



Press release, 4 March, 2019

A new publication supports Diamyd Medical's patent rights around GABA

A new scientific article published in Journal of Diabetes Research supports previous findings that form the basis of patent applications that Diamyd Medical exclusively licenses from University of California, Los Angeles (UCLA). The study shows that treatment with GABA in combination with the GABA receptor modulating agent Alprazolam provides increased effect on the survival and growth of insulin-producing cells in animals.

The authors behind the publication, active at UCLA, have investigated the influence of GABA and the GABA receptor modulator Alprazolam on diabetic mice transplanted with human islets of Langerhans from the pancreas. In line with their previously published results on cultured cells, treatment with GABA and Alprazolam each resulted in decreased cell death and increased replication of insulin-producing cells. Treatment with the combination of the two substances further increased the effect. Alprazolam also increased GABA's ability to prevent the an immune response.

The results support patent applications that Diamyd Medical exclusively licenses from UCLA for the therapeutic use of GABA with positive allosteric modulators of the GABAA receptor to enhance beta cell regeneration and survival, and immunomodulation. Diamyd Medical's patent rights also include another exclusive license from UCLA including a key patent expiring 2031 for a combination treatment of type 1 diabetes with GABA and GAD65, as well as directly owned patent applications.

Both GABA and Alprazolam are known substances, which provides an opportunity for expedited development to the market. GABA treatment is currently being evaluated in two investigator initiated clinical trials in type 1 diabetes patients. Results from the fully recruited trial at the University of Alabama at Birmingham that is conducted under the direction of Professor Kenneth McCormick are expected in the last quarter of 2019. The initial safety part of the trial ReGenerate-1 with Diamyd Medical's GABA-based investigational drug Remyen[®] is underway at Uppsala University Hospital under the direction of Professor Per-Ola Carlsson. The trials evaluate the safety of GABA as well as the efficacy on regaining endogenous insulin secretion in diabetes in order to lay the foundation for a larger and possibly pivotal trial.

The article, "A Clinically Applicable Positive Allosteric Modulator of GABA Receptors Promotes Human β -Cell Replication and Survival as well as GABA's Ability to Inhibit Inflammatory T cells, written by Jide Tian, Hoa Dang, Nataliya Karashchuk, Irvin Xu, and Daniel L. Kaufman, has been published on the website of the Journal of Diabetes Research, and is available through the link <https://www.hindawi.com/journals/jdr/2019/5783545/abs/>

About type 1 diabetes

Type 1 diabetes is an autoimmune disease where the beta cells, the cells in the pancreas that produce insulin, are broken down by the immune system. Type 1 diabetes has no cure and is associated with severe cardiovascular and long term complications such as acute low blood sugar (hypoglycaemia), cardiovascular problems, kidney damage and nerve damage that lead to major human suffering and high costs to society.

When the disease is diagnosed, the patient only has about 20% of the endogenous insulin production left, an acute life threatening condition. Life-sustaining insulin therapy is required and the blood sugar balance must be monitored around the clock for the rest of one's life. Most patients have no measurable insulin production left a few years after diagnosis which in turn significantly increases the risk of serious diabetes-related complications.

The need for disease-modifying drugs that can preserve and increase insulin production in type 1 diabetes is therefore very high. Diamyd Medical's investigational drugs, Diamyd[®] and Remygen[®], are being developed to meet the need for new drugs that are able to prevent future diabetes related complications.

About Diamyd Medical

Diamyd Medical is dedicated to finding a cure for diabetes and other serious inflammatory diseases through pharmaceutical development and investments in stem cell and medical technology.

Diamyd Medical develops the diabetes vaccine Diamyd®, for antigen-specific immunotherapy based on the exclusively licensed GAD-molecule. Diamyd® has demonstrated good safety in trials with more than 1,000 patients as well as effect in some pre-specified subgroups. Besides the Company's own European Phase-II trial DIAGNODE-2, where the diabetes vaccine is administered directly into the lymph node, there are four investigator initiated clinical trials ongoing with Diamyd®. Diamyd Medical also develops Remygen®, an oral GABA-based investigational drug. An investigator-initiated trial in patients with type 1 diabetes since at least five years has started at Uppsala University Hospital. An investigator-initiated placebo-controlled trial with GABA and Diamyd® in patients recently diagnosed with type 1 diabetes is ongoing at the University of Alabama at Birmingham. Exclusive licenses for GABA and positive allosteric modulators of GABA receptors for the treatment of diabetes and inflammatory diseases constitutes alongside with the diabetes vaccine Diamyd® and Remygen® key assets. Diamyd Medical is also one of the major shareholders in the stem cell company NextCell Pharma AB and has holdings in the medtech company Companion Medical, Inc., San Diego, USA and in the gene therapy company Periphagen, Inc., Pittsburgh, USA.

Diamyd Medical's B-share is traded on Nasdaq First North under the ticker DMYD B. FNCA Sweden AB is the Company's Certified Adviser. Phone: +46 8-528 00 399, e-mail: info@fnca.se

For further information, please contact:

Ulf Hannelius, President and CEO

Phone: +46 736 35 42 41

E-mail: ulf.hannelius@diamyd.com

Diamyd Medical AB (publ)

Kungsgatan 29, SE-111 56 Stockholm, Sweden. Phone: +46 8 661 00 26, Fax: +46 8 661 63 68

E-mail: info@diamyd.com Reg. no.: 556242-3797 Website: <https://www.diamyd.com>

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