

February 7, 2007

Mail Stop 6010

John S. Kovach  
Chairman and Chief Executive Officer  
Lixte Biotechnology Holdings, Inc.  
248 Route 25A, No. 2  
East Setauket, NY 11733

**Re: Lixte Biotechnology Holdings, Inc.  
Amendment No. 2 to Form SB-2  
Filed January 23, 2007  
File No. 333-137208**

Dear Mr. Kovach:

We have reviewed your filing and have the following 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.

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.

Amendment No. 2 to Form SB-2

1. Due to your name change, when you use the shortened name “Lixte” throughout your document, it is unclear whether you are referring to your company or the company you acquired in the reverse merger. Please revise throughout your document so your disclosure is clear from context.

Shares Eligible for Future Sale, page 16

2. If the “former stockholder of Lixte” to which you issued all of the shares in the reverse merger is your CEO, please say so directly here and each place in your document where you refer to issuing shares in the reverse merger.

Business, page 28

Intellectual Property, page 29

3. Your revision in response to prior comment 7 continues to summarize the opinion of an expert. Therefore, we reissue the comment.
4. We note your response to comment 6. That comment sought disclosure of the material terms of the agreement you were negotiating with the NIH relating to commercial rights to certain inventions. Your added disclosure under "Access to Clinical Materials" appears to relate to a different agreement. We reissue comment 6 in our letter to you dated December 15, 2006.

Government Regulation, page 34

5. We note your added disclosure in response to prior comment 8. Please expand your disclosure to clarify the nature, extent and duration of the FDA approval process.

Scientific Advisory Committee, page 37

6. We note your response to prior comment 10; however, this disclosure continues to appear in the section of your prospectus where you discuss your management. Therefore, we reissue the comment.

Executive Compensation, page 38

7. Please update your disclosure to include all required executive compensation information for your last completed fiscal year. Please ensure that your updated disclosure is in compliance with Release No. 33-8732A.

Security Ownership, page 39

8. We note the disclaimer in footnote 2. If securities are beneficially owned as defined in Regulation S-B Item 403, you must include them in the table, even if ownership is disclaimed. Please revise.

Selling Stockholders, page 41

9. We note your response to prior comment 40 and reissue the comment. Please see telephone interpretation 4S under Regulation S-K in the *Manual of Publicly Available Telephone Interpretations* (March 1999 Supplement) available on our website. If you cannot provide the required information regarding the individuals

who beneficially own the shares held by the entities listed in the table, those entities should be removed as selling shareholders and the related shares should be removed from the registration statement.

#### Financial Statements

10. We note your response to prior comment 14. However, if the financial statements need to be “read in conjunction with” disclosure in a Form 8-K, it is unclear how the disclosure in this registration statement is complete without inappropriate incorporation by reference.

#### Recent Sales of Unregistered Securities, page II-2

11. We note your response to comment 17. Please explain:
- Why you have not disclosed in Item 26 (Recent Sales of Unregistered Securities) the May 17, 2006 transaction mentioned in Appendix B;
  - Why over four million shares were returned in the reverse merger; and
  - Why you issued the 4,005,177 shares in the reverse merger.

#### Undertakings, page II-4

12. We note your response to prior comment 18. However, because the selling stockholders might engage in transactions that indicate that they are in substance primary transactions, you should include the undertaking. Therefore, we reissue the comment.

#### Exhibits

13. Please file complete exhibits with all attachments. For example, it appears that Appendix A is missing from exhibit 10.2.

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.

John S. Kovach  
Lixte Biotechnology Holdings, Inc.  
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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.

You may contact David Burton at (202) 551-3626 or Jay Webb at (202) 551-3603 if you have questions regarding comments on the financial statements and related matters. Please contact Eduardo Aleman at (202) 551-3646 or me at (202) 551-3617 with any other questions.

Sincerely,

Russell Mancuso  
Branch Chief

cc(via facsimile): David Ficksman – Troy & Gould, P.C.