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## Section 1: S-8 (S-8)

As filed with the Securities and Exchange Commission on March 13, 2020

Registration No. 333-

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**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)

47-1187261  
(I.R.S. Employer  
Identification No.)

6200 Lookout Road  
Boulder, CO 80301  
(Address of principal executive offices) (Zip code)

Miragen Therapeutics, Inc. 2016 Equity Incentive Plan  
Miragen Therapeutics, Inc. 2016 Employee Stock Purchase Plan  
(Full title of the plan)

William S. Marshall, Ph.D.  
President and Chief Executive Officer  
6200 Lookout Road  
Boulder, CO 80301  
(303) 531-5952  
(Name and address of agent for service) (Telephone number, including area code, of agent for service)

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*Copies to:*

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

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

Large accelerated filer

Non-accelerated filer

Accelerated filer

Smaller reporting company

Emerging growth company

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 7(a)(2)(B) of the Securities Act.

**CALCULATION OF REGISTRATION FEE**

Title of Securities to be Registered	Amount to be Registered <sup>(1)</sup>	Proposed Maximum Offering Price per Share <sup>(2)</sup>	Proposed Maximum Aggregate Offering Price <sup>(2)</sup>	Amount of Registration Fee
Common Stock, par value \$0.01 per share				
– Shares reserved for future grant under the 2016 Equity Incentive Plan	1,394,475 <sup>(3)</sup>	\$0.71	\$990,077.25	\$128.52
– Shares reserved for future grant under the 2016 Employee Stock Purchase Plan	348,618 <sup>(4)</sup>	\$0.71	\$247,518.78	\$32.13
<b>Total</b>	1,743,093	N/A	\$1,237,596.03	\$160.65

- (1) Pursuant to Rule 416(a) of the Securities Act of 1933, as amended (the “Securities Act”), this Registration Statement shall also cover any additional shares of Registrant’s common stock, par value \$0.01 per share (“Common Stock”), that become issuable under the Registrant’s 2016 Equity Incentive Plan (the “2016 Plan”) or 2016 Employee Stock Purchase Plan (the “2016 ESPP”) by reason of any stock dividend, stock split, recapitalization or other similar transaction that results in an increase in the number of outstanding shares of Registrant’s Common Stock.
- (2) Estimated solely for the purpose of calculating the amount of the registration fee pursuant to Rule 457(h) and Rule 457(c) promulgated under the Securities Act. The offering price per share and the aggregate offering price are based upon the average of the high and low prices of the Common Stock as reported on The Nasdaq Capital Market on March 9, 2020.
- (3) Represents an automatic increase to the number of shares of Common Stock available for issuance under the 2016 Plan effective January 1, 2020. Shares available for issuance under the 2016 Plan were previously registered on a registration statement on Form S-8 filed with the Securities and Exchange Commission (the “SEC”) on February 17, 2017 (Registration No. 333-216112).
- (4) Represents an automatic increase to the number of shares of Common Stock available for issuance under the 2016 ESPP effective January 1, 2020. Shares available for issuance under the 2016 ESPP were previously registered on a registration statement on Form S-8 filed with the SEC on February 17, 2017 (Registration No. 333-216112).

## REGISTRATION OF ADDITIONAL SHARES PURSUANT TO GENERAL INSTRUCTION

Pursuant to General Instruction E of Form S-8, Miragen Therapeutics, Inc., a Delaware corporation (the “*Registrant*”), is filing this Registration Statement with the Securities and Exchange Commission (the “*SEC*”) to register 1,394,475 additional shares of the Registrant’s common stock, par value \$0.01 per share (“*Common Stock*”) under the Registrant’s 2016 Equity Incentive Plan and 348,618 additional shares of Common Stock under the Registrant’s 2016 Employee Stock Purchase Plan pursuant to the provisions of those plans providing for an automatic increase in the number of shares reserved for issuance under such plans. This Registration Statement hereby incorporates by reference the contents of the Registrant’s Registration Statement on Form S-8 filed with the SEC on February 17, 2017 (Registration No. 333-216112).

### ITEM 8. EXHIBITS.

Exhibit No.	Exhibit Description	Schedule / Form	File Number	Exhibit	Filing Date
4.1	<a href="#">Certificate of Incorporation of Registrant</a>	10-Q	001-36483	3.1	August 14, 2014
4.2	<a href="#">Certificate of Amendment of Certificate of Incorporation of Registrant</a>	S-4	333-214893	3.3	December 2, 2016
4.3	<a href="#">Certificate of Amendment of Certificate of Incorporation of Registrant</a>	8-K	001-36483	3.1	February 13, 2017
4.4	<a href="#">Certificate of Amendment of Certificate of Incorporation of Registrant</a>	8-K	001-36483	3.2	February 13, 2017
4.5	<a href="#">Certificate of Ownership and Merger of Registrant</a>	8-K	001-36483	3.4	February 13, 2017
4.6	<a href="#">Amended and Restated Bylaws of Registrant</a>	10-Q	001-36483	3.1	August 15, 2016
4.7	<a href="#">Amendment to Bylaws of Registrant</a>	8-K	001-36483	3.3	February 13, 2017
4.8	<a href="#">Specimen Common Stock Certificate of Registrant</a>	S-1	333-194668	4.1	March 19, 2014
5.1*	<a href="#">Opinion of Cooley LLP</a>				
23.1*	<a href="#">Consent of Cooley LLP (included in Exhibit 5.1)</a>				
23.2*	<a href="#">Consent of KPMG LLP, independent registered public accounting firm</a>				
24.1*	<a href="#">Power of Attorney (included on the signature page of this Form S-8)</a>				
99.1	<a href="#">Registrant’s 2016 Equity Incentive Plan</a>	S-4	333-214893	10.37	December 2, 2016
99.2	<a href="#">Form of Stock Option Grant Notice and Stock Option Agreement under Registrant’s 2016 Equity Incentive Plan</a>	S-4	333-214893	10.38	December 2, 2016
99.3	<a href="#">Registrant’s 2016 Employee Stock Purchase Plan</a>	S-4	333-214893	10.39	December 2, 2016

\* Filed herewith

## SIGNATURES

**The Registrant.** Pursuant to the requirements of the Securities Act of 1933, 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 March 13, 2020.

**MIRAGEN THERAPEUTICS, INC.**

/s/ Jason A. Leverone

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Jason A. Leverone

*Chief Financial Officer, Treasurer and Secretary*

2.

## 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, and each or any one of them, 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 of 1933, and all post-effective amendments thereto, and to file the same, with all exhibits thereto, and other documents in connection therewith, with the Securities and Exchange Commission, 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 or her substitutes or 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 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>	March 13, 2020
<u>/s/ Jason A. Leverone</u> Jason A. Leverone	Chief Financial Officer, Treasurer, and Secretary <i>(Principal Financial Officer; Principal Accounting Officer)</i>	March 13, 2020
<u>/s/ Jeffrey S. Hatfield</u> Jeffrey S. Hatfield	Chairman of the Board	March 13, 2020
<u>/s/ Christopher Bowden</u> Christopher Bowden, M.D.	Director	March 13, 2020
<u>/s/ Thomas E. Hughes</u> Thomas E. Hughes, Ph.D.	Director	March 13, 2020
<u>/s/ Kevin Koch</u> Kevin Koch, Ph.D.	Director	March 13, 2020
<u>/s/ Arlene M. Morris</u> Arlene M. Morris	Director	March 13, 2020
<u>/s/ Joseph L. Turner</u> Joseph L. Turner	Director	March 13, 2020

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## Section 2: EX-5.1 (EXHIBIT 5.1)

Exhibit 5.1



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

March 13, 2020

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

**Re: Registration on Form S-8**

Ladies and Gentlemen:

We have acted as counsel to Miragen Therapeutics, Inc., a Delaware corporation (the "**Company**"), 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 1,743,093 shares of common stock, par value \$0.01 per share ("**Common Stock**"), consisting of (i) 1,394,475 shares of Common Stock (the "**2016 EIP Shares**") issuable pursuant to the Company's 2016 Equity Incentive Plan (the "**2016 EIP**"), and (ii) 348,618 shares of Common Stock (the "**ESPP Shares**", together with the 2016 EIP Shares, the "**Shares**") issuable pursuant to the Company's 2016 Employee Stock Purchase Plan (together with the 2016 EIP, the "**Plans**").

In connection with this opinion, we have examined and relied upon (a) the Registration Statement and related Prospectuses, (b) the Company's Certificate of Incorporation and Amended and Restated Bylaws, each as amended and currently in effect, (c) the Plans and (d) originals or copies certified to our satisfaction of such other records, documents, certificates, memoranda, and other instruments as we deem necessary or appropriate to enable us to render the opinion expressed below. 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, the accuracy, completeness and authenticity of certificates of public officials, and the due authorization, execution and delivery of all documents by all persons other than the Company where due authorization, execution and delivery are a prerequisite to the effectiveness thereof. As to certain factual matters, we have relied upon a certificate of an officer of the Company and have not independently verified such matters.

Our opinion is expressed only with respect to the General Corporation Law of the State of Delaware. We express no opinion to the extent that any other laws are applicable to the subject matter hereof and express no opinion and provide no assurance as to compliance with any federal or state securities law, rule or regulation.

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).



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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

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

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## **Section 3: EX-23.2 (EXHIBIT 23.2)**

**Exhibit 23.2**

### **Consent of Independent Registered Public Accounting Firm**

The Board of Directors  
Miragen Therapeutics, Inc.:

We consent to the use of our report dated March 12, 2020, with respect to the consolidated balance sheets of Miragen Therapeutics, Inc. as of December 31, 2019 and 2018, the related consolidated statements of operations and comprehensive loss, changes in stockholders' equity, and cash flows for each of the years in the three-year period ended December 31, 2019, and the related notes, and the effectiveness of internal control over financial reporting as of December 31, 2019, incorporated herein by reference.

Our report on the consolidated financial statements includes an explanatory paragraph related to a change in the method of accounting for revenue as of January 1, 2019 due to the adoption of ASC Topic 606, *Revenue from Contracts with Customers*.

/s/ KPMG LLP

Boulder, Colorado  
March 12, 2020

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