

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

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

DICERNA PHARMACEUTICALS, INC.

(Exact name of registrant as specified in its charter)

Delaware
(State or other jurisdiction of incorporation or organization)

20-5993609
(I.R.S. Employer Identification No.)

33 Hayden Avenue
Lexington, Massachusetts
(Address of principal executive offices)

02421
(Zip Code)

Dicerna Pharmaceuticals, Inc. Amended and Restated 2016 Inducement Plan
Dicerna Pharmaceuticals, Inc. 2014 Employee Stock Purchase Plan
Dicerna Pharmaceuticals, Inc. Amended and Restated 2014 Performance Incentive Plan
(Full title of the plan)

Douglas M. Fambrough, III, Ph.D.
Chief Executive Officer
Dicerna Pharmaceuticals, Inc.
33 Hayden Avenue
Lexington, MA 02421
(Name and address of agent for service)

(617) 621-8097
(Telephone number, including area code, of agent for service)

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	<input checked="" type="checkbox"/>	Accelerated filer	<input type="checkbox"/>
Non-accelerated filer	<input type="checkbox"/>	Smaller reporting company	<input checked="" type="checkbox"/>
		Emerging growth company	<input type="checkbox"/>

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 (1)	Proposed maximum offering price per share	Proposed maximum aggregate offering price	Amount of registration fee
Common Stock, \$0.0001 par value	2,454,800 (2)	\$20.43 (9)	\$50,151,564.00	\$6,509.67
Common Stock, \$0.0001 par value	356,100 (3)	\$20.25 (10)	\$7,211,025.00	\$935.99
Common Stock, \$0.0001 par value	89,100 (4)	\$20.00 (11)	\$1,782,000.00	\$231.30
Common Stock, \$0.0001 par value	715,731 (5)	\$20.43 (9)	\$14,622,384.33	\$1,897.99
Common Stock, \$0.0001 par value	1,937,129 (6)	\$20.43 (9)	\$39,575,545.47	\$5,136.91
Common Stock, \$0.0001 par value	1,010,030 (7)	\$22.58 (12)	\$22,806,477.40	\$2,960.28
Common Stock, \$0.0001 par value	631,500 (8)	\$22.58 (13)	\$14,259,270.00	\$1,850.85
TOTAL	7,194,390		\$150,408,266.20	\$19,522.99

- (1) Dicerna Pharmaceuticals, Inc., a Delaware corporation (the "Registrant"), is filing this Registration Statement to register (i) an additional 2,900,000 shares of common stock, par value \$0.0001 (the "Common Stock"), of the Registrant for issuance under the Dicerna Pharmaceuticals, Inc. Amended and Restated 2016 Inducement Plan (the "Inducement Plan"), (ii) an additional 715,731 shares of Common Stock for issuance under the Dicerna Pharmaceuticals, Inc. 2014 Employee Stock Purchase Plan (the "ESPP"), and (iii) an additional 3,578,659 shares of Common Stock for issuance under the Dicerna Pharmaceuticals, Inc. Amended and Restated 2014 Performance Incentive Plan (the "2014 Plan"). Pursuant to Rule 416 under the Securities Act of 1933, as amended (the "Securities Act"), this Registration Statement also covers such additional and indeterminate number of shares as may become issuable pursuant to the provisions of the Inducement Plan, the ESPP, and the 2014 Plan relating to adjustments for changes resulting from a stock dividend, stock split, or similar change.
- (2) Represents additional shares of Common Stock reserved for issuance under the Inducement Plan.
- (3) Represents shares of Common Stock reserved for issuance upon the exercise of outstanding options granted pursuant to the Inducement Plan.
- (4) Represents shares of Common Stock reserved for issuance upon the vesting of restricted stock units ("RSUs") granted pursuant to the Inducement Plan.
- (5) Represents the additional shares of Common Stock available for future issuance pursuant to the evergreen provision under the ESPP, determined based on the annual increase in available shares as of the first trading date in January 2020 in accordance with the terms of the ESPP.
- (6) Represents the additional shares of Common Stock available for future issuance pursuant to the evergreen provision under the 2014 Plan, determined based on the annual increase in available shares as of the first trading date in January 2020 in accordance with the terms of the 2014 Plan, less shares underlying equity awards granted through March 2, 2020.
- (7) Represents shares of Common Stock reserved for issuance upon the exercise of outstanding options granted pursuant to the 2014 Plan.
- (8) Represents shares of Common Stock reserved for issuance upon the vesting of RSUs granted pursuant to the 2014 Plan.
- (9) Estimated in accordance with Rules 457(c) and (h) under the Securities Act solely for the purposes of calculating the registration fee. The price of \$20.43 per share represents the average high and low sales prices of the Common Stock as quoted on the NASDAQ Global Select Market on March 2, 2020.
- (10) Estimated in accordance with Rules 457(c) and (h) under the Securities Act solely for the purposes of calculating the registration fee. For the shares of Common Stock reserved for issuance upon the exercise of outstanding options granted pursuant to the Inducement Plan, the proposed maximum offering price is \$20.25 per share, which is the weighted average exercise price of these outstanding awards under the Inducement Plan.
- (11) Estimated in accordance with Rules 457(c) and (h) under the Securities Act solely for the purposes of calculating the registration fee. For the shares of Common Stock reserved for issuance upon vesting of outstanding RSUs granted pursuant to the Inducement Plan, the proposed maximum offering price is \$20.00 per share, which is the weighted average adjusted closing price of the Common Stock as reported on the NASDAQ Global Select Market on the dates of grant of these outstanding awards under the Inducement Plan.
- (12) Estimated in accordance with Rules 457(c) and (h) under the Securities Act solely for the purposes of calculating the registration fee. For the shares of Common Stock reserved for issuance upon the exercise of outstanding options granted pursuant to the 2014 Plan, the proposed maximum offering price is \$22.58 per share, which is the weighted average exercise price of these outstanding awards under the 2014 Plan.
- (13) Estimated in accordance with Rules 457(c) and (h) under the Securities Act solely for the purposes of calculating the registration fee. For the shares of Common Stock reserved for issuance upon vesting of outstanding RSUs granted pursuant to the 2014 Plan, the proposed maximum offering price is \$22.58 per share, which is the weighted average adjusted closing price of the Common Stock as reported on the NASDAQ Global Select Market on the dates of grant of these outstanding awards under the 2014 Plan.

The Registration Statement shall become effective upon filing in accordance with Rule 462 under the Securities Act.

EXPLANATORY NOTE

This Registration Statement on Form S-8 is being filed for the purpose of registering 7,194,390 shares of Common Stock issuable under the following employee benefit plans for which Registration Statements on Form S-8 (File No. 333-193795, 333-210071, 333-223648, and 333-233149) were previously filed by the Registrant with the Securities and Exchange Commission (the "Commission"): (i) the Inducement Plan, as a result of an increase to the number of shares of Common Stock reserved under such plan totaling 2,900,000 shares, from which restricted stock units ("RSUs") representing an aggregate 89,100 shares of Common Stock and options to purchase an aggregate of 356,100 shares of Common Stock were granted prior to the date hereof; (ii) the ESPP, as a result of the operation of an automatic annual increase provision therein, which added an aggregate of 715,731 shares of Common Stock on the first trading date in January 2020; and (iii) the 2014 Plan, as a result of the operation of an automatic annual increase provision therein, which added an aggregate of 3,578,659 shares of Common Stock on the first trading date in January 2020, from which RSUs representing an aggregate of 631,500 shares of the Company's Common Stock and options to purchase an aggregate of 1,010,030 shares of Common Stock were granted subsequent to that date.

PART I
INFORMATION REQUIRED IN THE SECTION 10(A) PROSPECTUS

The information specified in Item 1 and Item 2 of Part I of this Registration Statement is omitted from this filing in accordance with the provisions of Rule 428 under the Securities Act and the introductory note to Part I of Form S-8. The documents containing the information specified in Part I will be delivered to plan participants as required by Rule 428(b)(1).

PART II
INFORMATION REQUIRED IN THE REGISTRATION STATEMENT

Item 3. Incorporation of Documents by Reference.

The Registrant hereby incorporates by reference in this Registration Statement the following documents and information previously filed with the Commission:

- (1) The Registrant's annual report on [Form 10-K](#) for the fiscal year ended December 31, 2019, filed with the Commission on February 28, 2020 (including information specifically incorporated by reference into our Form 10-K from our definitive proxy statement relating to our 2020 annual meeting of shareholders; to be filed within 120 days after the end of the 2019 fiscal year).
- (2) The Registrant's current reports on Form 8-K filed with the Commission on [January 13, 2020](#) (except with respect to items contained that are deemed furnished and not filed), [February 6, 2020](#), [February 10, 2020](#), and [February 27, 2020](#).
- (3) The description of the Common Stock contained in the Registrant's Registration Statement on [Form 8-A](#) filed with the Commission on January 28, 2014, including any subsequent amendment or report filed for the purpose of updating such description.

All documents subsequently filed by the Registrant with the Commission pursuant to Sections 13(a), 13(c), 14 and 15(d) of the Securities Exchange Act of 1934, as amended (the "Exchange Act"), 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 hereby 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 hereof from the respective dates of filing of such documents (such documents, and the documents enumerated above, being hereinafter referred to as "Incorporated Documents").

Any statement contained in an Incorporated Document shall be deemed to be modified or superseded for purposes of this Registration Statement to the extent that a statement contained in any other subsequently filed Incorporated Document 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(a) of the General Corporation Law of the State of Delaware ("DGCL") provides that a Delaware corporation may indemnify any person who was or is a party or is threatened to be made a party to any threatened, pending or completed action, suit or proceeding, whether civil, criminal, administrative or investigative (other than an action by or in the right of the corporation) by reason of the fact that he or she is or was a director, officer, employee or agent of the corporation or is or was serving at the request of the corporation as a director, officer, employee or agent of another corporation or enterprise, against expenses, judgments, fines and amounts paid in settlement actually and reasonably incurred by him or her in connection with such action, suit or proceeding if he or she acted in good faith and in a manner he or she reasonably believed to be in or not opposed to the best interests of the corporation, and, with respect to any criminal action or proceeding, had no cause to believe his or her conduct was unlawful.

Section 145(b) of the DGCL provides that a Delaware corporation may indemnify any person who was or is a party or is threatened to be made a party to any threatened, pending or completed action or suit by or in the right of the corporation to procure a judgment in its favor by reason of the fact that such person acted in any of the capacities set forth above, against expenses actually and reasonably incurred by him or her in connection with the defense or settlement of such action or suit if he or she acted under similar standards, except that no indemnification may be made in respect of any claim, issue or matter as to which such person shall have been adjudged to be liable to the corporation unless and only to the extent that the court in which such action or suit was brought shall determine that despite the adjudication of liability, such person is fairly and reasonably entitled to be indemnified for such expenses which the court shall deem proper.

Section 145 of the DGCL further provides that (i) to the extent a director or officer of a corporation has been successful in the defense of any action, suit or proceeding referred to in subsections (a) and (b) or in the defense of any claim, issue, or matter therein, he or she shall be indemnified against expenses (including attorneys' fees) actually and reasonably incurred by him or her in connection therewith; (ii) indemnification provided for by Section 145 shall not be deemed exclusive of any other rights to which the indemnified party may be entitled; and (iii) the corporation may purchase and maintain insurance on behalf of a director or officer of the corporation against any liability asserted against him or her or incurred by him or her in any such capacity or arising out of his or her status as such whether or not the corporation would have the power to indemnify him or her against such liabilities under Section 145.

Section 102(b)(7) of the DGCL provides that a corporation in its original certificate of incorporation or an amendment thereto validly approved by stockholders may eliminate or limit personal liability of members of its board of directors or governing body for breach of a director's fiduciary duty. No such provision, however, may eliminate or limit the liability of a director for breaching his or her duty of loyalty, failing to act in good faith, engaging in intentional misconduct or knowingly violating a law, paying a dividend or approving a stock repurchase which was illegal, or obtaining an improper personal benefit. A provision of this type has no effect on the availability of equitable remedies, such as injunction or rescission, for breach of fiduciary duty. The Registrant's Amended and Restated Certificate of Incorporation contains such a provision.

The Registrant's Amended and Restated Certificate of Incorporation and Amended and Restated Bylaws provide that the Registrant shall indemnify officers, directors, employees and agents of the Registrant, to the full extent permitted by and in the manner permissible under the laws of the State of Delaware. In addition, the Amended and Restated Bylaws permit the Board of Directors to authorize the Registrant to purchase and maintain insurance against any liability asserted against any director, officer, employee or agent of the Registrant arising out of his or her capacity as such.

The Registrant has entered into indemnification agreements with each of its directors and executive officers, pursuant to which the Registrant has agreed to indemnify and advance expenses to such officers and directors to the fullest extent permitted by applicable law.

The Registrant has obtained an insurance policy providing coverage for certain liabilities of its officers and directors.

Item 7. Exemption from Registration Claimed.

Not applicable.

Item 8. Exhibits.

Exhibit Number	Description
4.1	Amended and Restated Certificate of Incorporation of Dicerna Pharmaceuticals, Inc. (incorporated by reference to Exhibit 3.1 to the Registrant's Current Report on Form 8-K filed with the Commission on February 5, 2014).
4.2	Amended and Restated Bylaws of Dicerna Pharmaceuticals, Inc. (incorporated by reference to Exhibit 3.2 to the Registrant's Current Report on Form 8-K filed with the Commission on February 5, 2014).
4.3	Dicerna Pharmaceuticals, Inc. Amended and Restated 2016 Inducement Plan (incorporated by reference to Exhibit 4.3 to the Registrant's Registration Statement on Form S-8, filed with the Commission on March 14, 2018).
4.4	Dicerna Pharmaceuticals, Inc. 2014 Employee Stock Purchase Plan (incorporated by reference to Exhibit 10.9 to the Registrant's Registration Statement on Form S-1/A, filed with the Commission on January 28, 2014).
4.5	Dicerna Pharmaceuticals, Inc. Amended and Restated 2014 Performance Incentive Plan (incorporated by reference to Exhibit 10.2 to the Registrant's Quarterly Report on Form 10-Q filed with the Commission on May 10, 2019).
5.1*	Opinion of Goodwin Procter LLP, as to the legality of the securities being registered.
23.1*	Consent of Goodwin Procter LLP (included in the opinion filed as Exhibit 5.1).
23.2*	Consent of Independent Registered Public Accounting Firm.
24.1*	Power of Attorney (set forth on the signature page of this Registration Statement).

*Filed herewith.

Item 9. Undertakings.

(a) The undersigned Registrant hereby undertakes:

(1) 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 this 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 this 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 percent 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 this Registration Statement or any material change to such information in this Registration Statement; provided, however, that paragraphs (a)(1)(i) and (a)(1)(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 15(d) of the Exchange Act that are incorporated by reference in this Registration Statement.

(2) 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 therein, and the offering of such securities at that time shall be deemed to be the initial bona fide offering thereof.

(3) 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.

(b) 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 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 this Registration Statement shall be deemed to be a new registration statement relating to the securities offered therein, and the offering of such securities at that time shall be deemed to be the initial bona fide offering thereof.

(h) 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 Commission 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 Lexington, Commonwealth of Massachusetts, on March 4, 2020.

DICERNA PHARMACEUTICALS, INC.

By /s/ Douglas M. Fambrough, III, Ph.D.

Douglas M. Fambrough, III, Ph.D.

Chief Executive Officer

POWER OF ATTORNEY

Each person whose signature appears below constitutes and appoints Douglas M. Fambrough, III, Ph.D., and John B. Green, and each of them, acting individually and without the other, as his true and lawful attorneys-in-fact and agents, 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, exhibits thereto and other documents in connection therewith) to this Registration Statement, and to file the same, with all exhibits thereto, and other documents in connection therewith, with the 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 might or could do in person, hereby ratifying and confirming all that said attorneys-in-fact and agents, or either of them individually, or their or his substitute or substitutes, 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 below by the following persons in the capacities indicated and on the dates indicated.

<u>Signature</u>	<u>Title</u>	<u>Date</u>
<u>/s/ Douglas M. Fambrough, III, Ph.D.</u> Douglas M. Fambrough, III, Ph.D.	President, Chief Executive Officer and Director (Principal Executive Officer)	March 4, 2020
<u>/s/ John B. Green</u> John B. Green	Chief Financial Officer (Principal Financial and Accounting Officer)	March 4, 2020
<u>/s/ J. Kevin Buchi</u> J. Kevin Buchi	Chairman of the Board of Directors	March 4, 2020
<u>/s/ Martin Freed, M.D.</u> Martin Freed, M.D.	Director	March 4, 2020
<u>/s/ Stephen J. Hoffman, M.D., Ph.D.</u> Stephen J. Hoffman, M.D., Ph.D.	Director	March 4, 2020
<u>/s/ Stephen Doberstein, Ph.D.</u> Stephen Doberstein, Ph.D.	Director	March 4, 2020
<u>/s/ Adam Koppel, M.D., Ph.D.</u> Adam Koppel, M.D., Ph.D.	Director	March 4, 2020
<u>/s/ Marc Kozin</u> Marc Kozin	Director	March 4, 2020
<u>/s/ Patrick Gray</u> Patrick Gray	Director	March 4, 2020
<u>/s/ Anna Protopapas</u> Anna Protopapas	Director	March 4, 2020
<u>/s/ Cynthia Smith</u> Cynthia Smith	Director	March 4, 2020

March 4, 2020

Dicerna Pharmaceuticals, Inc.
33 Hayden Avenue
Lexington, Massachusetts 02421

Re: Securities Being Registered under Registration Statement on Form S-8

Ladies and Gentlemen:

We have acted as counsel to you in connection with your filing of a Registration Statement on Form S-8 (the "Registration Statement") pursuant to the Securities Act of 1933, as amended (the "Securities Act"), on or about the date hereof relating to an aggregate of 7,194,390 shares (the "Shares") of Common Stock, \$0.0001 par value per share ("Common Stock"), of Dicerna Pharmaceuticals, Inc., a Delaware corporation (the "Company"), that may be issued pursuant to the Company's 2016 Inducement Plan, 2014 Employee Stock Purchase Plan and Amended and Restated 2014 Performance Incentive Plan (collectively, the "Plans").

We have reviewed such documents and made such examination of law as we have deemed appropriate to give the opinions set forth below. We have relied, without independent verification, on certificates of public officials and, as to matters of fact material to the opinion set forth below, on certificates of officers of the Company.

The opinion set forth below is limited to the Delaware General Corporation Law.

For purposes of the opinion set forth below, we have assumed that no event occurs that causes the number of authorized shares of Common Stock available for issuance by the Company to be less than the number of then unissued Shares.

Based on the foregoing, we are of the opinion that the Shares have been duly authorized and, upon issuance and delivery against payment therefor in accordance with the terms of the Plans, will be validly issued, fully paid and nonassessable.

We hereby consent to the inclusion of this opinion as Exhibit 5.1 to the Registration Statement. In giving our consent, we do not admit that we are in the category of persons whose consent is required under Section 7 of the Securities Act or the rules and regulations thereunder.

Very truly yours,

/S/ GOODWIN PROCTER LLP

GOODWIN PROCTER LLP

Exhibit 23.2

CONSENT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

We consent to the incorporation by reference in this Registration Statement on Form S-8 of our reports dated February 27, 2020, relating to the consolidated financial statements of Dicerna Pharmaceuticals, Inc. and the effectiveness of Dicerna Pharmaceuticals Inc.'s internal control over financial reporting, appearing in the Annual Report on Form 10-K for the year ended December 31, 2019.

/s/ Deloitte & Touche LLP

Boston, Massachusetts

March 4, 2020