MIRAGEN TO PRESENT AT THE DIA/FDA OLIGONULEOTIDE-BASED THERAPEUTICS CONFERNECE TODAY

- *An overview of its second-generation mir-29 mimics*
- *Clinical development of its microRNA inhibitors*

BOULDER, Colo., Oct. 28, 2019 (GLOBE NEWSWIRE) -- miRagen Therapeutics, Inc. (NASDAQ: MGEN), a clinical-stage biopharmaceutical company developing proprietary RNA-targeted therapies with a specific focus on microRNAs, will present an overview of its novel second generation miR-29 mimics (MRG-229) at the DIA/FDA Oligonucleotide-Based Therapeutics Conference in Bethesda, Maryland, today. In a separate session at the conference, miRagen will also review clinical development of its microRNA inhibitors.

The Company will report on the effects of MRG-229, a preclinical miR-29 mimic product candidate, in both in vitro and in vivo animal models of lung fibrosis. These include the bleomycin induced pulmonary fibrosis model in rodents, in normal human lung fibroblasts (NHLF) in vitro, and in human lung slices treated with profibrotic agents, all of which demonstrated reductions in the levels of a variety of fibrosis markers.

Specifically, the presentation will highlight the following:

- Circulating miR-29 level was observed to correlate with survival and miR-29 is reduced in lungs of idiopathic pulmonary fibrosis (IPF) patients compared to healthy controls
- Targeted miR-29 mimics appeared to show anti-fibrotic activity in normal human lung fibroblasts (NHLFs) and human precision cut lung slices
- Stabilized, conjugated miR-29 mimics were observed to block fibrosis in bleomycin-induced pulmonary fibrosis, with increased potency as compared to first generation miR-29 mimics
- Stabilized, conjugated miR-29 mimics appeared to demonstrate activity by both intravenous and subcutaneous routes of administration

“We are encouraged by the second generation miR-29 mimics data presented to date. We believe these new molecules have been demonstrated to be more potent, have longer duration of action, and better tissue distribution than previously tested compounds,” said Paul Rubin, M.D., Executive Vice President, R&D, of miRagen Therapeutics.

William S. Marshall, President and CEO of miRagen Therapeutics, added, “We believe these novel second generation miR-29 mimics could become systemic treatments for indications where pathological fibrosis has been implicated in the lung and the liver, including IPF and nonalcoholic steatohepatitis (NASH). Patients with IPF have been documented to show reduced levels of miR-29 in their lungs, and low miR-29 levels have been shown to correlate with poorer survival in these patients. IPF affects more than 3 million patients world-wide resulting in significant morbidity and mortality despite existing therapies.”

In a Phase 1 clinical trial with healthy human volunteers, remlarsen, miRagen’s first generation miR-29 replacement, was administered through incisional wounds and was observed to be safe and well tolerated, and treatment was observed to result in a decrease in fibrosis or scarring, without effecting wound

healing. miRagen has also previously reported that miR-29 replacement with remlarsen was observed to reduce scar formation in animal models of retinal fibrosis and corneal injury. There are multiple pathologic conditions resulting in exaggerated fibrosis of the skin and of the eyes that are without beneficial pharmacological therapies, including keloid and hypertrophic scarring in the skin and fibrosis of the retina and cornea.

About miRagen Therapeutics, Inc.
miRagen Therapeutics, Inc. is a clinical-stage biopharmaceutical company discovering and developing proprietary RNA-targeted therapies with a specific focus on microRNAs and their role in diseases where there is a high unmet medical need. miRagen has three clinical stage product candidates, cobomarsen, remlarsen, and MRG-110. miRagen's clinical product candidate for the treatment of certain cancers, cobomarsen, is an inhibitor of microRNA-155, which is found at abnormally high levels in malignant cells of several blood cancers. miRagen's clinical product candidate for the treatment of pathological fibrosis, remlarsen, is a replacement for microRNA-29, which is found at abnormally low levels in a number of pathological fibrotic conditions, including cutaneous, cardiac, renal, hepatic, pulmonary and ocular fibrosis, as well as in systemic sclerosis. MRG-110, an inhibitor of microRNA-92, is miRagen's product candidate for the treatment of heart failure and other ischemic disease. In addition to these programs, miRagen is developing a pipeline of preclinical product candidates. The goal of miRagen's translational medicine strategy is to progress rapidly to first-in-human studies once it has established the pharmacokinetics, pharmacodynamic, safety, and manufacturability of the product candidate in preclinical studies. For more information, please visit www.miragen.com. For information on clinical trials please visit www.clinicaltrials.gov.

Note Regarding Forward-Looking Statements

This press release may contain forward-looking statements that involve substantial risks and uncertainties for purposes of the safe harbor provided by the Private Securities Litigation Reform Act of 1995. All statements contained in this press release other than statements of historical fact, including statements regarding miRagen's strategy, future operations, future financial position, future revenue, projected expenses, prospects, plans and objectives of management or the expected features of or potential indications for miRagen's product candidates are forward-looking statements. The words "believe," "may," "will," "estimate," "continue," "anticipate," "intend," "plan," "expect," "predict," "potential," "opportunity," "goals," or "should," and similar expressions are intended to identify forward-looking statements. Such statements are based on management's current expectations and involve risks and uncertainties. Actual results and performance could differ materially from those projected in the forward-looking statements as a result of many factors, including, without limitation: that miRagen has incurred losses since its inception, and anticipates that it will continue to incur significant losses for the foreseeable future; future financing activities may cause miRagen to restrict its operations or require it to relinquish rights; miRagen may fail to demonstrate safety and efficacy of its product candidates; miRagen's product candidates are unproven and may never lead to marketable products; miRagen's product candidates are based on a relatively novel technology, which makes it difficult to predict the time and cost of development and of subsequently obtaining regulatory approval, if at all; miRagen's product candidates may cause undesirable side effects or have other properties that could delay or prevent the regulatory approval; and the results of miRagen's clinical trials to date are not sufficient to show safety and efficacy of miRagen's product candidates and may not be indicative of future clinical trial results.

miRagen has based these forward-looking statements largely on its current expectations and projections about future events and trends. These forward-looking statements are subject to a number of risks,

uncertainties and assumptions, including those described under the heading “Risk Factors” in miRagen’s Annual Report on Form 10-K and subsequent periodic reports filed with the Securities and Exchange Commission. Moreover, miRagen operates in a very competitive and rapidly changing environment. New risks emerge from time to time. It is not possible for its management to predict all risks, nor can it assess the impact of all factors on its business or the extent to which any factor, or combination of factors, may cause actual results to differ materially from those contained in any forward-looking statements it may make. In light of these risks, uncertainties and assumptions, the future events and trends discussed in this press release may not occur and actual results could differ materially and adversely from those anticipated or implied in the forward-looking statements. miRagen undertakes no obligation to revise or publicly release the results of any revision to such forward-looking statements, except as required by law. Given these risks and uncertainties, readers are cautioned not to place undue reliance on such forward-looking statements. All forward-looking statements are qualified in their entirety by this