

Mail Stop 6010

July 23, 2008

Mr. Bruce A. Beutel
President and Chief Scientific Officer
Znomics, Inc.
2611 SW 3rd Avenue, Suite 200
Portland, OR 97201

**Re: Znomics, Inc.
Amendment No. 4 to Registration Statement on Form S-1/A
Filed July 16, 2008
File No. 333-148220**

Dear Mr. Beutel:

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 supplemental information so we may better understand your disclosure. After reviewing this information, we may or may not 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 on any other aspect of our review. Feel free to call us at the telephone numbers listed at the end of this letter.

Amendment No. 4 to Form S-1/A

Description of Business

Sale of Mutant Fish Lines and Services, page 42

1. We note your response to Comment 1 and reissue the comment in part. Please refer to your response on page 43.

- Please disclose the amount of the research payment you are obligated to pay the University of Utah. We note from Appendix A of Exhibit 10.7 that this amount equals \$33,175 upon execution of the agreement plus \$99,525 upon completion of due diligence.
 - Please disclose the amount of the success payment you are obligated to pay the University of Utah. We note from Appendix A of Exhibit 10.7 that this amount equals \$101,183.
 - Please expand your disclosure to quantify the aggregate amount of potential milestone payments. We note from Appendix C of Exhibit 10.7 that you are obligated to pay the University of Utah an aggregate amount of \$850,000 in potential milestone payments.
 - We note your disclosure on page 43 that you will pay a royalty in a “low percentage range” on sales of the licensed product to the University of Utah. Please revise your disclosure to state that you will pay a royalty in a “low single-digit percentage range” on sales of the licensed product.
 - Please expand your disclosure to state how long you will be required to continue paying the University of Utah royalty payments on sales of the licensed product.
2. We note your disclosure on page 43 regarding the research agreement between your company and Oregon Health & Science University, effective as of July 1, 2008.
- Please disclose the amount of the research payment you are obligated to pay Oregon Health & Science University. We note from Attachment A of Exhibit 10.8 that this amount equals \$115,500.
 - Please disclose the amount of the non-refundable initial license fee you are obligated to pay Oregon Health & Science University for any inventions. We note from Attachment A of Exhibit 10.8 that this amount equals \$75,000.
 - Please expand your disclosure to quantify the aggregate amount of potential milestone payments. We note from Attachment C of Exhibit 10.7 that you are obligated to pay Oregon Health & Science University an aggregate amount of \$850,000 in potential milestone payments.
 - We note your disclosure on page 43 that you will pay a royalty in a “low percentage range” on sales of the licensed product to Oregon Health & Science University. Please revise your disclosure to state that you will pay a royalty in a “low single-digit percentage range” on sales of the licensed product.
 - Please expand your disclosure to state how long you will be required to continue paying Oregon Health & Science University royalty payments on sales of the licensed product.

Mr. Bruce A. Beutel
President and Chief Scientific Officer
Znomics, Inc.
July 23, 2008
Page 3

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As appropriate, please amend your filing 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 supplemental 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 filings reviewed by the staff to be certain that they have provided all information investors require for an informed 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.

Notwithstanding our comments, in the event the company requests acceleration of the effective date of the pending registration statement, it should furnish a letter, at the time of such request, 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 this action as a defense in any proceeding initiated by the Commission or any person under the federal securities laws of the United States.

In addition, please be advised that the Division of Enforcement has access to all information you provide to the staff of the Division of Corporation Finance in connection with our review of your filing or in response to our comments on your filing.

We will consider a written request for acceleration of the effective date of the registration statement as a 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.

Mr. Bruce A. Beutel
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Znomics, Inc.
July 23, 2008
Page 4

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 Gus Rodriguez at (202) 551-3752 or Mary Mast at (202) 551-3613 if you have questions regarding comments on the financial statements and related matters. Please contact Rose Zukin at (202) 551-3239 or Suzanne Hayes at (202) 551-3675 with any other questions.

Sincerely,

Jeffrey P. Riedler
Assistant Director

cc: Scott Doney, Esq.
Cane Clark LLP
3273 East Warm Springs Rd.
Las Vegas, NV 89120