

**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)

**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:*

**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, under the 2011 Equity Incentive Plan	812,857(2)	\$15.86(3)	\$12,891,912.02	\$1,477.42

- (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") 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) Represents shares of the Registrant's common stock that were automatically added to the shares authorized for issuance under the 2011 Plan on January 1, 2012 pursuant to an "evergreen" provision contained in the 2011 Plan. Pursuant to such provision, on January 1st of each fiscal year beginning with the 2012 fiscal year, the number of shares available for issuance under the 2011 Plan is automatically increased in an amount equal to the least of (i) 1,000,000 shares of the Registrant's common stock, (ii) four percent (4%) of the number of shares of the Registrant's common stock outstanding on December 31st of the preceding fiscal year, or (iii) such number of shares of the Registrant's common stock determined by the Registrant's board of directors.
- (3) Estimated in accordance with paragraphs (c) and (h) of Rule 457 solely for the purpose of calculating the total registration fee. Computation based on the average of the high and low prices of the Registrant's common stock as reported on the NASDAQ Global Market on March 21, 2012.

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**INCORPORATION BY REFERENCE OF CONTENTS OF**

**REGISTRATION STATEMENT ON FORM S-8 NO. 333-172206**

This Registration Statement is being filed for the purpose of increasing the number of securities of the same class as other securities for which a Registration Statement on Form S-8 relating to the same benefit plan is effective. The Registrant previously registered shares of its common stock for issuance under the 2011 Plan under a Registration Statement on Form S-8 filed with the Securities and Exchange Commission on February 11, 2011 (File No. 333-172206). Pursuant to General Instruction E to Form S-8, this Registration Statement hereby incorporates by reference the contents of the Registration Statement referenced above.

## 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 South San Francisco, State of California, on March 26, 2012.

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)	March 26, 2012
<u>/s/ Vikram Jog</u> Vikram Jog	Chief Financial Officer (Principal Accounting and Financial Officer)	March 26, 2012
<u>/s/ Samuel Colella</u> Samuel Colella	Director	March 26, 2012
<u>/s/ Evan Jones</u> Evan Jones	Director	March 26, 2012
<u>/s/ Patrick S. Jones</u> Patrick S. Jones	Director	March 26, 2012
<u>/s/ Kenneth Nussbacher</u> Kenneth Nussbacher	Director	March 26, 2012
<u>/s/ John A. Young</u> John A. Young	Director	March 26, 2012

## INDEX TO EXHIBITS

<u>Exhibit Number</u>	<u>Description</u>
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)

OPINION OF WILSON SONSINI GOODRICH & ROSATI,  
PROFESSIONAL CORPORATION

March 26, 2012

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 812,857 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 (the "Plan"). 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 Plan.

It is our opinion that the Future Issuance Shares, when issued and sold in the manner referred to in the Plan and pursuant to the agreements that accompany the Plan, 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 &amp; ROSATI, P.C.

/s/ Wilson Sonsini Goodrich &amp; 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 Fluidigm Corporation 2011 Equity Incentive Plan of our report dated March 23, 2012, with respect to the consolidated financial statements and schedule of Fluidigm Corporation included in its Annual Report (Form 10-K) for the year ended December 31, 2011, filed with the Securities and Exchange Commission.

/s/ Ernst & Young LLP

March 23, 2012  
Redwood City, California