September 20, 2016

Mirna Therapeutics Halts Phase 1 Clinical Study of MRX34

Management to host conference call and webcast today at 5 p.m. Eastern

AUSTIN, Texas--(BUSINESS WIRE)-- Mirna Therapeutics, Inc. (Nasdaq:MIRN), a clinical stage biopharmaceutical company, today announced its decision to close the ongoing Phase 1 study of MRX34, its investigational microRNA therapy for multiple cancers. The Company voluntarily halted enrollment and dosing in the clinical study following multiple immune-related severe adverse events (SAE) observed in patients dosed with MRX34 over the course of the trial.

"Patient safety is the primary objective of our MRX34 Phase 1 clinical trial," said President and CEO Paul Lammers, M.D., M.Sc. "We made the difficult decision to close the study after a fifth, immune-related serious adverse event was recently reported by one of our clinical sites. This patient experienced severe (Grade 4) cytokine release syndrome and is undergoing treatment. We have notified the U.S. FDA and the Korean FDA of our decision and are in the process of closing the trial."

Mirna also announced that it will not be initiating a translational medicine study of MRX34 in melanoma patients, planned to begin later this year. The Company will be further analyzing its full preclinical and clinical data set, and will discuss with its advisors, as well as the FDA, possible future development of MRX34 and will provide updates when appropriate.

Conference Call Details

To access the call, participants should dial 877-407-9079 (U.S. & Canada) or 201-493-6746 (international) at least 10 minutes prior to the start of the call. The call will be webcast live and may be accessed from the **Events & Presentations** section of the Company's website. An archived version of the webcast will be available for replay following the event.

About Mirna Therapeutics, Inc.

Mirna is a clinical stage biopharmaceutical company developing microRNA-based oncology therapeutics and is the first to bring a synthetic microRNA mimic into clinical development for the treatment of cancer. Mirna's lead product candidate, MRX34, a mimic of naturally occurring microRNA-34 (miR-34), has been studied in a Phase 1 clinical trial which included patients with primary liver cancer, advanced solid tumors and hematological malignancies. miR-34 is one of the most widely published microRNAs and is considered a key regulator of multiple oncogenes across key oncogenic pathways, with the capacity to regulate more than 30 different oncogenes and repress immune checkpoint signaling molecules, including PD-L1. The Company was founded in 2007 and is located in Austin, Texas.

For more information, visit www.mirnarx.com.

Forward-Looking Statements

To the extent that statements contained in this press release are not descriptions of historical facts regarding Mirna, they are forward-looking statements reflecting the current beliefs and expectations of management made pursuant to the safe harbor provisions of the Private Securities Litigation Reform Act of 1995, including statements regarding possible future MRX34 development. Such forward-looking statements involve substantial risks and uncertainties that could cause our clinical development program, future results, performance or achievements to differ significantly from those expressed or implied by the forward-looking statements. Such risks and uncertainties include, among others, the uncertainties inherent in the clinical drug development process, including the outcomes of clinical trials, the regulatory approval process, our substantial dependence on MRX34, our commercialization plans and efforts and other matters that could affect the availability or commercial potential of our product candidates and the risk that our product candidates may cause undesirable side effects or have other properties that could delay or prevent their regulatory approval. We undertake no obligation to update or revise any forward-looking statements. For a further description of the risks and uncertainties that could cause actual results to differ from those expressed in these forward-looking statements, as well as risks relating to our business in general, see our Annual Report on Form 10-K filed with the U.S. Securities and Exchange Commission (SEC) on March 30, 2016 and our Quarterly Report on Form 10-Q, filed with the SEC on August 15, 2016.

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