

**Mirna Therapeutics, Inc.**  
1250 South Capital of Texas Highway  
Building 3, Suite 400  
Austin, Texas 78746

July 11, 2017

**VIA EDGAR**

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

Re: Mirna Therapeutics, Inc. Registration Statement on Form S-4 (File No. 333-218885)

**Request for Acceleration of Effectiveness**

Requested Date: July 13, 2017

Requested Time: 4:00 p.m. Washington, D.C. time

Ladies and Gentlemen:

In accordance with Rule 461 promulgated under the Securities Act of 1933, as amended, Mirna Therapeutics, Inc. (the "Registrant") hereby requests acceleration of the effective date of the Registration Statement on Form S-4 (File No. 333-218885), as amended (the "Registration Statement"), so that it may become effective at 4:00 p.m. Washington, D.C. time on July 13, 2017, or as soon as possible thereafter.

The Registrant hereby authorizes Chad Rolston, of Latham & Watkins LLP, to orally modify or withdraw this request for acceleration.

The Registrant hereby acknowledges that:

- should the Securities and Exchange Commission (the "Commission") or the staff of the Division of Corporation Finance (the "Staff"), acting pursuant to delegated authority, declare the filing effective, it does not foreclose the Commission from taking any action with respect to the filing;
- the action of the Commission or the Staff, acting pursuant to delegated authority, in declaring the filing effective, does not relieve the Registrant from its full responsibility for the adequacy and accuracy of the disclosure in the filing; and

- the Registrant may not assert Staff comments and the declaration of effectiveness as a defense in any proceeding initiated by the Commission or any person under the federal securities laws of the United States.

We request that we be notified of such effectiveness by a telephone call to Mr. Rolston at (650) 463-3079, or in his absence Bret Stancil, of Latham & Watkins LLP, at (650) 463-3087. We also respectfully request that a copy of the written order from the Commission verifying the effective time and date of such Registration Statement be sent to Latham & Watkins LLP, attention: Chad Rolston, via facsimile at (650) 463-2600.

Very truly yours,

Mirna Therapeutics, Inc.

/s/ Paul Lammers

Paul Lammers, M.D., M.Sc.

President and Chief Executive Officer

cc: Mark Roeder, Latham & Watkins LLP  
Chad Rolston, Latham & Watkins LLP  
Bret Stancil, Latham & Watkins LLP  
Matt Gardella, Mintz, Levin, Cohn, Ferris, Glovsky and Popeo, P.C.