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MEBIAS DISCOVERY

MEBIAS Discovery LLC Presents Pre-Clinical Data on Mu Opioid Receptor Pain Compounds at ADDC

Biased agonists show absence of respiratory depression, constipation, and addiction potential associated with opioids

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PHILADELPHIA--(BUSINESS WIRE)--**MEBIAS Discovery**, an emerging leader in the field of **biased agonism G-Protein Coupled Receptor (GPCR) drug discovery**, presented preclinical data on two novel drug candidates at the Academic Drug Discovery Consortium on October 12, 2017. Lawrence Kuo, PhD and Brett Tounge, PhD, two of MEBIAS' founding partners, shared the first preclinical data of MEB-1166 and MEB-1170 showing the compounds alleviated pain in a nociceptive model (tail flick) and lacked opioid-associated adverse effects including respiratory depression, constipation, and sedation, even at high doses. The data indicate that MEB-1166 and MEB-1170 could potentially be devoid of the dangerous side effects of standard opioids, making them attractive candidates for development.

According to the American Society of Addiction Medicine and the NIH, in 2015 over two million Americans abused or were dependent on opioids and more than 17,000 died of overdoses of prescription opioid pain medications. Respiratory depression is the leading cause of death associated with opioids.

The MEBIAS preclinical studies compared MEB-1166 and MEB-1170 against Trevena's Oliceridine (TRV130) and morphine, with appropriate controls. Both MEBIAS compounds displayed no adverse effect on respiratory depression as measured by the arterial partial pressure of oxygen (PaO_2), even at doses 4 times their efficacious dose. In contrast, when tested at 4 times their respective efficacious dose, morphine and Oliceridine exhibited significant respiratory depression (PaO_2 < 75mm Hg). In a preclinical study to assess addiction potential (conditioned place preference model), MEB-1170 induced no reward or liking behavior; MEB-1166 is currently being evaluated in the same model. Both MEBIAS compounds had minimal to no impact on gastrointestinal function as measured by charcoal transit and showed no sedation in the accelerating rotarod model. All *in vivo* studies were conducted with Sprague Dawley rats.

MEBIAS plans to advance internal candidates into early clinical development and partner with biopharmaceutical companies around other targets of interest.

The poster will be available on the MEBIAS Discovery website.

About MEBIAS Discovery LLC

MEBIAS, an emerging leader in the field of **biased agonism GPCR drug discovery**, was founded by three highly experienced drug discovery scientists, formerly of Merck and Johnson & Johnson. MEBIAS has developed a platform to discover next-generation GPCR drugs that avoid the on-target side effects of earlier generations of compounds, which

historically signal through both the G-protein as well as the beta-arrestin pathways. The platform is established on the principle that compounds signaling through either the G-protein or the beta-arrestin pathway can be efficacious with fewer or no side effects. At the core of MEBIAS' know-how are two specialized technologies: native GPCR purification and protein nuclear magnetic resonance. This know-how allows MEBIAS to achieve sensitivity unmatched by cell assays alone. The Company's lead program has produced proprietary mu opioid agonists designed to achieve analgesia without respiratory depression, constipation, and addiction potential seen in opioids on the market today. An additional internal discovery program will be initiated by the end of 2017. Areas of focus are neuroscience/pain, metabolic, gastroparesis, and inflammatory disorders.

MEBIAS' business model foresees partnering with biopharmaceutical firms on specific targets as well as advancing select internal candidates into early clinical development.

Forward-Looking Statements

This press release contains "forward-looking statements" concerning the development of the company's preclinical products, the potential benefits and attributes of such products, and the company's expectations regarding its products and prospects. Forward-looking statements are subject to risks, assumptions and uncertainties that could cause actual future events or results to differ materially from such statements. These statements are made as of the date of this press release. Actual results may vary. The company undertakes no obligation to update any forward-looking statements for any reason.

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