

**UNITED STATES
SECURITIES AND EXCHANGE COMMISSION**
Washington, D.C. 20549

**FORM S-8
REGISTRATION STATEMENT**

*Under
The Securities Act of 1933*

FLUIDIGM CORPORATION

(Exact name of Registrant as specified in its charter)

Delaware
(State or other jurisdiction of
incorporation or organization)

77-0513190
(I.R.S. Employer
Identification Number)

**7000 Shoreline Court, Suite 100
South San Francisco, California 94080
(650) 266-6000**
(Address of principal executive offices, including zip code)

**1999 Stock Option Plan
2009 Equity Incentive Plan
2011 Equity Incentive Plan**
(Full title of the plan)

Gajus V. Worthington
President and Chief Executive Officer
7000 Shoreline Court, Suite 100
South San Francisco, California 94080
(650) 266-6000
(Name, address and telephone number, including area code, of agent for service)

Copy to:
David J. Segre
Robert F. Kornegay
Wilson Sonsini Goodrich & Rosati, P.C.
650 Page Mill Road
Palo Alto, California 94304
(650) 493-9300

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, or a smaller reporting company. See the definitions of "large accelerated filer," "accelerated filer" and "smaller reporting company" in Rule 12b-2 of the Exchange Act.

Large accelerated filer

Accelerated filer

Non-accelerated filer (do not check if a smaller reporting company)

Smaller reporting company

CALCULATION OF REGISTRATION FEE

Title of Securities to be Registered	Amount to be Registered (1)	Proposed Maximum Offering Price Per Share	Proposed Maximum Aggregate Offering Price	Amount of Registration Fee
Common stock, \$0.001 par value per share:				
— To be issued under the 2011 Equity Incentive Plan	1,305,423(2)	\$13.50(5)	\$17,623,210.50	\$2,046.05
— Outstanding under the 2009 Equity Incentive Plan	1,704,967(3)	\$5.36(6)	\$9,331,583.12	\$1,083.40
— Outstanding under the 1999 Stock Option Plan	417,410(4)	\$3.59(7)	\$1,498,501.90	\$173.98
TOTAL:	3,463,809		\$28,453,295.52	\$3,303.43

- (1) Pursuant to Rule 416(a) of the Securities Act of 1933, as amended, this Registration Statement shall also cover any additional shares of the Registrant's common stock that become issuable under the 2011 Equity Incentive Plan ("2011 Plan"), 2009 Equity Incentive Plan ("2009 Plan") and 1999 Stock Option Plan ("1999 Plan") by reason of any stock dividend, stock split, recapitalization or other similar transaction effected without receipt of consideration that increases the number of the Registrant's outstanding shares of common stock.
- (2) Shares of common stock reserved for issuance under the 2011 Plan consist of (a) 1,250,000 shares of common stock initially available for future grants under the 2011 Plan plus (b) 55,423 shares of common stock previously reserved but unissued under the 2009 Plan that are now available for issuance under the 2011 Plan. To the extent outstanding awards under the 2009 Plan or 1999 Plan are forfeited or lapse unexercised and would otherwise have been returned to the share reserve under the 2009 Plan or 1999 Plan, as the case may be, the shares of common stock subject to such awards instead will be available for future issuance under the 2011 Plan. See footnotes 3 and 4 below.
- (3) Any such shares of common stock that are subject to awards under the 2009 Plan which are forfeited or lapse unexercised and would otherwise have been returned to the share reserve under the 2009 Plan instead will be available for issuance under the 2011 Plan. See footnote 2 above.
- (4) Any such shares of common stock that are subject to awards under the 1999 Plan which are forfeited or lapse unexercised and would otherwise have been returned to the share reserve under the 1999 Plan instead will be available for issuance under the 2011 Plan. See footnote 2 above.
- (5) Estimated in accordance with Rule 457(h) solely for purposes of calculating the registration fee on the basis of \$13.50, the initial public offering price set forth on the cover page of the Registrant's Prospectus dated February 10, 2011 relating to its initial public offering.
- (6) Estimated in accordance with Rule 457(h) solely for the purpose of calculating the registration fee on the basis of the weighted average exercise price of \$5.36 per share.
- (7) Estimated in accordance with Rule 457(h) solely for the purpose of calculating the registration fee on the basis of the weighted average exercise price of \$3.59 per share.

REGISTRATION STATEMENT ON FORM S-8

PART I

INFORMATION REQUIRED IN SECTION 10(a) PROSPECTUS

Item 1. Plan Information

The documents containing the information specified in this Item 1 will be sent or given to employees, officers, directors or others as specified by Rule 428(b)(1) under the Securities Act of 1933, as amended (the "Securities Act"). In accordance with the rules and regulations of the Securities and Exchange Commission (the "Commission") and the instructions to Form S-8, such documents are not being filed with the Commission either as part of this Registration Statement or as prospectuses or prospectus supplements pursuant to Rule 424 under the Securities Act.

Item 2. Registrant Information and Employee Plan Annual Information.

The documents containing the information specified in this Item 2 will be sent or given to employees, officers, directors or others as specified by Rule 428(b)(1) under the Securities Act. In accordance with the rules and regulations of the Commission and the instructions to Form S-8, such documents are not being filed with the Commission either as part of this Registration Statement or as prospectuses or prospectus supplements pursuant to Rule 424 under the Securities Act.

PART II

INFORMATION REQUIRED IN REGISTRATION STATEMENT

Item 3. Incorporation of Documents by Reference.

Fluidigm Corporation (the "Registrant") hereby incorporates by reference into this Registration Statement the following documents previously filed with the Securities and Exchange Commission:

(1) The Registrant's Prospectus filed with the Commission on February 10, 2011, pursuant to Rule 424(b) under the Securities Act of 1933, as amended (the "Securities Act"), relating to the Registration Statement on Form S-1, as amended (File No. 333-170965), which contains the Registrant's audited financial statements for the latest fiscal year for which such statements have been filed; and

(2) The description of the Registrant's Common Stock contained in the Company's Registration Statement on Form 8-A (File No. 001-34180) filed with the Commission on February 7, 2011, pursuant to Section 12(b) of the Securities Exchange Act of 1934, as amended (the "Exchange Act"), including any amendment or report filed for the purpose of updating such description.

All documents filed by the Registrant pursuant to Sections 13(a), 13(c), 14 and 15(d) of the Exchange Act on or after the date of this Registration Statement and prior to the filing of a post-effective amendment to this Registration Statement that indicates that all securities offered have been sold or that deregisters all securities then remaining unsold shall be deemed to be incorporated by reference in this Registration Statement and to be part hereof from the date of filing of such documents.

Any statement contained in a document incorporated or deemed to be incorporated by reference herein shall be deemed to be modified or superseded for purposes of this Registration Statement to the extent that a statement contained herein or in any other subsequently filed document which also is or is deemed to be incorporated by reference herein modifies or supersedes such statement. Any such statement so modified or superseded shall not be deemed, except as so modified or superseded, to constitute a part of this Registration Statement.

Item 4. Description of Securities.

Not applicable.

Item 5. Interests of Named Experts and Counsel.

Not applicable.

Item 6. Indemnification of Directors and Officers.

Section 145 of the Delaware General Corporation Law authorizes a corporation's board of directors to grant, and authorizes a court to award, indemnity to officers, directors and other corporate agents.

As permitted by Section 102(b)(7) of the Delaware General Corporation Law, the registrant's certificate of incorporation includes provisions that eliminate the personal liability of its directors and officers for monetary damages for breach of their fiduciary duty as directors and officers.

In addition, as permitted by Section 145 of the Delaware General Corporation Law, the bylaws of the registrant provide that:

- The registrant shall indemnify its directors and officers for serving the registrant in those capacities or for serving other business enterprises at the registrant's request, to the fullest extent permitted by Delaware law. Delaware law provides that a corporation may indemnify such person if such person acted in good faith and in a manner such person reasonably believed to be in or not opposed to the best interests of the registrant and, with respect to any criminal proceeding, had no reasonable cause to believe such person's conduct was unlawful.
- The registrant may, in its discretion, indemnify employees and agents in those circumstances where indemnification is not required by law.
- The registrant is required to advance expenses, as incurred, to its directors and officers in connection with defending a proceeding, except that such director or officer shall undertake to repay such advances if it is ultimately determined that such person is not entitled to indemnification.
- The registrant will not be obligated pursuant to the bylaws to indemnify a person with respect to proceedings initiated by that person, except with respect to proceedings authorized by the registrant's Board of Directors or brought to enforce a right to indemnification.
- The rights conferred in the bylaws are not exclusive, and the registrant is authorized to enter into indemnification agreements with its directors, officers, employees and agents and to obtain insurance to indemnify such persons.
- The registrant may not retroactively amend the bylaw provisions to reduce its indemnification obligations to directors, officers, employees and agents.

The registrant's policy is to enter into separate indemnification agreements with each of its directors and officers that provide the maximum indemnity allowed to directors and executive officers by Section 145 of the Delaware General Corporation Law and also provides for certain additional procedural protections. The registrant also maintains directors and officers insurance to insure such persons against certain liabilities.

These indemnification provisions and the indemnification agreements entered into between the registrant and its officers and directors may be sufficiently broad to permit indemnification of the registrant's officers and directors for liabilities (including reimbursement of expenses incurred) arising under the Securities Act.

See also Registrant's undertakings in Section 9 of this Registration Statement.

Item 7. Exemption from Registration Claimed.

Not applicable.

Item 8. Exhibits.

<u>Exhibit Number</u>	<u>Description</u>
4.1*	Specimen common stock certificate of Registrant (which is incorporated herein by reference to Exhibit 4.1 to the Registrant's Registration Statement on Form S-1 (Registration No. 333-170965), as amended ("Registrant's Form S-1"))
4.2*	1999 Stock Option Plan and forms of agreements thereunder (which are incorporated herein by reference to Exhibits 10.2 and 10.2A to the Registrant's Form S-1)
4.3*	2009 Equity Incentive Plan and forms of agreements thereunder (which are incorporated herein by reference to Exhibits 10.3 and 10.3A to the Registrant's Form S-1)
4.4*	2011 Equity Incentive Plan and forms of agreement thereunder (which are incorporated herein by reference to Exhibit 10.4 and 10.4A to the Registrant's Form S-1)
5.1	Opinion of Wilson Sonsini Goodrich & Rosati, Professional Corporation
23.1	Consent of Independent Registered Public Accounting Firm
23.2	Consent of Wilson Sonsini Goodrich & Rosati, Professional Corporation (contained in Exhibit 5.1 hereto)
24.1	Power of Attorney (contained on signature page hereto)

* Incorporated by reference to exhibits filed with the Registrant's Registration Statement on Form S-1, as amended (Registration No. 333-170965), as declared effective on February 9, 2011.

Item 9. Undertakings.

A. The undersigned Registrant hereby undertakes:

(1) To file, during any period in which offers or sales are being made, a post-effective amendment to this registration statement:

(i) To include any prospectus required by Section 10(a)(3) of the Securities Act of 1933;

(ii) To reflect in the prospectus any facts or events arising after the effective date of the registration statement (or the most recent post-effective amendment thereof) which, individually or in the aggregate, represent a fundamental change in the information set forth in the registration statement. Notwithstanding the foregoing, any increase or decrease in volume of securities offered (if the total dollar value of securities offered would not exceed that which was registered) and any deviation from the low or high end of the estimated maximum offering range may be reflected in the form of prospectus filed with the Commission pursuant to Rule 424(b) if, in the aggregate, the changes in volume and price represent no more than a 20 percent change in the maximum aggregate offering price set forth in the "Calculation of Registration Fee" table in the effective registration statement;

(iii) To include any material information with respect to the plan of distribution not previously disclosed in the registration statement or any material change to such information in the registration statement.

Provided, however, that paragraphs (A)(1)(i) and (A)(1)(ii) do not apply if the information required to be included in a post-effective amendment by those paragraphs is contained in periodic reports filed with or furnished to the Commission by the Registrant pursuant to Section 13 or Section 15(d) of the Securities Exchange Act of 1934 that are incorporated by reference in this registration statement.

(2) That, for the purpose of determining any liability under the Securities Act of 1933, each such post-effective amendment shall be deemed to be a new registration statement relating to the securities offered therein, and the offering of such securities at that time shall be deemed to be the initial bona fide offering thereof.

(3) To remove from registration by means of a post-effective amendment any of the securities being registered which remain unsold at the termination of the offering.

B. The undersigned Registrant hereby undertakes that, for purposes of determining any liability under the Securities Act of 1933, each filing of the Registrant's annual report pursuant to Section 13(a) or Section 15(d) of the Securities Exchange Act of 1934 (and, where applicable, each filing of an employee benefit plan's annual report pursuant to Section 15(d) of the Securities Exchange Act of 1934) that is incorporated by reference in the registration statement shall be deemed to be a new registration statement relating to the securities offered therein, and the offering of such securities at that time shall be deemed to be the initial bona fide offering thereof.

C. Insofar as indemnification for liabilities arising under the Securities Act of 1933 may be permitted to directors, officers and controlling persons of the Registrant pursuant to the foregoing provisions, or otherwise, the Registrant has been advised that in the opinion of the Securities and Exchange Commission such indemnification is against public policy as expressed in the Act and is, therefore, unenforceable. In the event that a claim for indemnification against such liabilities (other than the payment by the Registrant of expenses incurred or paid by a director, officer or controlling person of the Registrant in the successful defense of any action, suit or proceeding) is asserted by such director, officer or controlling person in connection with the securities being registered, the Registrant will, unless in the opinion of its counsel the matter has been settled by controlling precedent, submit to a court of appropriate jurisdiction the question whether such indemnification by it is against public policy as expressed in the Securities Act of 1933 and will be governed by the final adjudication of such issue.

SIGNATURES

Pursuant to the requirements of the Securities Act of 1933, as amended, the Registrant certifies that it has reasonable grounds to believe that it meets all of the requirements for filing on Form S-8 and has duly caused this Registration Statement to be signed on its behalf by the undersigned, thereunto duly authorized, in the City of Palo Alto, State of California, on February 11, 2011.

FLUIDIGM CORPORATION

By: /s/ Gajus V. Worthington
Gajus V. Worthington
President and Chief Executive Officer

POWER OF ATTORNEY

KNOW ALL PERSONS BY THESE PRESENTS, that each person whose signature appears below hereby constitutes and appoints Gajus V. Worthington and Vikram Jog and each of them, as his true and lawful attorney in fact and agent with full power of substitution, for him in any and all capacities, to sign any and all amendments to this Registration Statement on Form S-8 (including post effective amendments), and to file the same, with all exhibits thereto and other documents in connection therewith, with the Securities and Exchange Commission, granting unto said attorney in fact, proxy and agent full power and authority to do and perform each and every act and thing requisite and necessary to be done in connection therewith, as fully for all intents and purposes as he might or could do in person, hereby ratifying and confirming all that said attorney in fact, proxy and agent, or his substitute, may lawfully do or cause to be done by virtue hereof.

Pursuant to the requirements of the Securities Act of 1933, this Registration Statement on Form S-8 has been signed by the following persons in the capacities and on the dates indicated.

<u>Signature</u>	<u>Title</u>	<u>Date</u>
<u>/s/ Gajus V. Worthington</u> Gajus V. Worthington	President, Chief Executive Officer and Director (Principal Executive Officer)	February 11, 2011
<u>/s/ Vikram Jog</u> Vikram Jog	Chief Financial Officer (Principal Accounting and Financial Officer)	February 11, 2011
<u>/s/ Jeremy Loh</u> Jeremy Loh	Director	February 11, 2011
<u>/s/ Samuel Colella</u> Samuel Colella	Director	February 11, 2011
<u>/s/ Kenneth Nussbacher</u> Kenneth Nussbacher	Director	February 11, 2011
<u>/s/ Raymond Whitaker</u> Raymond Whitaker	Director	February 11, 2011
<u>/s/ John A. Young</u> John A. Young	Director	February 11, 2011

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23.1	Consent of Independent Registered Public Accounting Firm
23.2	Consent of Wilson Sonsini Goodrich & Rosati, Professional Corporation (contained in Exhibit 5.1 hereto)
24.1	Power of Attorney (contained on signature page hereto)

* Incorporated by reference to exhibits filed with the Registrant's Registration Statement on Form S-1, as amended (Registration No. 333-170965), as declared effective on February 9, 2011.

OPINION OF WILSON SONSINI GOODRICH & ROSATI,
PROFESSIONAL CORPORATION

February 11, 2011

Fluidigm Corporation
7000 Shoreline Court, Suite 100
South San Francisco, California 94080

Re: Registration Statement on Form S-8

Ladies and Gentlemen:

We have examined the Registration Statement on Form S-8 (the "Registration Statement") to be filed by Fluidigm Corporation, a Delaware corporation, with the Securities and Exchange Commission on or about the date hereof, in connection with the registration under the Securities Act of 1933, as amended, of an aggregate of 3,463,809 shares of your common stock, par value \$0.001 per share (the "Future Issuance Shares"), reserved for future issuance pursuant to the 2011 Equity Incentive Plan, 2009 Equity Incentive Plan and 1999 Stock Plan (the "Plans"). As your legal counsel, we have reviewed the actions proposed to be taken by you in connection with the issuance and sale of the Future Issuance Shares to be issued under the Plans.

It is our opinion that the Future Issuance Shares, when issued and sold in the manner referred to in the Plans and pursuant to the agreements that accompany the Plans, will be legally and validly issued, fully paid and nonassessable.

We consent to the use of this opinion as an exhibit to the Registration Statement, and further consent to the use of our name wherever appearing in the Registration Statement and any amendments thereto.

Very truly yours,

WILSON SONSINI GOODRICH & ROSATI, P.C.

/s/ Wilson Sonsini Goodrich & Rosati, P.C.

CONSENT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

We consent to the incorporation by reference in the Registration Statement (Form S-8) pertaining to the 1999 Stock Option Plan, 2009 Equity Incentive Plan, and 2011 Equity Plan of Fluidigm Corporation of our report dated December 3, 2010, except for the last paragraph of Note 1 as to which the date is February 3, 2011, with respect to the consolidated financial statements of Fluidigm Corporation for the year ended December 31, 2009 included in the Registration Statement on Form S-1, as amended (File No. 333-170965), filed with the Securities and Exchange Commission.

/s/ Ernst & Young LLP

Palo Alto, California
February 9, 2011