



DIVISION OF  
CORPORATION FINANCE

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

February 2, 2011

Michael C. Ferrara  
President and Chief Executive Officer  
Microfluidics International Corporation  
30 Ossipee Road  
Newton, MA 02464

**Re: Microfluidics International Corporation  
Schedule 14D-9 Filed on January 25, 2011  
Amendment No. 1 to Schedule 14D-9 filed on January 31, 2011  
File No. 005-35850**

Dear Mr. Ferrara:

We have limited our review of the filings to those issues we have addressed in our comments below. 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 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.

Schedule 14D-9 Filed on January 25, 2011

Background and Reasons for the Company Board's Recommendation, page 13

Background of the offer, page 13

1. Please supplement your disclosure to provide additional material information regarding any discussions amongst the company and its board, Celgene, IDEX and their respective advisors commencing in October 2010 through to the date of execution of the Agreement Concerning Debenture and the Strategic Collaboration Agreement. Refer generally to Item 8 of Schedule 14D-9 and corresponding 1011(b) of Regulation M-A.

Opinion of America's Growth Capital, page 24

2. Although the analyses undertaken by the advisor are identified, the underlying basis or assumptions are not fully described in the 14D-9. Advise us of the consideration you have given to providing further context to this discussion by summarizing the quantitative and qualitative assumptions underlying the analyses performed. If you revise to include the financial forecasts and/or non-GAAP financial measures that formed the basis of the advisor's analyses, please present such information in accordance with Rule 100 of Regulation G.

We urge all persons who are responsible for the accuracy and adequacy of the disclosure in the filings 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 the 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.

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If you have questions or comments please contact me at (202) 551-3757. You may also contact me via facsimile at (202) 772-9203. Please send all correspondence to the following ZIP code: 20549-3628.

Sincerely,

Mellissa Campbell Duru  
Special Counsel  
Office of Mergers & Acquisitions

cc: Via Facsimile (617) 542-2241  
Jonathan Kravetz, Esq.  
Mintz, Levin, Cohen, Ferris, Glovsky and Popeo, P.C.