



DIVISION OF
CORPORATION FINANCE

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

May 11, 2011

Frank M. Reynolds
Chief Executive Officer and Chief Financial Officer
Invivo Therapeutics Holdings Corp.
One Broadway, 14th Floor
Cambridge, MA 02142

**Re: Invivo Therapeutics Holdings Corp.
Proxy Statement on Schedule 14A
Correspondence received April 26, 2011
Form 10-K for the year ended December 31, 2010
File No. 000-52089**

Dear Mr. Reynolds:

We have limited our review of your filing and related correspondence to those issues we have addressed in our 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 within ten business days by amending your filing, by providing the requested information, or by advising us when you will provide the requested response. 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 filing and the information you provide in response to these comments, we may have additional comments.

Please be advised that comments issued in this letter or your responses to these comments should not be construed to impact our currently ongoing review of your outstanding Form S-1 registration statement, initially filed on February 1, 2011 (file number 333-171998). As such, we may continue to follow up on comments, whether referred to in this letter or not, when you file an amended Form S-1, even if we do not address them here or in subsequent letters regarding your Proxy Statement or Form 10-K. In addition, our failure to comment on specific disclosure in your Proxy Statement or Form 10-K is not an indication that we have reviewed the disclosure or that we will not comment on the same disclosure in the Form S-1. Please also address our comments in this letter in the subsequent amendment to the Form S-1 you plan to file shortly, where applicable.

Annual Report on Form 10-K for the year ended December 31, 2010

Business, page 3

1. We note your response to our prior comment number 7 in our letter dated February 11, 2011; however, it is still unclear what is meant by “[i]n connection with the merger” with respect to the private offering. In addition, please tell us whether all of the investors in the private placement were accredited investors.
2. We note your response to our prior comment number 8 in our letter dated February 11, 2011. Please clarify whether the Bridge Financing was offered or sold to any non-accredited investors.
3. Please revise this section to reflect the fact that the development stage of your business causes significant uncertainty, such that you are completely unable to quantify your near term funding needs or timelines regarding your planned business, as suggested by your responses to comment numbers 12 and 20 from our letter dated February 11, 2011.

Risk Factors, page 14

4. Refer to prior comment 11 in our February 28, 2011 letter. Your risk factors should address the risks relating to methylprednisolone sodium succinate including its harmful systemic side effects, such as increased risks of pneumonia, sepsis and mortality identified by you, in addition to your uncertainty regarding its combination with your polymer. Please revise.
5. Please expand your response to prior comment 16 to explain more clearly how you determined that the deleted risk factor is no longer relevant.
6. Please disclose the substance of your response to prior comment 29, regarding the status of your plans to market your products outside the United States.

Intellectual Property, page 13

7. We note your responses to comments 31 and 32. Please note that confidential treatment is not appropriate for information that is material to investors. Please provide the requested disclosure or tell us why you believe that it is not appropriate. In this regard, you must file all related requests for confidential treatment at the time that the original related Securities Act or Exchange Act filing is made or due.

Pilot Primate Study, page 9

8. We note your response to our prior comment number 26 in our February 28, 2011 letter. Please explain why you developed a different scale from the Basso-Beattie-Bresnahan for the primate studies.

Note 9. Bridge Notes Payable, page 44

9. We note your response to our prior comment 41 that you allocated the proceeds received between the debt instrument and the warrant on a relative fair value basis. However, we note that FASB ASC 470-20-25-2 reference warrants that are accounted for as paid-in capital within equity. In light of the fact that you concluded that the warrants are to be classified as a derivative liability, tell us how you considered FASB ASC 815-10-30-1 in allocating the total proceeds of the offering between the warrants and the debt instrument. Please explain to us why based on that guidance you would not first allocate the full fair value to the warrants and then attribute the residual value to the debt instrument.

Note 11 – Common Stock, page 47

10. In connection with the Merger on October 26, 2010, we see that you entered into private placement Unit offerings which consisted of one share of common stock and a warrant to purchase one share of common stock at \$1.40 per share. To account for the Units, we note that you allocated the proceeds from the offering to the common stock and warrants based on their relative fair value and subsequently recorded the warrants as derivative liabilities at their full fair value. Please address the following:
 - Describe to us the significant terms of the warrant agreements on which you based your conclusion that they should be recorded as derivative liabilities.
 - Explain to us why you would not first allocate the proceeds from the offering to the full fair value of the warrants and then attribute the residual value to the common stock given the guidance in FASB ASC 815-10-30-1.

Note 14. Warrants, page 51

11. For each warrant issuance, including in connection with the Unit Offering, Bridge Notes, Placement Agent and any other issuance, please address the following:
 - Separately describe and quantify for us how the warrants were valued (i.e. relative fair value or full fair value) and accounted for at issuance. Please provide references to the appropriate authoritative literature, which supports your accounting.
 - Please describe the valuation methods used to value these warrants.

- If the warrants were initially recorded at relative fair value, include the difference between the relative fair value and the full fair value at issuance.
 - Provide us a chronological detailed schedule, which reconciles the amounts recorded in the income statement and balance sheet for each warrant issuance from their issuance to the most recent balance sheet date.
12. In this regard, please revise future filings to specifically identify the model utilized to value your derivative liabilities, the significant assumptions inherent in that model and the significant terms of the warrant agreement which required liability treatment.

Directors, Executive Officers and Corporate Governance, page 54

13. You do not appear to have addressed the first sentence of prior comment 33 regarding your advisory boards; therefore, we reissue the comment.

Exhibits, Financial Statement Schedules, page 55

14. You do not appear to have addressed prior comment 51; therefore we reissue the comment. Please file complete exhibits.

Form 8-K filed November 1, 2010

Statements of Operations, page F-4

15. We note your response to our prior comment 56 that acknowledges that your statement of operations from inception to December 31, 2009 and June 30, 2010 are incorrect. Accordingly, please amend the Form 8-K to correctly present the statement of operations for the period from November 28, 2005 (inception) to December 31, 2009 and from November 28, 2005 (inception) to June 30, 2010.

Pro Forma Financial Statements, page F-23

16. We note your response to our prior comment 57 that you will provide updated pro forma financial statements in an amendment of the Form S-1. Please note pro forma financial statements do not apply to merger transactions accounted for as recapitalizations as they would not be meaningful. Please revise this filing as well as the Form S-1, when amended, to remove the pro forma information currently presented. In addition, revise the Accounting Treatment; Change in Control section on page 10 and other relevant sections of this Form 8-K, as appropriate, to remove the disclosure stating that the transaction was accounted for as a reverse merger and instead correctly indicate that you accounted for the transaction as a recapitalization of InVivo, the operating company. Please provide similar revisions in your future filings, including any amendments to your Form S-1 and your Form 10-K for the year ended December 31, 2010.

Frank M. Reynolds
Invivo Therapeutics Holdings Corp.
May 11, 2011
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General

17. Please provide the undertakings requested at the bottom of this letter.

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 Exchange Act of 1934 and all applicable Exchange 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.

In responding to our comments, please provide a written statement from the company acknowledging that:

- the company is responsible for the adequacy and accuracy of the disclosure in the filing;
- staff comments or changes to disclosure in response to staff comments do not foreclose the Commission from taking any action with respect to the filing; and
- the company may not assert staff comments as a defense in any proceeding initiated by the Commission or any person under the federal securities laws of the United States.

You may contact Kevin Kuhar, Staff Accountant, at (202) 551-3662 or Jeffrey Jaramillo, Accounting Branch Chief, at (202) 551-3212 if you have questions regarding comments on the financial statements or related matters. Please contact Ruairi Regan, Staff Attorney, at (202) 551-3269 or me at (202) 551-3528 with any other questions.

Sincerely,

Amanda Ravitz
Assistant Director

cc (by facsimile): Thomas B. Rosedale, Esq. (617) 399-6930