

## **Umecrine Cognition announces grant of a US patent protecting its lead candidate drug GR3027. The use of GR3027 as a novel therapy of hepatic encephalopathy is also acknowledged in recognized scientific publications.**

**STOCKHOLM – December 9, 2015. Umecrine Cognition AB today announces that the United States Patent and Trademark Office (USPTO) has granted a patent covering its lead candidate drug GR3027. The patent adds to a corresponding patent granted by the European Patent Office (EPO) earlier this year. Umecrine Cognition is also pleased to announce peer-reviewed scientific publications supporting the use of GR3027 as a novel therapy for hepatic encephalopathy.**

“I am very pleased to announce this strengthening of Umecrine Cognition’s intellectual property position. This is an important step to safeguard the commercial potential of GR3027 as we prepare for clinical development of the compound in patients suffering from cirrhosis and hepatic encephalopathy (HE). The goal with the novel treatment mechanism in HE represented by GR3027 is to reverse the severe neurocognitive complications that follows acute and chronic liver disease where the treatment options today are very limited,” comments Magnus Doverskog, CEO of Umecrine Cognition.

HE is a serious neuropsychiatric and neurocognitive complication in acute and chronic liver disease with detrimental effects on health-related quality of life as a consequence of its diverse and debilitating symptoms. HE is characterized by impairments of the sleep-wake cycle, consciousness, cognition, memory, decreased energy levels, personality change and reduced motor skills. The pathophysiology of HE is driven by reduced liver function through cirrhosis as this increases the ammonia load in the systemic circulation which leads to hyperammonemia and neuroinflammation.

Magnus Doverskog adds, “Recently, several articles in peer-reviewed journals have been published that further elucidates the mechanistic properties of GR3027 and its efficacy in relevant disease models. The data presents a very compelling case for the potential future clinical use of this compound in the treatment of HE.”

GR3027 is a GABA<sub>A</sub> receptor modulating steroid antagonist (GAMSA), described in a recently published peer-reviewed article in *Journal of Steroid Biochemistry & Molecular Biology* [1], in such way that the compound antagonizes the neurosteroid enhancement of GABA<sub>A</sub> receptor activation. The enhanced GABA<sub>A</sub> receptor signaling is a key driver for the neurological symptoms associated with HE [2] and the compound class and mechanism of action represented by GR3027 has shown promising therapeutic properties to restore cognitive and motor function in hyperammonemia and HE [2,3].

Recently published peer-reviewed preclinical studies [4] (announced by Umecrine Cognition on August 19, 2015) confirms the ability of GR3027 to reverse key neurological symptoms associated with HE. In the studies, GR3027 restored motor coordination, spatial memory and spatial learning, while GR3027 treatment also partially restored circadian rhythms.

[1] Johansson M et al, GABA<sub>A</sub> receptor modulating steroid antagonists (GAMSA) are functional in vivo, *The Journal of Steroid Biochemistry and Molecular Biology*, Published 30 October, 2015, DOI:10.1016/j.jsbmb.2015.10.019

[2] Buttersworth R F, Neurosteroids in hepatic encephalopathy: Novel insights and new therapeutic opportunities, *Journal of Steroid Biochemistry & Molecular Biology*, Published 14 November, 2015, 2015, DOI:10.1016/j.jsbmb.2015.11.006

[3] Agusti A et al., Modulation of GABA<sub>A</sub> receptors by neurosteroids. A new concept to improve cognitive and motor alterations in hepatic encephalopathy, *Journal of Steroid Biochemistry & Molecular Biology*, Published 22 August, 2015, DOI:10.1016/j.jsbmb.2015.08.020

[4] Johansson M et al., GR3027 antagonizes GABA<sub>A</sub> receptor potentiating neurosteroids and restores spatial learning and motor coordination in rats with hepatic encephalopathy, *American Journal of Physiology - Gastrointestinal and Liver Physiology*, Published 2 July 2015, DOI: 10.1152/ajpgi.00073.2015

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**TO THE EDITORS**

**About Umecrine Cognition AB**

Umecrine Cognition is developing a potential therapy that represents a new target class relevant for several major CNS-related disorders. The primary focus is to develop a treatment for life-threatening overt Hepatic Encephalopathy and long-term treatment in minimal Hepatic Encephalopathy in patients with liver disease, a growing area with high unmet medical need. The current lack of therapeutics that directly addresses the neurocognitive signs and symptoms of Hepatic Encephalopathy makes a novel treatment likely to become a major contribution for the treatment of this disorder. For more information, please visit [www.umecrinecognition.com](http://www.umecrinecognition.com).