PRESS RELEASE

Servier and miRagen extend collaboration for the research, development and commercialization of microRNA-targeting therapeutics

A new program targeting microRNA-92 for the treatment of cardiovascular disease and certain other vascular flow related diseases may support regenerative therapy

Paris & Boulder – 3 May 2017 – Servier and Miragen Therapeutics, Inc. (Nasdaq: MGEN), a clinical-stage biopharmaceutical company focused on the discovery and development of microRNA-targeted therapies, announced today that they have extended their research collaboration through September 2019. MicroRNA-92 has been added to the existing collaboration as a new therapeutic target, with the objective to start testing MRG-110 in humans within a year.

MRG-110, the lead product candidate under the collaboration, inhibits the activity of microRNA-92, which has been shown to be a regulator of new blood vessel creation in multiple peer reviewed scientific publications. This may indicate that MRG-110 could be useful in the treatment of ischemic disease, cardiovascular disease and certain other vascular flow related diseases.

Servier is responsible for leading the global clinical development and potential commercialization of MRG-110, and any other microRNA therapeutic product candidates developed through the collaboration in all countries except the United States and Japan, where miRagen retains all rights. miRagen has the right to utilize Servier generated data for regulatory filings in the United States and Japan. In conjunction with the amendment, Servier has returned to miRagen the rights to certain other preclinical programs. Servier has the option to add one additional microRNA target for research and development in cardiovascular disease under this collaboration through September 2019.

“We are highly excited to pursue our collaboration with miRagen, with the ambitious goal to develop a first-in-class compound in the field of regenerative therapy with what we believe has the potential to restore the microvascular density,” said Isabelle Tupinon-Mathieu, M.D., Head of Cardiovascular and Metabolism Therapeutic Innovation Poles, V.P R&D at Servier. “We really feel that, as a leader in cardiology, we have to use our expertise to find innovative answers to cover important medical needs.”

“Our strategic collaboration with Servier continues to be focused on addressing cardiovascular diseases that have been difficult to treat with traditional therapeutic approaches. Together, we believe we have made advancements in understanding microRNA therapeutics and we share a commitment to developing product candidates to treat diseases

with high unmet medical need," said William S. Marshall, President and CEO of miRagen Therapeutics, Inc. "We are very excited to move into the next phase of our collaboration focused on development of MRG-110, which we believe has potential applications in heart failure as well as other diseases that would benefit from enhanced revascularization. We believe the activity of MRG-110 in pre-clinical testing indicates the potential for a number of differentiated therapeutic applications for microRNA-92 inhibitors."

About the miRagen / Servier Cardiovascular Collaboration

In October 2011, miRagen entered into a License and Collaboration Agreement with Servier with the goal of advancing microRNA-based therapies in cardiovascular disease and the agreement has been extended several times since then. Under the terms of the agreement, miRagen received an upfront payment in 2011 and an additional payment when Servier exercised its option to name a third target under the agreement in 2013. The May 2017 amendment provides Servier with an exclusive license to research, develop, and commercialize RNA-targeting therapeutics for one target in the cardiovascular field and the right to obtain such an exclusive license for another target to be named by Servier by a specified date. miRagen also is also eligible to receive research and development milestone payments, commercial milestone payments and royalties on the sale of any products developed under the collaboration, if any. After the May 2017 amendment to the agreement, Servier will continue to finance the research, development, regulatory approval, and commercialization costs of product candidates developed under the collaboration. Under the agreement, miRagen retains all commercialization rights in the United States and Japan for all product candidates developed under the collaboration, and the option to co-sponsor any Phase 3 clinical programs if miRagen elects to seek marketing approval in the United States or Japan for any product candidate developed under the collaboration.

About Servier

Servier is an international pharmaceutical company governed by a non-profit foundation with its headquarters in Suresnes (France). With a strong international presence in 148 countries and a turnover of 4 billion euros in 2016, Servier employs 21,000 people worldwide. Corporate growth is driven by Servier's constant search for innovation in five areas of excellence: cardiovascular, immune-inflammatory and neurodegenerative diseases, oncology and diabetes, as well as by its activities in high-quality generic drugs. Entirely independent, with no shareholders, the Group reinvests 25% of its turnover (excluding generics) in research and development and uses all its profits for growth.

A key player in cardiology and hypertension for the last 20 years, number 2 in Europe and 8 worldwide, Servier has 12 major products on the market with a total turnover of more than 1.6 billion euro in 2016. Currently, there are 12 new fixed-dose combinations and 10 new molecular entities in research or development, mainly targeting heart failure. This portfolio of innovative treatments is being developed with partners worldwide.

More information: www.servier.com

About miRagen Therapeutics, Inc.

miRagen Therapeutics, Inc. is a clinical-stage biopharmaceutical company discovering and developing proprietary RNA-targeted therapeutics with a specific focus on microRNAs and their role in diseases where there is a high unmet medical need. miRagen's two lead product candidates, MRG-106 and MRG-201, are currently in Phase 1 clinical trials. miRagen's clinical product candidate for the treatment of certain cancers, MRG-106, is an inhibitor of microRNA-155, which is found at abnormally high levels in several blood cancers. miRagen's clinical product candidate for the treatment of pathological fibrosis, MRG-201, is a replacement for miR-29, which is found at abnormally low levels in several pathological fibrotic conditions, including cardiac, renal, hepatic, and pulmonary fibrosis, as well as systemic sclerosis. In addition to miRagen's clinical programs, it is developing a pipeline of pre-clinical 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, pharmacodynamics and safety of the product candidate in pre-clinical studies. For more information, please visit www.miragenrx.com.

For information on clinical trials please visit www.clinicaltrials.gov.

About microRNAs

MicroRNAs have emerged as an important class of small RNAs encoded in the genome, acting as master regulators of gene expression. microRNAs are short RNA molecules, or oligonucleotides, that regulate gene expression or activity and play a vital role in influencing the pathways responsible for many disease processes. A body of evidence has shown that inappropriate levels of particular microRNAs are directly linked to a range of serious diseases, many of which are poorly served by existing therapies. microRNAs can affect the balance of protein expression and serve as “command and control” nodes that directly coordinate multiple critical systems simultaneously. This effect on systems biology is a naturally occurring homeostatic process that becomes disrupted in certain disease states. As a result, developing microRNA therapeutics is fundamentally different from the single-protein, single-target approach that is the foundation of traditional small and large molecule drugs., and microRNAs may represent potential drug targets for controlling many biologic and disease processes.

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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 the potential development or regulatory approval of any product candidates developed under the collaboration between miRagen and Servier, miRagen’s strategy, future operations, future financial position, future revenue, projected expenses, prospects, plans and objectives of management 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; and miRagen’s product candidates may cause undesirable side effects or have other properties that could delay or prevent the regulatory approval.

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 in 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 cautionary statement.