

Mail Stop 4720

December 17, 2009

Michael Cohen  
President, Chief Executive Officer and Chairman of the Board  
Proteonomix, Inc.  
187 Mill Lane  
Mountainside, New Jersey 07052

**Re: Proteonomix, Inc.  
Registration Statement on Form 10-12G/A  
Filed December 4, 2009  
File No. 000-53750**

Dear Mr. Cohen:

We have reviewed your December 4, 2009 response to our November 6, 2009 comment letter and have the following additional 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.

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 any other aspect of our review. Feel free to call us at the telephone numbers listed at the end of this letter.

**Form 10-12G/A filed December 4, 2009**

**General**

1. We note your response to our prior comment 1 and advise you that the supplemental support provided as the basis for numerous statements about the efficacy of Matrix NC-138 in the filing is not sufficient. We do not consider the white paper, which appears to be a marketing tool prepared by the company's CEO, President and Chairman of the Board, to be an objective unbiased source.

The white paper, in and of itself, does not represent independent verification of the claims made about your product. Nor does it appear that this paper has been subject to independent scrutiny, as would a publication appearing in a peer-reviewed academic or scientific periodical. Accordingly, please delete the following statements from the filing:

- “Further, our protein molecules form a complex structure that enhances skin firmness and elasticity and delivers essential complexes that assist in the support of cells found in human tissues. We have found that Matrix NC138, when combined with our carrier agents and applied to the skin surface, penetrates the outer epidermal layer. Once within the extracellular matrix environment of the skin, the components enhance the production of type 4 collagen in the skin, helping to reduce the appearance of superficial wrinkles.” (Page 9)
- “We and our subsidiary, Proteoderm, conducted tests of the efficacy of our cosmeceutical kit on a dozen women and have found that our kit removed age lines in the faces and under the eyes of each person we tested.” (Page 9)
- “The results were that the Matrix NC-138 induced collagen production by more than 300% in aged fibroblasts.” (Page 9)
- “In addition, it was demonstrated that Matrix NC-138 rejuvenates skin cells.” (Page 9)
- “Matrix NC-138 extended the longevity of keratinocytes and fibroblasts.” (Page 9)
- “The results were that Matrix NC-138 reduces both deep and subtle wrinkles...It was observed that Matrix NC-138 led to a refinement of the skin texture and contributed to a youthful look. Additionally, Matrix NC-138 increased moisture content of the skin. The moisture content was clearly improved compared to placebo control after four weeks of application.” (Page 9)

Alternatively, you should revise your disclosure regarding Matrix NC-138 to provide a balanced discussion that makes clear that your research, data and conclusions regarding this product have not been independently verified, that the merits of your claims have not been subject to independent evaluation by experts in the field, that the results of your efficacy tests were based on observations of only twelve volunteers and have not yet been replicated, and that there are no established standards for test procedures, methodology or documentation by which companies marketing cosmeceuticals must adhere before making claims about their products’ efficacy.

2. With respect to your statements about your growth platforms, it does not appear that you have provide the supplemental documentation we requested that substantiates the following statements:

- "...ES-400 grown cells show less than 1% destructive tumor formation in progressive generations. (Page 13)
- By contrast, current competitors' stem cell lines demonstrate an 80% probability of destructive tumor formation in successive generations." (Page 13)
- "CB-500 enhances the rate of growth of a stem cell colony." (Page 13)

Therefore, please supplementally provide support for these statements or delete them from the registration statement.

3. In response to our prior comment 1, we also note that you have modified your disclosure to read: "In the next few years, we anticipate that treatments based on stem cells ... will be used for patients to treat different ailments ..." Please replace the phrase "next few years" with "future" or some other non-specific timeframe unless you have reason to believe that these treatments will be available in the near future. If so, please provide substantiation for this belief. We note that the page from the University of Miami website that you have submitted supplementally makes no such claim about the date of availability of these treatments, only that preliminary experimental and clinical trials have yielded promising results.
4. Please explain why you anticipate that the combination of your Platform ES-400 with E.S.E.F. 99 will reduce the possibility of Aneuploid cell cultures in progressive generations of stem cells where discussed on page 13.

Item 1. Business, page 2

5. Please define "recall bias" where used on page 4 of the filing.
6. We note the following statement on page 5: "These technologies have been licensed to us in perpetuity." Please revise this statement to specifically state the identity of the licensor(s) of the cell surface markers and methods for their isolation. As written, it is unclear whether the technologies were licensed to the company by Michael Cohen alone, to others or to Mr. Cohen together with additional parties.
7. We note also that Exhibit 10.27, which concerns the July 1, 2009 assignment of technologies and patent applications by Michael Cohen to the company, does not include Appendix A. Accordingly, it is not possible for us to verify which technologies are covered by this agreement. Please be advised that you are required to file all appendices, attachments, schedules, etc. to your exhibits filed under Item 601 of Regulation S-K. Please file Appendix A to Exhibit 10.27, as well as any other appendices, attachments, schedules, etc. to your exhibits that you have may have omitted.

8. We note your response to our prior comment 8 and advise you that the paragraph included in your response which begins “The license provides that research and development as well as funding...” has not been included in the filing under the FlexPak-5 table. Please revise your filing to include this paragraph in the same place as it appears in your response letter.
9. We note your response to our prior comment 10. Your revised disclosure indicates that when Dr. McNiece left Johns Hopkins University in 2007, the company began working with the University of Miami on the expansion of cord blood stem cells, the production of Matrix NC-138 and isolation of specific cells to be used in cardiological therapeutics. However, the only agreement that has been filed that relates to the relationship between the company and the University of Miami is the May 27, 2008 Fee for Services Agreement with the University’s Interdisciplinary Stem Cell Institute. Please confirm that this is the only agreement, whether written or oral, that governs the parties’ relationship.
10. We note your response to our prior comment 11 and the revised disclosure that you have provided in the registration statement. Please remove the excerpt from ViaCord LLC’s website that appears on page 6. We have no objection to retaining some form of the statement derived from the New England Journal of Medicine concerning the rejection rate of transplants using cord blood, but the remainder of the excerpt is not relevant to the discussion of your technology and may confuse readers. Nor is it responsive to our request for substantiation of your statement about the anticipated rejection rate of transplanted islet cells.
11. We note your response to our prior comment 14. It does not appear that you have revised your disclosure on page 16 to be consistent with your disclosure on page 7 as previously requested. Please reconcile your estimates of funding needs on page 7 with the estimates you provide at the top of page 16. In addition, please disclose the funding you will require for the remainder for 2009 and 2010 for research and development related to the development of your islet cells technology.
12. We note your response to our prior comment 15. Please revise your disclosure to state whether or not the company is a member of the Personal Care Products Council and, if so, whether it is an active member or an associate member. If the company is not a member, please revise your disclosure to state how the PCPC affects the company’s operations and why disclosure about the PCPC is relevant.
13. Please revise to clarify how the PCPC is a self-regulatory organization if it does not regulate its members. These two statements appear contradictory.

14. Please summarize the safety practices formalized by the Consumer Commitment Code, clarify whether the PCPC requires its members to comply with this code and state whether your company follows the code.
15. We note the following statement on page 10: "We are preparing an application to the CIR for our proprietary Matrix NC-138. All other ingredients are on the approved list." Please revise your disclosure to explain what the "approved list" is and to be more specific about which ingredients are currently on this list.
16. Please explain the nature and scope of the assessment the CIR will undertake once you have submitted your application for Matrix NC-138, how long this safety assessment will take to complete and the consequences should the CIR issue a negative assessment of Matrix NC-138. Please also clarify whether a safety assessment by the CIR is required to commercialize cosmetics in the U.S.
17. We note the following statement on page 15: "We have sufficient funds to manufacture and package the raw material for our kits." Please revise this statement to indicate how long you believe you will have sufficient funds to manufacture and package the raw materials, for how many kits and the source of your funding.
18. We also note your statement on page 8 that your reinstated agreement with China Biopharma and Sinoquest requires that you produce and sell cosmeceutical kits in the United States. Please clarify the quantities of these kits you are required to produce and sell in the United States and any other terms specified by China Biopharma and Sinoquest.
19. We note your response to our prior comment 20 and advise you that the current filing does not contain a clarification that the Sperm and Embryo Bank of New Jersey and BioGenetics Corporation are under common control. Please revise your disclosure to make this clarification.
20. We note your response to our prior comment 21 and advise you that the current filing does not state by which New York and New Jersey agencies the facilities are licensed. Please revise your disclosure to name the agencies that provide licenses to the Sperm Bank of New York, or, in the alternative, delete your statement that SBY is licensed. In addition, state whether SBNY is certified to receive Medicare and Medicaid payments.
21. We note your response to our prior comment 22 and advise you that you have not discussed in greater detail the medical and ethical standards set forth by the American Society for Reproductive Medicine. We reissue this portion of the comment.

22. We note that you have deleted the definition of CLIA from the filing. Please reinstate this definition on page 4 where CLIA is first discussed.
23. In our prior comment 25 we asked that you clarify that, if true, the term “diversification” used in your discussion on page 12 is synonymous with the term “differentiation.” It does not appear that you have made this clarification; therefore, we reissue this part of the comment.
24. We note your response to our prior comment 26 and we reissue the comment. With respect to the statement on page 12, “None of them includes a protein such as our patent pending protein which occurs in women during pregnancy,” you have not clarified that the protein is Matrix NC-138 and have not explained why it is an advantage to the company that none of its competitors includes this protein.
25. We note your response to our prior comment 27 and advise you that we disagree with your conclusion that companies offering anti-aging cosmetics are not direct competitors of the company. If you mean that you are not aware of any companies that have cosmeceutical technologies similar to the ones you are developing, then state this clearly and remove your statement that you have no direct competitors.

Item 2. Financial Information, page 16

26. We note the following statement on page 17 of the filing: “We have developed sufficient technology patent applications including a medium and a scaffolding for enhancing the growth of stem cells, a growth platform for stem cells, a unique cord blood banking cryopreservation bag and cosmetic products utilizing a secreted matrix derived from stem cells.” Please explain what you mean by “a sufficient technology patent applications.”
27. We note your response to our prior comment 31. Please revise your disclosure to include the explanation of the professional, consulting and marketing fees provided in your response letter, where appropriate in the filing.

Item 4. Security Ownership and Certain Beneficial Owners and Management, page 22

28. We note your response to our prior comment 32 and your statement that Dr. McNiece has been added to the other tables in the filing, not including the beneficial ownership table; however, you have not added Dr. McNiece to the Summary Compensation Table or the Outstanding Equity Awards at Fiscal Year End Table. Please revise each table accordingly.
29. We note that footnote 4 to the Beneficial Ownership table on page 43 contains the phrase “check numbers” at the end of the sentence. Please delete this phrase.

Item 6. Executive Compensation, page 27

30. We note your response to our prior comment 34 and we reissue the comment. The typographical error has not been corrected in the filing.
31. We note your response to our prior comment 36 and the following statements on page 27 of the filing:
- “Pursuant to the agreement, Mr. Cohen is entitled to...an annual bonus of no less than 30% of the base salary, such bonus to be based on the achievement of milestones to be established each year by the Board of Directors.”
  - “As of December 31, 2008, Mr. Cohen has not earned a bonus except for the bonus stipulated in his employment agreement as none of the milestones adopted by the Board of Directors have been met.”
  - “Mr. Cohen’s minimum bonus of \$75,000 per annum has not been paid and has accrued.”

The first bullet point above states that the bonus under the employment agreement will not be paid unless milestones are met. However, the second bullet point indicates that none of the milestones were met, but still contains the clause “except for the bonus stipulated in his employment agreement,” as if there is another bonus not contingent on the performance of milestones defined in the employment agreement. Finally, the third bullet point states that the minimum bonus of \$75,000 per annum has accrued, even though the milestones have not been achieved by Mr. Cohen. Please revise each of these statements to clarify exactly what bonus opportunities are available to Mr. Cohen both under his employment agreement and otherwise and why \$75,000 per annum is being accrued if he has not achieved the milestones set by the board of directors.

Exhibits, page 34

32. We note the inclusion of Exhibits 10.1, 10.6, 10.8 and 10.9 in your exhibit index; however, these agreements are not discussed in the filing. Please provide a brief description of each agreement where appropriate and discuss the material terms of each.
33. We note your response to our prior comment 44 and advise you that your revised footnote incorrectly states that the Form 10 was filed on August 10, 2009 rather than August 4, 2009. Please revise.

Consolidated Financial Statements at September 30, 2009

Notes to Consolidated Financial Statements

General

34. We note your reference to the company's therapeutic agents as "clinical stage" throughout the notes to the financial statements. As you do not currently have any products or therapies in the clinical stage, please revise this phrase to "pre-clinical stage" in all places in which it appears.

Note 5—Promissory Notes, page F-18

35. We note your response to our prior comment 40. Please further revise your disclosure in this section to state when you anticipate curing the default on the promissory notes and when you plan to satisfy your obligations thereunder.

Note 8—Commitments, page F-19

36. We note that you have revised the first sentence under the *Employment Agreements* heading of Note 8 to refer to an agreement with a "senior officer" rather than stating that the agreement is with the president/CEO of the company. Please revise to reinstate the reference to Mr. Cohen.

Note 9—Stockholders' Equity (Deficit), page G-20

37. To help us evaluate your response to prior comment 41, please revise your disclosure to include the following information, in tabular form, for equity instruments granted during the periods presented, including any options, warrants, and preferred stock:
- For each grant date, the number of options, warrants, or shares granted, the exercise price, the fair value of the common stock, and the intrinsic value, if any, for each option, warrants or shares granted;
  - Whether or not the valuation used to determine the fair value of the equity instruments was contemporaneous or retrospective;
  - If the valuation specialist was a related party or the board of directors, please state that fact; and
  - Discuss each significant factor contributing to the difference between the fair value as of the date of each grant and current estimated fair value.

Please continue to update your disclosures up until the time of effectiveness of your registration statement and include grants to non-employees as appropriate.

\* \* \* \* \*

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.

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

Michael Cohen  
Proteonomix, Inc.  
December 17, 2009  
Page 10

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 Ibolya Ignat at (202) 551-3656 or Gus Rodriguez at (202) 551-3752 if you have questions regarding comments on the financial statements and related matters. Please contact Laura Crotty at (202) 551-3563, Daniel S. Greenspan at (202) 551-3623 or myself at (202) 551-3715 with any other questions.

Sincerely,

Jeffrey P. Riedler  
Assistant Director

cc: Joel Pensley, Esq.