

**UNITED STATES
SECURITIES AND EXCHANGE COMMISSION**

Washington, D.C. 20549

FORM S-8

**REGISTRATION STATEMENT
UNDER
THE SECURITIES ACT OF 1933**

Mirna Therapeutics, Inc.

(Exact name of registrant as specified in its charter)

Delaware
(State or other jurisdiction of
incorporation or organization)

26-1824804
(I.R.S. Employer
Identification Number)

**2150 Woodward Street, Suite 100
Austin, TX 78744
(512) 901-0900**

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

**2008 Long Term Incentive Plan
2015 Equity Incentive Award Plan
2015 Employee Stock Purchase Plan
(Full Title of the Plan)**

**Paul Lammers, M.D., M.Sc.
President & Chief Executive Officer
Mirna Therapeutics, Inc.
2150 Woodward Street, Suite 100
Austin, TX 78744
(512) 901-0900**

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

Copies to:

**Alan C. Mendelson, Esq.
Mark V. Roeder, Esq.
Latham & Watkins LLP
140 Scott Drive
Menlo Park, CA 94025
Telephone: (650) 328-4600
Facsimile: (650) 463-2600**

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	<input type="radio"/>		Accelerated filer	<input type="radio"/>
Non-accelerated filer	<input checked="" type="radio"/> (Do not check if a smaller reporting company)		Smaller reporting company	<input type="radio"/>

CALCULATION OF REGISTRATION FEE

Title of Securities to be Registered	Amount to be Registered(1)	Proposed Maximum Offering Price Per Share(2)	Proposed Maximum Aggregate Offering Price(2)	Amount of Registration Fee
Common Stock, par value \$0.001 per share	2,639,474 shares	\$5.55 – 6.97	\$ 16,226,701	\$ 1,635

(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 that become issuable under the 2008 Long Term Incentive Plan, as amended (the "2008 Plan"), the 2015 Equity Incentive Award Plan (the "2015 Plan") and the 2015 Employee Stock Purchase Plan (the "ESPP") by reason of any stock dividend, stock split, recapitalization or similar transaction effected without the Registrant's receipt of consideration which would increase the number of outstanding shares of 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 (a) for outstanding options granted under the 2008 Plan and the 2015 Plan are based upon the weighted-average exercise price of such outstanding options, and (b) for shares reserved for future issuance under the 2015 Plan and ESPP are based on the average of the high and the low price of Registrant's common stock as reported on NASDAQ on October 2, 2015. The chart below details the calculations of the registration fee:

Securities	Number of Shares	Offering Price Per Share	Aggregate Offering Price
Shares issuable upon the exercise of outstanding options granted under the 2008 Plan and 2015 Plan	1,528,475	\$ 5.55(2)(a)	\$ 8,483,037
Shares reserved for future grant under the 2015 Plan	943,819	\$ 6.97(2)(b)	\$ 6,578,419
Shares reserved for future grant under the ESPP	167,180	\$ 6.97(2)(b)	\$ 1,165,245
Proposed Maximum Aggregate Offering Price			\$ 16,226,701
Registration Fee			\$ 1,635

**Proposed sale to take place as soon after the effective date of the
registration statement as awards under the plans are exercised and/or vest.**

PART I

INFORMATION REQUIRED IN THE SECTION 10(a) PROSPECTUS

The information called for in Part I of Form S-8 is not being filed with or included in this Form S-8 (by incorporation by reference or otherwise) in accordance with the rules and regulations of the Securities and Exchange Commission (the "SEC").

PART II

INFORMATION REQUIRED IN THE REGISTRATION STATEMENT

In this registration statement, Mirna Therapeutics, Inc. is sometimes referred to as "Registrant," "we," "us" or "our."

Item 3. Incorporation of Documents by Reference.

The SEC allows us to incorporate by reference the information we file with them, which means that we can disclose important information to you by referring you to those documents. The information incorporated by reference is considered to be part of this registration statement, and later information filed with the SEC will update and supersede this information. We hereby incorporate by reference into this registration statement the following documents previously filed with the SEC:

- (a) The prospectus filed by the Registrant with the SEC pursuant to Rule 424(b) under the Securities Act, on October 1, 2015, relating to the registration statement on Form S-1, as amended (No. 333-206544), which contains the Registrant's audited financial statements for the latest fiscal year for which such statements have been filed;
- (b) The Registrant's Current Report on Form 8-K as filed with the SEC on October 6, 2015; and
- (c) The description of the Registrant's common stock contained in the Registrant's registration statement on Form 8-A (File No. 001-37566), filed by the Registrant with the SEC under Section 12(b) of the Securities Exchange Act of 1934, as amended (the "Exchange Act"), on September 23, 2015, including any amendments or reports filed for the purpose of updating such description.

All documents that the Registrant subsequently files pursuant to Sections 13(a), 13(c), 14 and 15(d) of the Exchange Act prior to the filing of a post-effective amendment to the registration statement which indicates that all of the shares of common stock offered have been sold or which deregisters all of such shares then remaining unsold, shall be deemed to be incorporated by reference in this registration statement and to be a part hereof from the date of the filing of such documents; except as to any portion of any future annual or quarterly report to stockholders or document or current report furnished under current Items 2.02 or 7.01 of Form 8-K, and exhibits furnished on such form that relate to such items, that is not deemed filed under such provisions. For the purposes of this registration statement, any statement contained in a document incorporated or deemed to be incorporated by reference herein shall be deemed to be modified or superseded to the extent that a statement contained herein or in any other subsequently filed document which also is or 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.

Under no circumstances will any information filed under current items 2.02 or 7.01 of Form 8-K, and exhibits furnished on such form that relate to such items, be deemed incorporated herein by reference unless such Form 8-K expressly provides to the contrary.

Item 4. Description of Securities.

Not applicable.

Item 5. Interests of Named Experts and Counsel.

None.

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Item 6. Indemnification of Directors and Officers.

As permitted by Section 102 of the Delaware General Corporation Law, we have adopted provisions in our amended and restated certificate of incorporation (the "Certificate of Incorporation") filed with the Secretary of State of the State of Delaware and our amended and restated bylaws (the "Bylaws") that limit or eliminate the personal liability of our directors for a breach of their fiduciary duty of care as a director. The duty of care generally requires that, when acting on behalf of the corporation, directors exercise an informed business judgment based on all material information reasonably available to them. Consequently, a director will not be personally liable to us or our stockholders for monetary damages for breach of fiduciary duty as a director, except for liability for:

- any breach of the director's duty of loyalty to us or our stockholders;
- any act or omission not in good faith or that involves intentional misconduct or a knowing violation of law;
- any act related to unlawful stock repurchases, redemptions or other distributions or payment of dividends; or
- any transaction from which the director derived an improper personal benefit.

These limitations of liability do not affect the availability of equitable remedies such as injunctive relief or rescission. Our Certificate of Incorporation also authorizes us to indemnify our officers, directors and agents to the fullest extent permitted under Delaware law.

As permitted by Section 145 of the Delaware General Corporation Law, our Bylaws provide that:

- we may indemnify our directors, officers, employees and agents to the fullest extent permitted by the Delaware General Corporation Law, subject to limited exceptions;
- we may advance expenses to our directors, officers, employees and agents in connection with a legal proceeding to the fullest extent permitted by the Delaware General Corporation Law, subject to limited exceptions; and
- the rights provided in our Bylaws are not exclusive.

Our Certificate of Incorporation and our Bylaws provide for the indemnification provisions described above and elsewhere herein. We have also entered into separate indemnification agreements with our directors and officers which may be broader than the specific indemnification provisions contained in the Delaware General Corporation Law. These indemnification agreements generally require us, among other things, to indemnify our officers and directors against liabilities that may arise by reason of their status or service as directors or officers, other than liabilities arising from willful misconduct. These indemnification agreements also generally require us to advance any expenses incurred by the directors or officers as a result of any proceeding against them as to which they could be indemnified. In addition, we have purchased a policy of directors' and officers' liability insurance that insures our directors and officers against the cost of defense, settlement or payment of a judgment in some circumstances. These indemnification provisions and the indemnification agreements may be sufficiently broad to permit indemnification of our officers and directors for liabilities, including reimbursement of expenses incurred, arising under the Securities Act of 1933, as amended, or the Securities Act.

Item 7. Exemption from Registration Claimed.

Not applicable.

Item 8. Exhibits.

Reference is made under this Item 8 to the exhibit index included in this Registration Statement.

Item 9. Undertakings.

1. The 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 of 1933;

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- (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 SEC pursuant to Rule 424(b) if, in the aggregate, the changes in volume and price represent no more than 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 the registration statement or any material change to such information in the registration statement;

Provided, however, that paragraphs (a)(1)(i) and (a)(1)(ii) do not apply if the registration statement is on Form S-8 and the information required to be included in a post-effective amendment by those paragraphs is contained in periodic reports filed with or furnished to the Commission by the Registrant pursuant to section 13 or 15(d) of the Securities Exchange Act of 1934 that are incorporated by reference in the registration statement.

- (b) That, for the purpose of determining any liability under the Securities Act of 1933, 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.
- (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.
- (d) That, for the purpose of determining liability of the Registrant under the Securities Act of 1933 to any purchaser in the initial distribution of the securities, the undersigned Registrant undertakes that in a primary offering of securities of the undersigned Registrant pursuant to this registration statement, regardless of the underwriting method used to sell the securities to the purchaser, if the securities are offered or sold to such purchaser by means of any of the following communications, the undersigned Registrant will be a seller to the purchaser and will be considered to offer or sell such securities to such purchaser:
 - (i) Any preliminary prospectus or prospectus of the undersigned Registrant relating to the offering required to be filed pursuant to Rule 424;
 - (ii) Any free writing prospectus relating to the offering prepared by or on behalf of the undersigned Registrant or used or referred to by the undersigned Registrant;
 - (iii) The portion of any other free writing prospectus relating to the offering containing material information about the undersigned Registrant or its securities provided by or on behalf of the undersigned Registrant; and
 - (iv) Any other communication that is an offer in the offering made by the undersigned Registrant to the purchaser.

2. The Registrant hereby undertakes that, for purposes of determining any liability under the Securities Act of 1933, each filing of the Registrant's annual report pursuant to Section 13(a) or 15(d) of the Securities Exchange Act of 1934 (and, where applicable, each filing of an employee benefit plan's

Exhibit Index

Exhibit Number	Exhibit Description	Incorporated by Reference			Filed Herewith
		Form	Date	Number	
4.1	Amended and Restated Certificate of Incorporation.	8-K	10/6/2015	3.1	
4.2	Amended and Restated Bylaws.	8-K	10/6/2015	3.2	
4.3	Form of Common Stock Certificate.	S-1/A	09/18/2015	4.2	
4.4	Third Amended and Restated Investor Rights Agreement, dated as of March 31, 2015, by and among Mirna Therapeutics, Inc. and certain of its stockholders.	S-1/A	09/11/2015	4.3	
4.5	Registration Rights Agreement, dated October 5, 2015, by and between Mirna Therapeutics, Inc. and the Cancer Prevention and Research Institute of Texas.	8-K	10/6/2015	4.1	
5.1	Opinion of Latham & Watkins LLP.				X
23.1	Consent of independent registered public accounting firm.				X
23.2	Consent of Latham & Watkins LLP (included in Exhibit 5.1).				X
24.1	Power of Attorney. Reference is made to the signature page to the Registration Statement.				X
99.1(A)#	2008 Long Term Incentive Plan, as amended.	S-1	8/24/2015	10.8(A)	
99.1(B)#	Form of Notice of Stock Option Grant under 2008 Long Term Incentive Plan.	S-1	8/24/2015	10.8(B)	
99.1(C)#	Form of Stock Option Agreement under 2008 Long Term Incentive Plan.	S-1	8/24/2015	10.8(C)	
99.2(A)#	2015 Equity Incentive Award Plan.	S-1/A	9/18/2015	10.9(A)	
99.2(B)#	Form of Stock Option Grant Notice and Stock Option Agreement under the 2015 Equity Incentive Award Plan.	S-1/A	9/11/2015	10.9(B)	
99.2(C)#	Form of Restricted Stock Award Agreement and Restricted Stock Unit Award Grant Notice under the 2015 Equity Incentive Award Plan.	S-1/A	9/11/2015	10.9(C)	
99.3#	2015 Employee Stock Purchase Plan.	S-1/A	9/18/2015	10.10	

Indicates management contract or compensatory plan.

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

LATHAM & WATKINS LLP

FIRM / AFFILIATE OFFICES

Abu Dhabi	Milan
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London	Singapore
Los Angeles	Tokyo
Madrid	Washington, D.C.

October 6, 2015

Mirna Therapeutics, Inc.
 2150 Woodward Street, Suite 100
 Austin, TX 78744

Re: Registration Statement on Form S-8; 2,639,474 shares of Common Stock of Mirna Therapeutics, Inc., par value \$0.001 per share

Ladies and Gentlemen:

We have acted as special counsel to Mirna Therapeutics, Inc., a Delaware corporation (the “**Company**”), in connection with the registration by the Company of 2,628,614 shares of common stock of the Company, par value \$0.001 per share (the “**Shares**”), issuable under the Company’s 2008 Long Term Incentive Plan, as amended (the “**2008 Plan**”), 2015 Equity Incentive Award Plan (the “**2015 Plan**”) and 2015 Employee Stock Purchase Plan (the “**ESPP**”) and together with the 2008 Plan and the 2015 Plan, the “**Plans**”).

The Shares are included in a registration statement on Form S—8 under the Securities Act of 1933, as amended (the “**Act**”), filed with the Securities and Exchange Commission (the “**Commission**”) on October 6, 2015 (the “**Registration Statement**”). 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 the related prospectus, other than as expressly stated herein with respect to the issue of the 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.

October 6, 2015

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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 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 Plans, assuming in each case that the individual issuances, grants or awards under the Plans are duly authorized by all necessary corporate action and duly issued, granted or awarded and exercised in accordance with the requirements of law and the Plans (and the agreements and awards duly adopted thereunder and in accordance therewith), the issue and sale of the Shares will have been duly authorized by all necessary corporate action of the Company, and the 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. 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 the Registration Statement (Form S-8) pertaining to the 2008 Long Term Incentive Plan, 2015 Equity Incentive Award Plan and 2015 Employee Stock Purchase Plan of Mirna Therapeutics, Inc. of our report dated July 15, 2015 except as to Note 17, which is as of September 29, 2015, with respect to the consolidated financial statements of Mirna Therapeutics, Inc. included in the Registration Statement (Form S-1 No. 333-206544) and related prospectus of Mirna Therapeutics, Inc. for the year ended December 31, 2014, filed with the Securities and Exchange Commission.

/s/ Ernst & Young LLP

Austin, Texas
October 5, 2015
