



DIVISION OF
CORPORATION FINANCE

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

February 3, 2011

Gajus V. Worthington
President and Chief Executive Officer
Fluidigm Corporation
7000 Shoreline Court, Suite 100
South San Francisco, California 94080

**Re: Fluidigm Corporation
Registration Statement on Form S-1
Amended January 28, 2011
File No. 333-170965**

Dear Mr. Worthington:

We have reviewed your filing and your January 31, 2011 correspondence and have the following comments. 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 registration statement and providing the requested information. Where 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 registration statement and the information you provide in response to these comments, we may have additional comments.

Prospectus Summary, page 1

1. We note your response to oral comment 3 in your correspondence dated January 31, 2011. Please revise your summary section to include a separately captioned discussion of benefits to affiliates in which you disclose the value to insiders of options granted to them, based upon the difference between the exercise price and the mid-point of the price range presently proposed for your offering.

Capitalization, page 34

2. Please tell us the difference between the pro forma amounts in the Capitalization table on page 34 and the pro forma amounts in the consolidated balance sheets on page F-41.

Critical Accounting Policies...., page 41

Stock-Based Compensation, page 43

3. We note your response to oral comment 1 in your correspondence dated January 31, 2011. Please revise here, or elsewhere as applicable, to provide a summary of the significant factors relating to the methodology used to determine the fair value of the options granted in January 2011, including how you considered the possible sale of the company, prospects for an Initial Public Offering and valuation range provided by underwriters. Please also discuss the assumptions used for the weighting of alternative outcomes, as indicated in your response, and how this weighting impacted the fair value estimate of your common stock used to value the stock options granted in January 2011.

Certain Relationships and Related Party Transactions, page 119

4. We note your response to oral comment 2 in your correspondence dated January 31, 2011. Your response does not address the financial consideration given to affiliates for the waiver of the minimum price requirement. In this regard, we refer to your response to prior comment 11 in your January 28, 2011 response letter, which states that you agreed to reduce the conversion of the Series E preferred stock as an incentive for the Series E preferred stockholders to consent to remove the auto-conversion threshold. On this basis, it appears that your related parties had a direct material interest in this transaction. Please refer to Regulation S-K, Item 404(a). Please revise to disclose the materials terms of this transaction, including the value to each related party of the reduced conversions price.

Life Science Research, page 64

5. We note your revised disclosure on page 65. Please revise to identify the author of the referenced industry report. In light of the additional industry data, we also reissue prior comment 10 to our December 30, 2010 letter.

Report of Independent Registered Public Accounting Firm, page F-2

6. Prior to effectiveness of the registration statement please have your independent accountants revise their audit report on page F-2 and consent in Exhibit 23.1 to remove the draft language.

Financial Statements

7. Please update your financial statements if required by Rule 3-12 of Regulation S-X.

Note 1. Reverse Stock Split, page F-10

8. We note your disclosure in Note 1 that the reverse stock split is subject to stockholder approval and will be effected prior to effectiveness of the registration statement. Please tell us when you expect to receive stockholder approval and revise to update the disclosure after the approval is received.

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 the information the Securities Act of 1933 and all applicable Securities Act rules require. 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 you request acceleration of the effective date of the pending registration statement please provide a written statement from the company 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 staff comments and the declaration of effectiveness as a defense in any proceeding initiated by the Commission or any person under the federal securities laws of the United States.

Please refer to Rules 460 and 461 regarding requests for acceleration. 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. Please allow adequate time for us to review any amendment prior to the requested effective date of the registration statement.

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You may contact Jeanne Bennett at 202-551-3606 or Brian Cascio, Accounting Branch Chief, at 202-551-3676 if you have questions regarding comments on the financial statements and related matters. Please contact Joseph McCann at 202-551-6262 or Mary Beth Breslin, Senior Attorney, at 202-551-3625 with any other questions.

Sincerely,

Amanda Ravitz
Assistant Director

cc (via fax): David J. Segre, Esq. – Wilson Sonsini Goodrich & Rosati P.C.