April 5, 2017

Ligand Enters Commercial License and Supply Agreements with Marinus Pharmaceuticals for Captisol-Enabled Ganaxolone

SAN DIEGO--(BUSINESS WIRE)-- **Ligand Pharmaceuticals Incorporated (NASDAQ: LGND)** today announced that it has entered into commercial License and Supply Agreements (License Agreement) with Marinus Pharmaceuticals, Inc., granting rights to use Ligand's Captisol in the formulation of its intravenous (IV) ganaxolone. Captisol is a patent protected, chemically modified cyclodextrin with a structure designed to optimize the solubility and stability of drugs. Marinus is preparing to initiate clinical trials with Captisol-enabled ganaxolone IV in patients with postpartum depression (PPD) and status epilepticus (SE).

This License Agreement replaces the prior research agreement which allowed Marinus to evaluate ganaxolone IV with Captisol in preclinical and Phase 1 clinical studies. Under this new agreement, Marinus receives exclusive worldwide rights to Captisol-enabled ganaxolone for use in humans. In addition to an upfront payment, Ligand is entitled to potential milestone payments, royalties and revenue from future sales of Captisol-enabled ganaxolone.

"This agreement allows Captisol-enabled ganaxolone to go into later-stage testing and potential commercialization in indications that have significant unmet clinical needs," said John Higgins, Chief Executive Officer of Ligand Pharmaceuticals. "Ligand's portfolio of fully-funded shots on goal continues to grow and contains a large number of Captisol-enabled drugs. We continue to be encouraged by the recent progress of our partners, including Marinus."

"Ganaxolone IV formulated with Captisol has produced a good safety, tolerability, and toxicity profile in preclinical and Phase 1 testing," commented Christopher M. Cashman, President and Chief Executive Officer of Marinus Pharmaceuticals. "We look forward to moving ganaxolone IV into Phase 2 clinical trials in patients with PPD and SE this year."

About Ganaxolone

Ganaxolone, a positive allosteric modulator of GABAA, is being developed in three different dose forms (intravenous, capsule, and liquid) intended to maximize therapeutic reach to adult and pediatric patient populations in both acute and chronic care settings. Ganaxolone exhibits antiseizure and antianxiety actions via its effects on synaptic and extrasynaptic GABAA receptors. Ganaxolone has been studied in more than 1,500 subjects, both pediatric and adult, at therapeutically relevant dose levels and treatment regimens for up to two years.

In these studies, ganaxolone was generally safe and well tolerated. The most commonly reported adverse events were somnolence, dizziness and fatigue.

About Marinus Pharmaceuticals, Inc.

Marinus Pharmaceuticals, Inc. (NASDAQ:MRNS) is a biopharmaceutical company dedicated to the development of ganaxolone, which offers a new mechanism of action, demonstrated efficacy and safety, and convenient dosing to improve the lives of patients suffering from epilepsy and neuropsychiatric disorders. Ganaxolone is a positive allosteric modulator of GABAA that acts on a well-characterized target in the brain known to have both antiseizure and antianxiety effects. Ganaxolone is being developed in three different dose forms (IV, capsule and liquid) intended to maximize therapeutic reach to adult and pediatric patient populations in both acute and chronic care settings. Marinus is currently evaluating ganaxolone in orphan pediatric indications for the treatment of genetic seizure and behavior disorders, and preparing to initiate Phase 2 studies in status epilepticus, an orphan indication, and postpartum depression. For more information visit www.marinuspharma.com.

About Ligand Pharmaceuticals

Ligand is a biopharmaceutical company focused on developing or acquiring technologies that help pharmaceutical companies discover and develop medicines. Our business model creates value for stockholders by providing a diversified portfolio of biotech and pharmaceutical product revenue streams that are supported by an efficient and low corporate cost structure. Our goal is to offer investors an opportunity to participate in the promise of the biotech industry in a profitable, diversified and lower-risk business than a typical biotech company. Our business model is based on doing what we do best: drug discovery, early-stage drug development, product reformulation and partnering. We partner with other pharmaceutical companies to leverage what they do best (late-stage development, regulatory management and commercialization) to ultimately generate our revenue. Ligand's Captisol® platform technology is a patent-protected, chemically modified cyclodextrin with a structure designed to optimize the solubility and stability of drugs. OmniAb® is a patent-protected transgenic animal platform used in the discovery of fully human mono-and bispecific therapeutic antibodies. Ligand has established multiple alliances, licenses and other business relationships with the world's leading pharmaceutical companies including Novartis, Amgen, Merck, Pfizer, Celgene, Gilead, Janssen, Baxter International and Eli Lilly.

Follow Ligand on Twitter @Ligand_LGND.

Forward-Looking Statements

This news release contains forward-looking statements by Ligand that involve risks and uncertainties and reflect Ligand's judgment as of the date of this release. These include statements regarding Marinus' planned development of Captisol-enabled intravenous ganaxolone including the target indications. Actual events or results may differ from our expectations. For example, Marinus may choose to abandon Captisol-enabled intravenous ganaxolone; Marinus' clinical development plan may fail for a variety of reasons beyond Ligand's and Marinus' control including increased costs or company priorities; the safety, tolerability and efficacy data from a new clinical trial or other study in Captisol-enabled intravenous ganaxolone may conflict with the results of prior clinical trials; or Captisol-

enabled intravenous ganaxolone might not be successfully commercialized. The failure to meet expectations with respect to any of the foregoing matters may reduce Ligand's stock price. Additional information concerning these and other important risk factors affecting Ligand can be found in Ligand's prior press releases available at www.ligand.com as well as in Ligand's public periodic filings with the Securities and Exchange Commission, available at www.sec.gov. Ligand disclaims any intent or obligation to update these forward-looking statements beyond the date of this press release, except as required by law. This caution is made under the safe harbor provisions of the Private Securities Litigation Reform Act of 1995.

View source version on businesswire.com:
http://www.businesswire.com/news/home/20170405005243/en/

Ligand Pharmaceuticals Incorporated
Todd Pettingill, 858-550-7500
investors@ligand.com
@Ligand_LGND
or
LHA
Bruce Voss, 310-691-7100
bvoss@lhai.com

Source: Ligand Pharmaceuticals Incorporated