting in response to comment 11. For example, if the derivative accounting is triggered by an exercise price adjustment feature, describe the events that would trigger the exercise price adjustment and how the new exercise price will be calculated. Furthermore, please explain to us why you believe Black Scholes is the most appropriate

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method in calculating the warrants' fair value as the Black Scholes method does not take into account changes to the exercise price.

Financial Statements for the Year Ended December 31, 2009

(1) Business Description and Summary of Significant Accounting Policies

Inventories, page F-26

3. Given the significance of inventory obsolescence recognized during the quarter ended September 30, 2010, please disclose your policy in recognizing inventory reserves and write-offs. In your disclosure, please quantify the average shelf life of your inventories.

\* \* \* \* \*

You may contact Keira Ino at (202) 551-3659 or Lisa Vanjoske at (202) 551-3614 if you have questions regarding comments on the financial statements and related matters. Please contact Johnny Gharib at (202) 551-3170 or Sebastian Gomez Abero at (202) 551- 3578 with any other questions.

Sincerely,

Jeffrey Riedler  
Assistant Director