

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

**FORM S-1
REGISTRATION STATEMENT**

*Under
The Securities Act of 1933*

Avalanche Biotechnologies, Inc.

(Exact name of registrant as specified in its charter)

Delaware
(State or other jurisdiction of
incorporation or organization)

2836
(Primary Standard Industrial
Classification Code Number)
1035 O'Brien Drive, Suite A
Menlo Park, CA 94025
(650) 272-6269

20-5258327
(I.R.S. Employer
Identification Number)

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

Thomas W. Chalberg, Jr., Ph.D.
President and Chief Executive Officer
Avalanche Biotechnologies, Inc.
1035 O'Brien Drive, Suite A
Menlo Park, CA 94025
(650) 272-6269

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

Copies to:

Alan C. Mendelson, Esq.
Robert W. Phillips, Esq.
Latham & Watkins LLP
140 Scott Drive
Menlo Park, CA 94025
(650) 328-4600

Hans P. Hull
Senior Vice President
Legal and Corporate Development
Avalanche Biotechnologies, Inc.
1035 O'Brien Drive, Suite A
Menlo Park, CA 94025
(650) 272-6269

Eric W. Blanchard, Esq.
Covington & Burling LLP
620 Eighth Avenue
New York, NY 10018
(212) 841-1000

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, 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. 333-197133

If 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.

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

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

Accelerated filer

Smaller reporting company

CALCULATION OF REGISTRATION FEE

| TITLE OF EACH CLASS OF SECURITIES TO BE REGISTERED | AMOUNT TO BE REGISTERED(1) | PROPOSED MAXIMUM AGGREGATE OFFERING PRICE PER SHARE(2) | PROPOSED MAXIMUM AGGREGATE OFFERING PRICE (2) | AMOUNT OF REGISTRATION FEE |
|---|----------------------------------|--|--|-------------------------------|
| Common Stock, \$0.0001 par value per share | 690,000 | \$17.00 | \$11,730,000 | \$1,511 (2) |

- (1) Represents only the additional number of shares being registered. Does not include the securities that the Registrant previously registered on the Registration Statement on Form S-1 (File No. 333-197133).
- (2) The registration fee is calculated in accordance with Rule 457(a) under the Securities Act of 1933, as amended, based on the proposed maximum aggregate offering price. The registrant previously registered securities at an aggregate offering price not to exceed \$105,570,000 on a Registration Statement on Form S-1 (File No. 333-197133), which was declared effective by the Securities and Exchange Commission on July 30, 2014. In accordance with Rule 462(b) under the Securities Act, an additional amount of securities having a proposed maximum aggregate offering price of \$11,730,000 is hereby registered, which includes shares issuable upon the exercise of the underwriters' option to purchase additional shares.

The Registration Statement shall become effective upon filing in accordance with Rule 462(b) promulgated under the Securities Act of 1933, as amended.

Explanatory note and incorporation by reference

This Registration Statement is being filed pursuant to Rule 462(b) under the Securities Act of 1933, as amended (the "**Securities Act**"). The contents of the Registration Statement on Form S-1, as amended (File No. 333-197133) filed by Avalanche Biotechnologies, Inc. with the Securities and Exchange Commission (the "**Commission**") pursuant to the Securities Act, which was declared effective by the Commission on July 30, 2014, are incorporated by reference into this Registration Statement.

The required opinion and consents are listed on an Exhibit Index attached hereto and filed herewith.

EXHIBIT INDEX

| EXHIBIT NUMBER | DESCRIPTION |
|-----------------------|--|
| 5.1 | Opinion of Latham & Watkins LLP. |
| 23.1 | Consent of independent registered public accounting firm. |
| 23.2 | Consent of Latham & Watkins LLP (included in Exhibit 5.1). |
| 24.1* | Power of Attorney. |

* Previously filed on the signature page to the Registrant's Registration Statement on Form S-1, as amended (File No. 333-197133), originally filed with the Securities and Exchange Commission on June 30, 2013 and incorporated by reference herein.

140 Scott Drive
 Menlo Park, California 94025
 Tel: +1.650.328.4600 Fax: +1.650.463.2600
 www.lw.com

LATHAM & WATKINS LLP

July 30, 2014

FIRM / AFFILIATE OFFICES

| | |
|-------------|------------------|
| Abu Dhabi | Milan |
| Barcelona | Moscow |
| Beijing | Munich |
| Boston | New Jersey |
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| Dubai | Riyadh |
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| London | Singapore |
| Los Angeles | Tokyo |
| Madrid | Washington, D.C. |

Avalanche Biotechnologies, Inc.
 1035 O'Brien Drive, Suite A
 Menlo Park, CA 94025

Re: Form S-1 Registration Statement File No. 333-197133 and Registration Statement filed pursuant to Rule 462(b) promulgated under the Securities Act of 1933, as amended

Ladies and Gentlemen:

We have acted as special counsel to Avalanche Biotechnologies, Inc., a Delaware corporation (the "**Company**"), in connection with the registration of shares of the Company's common stock, \$0.0001 par value per share (the "**Common Stock**"), pursuant to a registration statement on Form S-1 under the Securities Act of 1933, as amended (the "**Act**"), filed with the Securities and Exchange Commission (the "**Commission**") on June 30, 2014 (Registration No. 333-197133) (as amended, the "**Initial Registration Statement**") and a registration statement relating to the Initial Registration Statement filed pursuant to Rule 462(b) promulgated under the Act (the "**Post-Effective Amendment**") and together with the Initial Registration Statement, the "**Registration Statement**"). The Post-Effective Amendment relates to the registration of 690,000 shares of Common Stock of the Company (the "**Additional Shares**").

This opinion is being furnished in connection with the requirements of Item 601(b)(5) of Regulation S-K under the Act, and no opinion is expressed herein as to any matter pertaining to the contents of the Registration Statement or related prospectus (the "**Prospectus**"), other than as expressly stated herein with respect to the issue of the Additional Shares.

As such counsel, we have examined such matters of fact and questions of law as we have considered appropriate for purposes of this letter. With your consent, we have relied upon certificates and other assurances of officers of the Company and others as to factual matters without having independently verified such factual matters. We are opining herein as to the General Corporation Law of the State of Delaware (the "**DGCL**"), and we express no opinion with respect to any other laws.

LATHAM & WATKINS^{LLP}

Subject to the foregoing and the other matters set forth herein, it is our opinion that, as of the date hereof, when the Additional Shares shall have been duly registered on the books of the transfer agent and registrar therefor in the name or on behalf of the purchasers and have been issued by the Company against payment therefor (not less than par value) in the circumstances contemplated by the form of the underwriting agreement filed as an exhibit to the Initial Registration Statement, the issuance and sale of the Additional Shares will have been authorized by all necessary corporate action of the Company and the Additional Shares will be validly issued, fully paid and nonassessable. In rendering the foregoing opinion, we have assumed that the Company will comply with all applicable notice requirements regarding uncertificated shares provided in the DGCL.

This opinion is for your benefit in connection with the Registration Statement and may be relied upon by you and by persons entitled to rely upon it pursuant to the applicable provisions of the Act. We consent to your filing this opinion as an exhibit to the Registration Statement and to the reference to our firm in the Prospectus under the heading "Legal Matters." In giving such consent, we do not thereby admit that we are in the category of persons whose consent is required under Section 7 of the Act or the rules and regulations of the Commission thereunder.

Very truly yours,

/s/ Latham & Watkins LLP

CONSENT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

We consent to the incorporation by reference in this Registration Statement on Form S-1 of our report dated May 30, 2014 relating to the consolidated financial statements of Avalanche Biotechnologies, Inc. and its subsidiary (collectively, the "Company") as of and for the years ended December 31, 2013 and 2012, and for the period from July 17, 2006 (date of inception) to December 31, 2013 (which report expresses an unqualified opinion on the consolidated financial statements and includes an explanatory paragraph referring to the Company being in the development stage as of December 31, 2013) appearing in the Prospectus, which is part of Registration Statement No. 333-197133 on Form S-1, as amended, and to the reference to us under the heading "Experts" in such Prospectus.

/s/ Deloitte and Touche LLP

San Jose, California
July 30, 2014