



April 25, 2016

Mirna Therapeutics Appoints Vincent J. O'Neill, M.D., as Chief Medical Officer

AUSTIN, Texas--(BUSINESS WIRE)-- Mirna Therapeutics, Inc. (Nasdaq:MIRN), a clinical stage biopharmaceutical company developing a broad pipeline of microRNA-based oncology therapeutics, today announced the appointment of Vincent J. O'Neill, M.D., B.Sc., M.R.C.P. as Chief Medical Officer, effective April 25, 2016.

Dr. O'Neill, a medical oncologist, joins Mirna with 15 years of therapeutic and diagnostic product development experience, with senior leadership roles at global pharmaceutical companies, including Sanofi, Genentech and GlaxoSmithKline. Most recently, he served as Chief Medical Officer at Exosome Diagnostics, where he oversaw global product development and medical affairs. At both Genentech and GlaxoSmithKline, he managed the clinical and biomarker development programs of several oncology therapeutic candidates. He was instrumental in the expanded approval of Genentech's Avastin[®] and Tarceva[®] oncology therapeutics. At GSK, he oversaw the signal transduction discovery unit and led the first IND application and clinical trial of MEK inhibitor MEKINIST[®].

Dr. O'Neill will be assuming the role of Chief Medical Officer from Dr. Sinil Kim, who joined Mirna's executive team in 2013 and led the design and management of Mirna's Phase 1 clinical trial of MRX34, its lead product candidate and the first microRNA therapeutic in clinical development in cancer.

"We are excited that Vince is joining the Mirna team as we prepare to advance MRX34 into two Phase 2 trials later this year. His extensive leadership in product development across all phases of clinical study as well as his background in molecular pathology and translational research will significantly enhance our efforts as we move into this next stage of our Company's growth," said Dr. Paul Lammers, M.D., M.Sc., President and CEO. "We are grateful to Sinil for his foundational contributions to our pioneering work in microRNA therapeutics and for leading our MRX34 clinical development program to this stage. We wish him well."

Dr. O'Neill received his M.D. and his B.Sc. in molecular pathology, from the University of Glasgow. He has authored multiple peer-reviewed publications and conference presentations. Dr. O'Neill is also a member of the Royal College of Physicians.

About Mirna Therapeutics, Inc.

Mirna is a clinical stage biopharmaceutical company developing a broad pipeline of microRNA-based oncology therapeutics and is the first to establish clinical proof-of-concept for a microRNA replacement therapy for cancer. Mirna's lead product candidate, MRX34, a mimic of naturally occurring microRNA-34 (miR-34), is currently being studied in a Phase 1 clinical trial in 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 the immune checkpoint signaling molecule PD-L1. The potential capacity to simultaneously affect multiple pathways and processes that are critical to cancer cell viability may make mimics of tumor suppressor microRNAs potent anti-cancer agents and less susceptible to drug resistance. Mirna plans to develop MRX34 as a monotherapy and in combination with other therapeutic modalities, such as targeted therapies and immuno-oncology agents. 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 our pre-clinical and clinical activity and results of our clinical development program, including the projected timing and nature of Phase 2 studies of MRX34; and our beliefs regarding our potential for growth. 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. Mirna undertakes 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.

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