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LATHAM & WATKINS LLP

September 2, 2015

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VIA EDGAR AND HAND DELIVERY

United States Securities and Exchange Commission
Division of Corporation Finance
100 F Street, N.E.
Washington, D.C. 20549-6010

File No. 054663-0010

Attention: Jeffrey P. Riedler, Assistant Director
Tara Keating Brooks
Bryan Pitko
Sasha Parikh
Jim Rosenberg

**FOIA Confidential Treatment
Requested Under 17 C.F.R. § 200.83**

Re: **Mirna Therapeutics, Inc.**
Stock-Based Compensation
Registration Statement on Form S-1 (File No. 333-206544)

Ladies and Gentlemen:

On behalf of Mirna Therapeutics, Inc. (the "**Company**" or "**Mirna**"), we submit this letter (this "**Letter**") to the staff (the "**Staff**") of the Securities and Exchange Commission (the "**Commission**"). The Company originally filed the above-referenced Registration Statement on Form S-1 (the "**Registration Statement**") with the Commission on August 24, 2015.

The purpose of this Letter is to provide supplemental information to the Staff with respect to the accounting treatment for stock-based compensation for its consideration during the review cycle so that the Company may be in a position to print a preliminary prospectus as promptly as practicable. We are respectfully requesting confidential treatment for certain portions of this Letter pursuant to Rule 83 promulgated by the Commission, 17 C.F.R. §200.83. This Letter is accompanied by such request for confidential treatment because of the commercially sensitive

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nature of the information discussed in this Letter. A redacted letter will be filed on EDGAR, omitting the confidential information contained in this Letter.

The Company's discussion of stock-based compensation is primarily contained within the section of the Registration Statement entitled "Management's Discussion and Analysis of Financial Condition and Results of Operations—Critical Accounting Policies and Estimates—Stock-Based Compensation" (the "**MD&A**") and Note 2, Summary of Significant Accounting Policies in the Financial Statements included in the Registration Statement (the "**Financial Notes**") and appears on pages 79, 80 and F-8 through F-10 of the Registration Statement.

The Company supplementally advises the Staff that, while not reflected in the Registration Statement, based on discussions with the Company's Board of Directors and reflecting the input from the lead underwriters for its initial public offering (the "**IPO**"), the Company currently anticipates an approximate price range of \$[***] to \$[***] per share for the Company's common stock (the "**Preliminary IPO Price Range**"), with a midpoint of the anticipated range of approximately \$[***] per share (the "**Preliminary Assumed IPO Price**"). The Preliminary IPO Price Range and Preliminary Assumed IPO Price do not reflect any stock split that the Company might effect prior to the Commission's declaration of effectiveness of the Registration Statement. The Company currently anticipates implementing an approximate [***] to [***] reverse stock split, which would result in a post-split Preliminary IPO Price

Range of \$[***] to \$[***] per share, with a midpoint of \$[***] per share. For consistency with the Registration Statement, all data in this letter is reflected on a pre-split basis.

The Company's final post-split Preliminary IPO Price Range remains under discussion between the Company and the lead underwriters, and a bona fide price range will be included in an amendment to the Registration Statement prior to any distribution of the preliminary prospectus in connection with the Company's road show.

As set forth in the MD&A on page 80 of the Registration Statement, the Company recorded stock-based compensation expense related to options granted of \$0.2 million and \$0.4 million in the years ended December 31, 2013 and 2014, and \$0.4 million for the six months ended June 30, 2015, respectively. On a percentage basis, the recorded stock-based compensation expense for the year ended December 31, 2014 and six months ended June 30, 2015 represents approximately 2.6% and 3.5% of total net loss for those periods, respectively.

STOCK OPTION GRANTS IN PRECEDING 12 MONTHS

The following table summarizes by grant date the number of shares of common stock underlying stock options granted during the twelve months preceding, and the period subsequent to, the most recent balance sheet date included in the Registration Statement, as well as the associated per share exercise price and the estimated fair value per share of the Company's common stock to determine stock-based compensation expense for financial reporting purposes:

Option Grant Dates	Number of Shares Underlying Options	Exercise Price Per Share	Fair Value — Financial Reporting Purposes
November 5, 2014	256,000	\$ 0.52	\$ 0.52
March 1, 2015	964,000	\$ 0.41	\$ 0.41
June 4, 2015	3,957,750	\$ 0.43	\$ 0.43

[*] CERTAIN INFORMATION IN THIS DOCUMENT HAS BEEN OMITTED AND FILED SEPARATELY WITH THE SECURITIES AND EXCHANGE COMMISSION. CONFIDENTIAL TREATMENT HAS BEEN REQUESTED WITH RESPECT TO THE OMITTED PORTION.**

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ANTICIPATED ACTIONS

The Company currently anticipates that the final Preliminary IPO Price Range (and related stock split) will be finalized and approved by the Company's Board of Directors on or about September 8, 2015.

The remainder of this letter will outline the Company's historical fair value determination practice and methodologies, as well as provide an explanation as between the difference between the Preliminary Assumed IPO Price and the fair value determination with respect to the option awards granted in early June 2015.

HISTORICAL FAIR VALUE DETERMINATION AND METHODOLOGY

As previously disclosed, the Company has historically determined the fair value of its common stock using methodologies, estimates and assumptions consistent with the American Institute of Certified Public Accountants 2013 Accounting and Valuation Guide, *Valuation of Privately-Held-Company Equity Securities Issued as Compensation* (the "**AICPA Practice Guide**"). In addition, the Company's Board of Directors also considered numerous objective and subjective factors, along with input from management and third-party valuations, to determine the fair value of the Company's common stock as disclosed in the Registration Statement.

As noted in the Financial Notes, the Company has applied the probability-weighted expected return method ("**PWERM**"). The Company elected to utilize the PWERM method as estimates regarding potential outcomes were considered reasonable. At each grant date, the Board of Directors considered whether any events occurred that would trigger any material changes to the business or would require adjustment to the estimated fair value from the previous valuation date. Under the PWERM valuation method, the per share value of the common stock is estimated based upon the probability-weighted present value of expected future equity values for the common stock, under various possible future liquidity event scenarios, discounted at risk-adjusted rates of return which take into consideration the rights and preferences of each class of stock.

On June 4, 2015, the Company's Board of Directors granted stock options at an exercise price equal to the estimated fair value as determined by a Company valuation, dated May 28, 2015, which valuation was as of March 31, 2015 (the "**March 2015 Valuation**").

The March 2015 Valuation was derived using the PWERM method and was based on the closing of the Company's issuance of shares of Series D Preferred Stock (the "**Series D Financing**"), which had an initial closing of approximately \$35.5 million on March 31, 2015 at a price per share of \$0.611. The transaction was believed to be representative of an arm's length transaction, as more than half of the aggregate amount raised included participation from new outside investors, and therefore indicative of the estimated fair value of a share of common stock

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as of the investment date. In addition, the March 2015 Valuation reflected, due to the passage of time, additional accrued growth of Company's accruing paid-in-kind dividend in connection with the conversion of all shares of Series C and Series D Preferred Stock into shares of common stock immediately prior to

the consummation of the Company’s proposed IPO, pursuant to the Company’s certificate of incorporation.

In performing such analysis, the PWERM valuation method was used to correlate the price per share of the Series D Financing with the following five potential future liquidity events:

- (i) an initial public offering occurring by October 31, 2015 (the “**2015 IPO**”);
- (ii) an initial public offering occurring during the first quarter of 2016, after a private financing in the first quarter of 2015 and receipt of results from the Company’s Phase 1 safety study of its lead product candidate (the “**2016 IPO**”);
- (iii) additional private financing during the fourth quarter of 2016, and an initial public offering during the third quarter of 2017 concurrent with the Company’s Phase 2 trial of its lead product candidate (the “**2017 IPO**”);
- (iv) additional private financing and FDA approval of one or more of the Company’s product candidates, followed by a structured acquisition or initial public offering by 2019 (the “**2019 M&A/IPO**”); and
- (v) inability to achieve FDA approval for any of the Company’s product candidates, enter into a structured acquisition, or complete an initial public offering (the “**Dissolution**”).

For each of these potential events, the Company estimated the total proceeds to be distributed to equity holders and, ultimately, a present value estimate of the indicated value per share of common stock. A probability weighting of the applicable liquidity event was applied and resulted in the probability weighted indicated value per share.

The following table sets forth the results of the PWERM method analysis that was utilized in the March 2015 Valuation and subsequently used by the Company to determine the resulting Indicated Value of a Share of Common Stock (in millions, except per share data):

PWERM METHOD	2015 IPO	2016 IPO	2017 IPO	2019 M&A/IPO	Dissolution
Total Estimated Proceeds to be Distributed to					
Equity Holders	\$ [***]	\$ [***]	\$ [***]	\$ [***]	\$ [***]
Indicated Per Share Value of Common Stock	\$ [***]	\$ [***]	\$ [***]	\$ [***]	\$ [***]
Probability Weight Assigned	[***]%	[***]%	[***]%	[***]%	[***]%
Probability Weighted Indicated Value of a Share of					
Common Stock	\$ [***]	\$ [***]	\$ [***]	\$ [***]	\$ [***]
Indicated Value of a Share of Common Stock	\$	0.43			

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DISCUSSION OF MOST RECENT FAIR VALUE DETERMINATION

In connection with preparing for a proposed IPO and the preparation of the Company’s financial statements to be included in the Registration Statement, the Company completed a valuation of its common stock, dated August 12, 2015, which valuation was as of June 30, 2015 (the “**June 2015 Valuation**”), pursuant to which, among other things, the probability of the 2015 IPO increased to [***]% and the probability of the 2016 IPO increased to [***]%. Between March 31, 2015 and June 30, 2015, the Company took certain steps towards initiating and completing its proposed IPO, including holding an organizational meeting on June 19, 2015 and completing subsequent rounds of the Series D Financing, and received positive safety and other data from its ongoing Phase 1 clinical trial of its lead product candidate.

The following table sets forth the results of the PWERM method analysis that was utilized in the June 2015 Valuation and subsequently used by the Company to determine the Indicated Value of a Share of Common Stock as of June 30, 2015 (in millions, except per share data):

PWERM METHOD	2015 IPO	2016 IPO	2017 IPO	2019 M&A/IPO	Dissolution
Total Estimated Proceeds to be Distributed to					
Equity Holders	\$ [***]	\$ [***]	\$ [***]	\$ [***]	\$ [***]
Indicated Per Share Value of Common Stock	\$ [***]	\$ [***]	\$ [***]	\$ [***]	\$ [***]
Probability Weight Assigned	[***]%	[***]%	[***]%	[***]%	[***]%
Probability Weighted Indicated Value of a Share of					
Common Stock	\$ [***]	\$ [***]	\$ [***]	\$ [***]	\$ [***]
Indicated Value of a Share of Common Stock	\$	[***]			

PRELIMINARY ASSUMED IPO PRICE

On August 14, 2015, at a meeting of the Board of Directors, the Company and the lead underwriters for the Company’s IPO discussed the anticipated Preliminary IPO Price Range. On August 28, 2015, the lead underwriters for the Company’s IPO presented an update regarding the Preliminary IPO Price Range to certain members of the Board of Directors. On August 31, 2015, at a meeting of the Board of Directors, the underwriters presented the Preliminary IPO Price Range for discussion with the Company. As noted above under “**Anticipated Actions**,” the Company currently anticipates that the final Preliminary IPO Price Range (and related stock split) will be finalized and approved by the Company’s Board of Directors on or about

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September 8, 2015. Further, the anticipated Preliminary IPO Price Range is \$[***] to \$[***] per share, with a Preliminary Assumed IPO Price of approximately \$[***] per share. The foregoing prices per share do not reflect any stock split that the Company might affect prior to the Company's IPO.

The following table summarizes the Company's anticipated pre-offering equity values (based on the low-end, mid-point and high-end of the Preliminary IPO Price Range) (in millions, except per share data).

	Low-End		Mid-Point		High-End	
Pre-Offering Equity Value	\$	[***]	\$	[***]	\$	[***]
Pre-Offering Equity Value Per Share	\$	[***]	\$	[***]	\$	[***]

COMPARISON OF IPO PRICE RANGE AND ESTIMATED EQUITY FAIR VALUE PER SHARE

The Company notes that, as is typical in initial public offerings, the estimated Preliminary IPO Price Range was not derived using a formal valuation of fair value, but was determined by discussion between the Company and the underwriters. The Company believes the difference between the Preliminary IPO Price Range and the earlier valuation report primarily results from consideration of a number of factors. First, the valuation methodology used by the underwriters is based on quantitative and qualitative factors, which differ from the methodologies of the Company's valuation specialists for the valuation reports. Additionally, the underwriters necessarily assume that an IPO has occurred and an active and liquid market for the stock has developed and, as such, the underwriters do not utilize any discounts for lack of marketability or probabilities for alternative outcome scenarios. Next, from June through August 2015, the Company continued to receive positive safety and other data from its ongoing Phase 1 clinical trial of its lead product candidate. Next, at the meeting of the Board of Directors on August 14, 2015, the Company received preliminary feedback from its underwriters that the Company's "test the waters" meetings indicating that there is anticipated to be sufficient demand for the Company's common stock to continue to prepare for and further evaluate a potential IPO to occur during September or October 2015. Further, at the meeting of the Board of Directors on August 31, 2015, the underwriters presented the recommended Preliminary IPO Price Range to the Company, which reflected developments in the Company's business, the IPO process, and the state of the public markets both generally and for biotechnology companies comparable to the Company.

CONCLUSION

The Company has historically determined the fair value of its common stock consistent with the guidance set forth in the AICPA Practice Guide, including, specifically, its use of the PWERM methodology, which is an accepted valuation method under the AICPA Practice Guide. The Company believes that the probability weighting of each potential liquidity event used in its

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PWERM analysis was reasonable at the time, in light of the Company's stage of development, including the status of its research and development efforts and financial position, external market conditions affecting the biotechnology industry, the volatility in the capital markets, especially with respect to initial public offerings, and the relative likelihood of achieving a liquidity event such as an initial public offering or sale of the Company in light of prevailing market conditions

In light of the factors discussed herein, the Company believes that the deemed per share fair values used as the basis for determining stock-based compensation in connection with its stock option grants have been reasonable and appropriate.

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We thank you in advance for your consideration of the foregoing. Please do not hesitate to contact me by telephone at (650) 463-3043 or by fax at (650) 463-2600 with any questions or comments regarding this correspondence.

Very truly yours,

/s/ Mark V. Roeder

Mark V. Roeder
of LATHAM & WATKINS LLP

cc: Paul Lammers, M.D., M.Sc., Mirna Therapeutics, Inc.
Jon Irvin, Mirna Therapeutics, Inc.
Alan C. Mendelson, Esq., Latham & Watkins LLP
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