

Mail Stop 3561

February 4, 2009

Thomas A. Bologna, Chief Executive Officer
Orchid Cellmark, Inc.
4390 US Route One
Princeton, NJ 08540

**RE: Orchid Cellmark, Inc.
January 13, 2009 Supplemental Correspondence in connection with Form
10-K for Fiscal Year Ended December 31, 2008
Schedule DEFR 14A for June 5, 2008
File No. 0-30267**

Dear Mr. Bologna:

We have reviewed your correspondence and have the following comments. If you disagree, we will consider your explanation as to why our comments are inapplicable. 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 filings. 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.

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1. We note your response to comment four of our letter dated December 31, 2008 and we reissue the comment. You have not provided a detailed analysis as to why disclosure of the targets would result in competitive harm. We requested a quantitative discussion of all the terms of the necessary targets to be achieved for your named executive officers to earn their cash bonuses. In your response letter, you noted that revenues, gross margins, cash at the end of the year, improved sample turnaround times, strategic acquisitions, research and development

objectives and intellectual property objectives were used to determine executive performance based compensation. In future filings, you should disclose the specific factors used and how the company allocated these factors to determine the bonuses. Your response indicates that disclosure of these targets would provide competitors insight into the company's pricing, expected cash position, operating performance and business plans. Please either provide us with a detailed explanation for your conclusion that disclosure of each of the targets would result in competitive harm or disclose the specific performance targets in future filings. To the extent that it is appropriate to omit specific targets, please provide disclosure pursuant to Instruction 4 to Item 402(b). General statements regarding the level of difficulty, or ease, associated with achieving the performance goals either corporately or individually are not sufficient. In discussing how likely it will be for the company to achieve the target levels or other factors, provide as much detail as necessary without providing information that poses a reasonable risk of competitive harm.

Closing Comments

As appropriate, please respond to these comments within 10 business days or tell us when you will provide us with a response. Please understand that we may have additional comments after reviewing your 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 Exchange Act of 1934 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.

You may contact Ethan Horowitz at (202) 551-3311 or Raj Rajan at (202) 551-3388 if you have questions regarding comments on the financial statements and related matters. Please contact Susann Reilly at (202) 551-3236 or David Link at (202) 551-3356 with other questions.

Sincerely,

John Reynolds
Assistant Director
Office of Beverages, Apparel and
Health Care Services

Thomas A. Bologna
Fax: 609-750-6405