

SECURITIES AND EXCHANGE COMMISSION

Washington, D.C. 20549

**FORM S-1
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)**3826**
(Primary Standard Industrial
Classification Code Number)**77-0513190**
(I.R.S. Employer
Identification Number)**7000 Shoreline Court, Suite 100
South San Francisco, CA 94080
(650) 266-6000**

(Address, including zip code, and telephone number, including area code, of Registrant's principal executive offices)

**Gajus V. Worthington
President and Chief Executive Officer
7000 Shoreline Court, Suite 100
South San Francisco, CA 94080
(650) 266-6000**

(Name, address, including zip code, and telephone number, including area code, of agent for service)

**David J. Segre
Robert F. Kornegay
Asaf H. Kharal
Wilson Sonsini Goodrich & Rosati P.C.
650 Page Mill Road
Palo Alto, CA 94304
Telephone: (650) 493-9300
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William M. Smith
Vice President, Legal Affairs
and General Counsel
7000 Shoreline Court, Suite 100
South San Francisco, CA 94080
Telephone: (650) 266-6000
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B. Shayne Kennedy
Latham & Watkins LLP
650 Town Center Drive, 20th Floor
Costa Mesa, CA 92626
Telephone: (714) 540-1235
Telecopy: (714) 755-8290****Approximate date of commencement of proposed sale to the public:** As soon as practicable after the effective date of this Registration Statement.If any of the securities being registered on this form are to be offered on a delayed or continuous basis pursuant to Rule 415 under the Securities Act of 1933, as amended (the "Securities Act"), check the following box. If this form is filed to register additional securities for an offering pursuant to Rule 462(b) under the Securities Act, please check the following box and list the Securities Act registration statement number of the earlier effective registration statement for the same offering. 333-170965If this form is a post-effective amendment filed pursuant to Rule 462(c) under the Securities Act, check the following box and list the Securities Act registration statement number of the earlier effective registration statement for the same offering. If this form is a post-effective amendment filed pursuant to Rule 462(d) under the Securities Act, check the following box and list the Securities Act registration statement number of the earlier effective registration statement for the same offering. If delivery of the prospectus is expected to be made pursuant to Rule 434, check the following box. **CALCULATION OF REGISTRATION FEE**

Title of Each Class of Securities to be Registered	Proposed Maximum Aggregate Offering Price (1)	Amount of Registration Fee (2)
Common Stock \$0.001 par value	\$43,132.50	\$5.01

(1) Fee calculated pursuant to Rule 457(o) and Section 6(b) of the Securities Act of 1933, as amended.

(2) The Registrant previously registered an aggregate of \$86,250,000 of Common Stock on a Registration Statement on Form S-1 (File No. 333-170965), as amended, which was declared effective on February 9, 2011 and for which a filing fee of \$6,149.63 was previously paid.

This registration statement shall become effective upon filing with the Commission in accordance with Rule 462(b) of the Securities Act of 1933, as amended.

INCORPORATION OF CERTAIN INFORMATION BY REFERENCE

This Registration Statement is being filed with the Securities and Exchange Commission (the "Commission") pursuant to Rule 462(b) under the Securities Act of 1933, as amended. This Registration Statement relates to the public offering of common stock of the Registrant contemplated by the Registration Statement on Form S-1, as amended (File No. 333-170965), originally filed by the Registrant on December 3, 2010, as amended (the "Prior Registration Statement"), and is being filed for the sole purpose of registering additional securities of the same class as were included in the Prior Registration Statement. The contents of the Prior Registration Statement and all exhibits thereto are hereby incorporated by reference.

SIGNATURES

Pursuant to the requirements of the Securities Act of 1933, the registrant 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 the 10th day of February, 2011.

FLUIDIGM CORPORATION

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

Pursuant to the requirements of the Securities Act of 1933, this Registration Statement has been signed by the following persons in the capacities indicated on the 10th day of February, 2011:

<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 10, 2011
<u>/s/ Vikram Jog</u> Vikram Jog	Chief Financial Officer (Principal Accounting and Financial Officer)	February 10, 2011
<u>*</u> Jeremy Loh	Director	February 10, 2011
<u>*</u> Samuel Colella	Director	February 10, 2011
<u>*</u> Kenneth Nussbacher	Director	February 10, 2011
<u>*</u> Raymond Whitaker	Director	February 10, 2011
<u>*</u> John A. Young	Director	February 10, 2011

By: /s/ Gajus V. Worthington
Gajus V. Worthington
Attorney-in-Fact

By: /s/ Vikram Jog
Vikram Jog
Attorney-in-Fact

The Power of Attorney granted by each director was filed as an exhibit to the Prior Registration Statement.

EXHIBIT INDEX

<u>Exhibit Number</u>	<u>Description</u>
5.1	Opinion of Wilson Sonsini Goodrich & Rosati, Professional Corporation
23.1	Consent of Ernst & Young LLP, Independent Registered Public Accounting Firm
23.2	Consent of Wilson Sonsini Goodrich & Rosati, Professional Corporation (included in Exhibit 5.1)
24.1*	Power of Attorney

* Incorporated by reference from the Prior Registration Statement.

February 10, 2011

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

Re: Registration Statement on Form S-1

Ladies and Gentlemen:

This opinion is furnished to you in connection with the Registration Statement on Form S-1 (the "Registration Statement") filed by Fluidigm Corporation (the "Company") with the Securities and Exchange Commission on February 10, 2011 pursuant to Rule 462(b) promulgated under the Securities Act of 1933, as amended (the "Securities Act"), in connection with the registration under the Securities Act of 3,195 shares of the Company's Common Stock, \$0.001 par value per share (the "Shares"). The Shares will be sold by the Company pursuant to an underwriting agreement entered into by and among the Company and the underwriters (the "Underwriting Agreement"), substantially in the form filed as an exhibit to the Registration Statement on Form S-1 (File No. 333-170965) (the "Prior Registration Statement"). The Prior Registration Statement is incorporated by reference into the Registration Statement pursuant to Rule 462(b) under the Securities Act. This opinion is in addition to our opinion that was filed as Exhibit 5.1 to the Company's Amendment No. 6 to the Prior Registration Statement.

We are acting as counsel for the Company in connection with the sale by the Company of the Shares. In such capacity, we have examined originals or copies, certified or otherwise identified to our satisfaction, of such documents, corporate records, certificates of public officials and other instruments as we have deemed necessary for the purposes of rendering this opinion. In our examination, we have assumed the genuineness of all signatures, the authenticity of all documents submitted to us as originals, the conformity with the originals of all documents submitted to us as copies, the authenticity of the originals of such documents and the legal competence of all signatories to such documents.

We express no opinion herein as to the laws of any state or jurisdiction other than the General Corporation Law of the State of Delaware and the federal laws of the United States of America.

On the basis of the foregoing, we are of the opinion, that the Shares to be issued and sold by the Company have been duly authorized and, when such Shares are issued and paid for in accordance with the terms of the Underwriting Agreement, will be validly issued, fully paid and nonassessable.

We consent to the use of this opinion as an exhibit to the Registration Statement, and we consent to the reference of our name under the caption "Legal Matters" in the prospectus forming part of the Registration Statement.

Very truly yours,

WILSON SONSINI GOODRICH & ROSATI
Professional Corporation

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

CONSENT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

We consent to the incorporation by reference in this Registration Statement on Form S-1 filed pursuant to Rule 462(b) of the Securities Act of 1933, of the reference to our firm under the caption "Experts" and of our report dated December 3, 2010, except for last paragraph of Note 1, as to which the date is February 3, 2011, relating to the consolidated financial statements of Fluidigm Corporation, included in the Registration Statement (Form S-1 No. 333-170965) and related Prospectus of Fluidigm Corporation for the registration of 3,195 shares of its common stock.

/s/ Ernst & Young LLP

Palo Alto, California
February 9, 2011