
Section 1: S-8 (S-8)

As filed with the Securities and Exchange Commission on February 16, 2017

Registration No.

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

Form S-8
REGISTRATION STATEMENT
UNDER
THE SECURITIES ACT OF 1933

MIRAGEN THERAPEUTICS, INC.

(Exact name of registrant as specified in its charter)

Delaware
(State or other jurisdiction of
incorporation or organization)

**6200 Lookout Road
Boulder, Colorado 80301
(303) 531-5952**
(Address of Principal Executive Offices)

47-1187261
(I.R.S. Employer
Identification Number)

**MIRAGEN THERAPEUTICS, INC. 2008 EQUITY INCENTIVE PLAN
MIRAGEN THERAPEUTICS, INC. 2016 EQUITY INCENTIVE PLAN
MIRAGEN THERAPEUTICS, INC. 2016 EMPLOYEE STOCK PURCHASE PLAN**
(Full title of the plans)

William S. Marshall
President and Chief Executive Officer
6200 Lookout Road
Boulder, Colorado 80301
(303) 531-5952
(Name and address of agent for service)

Copies to:
Brent D. Fassett
Cooley LLP
380 Interlocken Crescent, Suite 900
Broomfield, CO 80021
(720) 566-4000

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, \$0.01 par value per share				
Miragen Therapeutics, Inc. 2008 Equity Incentive Plan (issued)	2,311,015(2)	\$1.49(3)	\$3,443,412.35	\$399.09
Miragen Therapeutics, Inc. 2016 Equity Incentive Plan (issued)	641,200(4)	\$11.33(5)	\$7,264,796.00	\$841.99
Miragen Therapeutics, Inc. 2016 Equity Incentive Plan (available)	1,040,094(6)	\$12.21(7)	\$12,699,547.74	\$1,471.88
Miragen Therapeutics, Inc. 2016 Employee Stock Purchase Plan (available)	210,162	\$12.21(7)	\$2,566,078.02	\$297.41

- (1) Pursuant to Rule 416(a) promulgated under the Securities Act of 1933, as amended, (the "Securities Act") this Registration Statement shall also cover any additional shares of Registrant's common stock (the "Common Stock") that become issuable under the plans set forth herein by reason of any stock dividend, stock split, recapitalization, or other similar transaction effected that results in an increase to the number of outstanding shares of Registrant's Common Stock, as applicable.
- (2) Represents shares of Common Stock subject to outstanding stock options that are outstanding as of the date this Registration Statement is being filed.
- (3) 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 outstanding stock awards granted pursuant to the Miragen Therapeutics, Inc. 2008 Equity Incentive Plan.
- (4) Represents shares of Common Stock subject to stock options that are outstanding as of the date this Registration Statement is being filed.
- (5) 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 outstanding stock awards granted pursuant to the Miragen Therapeutics, Inc. 2016 Equity Incentive Plan.
- (6) Represents shares of Common Stock available for grant as of the date this Registration Statement is filed.
- (7) Estimated in accordance with Rules 457(c) and (h) solely for the purpose of calculating the registration fee on the basis of \$12.21 per share, the average of the high and low prices of the Common Stock as reported on The NASDAQ Capital Market on February 14, 2017, a date that is within five business days prior to the date on which this Registration Statement is being filed.

EXPLANATORY NOTE

On February 13, 2017, Miragen Therapeutics, Inc., formerly known as Signal Genetics, Inc. (the “Registrant,” “we,” “us” or “our”), completed its business combination with what was then known as Miragen Therapeutics, Inc. (“Private Miragen”) in accordance with the terms of the Agreement and Plan of Merger and Reorganization, dated as of October 31, 2016, by and among the Registrant, Signal Merger Sub, Inc. (“Merger Sub”) and Private Miragen (the “Merger Agreement”), pursuant to which Merger Sub merged with and into Private Miragen, with Private Miragen surviving as a wholly-owned subsidiary of the Registrant (the “Merger”). Pursuant to the Merger Agreement, each option to purchase shares of Private Miragen common stock that was outstanding and unexercised immediately prior to the effective time of the Merger under the Miragen Therapeutics, Inc. 2008 Equity Incentive Plan (the “2008 Plan”), whether or not vested, was converted into and became an option to purchase shares of the Registrant’s Common Stock and the Registrant assumed the 2008 Plan.

The Registrant is also filing this Registration Statement on Form S-8 for the purpose of registering an additional (a) 1,681,294 shares of Common Stock issuable to eligible persons under the Miragen Therapeutics, Inc. 2016 Equity Incentive Plan, and (b) 210,162 shares of Common Stock issuable to eligible persons under the Miragen Therapeutics, Inc. 2016 Employee Stock Purchase Plan.

PART II

ITEM 3. INCORPORATION OF CERTAIN DOCUMENTS BY REFERENCE

The following documents filed by the Registrant with the Securities and Exchange Commission (the “SEC”) are incorporated by reference into this Registration Statement:

(a) The Registrant’s Annual Report on Form 10-K (File No. 001-36483) for the fiscal year ended December 31, 2015, filed with the SEC on March 21, 2016, as amended (“Form 10-K”).

(b) The Registrant’s prospectus filed on December 2, 2016 pursuant to Rule 424(b) under the Securities Act, relating to the Registration Statement on Form S-4 deemed effective January 9, 2017, as amended (File No. 333-214893), which contains audited financial statements of Private Miragen as of December 31, 2015 and 2014, the two latest fiscal years for which such statements have been filed, and pro forma financial information for the nine months ended September 30, 2016, including all material incorporated by reference therein.

(c) All other reports filed by the Registrant pursuant to Section 13(a) or 15(d) of the Securities Exchange Act of 1934, as amended (the “Exchange Act”) since the end of the fiscal year ended December 31, 2015.

(d) The description of the Registrant’s Common Stock contained in the Registrant’s Registration Statement on Form 8-A (File No. 001-36483) filed with the SEC on June 6, 2014, including any other amendments or reports filed for the purposes of updating this description.

(e) All other reports and documents subsequently filed by the Registrant pursuant to Sections 13(a), 13(c), 14 and 15(d) of the Exchange Act (other than Current Reports furnished under Item 2.02 or Item 7.01 of Form 8-K and exhibits furnished on such form that relate to such items) on or after the date of this Registration Statement and prior to the filing of a post-effective amendment to this Registration Statement which indicates that all securities offered have been sold or which deregisters all securities then remaining unsold, shall be deemed to be incorporated by reference herein and to be a part of this Registration Statement from the date of the filing of such reports and 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 subsequently filed document that also 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 court to award, or a corporation's board of directors to grant, indemnity to directors and officers in terms sufficiently broad to permit such indemnification under certain circumstances for liabilities, including reimbursement for expenses incurred, arising under the Securities Act.

The Registrant's amended and restated certificate of incorporation and amended and restated bylaws provide that the Registrant will indemnify its directors and officers, and may indemnify its employees and other agents, to the fullest extent permitted by the Delaware General Corporation Law. However, Delaware law prohibits the Registrant's certificate of incorporation from limiting the liability of the Registrant's directors for the following:

- any breach of the director's duty of loyalty to us or to our stockholders;
- acts or omissions not in good faith or that involve intentional misconduct or a knowing violation of law;
- unlawful payment of dividends or unlawful stock repurchases or redemptions; and
- any transaction from which the director derived an improper personal benefit.

The Registrant has entered into agreements to indemnify each of its directors and officers. These agreements provide for the indemnification of such persons for all reasonable expenses and liabilities incurred in connection with any action or proceeding brought against them by reason of the fact that they are or were serving in such capacity.

The Registrant may maintain insurance policies that indemnify its directors and officers against various liabilities arising under the Securities Act and the Exchange Act that might be incurred by any director or officer in his capacity as such. The Registrant has obtained director and officer liability insurance to cover liabilities directors and officers may incur in connection with their services to the Registrant.

ITEM 7. EXEMPTION FROM REGISTRATION CLAIMED.

Not applicable.

ITEM 8. EXHIBITS

<u>Exhibit No.</u>	<u>Exhibit Description</u>	<u>Schedule / Form</u>	<u>File Number</u>	<u>Exhibit</u>	<u>Filing Date</u>
4.1	Certificate of Incorporation of Registrant	10-Q	001-36483	3.1	August 14, 2014
4.2	Certificate of Amendment of Certificate of Incorporation of Registrant	8-K	001-36483	3.1	February 13, 2017
4.3	Certificate of Amendment of Certificate of Incorporation of Registrant	8-K	001-36483	3.2	February 13, 2017
4.4	Amended and Restated Bylaws of Registrant	10-Q	001-36483	3.1	August 15, 2016
4.5	Amendment to Bylaws of Registrant	8-K	001-36483	3.3	February 13, 2017
4.6	Specimen Common Stock Certificate of Registrant	S-1	333-194668	4.1	March 19, 2014
5.1*	Opinion of Cooley LLP				
23.1*	Consent of Cooley LLP (included in Exhibit 5.1)				
23.2*	Consent of KPMG LLP, independent registered public accounting firm				
23.3*	Consent of BDO USA, LLP, independent registered public accounting firm				
24.1*	Power of Attorney (included on the signature page of this Form S-8)				
99.1	Miragen Therapeutics, Inc. 2008 Equity Incentive Plan	S-4	333-214893	10.48	December 2, 2016
99.2	Form of Stock Option Grant Notice and Stock Option Agreement under the Miragen Therapeutics, Inc. 2008 Equity Incentive Plan	S-4	333-214893	10.49	December 2, 2016
99.3	Miragen Therapeutics, Inc. 2016 Equity Incentive Plan†	S-4	333-214893	10.37	December 2, 2016
99.4	Form of Stock Option Grant Notice and Stock Option Agreement under the Miragen Therapeutics, Inc. 2016 Equity Incentive Plan†	S-4	333-214893	10.38	December 2, 2016
99.5	Miragen Therapeutics, Inc. 2016 Employee Stock Purchase Plan†	S-4	333-214893	10.39	December 2, 2016

*Provided herewith

†Note that the name of this plan has been amended to reflect the current name of the Registrant.

ITEM 9. UNDERTAKINGS

1. The undersigned registrant hereby undertakes:

(a) 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;

(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% 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)(i) and (a)(ii) do not apply if the information required to be included in a post-effective amendment by those paragraphs is contained in reports filed with or furnished to the Commission by the registrant pursuant to Section 13 or Section 15(d) of the Exchange Act that are incorporated by reference in the registration statement.

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

(c) 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.

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

3. Insofar as indemnification for liabilities arising under the Securities Act 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 SEC such indemnification is against public policy as expressed in the Securities 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 and will be governed by the final adjudication of such issue.

SIGNATURES

Pursuant to the requirements of the Securities Act, 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 Boulder, State of Colorado, on this 16th day of February, 2017.

MIRAGEN THERAPEUTICS, INC.

/s/ William S. Marshall

William S. Marshall, Ph.D.

President and Chief Executive Officer

POWER OF ATTORNEY

Know All Persons By These Presents, that each person whose signature appears below constitutes and appoints William S. Marshall and Jason A. Leverone, as his or her true and lawful attorney-in-fact and agent, each with full power of substitution and resubstitution, for him or her and in his or her name, place and stead, in any and all capacities, to sign any and all amendments (including post-effective amendments) to this Registration Statement, and to sign any registration statement for the same offering covered by this Registration Statement that is to be effective upon filing pursuant to Rule 462(b) promulgated under the Securities Act, and all post-effective amendments thereto, and to file the same, with all exhibits thereto, and other documents in connection therewith, with the SEC, granting unto said attorneys-in-fact and agents, and each of them, 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 to all intents and purposes as he or she might or could do in person, hereby ratifying and confirming all that said attorneys-in-fact and agents, or any of them, or their or his substitutes or substitute, may lawfully do or cause to be done by virtue hereof.

Pursuant to the requirements of the Securities Act, this Registration Statement 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/ William S. Marshall</u> William S. Marshall, Ph.D.	President, Chief Executive Officer and Director <i>(Principal Executive Officer)</i>	February 16, 2017
<u>/s/ Jason A. Leverone</u> Jason A. Leverone	Chief Financial Officer, Treasurer and Secretary <i>(Principal Financial Officer; Principal Accounting Officer)</i>	February 16, 2017
<u>/s/ Bruce L. Booth</u> Bruce L. Booth	Chairman of the Board	February 16, 2017
<u>/s/ John W. Creecy</u> John W. Creecy	Director	February 16, 2017
<u>/s/ Thomas E. Hughes</u> Thomas E. Hughes	Director	February 16, 2017
<u>/s/ Kevin Koch</u> Kevin Koch, Ph.D.	Director	February 16, 2017
<u>/s/ Kyle Lefkoff</u> Kyle Lefkoff	Director	February 16, 2017
<u>/s/ Joseph L. Turner</u> Joseph L. Turner	Director	February 16, 2017

EXHIBIT INDEX

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*Provided herewith

†Note that the name of this plan has been amended to reflect the current name of the Registrant.

[\(Back To Top\)](#)

Section 2: EX-5.1 (EX-5.1)

EXHIBIT 5.1



Brent D. Fassett
+1 720 566 4025
fassettbd@cooley.com

February 16, 2017

Miragen Therapeutics, Inc.
6200 Lookout Road
Boulder, CO 80301

Ladies and Gentlemen:

We have acted as counsel to Miragen Therapeutics, Inc., a Delaware corporation f/k/a Signal Genetics, Inc. (the “**Company**”), and you have requested our opinion in connection with the filing of a registration statement on Form S-8 (the “**Registration Statement**”) with the Securities and Exchange Commission covering the offering of up to 4,202,471 shares of the Company’s Common Stock, par value \$0.01 per share (“**Common Stock**”), including (a) 2,311,015 shares of Common Stock (the “**2008 Shares**”) issuable pursuant to the Company’s 2008 Equity Incentive Plan (the “**2008 Plan**”), (b) 1,681,294 shares of Common Stock (the “**2016 Shares**”) issuable pursuant to the Company’s 2016 Equity Incentive Plan (the “**2016 Plan**”), and (c) 210,162 shares of Common Stock (the “**2016 ESPP Shares**” and, together with the 2008 Shares and the 2016 Shares, the “**Shares**”) pursuant to the Company’s 2016 Employee Stock Purchase Plan (the “**2016 ESPP**” and, together with the 2008 Plan and the 2016 Plan, the “**Plans**”).

In connection with this opinion, we have examined and relied upon (a) the Registration Statement and related Prospectuses included therein, (b) the Plans, (c) the Company’s Amended and Restated Certificate of Incorporation and Bylaws, as currently in effect as of the date hereof, and (d) such other records, documents, certificates, memoranda, and other instruments as we deem necessary or appropriate to enable us to render the opinion expressed below. As to certain factual matters, we have relied upon a certificate of an officer of the Company and have not sought to independently verify such matters. We have assumed the genuineness and authenticity of all documents submitted to us as originals and the conformity to originals of all documents submitted to us as copies thereof, and we have assumed the due execution and delivery of all documents where due execution and delivery are prerequisite to the effectiveness thereof.

Our opinion is expressed only with respect to the General Corporation Law of the State of Delaware. Our opinion is based on those laws as in effect on the date hereof, and we disclaim any obligation to advise you of facts, circumstances, events or developments which hereafter may be brought to our attention and which may alter, affect or modify the opinion expressed herein. We express no opinion as to whether the laws of any jurisdiction other than those identified above are applicable to the subject matter hereof. We are not rendering any opinion as to compliance with any federal or state antifraud law, rule or regulation related to securities, or to the sale or issuance thereof.

On the basis of the foregoing, and in reliance thereon, we are of the opinion that the Shares, when sold and issued in accordance with the Plans, the Registration Statement, and related Prospectuses, will be validly issued, fully paid, and nonassessable (except as to shares issued pursuant to certain deferred payment arrangements, which will be fully paid and nonassessable when such deferred payments are made in full).

Cooley LLP 380 Interlocken Crescent Suite 900 Broomfield, CO 80021-8023
t: (720) 566-4000 f: (720) 566-4099 cooley.com



February 16, 2017
Page Two

We consent to the filing of this opinion as an exhibit to the Registration Statement.

Sincerely,

Cooley LLP

By: /s/ Brent D. Fassett

Brent D. Fassett

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[\(Back To Top\)](#)

Section 3: EX-23.2 (EX-23.2)

EXHIBIT 23.2

Consent of Independent Registered Public Accounting Firm

The Board of Directors and Stockholders
Miragen Therapeutics, Inc.:

We consent to the use of our report dated April 27, 2016, (except as to notes 7, 11 and 12, which are as of December 2, 2016 and note 13 which is as of December 22, 2016) with respect to the consolidated balance sheets of Miragen Therapeutics, Inc. as of December 31, 2015 and 2014, and the related consolidated statements of operations, preferred stock and stockholders' deficit, and cash flows for the years then ended, incorporated by reference herein.

/s/ KPMG LLP

Boulder, Colorado
February 16, 2017

[\(Back To Top\)](#)

Section 4: EX-23.3 (EX-23.3)

EXHIBIT 23.3

Consent of Independent Registered Public Accounting Firm

Miragen Therapeutics, Inc. (Formerly known as Signal Genetics, Inc.)
Boulder, Colorado

We hereby consent to the incorporation by reference in the Prospectus constituting a part of this Registration Statement of our report dated March 21, 2016, except for Note 9 which is as of November 4, 2016, relating to the consolidated financial statements, of Miragen Therapeutics, Inc. (formerly known as Signal Genetics, Inc.) appearing in the Company's Annual Report on Form 10-K for the year ended December 31, 2015.

/s/ BDO USA, LLP
San Diego, California
February 16, 2017

[\(Back To Top\)](#)