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

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**FORM S-8**  
**REGISTRATION STATEMENT**  
**UNDER**  
**THE SECURITIES ACT OF 1933**

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**Gemphire Therapeutics Inc.**

(Exact name of registrant as specified in its charter)

**Delaware**  
(State or other jurisdiction of  
incorporation or organization)

**47-2389984**  
(I.R.S. Employer Identification Number.)

**17199 N. Laurel Park Drive, Suite 401, Livonia, MI**  
(Address of principal executive offices)

**48152**  
(Zip code)

**Gemphire Therapeutics Inc. Amended and Restated 2015 Equity Incentive Plan**  
**Gemphire Therapeutics Inc. 2016 Employee Stock Purchase Plan**  
(Full title of the plan)

**Dr. Steven Gullans**  
**Interim President and Chief Executive Officer**  
**Gemphire Therapeutics Inc.**  
**17199 N. Laurel Park Drive, Suite 401**  
**Livonia, Michigan 48152**  
**(734) 245-1700**

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

**Copies to:**

**Phillip D. Torrence, Esq.**  
**Gabrielle L. Sims, Esq.**

Honigman Miller Schwartz and Cohn LLP  
350 East Michigan Avenue, Suite 300  
Kalamazoo, Michigan 49007-3800  
(269) 337-7700

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, 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  (Do not check if a smaller reporting company)

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.

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**CALCULATION OF REGISTRATION FEE**

Title of securities to be registered	Amount to be registered(1)	Proposed maximum offering price per share <sup>(2)</sup>	Proposed maximum aggregate offering price	Amount of registration fee
Common Stock, par value \$0.001 per share				
— Amended and Restated 2015 Equity Incentive Plan	646,937(3)	\$9.02	\$5,835,372	\$726.51
— 2016 Employee Stock Purchase Plan	150,000(4)	\$9.02	\$1,353,000	\$168.45
<b>Total</b>	<b>796,937</b>		<b>\$7,188,372</b>	<b>\$894.96</b>

- (1) Pursuant to Rule 416(a) under the Securities Act of 1933, as amended (the "Securities Act"), this Registration Statement shall also cover any additional shares of the Registrant's Common Stock ("Common Stock") that become issuable under the plans by reason of any stock dividend, stock split, recapitalization or other similar transaction.
- (2) Estimated solely for the purpose of calculating the amount of the registration fee pursuant to Rule 457(c) and Rule 457(h) under the Act. The offering price per share and aggregate offering price are based on the average of the high and low prices of the Registrant's Common Stock as reported on The Nasdaq Global Market on January 22, 2018.
- (3) Represents shares of Common Stock that were automatically added to the shares authorized for issuance under the Gemphire Therapeutics Inc. Amended and Restated 2015 Equity Incentive Plan (the "A&R 2015 Plan") on January 1, 2018 pursuant to an "evergreen" provision contained in the A&R 2015 Plan. Pursuant to such provision, on January 1 of each calendar year, from January 1, 2017 through January 1, 2026, the number of shares authorized for issuance under the A&R 2015 Plan is automatically increased to the number of shares equal to: (a) 20% of the fully-diluted shares of Common Stock outstanding as of December 31 of the preceding calendar year or (b) such lesser number of shares of Common Stock as is determined by the Registrant's board of directors (the "Board") for the applicable year.
- (4) Represents shares of Common Stock that were automatically added to the shares authorized for issuance under the Gemphire Therapeutics Inc. 2016 Employee Stock Purchase Plan (the "2016 ESPP") on January 1, 2018 pursuant to an "evergreen" provision contained in the 2016 ESPP. Pursuant to such provision, on January 1 of each calendar year, from January 1, 2017 through January 1, 2026, the number of shares authorized for issuance under the 2016 ESPP is automatically increased by a number equal to the lesser of: (a) 1.0% of the total number of shares of capital stock outstanding on December 31 of the preceding calendar year and (b) 75,000 shares of Common Stock.

## EXPLANATORY NOTE

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 of the Registrant on Form S-8 relating to the A&R 2015 Plan and 2016 ESPP is effective.

The Registrant's Registration Statement on Form S-8 previously filed with the Securities and Exchange Commission (the "Commission") on August 9, 2016 (File No. 333-213014) is incorporated by reference in this Registration Statement, pursuant to General Instruction E to Form S-8.

## PART II

### INFORMATION REQUIRED IN THE REGISTRATION STATEMENT

#### Item 3. Incorporation of Documents By Reference.

The following documents filed with the Commission by the Registrant are hereby incorporated by reference in this Registration Statement:

- (a) the Registrant's Annual Report on Form 10-K for the fiscal year ended December 31, 2016, filed with the Commission on March 21, 2017 (including information specifically incorporated by reference therein from the Registrant's Proxy Statement filed with the Commission on April 6, 2017);
- (b) the Registrant's Quarterly Reports on Form 10-Q for the quarters ended March 31, 2017, June 30, 2017 and September 30, 2017, which were filed with the Commission on May 10, 2017, August 14, 2017 and November 13, 2017, respectively;
- (c) the Registrant's Current Reports on Form 8-K filed with the Commission on February 7, 2017, March 10, 2017, March 13, 2017, May 24, 2017, May 30, 2017, June 28, 2017, July 25, 2017, August 7, 2017, September 19, 2017 and September 25, 2017; and
- (d) the description of the Registrant's Common Stock contained in the Registrant's Registration Statement on Form 8-A (File No. 001-37809) filed with the Commission on June 20, 2016 under Section 12(b) of the Securities Exchange Act of 1934, as amended (the "Exchange Act"), including any amendments or reports filed for the purpose of updating such description.

In addition, all documents the Registrant subsequently files pursuant to Sections 13(a), 13(c), 14 or 15(d) of the Exchange Act after the filing of this Registration Statement and prior to the filing of a post-effective amendment which indicates that all securities offered hereby have been sold or which deregisters all securities covered hereby then remaining unsold are incorporated by reference in this Registration Statement and are a part hereof from the date of filing of such documents. Notwithstanding anything herein, the Registrant is not incorporating by reference any information furnished under Item 2.02 or Item 7.01 of any Current Report on Form 8-K, unless, and to the extent specified, in any such Current Report on Form 8-K.

Any statement herein or 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, which also is or is deemed to be incorporated by reference herein, modifies or supersedes such prior statement. Any such statement so modified or superseded shall not be deemed, except as so modified or superseded, to constitute part of this Registration Statement.

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**Item 8. Exhibits.**

<u>Exhibit No.</u>	<u>Description</u>
4.1	<a href="#"><u>Third Amended and Restated Certificate of Incorporation of the Registrant, incorporated by reference to Exhibit 3.2 to the Registrant's Registration Statement on Form S-1 filed on June 13, 2016 (Registration No. 333-210815)</u></a>
4.2	<a href="#"><u>Amended and Restated Bylaws of the Registrant, incorporated by reference to Exhibit 3.4 to the Registrant's Registration Statement on Form S-1 filed on June 13, 2016 (Registration No. 333-210815)</u></a>
4.3	<a href="#"><u>Form of Common Stock certificate, incorporated by reference to Exhibit 4.1 to the Registrant's Registration Statement on Form S-1 filed on June 13, 2016 (Registration No. 333-210815)</u></a>
5.1*	<a href="#"><u>Opinion of Honigman Miller Schwartz and Cohn LLP</u></a>
23.1*	<a href="#"><u>Consent of Independent Registered Public Accounting Firm</u></a>
23.2*	<a href="#"><u>Consent of Honigman Miller Schwartz and Cohn LLP (included in its opinion filed as Exhibit 5.1 to this Registration Statement)</u></a>
24.1*	<a href="#"><u>Power of Attorney (included after the signature of the Registrant contained on the Signature Page of this Registration Statement)</u></a>
99.1	<a href="#"><u>Amended and Restated 2015 Equity Incentive Plan, incorporated by reference to Exhibit 10.3 to the Registrant's Registration Statement on Form S-1 filed on June 13, 2016 (Registration No. 333-210815)</u></a>
99.2	<a href="#"><u>2016 Employee Stock Purchase Plan, incorporated by reference to Exhibit 10.4 to the Registrant's Registration Statement on Form S-1 filed on June 13, 2016 (Registration No. 333-210815)</u></a>

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\* Filed herewith

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## SIGNATURES

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 Livonia, State of Michigan, on January 24, 2018.

GEMPHIRE THERAPEUTICS INC.

By: /s/ STEVEN GULLANS

Steven Gullans, Ph.D.

Interim 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 Steven Gullans and Jeffrey S. Mathiesen, and each of them as his or her true and lawful attorneys-in-fact and agents, each with the full power of substitution, for him in any and all capacities, to sign the Registration Statement on Form S-8 of Gemphire Therapeutics Inc., and any or all amendments (including post-effective amendments thereto), and to file the same, with 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 and about the premises, 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 their or her substitute or substitutes, 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>
/s/ Steven Gullans Steven Gullans	Interim President and Chief Executive Officer (Principal Executive Officer)	January 24, 2018
/s/ Jeffrey S. Mathiesen Jeffrey S. Mathiesen	Chief Financial Officer and Secretary (Principal Financial and Accounting Officer)	January 24, 2018
/s/ Charles L. Bisgaier, Ph.D. Charles L. Bisgaier, Ph.D.	Chief Scientific Officer and Chairman of the Board of Directors	January 24, 2018
/s/ P. Kent Hawryluk P. Kent Hawryluk	Member of the Board of Directors	January 24, 2018
/s/ Kenneth Kousky Kenneth Kousky	Member of the Board of Directors	January 24, 2018
/s/ Pedro Lichtinger Pedro Lichtinger	Member of the Board of Directors	January 24, 2018
/s/ Andrew Sassine Andrew Sassine	Member of the Board of Directors	January 24, 2018

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# HONIGMAN

Honigman Miller Schwartz and Cohn LLP  
Attorneys and Counselors

(269) 337-7700  
Fax: (269) 337-7701  
www.honigman.com

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January 24, 2018

Gemphire Therapeutics Inc.  
17199 N. Laurel Park Drive, Suite 401  
Livonia, Michigan 48152

***RE: Registration Statement on Form S-8***

Ladies and Gentlemen:

We have acted as counsel to Gemphire Therapeutics Inc., a Delaware corporation (the "Company"), in connection with the preparation and filing with the Securities and Exchange Commission (the "Commission") of a Registration Statement on Form S-8 (the "Registration Statement") for the registration under the Securities Act of 1933, as amended (the "Securities Act"), of (a) a maximum of 646,937 shares (the "2015 Plan Shares") of the Company's common stock, par value \$0.001 per share (the "Common Stock"), reserved for issuance under the Company's Amended and Restated 2015 Equity Incentive Plan (the "2015 Plan") and (b) a maximum of 150,000 shares (the "2016 ESPP Shares" and, together with the 2015 Plan Shares, the "Shares") of the Common Stock reserved for issuance under the Company's 2016 Employee Stock Purchase Plan (the "2016 ESPP" and, together with the 2015 Plan, the "Plans").

Based upon our examination of such documents and other matters as we deem relevant, we are of the opinion that (i) the Shares to be offered by the Company under the respective Plans pursuant to the Registration Statement are duly authorized, and (ii) when issued and sold by the Company in accordance with the respective Plans and the awards thereunder, the Shares will be validly issued, fully paid and non-assessable.

We hereby consent to the filing of this opinion with the Commission as Exhibit 5.1 to the Registration Statement. In giving such consent, we do not admit that we are within the category of persons whose consent is required by Section 7 of the Securities Act or the rules and regulations promulgated thereunder by the Commission.

Very truly yours,

/s/ HONIGMAN MILLER SCHWARTZ AND COHN LLP

**350 East Michigan Avenue · Suite 300 · Kalamazoo, Michigan 49007-3800**

*Detroit · Ann Arbor · Bloomfield Hills · Chicago · Grand Rapids · Kalamazoo · Lansing*

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**Consent of Independent Registered Public Accounting Firm**

We consent to the incorporation by reference in the Registration Statement (Form S-8) pertaining to the Amended and Restated 2015 Equity Incentive Plan and 2016 Employee Stock Purchase Plan of Gemphire Therapeutics Inc. of our report dated March 20, 2017 with respect to the financial statements and schedule of Gemphire Therapeutics Inc. included in its Annual Report (Form 10-K) for the year ended December 31, 2016, filed with the Securities and Exchange Commission.

/s/ Ernst & Young LLP  
Detroit, Michigan  
January 24, 2018

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