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ZULRESSO™ (brexanolone) CIV, a Product for Treating Postpartum Depression Using Ligand's Captisol® in its Formulation, Launched by Sage Therapeutics

SAN DIEGO--(BUSINESS WIRE)-- Ligand Pharmaceuticals Incorporated (NASDAQ: LGND) today announced that Sage Therapeutics has launched ZULRESSO™ (brexanolone) injection, which was approved by the U.S. Food and Drug Administration (FDA) on March 19, 2019, and is the first and only treatment specifically approved for postpartum depression (PPD), one of the most common medical complications during and after pregnancy. ZULRESSO uses Ligand's Captisol in its formulation. With this launch, ZULRESSO is the 11th FDA-approved drug to use Ligand's patented Captisol technology.

ZULRESSO is administered via continuous intravenous (IV) infusion for 2.5 days under the supervision of healthcare providers in sites of care certified under the ZULRESSO Risk Evaluation and Mitigation Strategy (REMS) program. For more information on ZULRESSO, including the final product label, visit ZULRESSO.COM or ZULRESSOREMS.COM.

About Postpartum Depression

Postpartum depression is one of the most common medical complications during and after pregnancy. PPD is a distinct and readily identified major depressive episode that can occur during pregnancy or after giving birth. Expert opinions vary as to the timing of the onset of PPD, ranging from onset during pregnancy up to 4-weeks postpartum and onset during pregnancy up to 12-months postpartum. PPD may have devastating consequences for a woman and for her family, which may include significant functional impairment, depressed mood and/or loss of interest in her newborn, and associated symptoms of depression such as loss of appetite, difficulty sleeping, motor challenges, lack of concentration, loss of energy and poor self-esteem. PPD can be a life-threatening condition due to the risk of suicide, a leading cause of maternal death following childbirth. PPD is estimated to affect approximately one in nine women who have given birth in the U.S. and 400,000 women annually. More than half of these cases may go undiagnosed without proper screening.

About ZULRESSO™ (brexanolone) injection

ZULRESSO, the first medicine specifically approved by the U.S. Food and Drug Administration (FDA) for the treatment of postpartum depression (PPD) in adults, is a positive allosteric modulator of both synaptic and extrasynaptic GABAA receptors. Allosteric modulation of neurotransmitter receptor activity results in varying degrees of desired activity rather than complete activation or inhibition of the receptor.

About Captisol®

Captisol is a patent-protected, chemically modified cyclodextrin with a structure designed to optimize the solubility and stability of drugs. Captisol was invented and initially developed by scientists in the laboratories of Dr. Valentino Stella, University Distinguished Professor at the University of Kansas' Higuchi Biosciences Center, for specific use in drug development and formulation. This unique technology has enabled several FDA-approved products, including Amgen's Kyprolis®, Baxter International's Nexterone®, Acrotech Biopharma's EVOMELA®, Melinta Therapeutics' Baxdela™, Sage Therapeutics' ZULRESSO™, Merck & Co.'s Noxafil™ and Pfizer's Vfend™. There are many Captisol-enabled products currently in various stages of development.

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. The Vernalis Design Platform (VDP) integrates protein structure determination and engineering, fragment screening and molecular modeling, with medicinal chemistry, to enable success in novel drug discovery programs against highly-challenging targets. Ligand has established multiple alliances, licenses and other business relationships with the world's leading pharmaceutical companies including Amgen, Merck, Pfizer, Gilead, Janssen, Baxter International and Eli Lilly. Follow Ligand on Twitter @Ligand_LGND.

Forward-Looking Statements

This press 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 forward-looking statements include comments regarding the potential for ZULRESSO to rapidly resolve PPD symptoms; and estimates as to the number of women with PPD in the United States and rates of diagnosis. Actual events or results may differ from Ligand's expectations. For example, Sage may encounter issues, delays or other challenges in launching or commercializing ZULRESSO, including issues related to market acceptance and reimbursement, challenges related to limiting the site of administration of the product to a certified healthcare facility monitored by a qualified healthcare provider, and the necessity for a Risk Evaluation and Mitigation Strategies plan; challenges associated with execution of Sage's sales and patient support activities, which in each case could limit the potential of Sage's product; results achieved with ZULRESSO in the treatment of PPD once Sage has

launched the product may be different than observed in clinical trials, and may vary among patients; Sage may encounter unexpected safety or tolerability issues with ZULRESSO; the number of patients with PPD or the unmet need for additional treatment options may be significantly smaller than Sage has reported; success in early stage clinical trials may not be repeated or observed in ongoing or future clinical trials; and Sage may encounter technical and other unexpected hurdles in the commercialization of ZULRESSO. 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 and its periodic filings with the Securities and Exchange Commission (including its most recent annual report on Form 10-K and subsequent quarterly reports on Form 10-Q), available at www.sec.gov, as updated by future period reports filed with the Securities and Exchange Commission. Ligand disclaims any intent or obligation to update these forward-looking statements beyond the date of this report. This caution is made under the safe harbor provisions of the Private Securities Litigation Reform Act of 1995.

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