Gene strain for encoding taurine and GABA transporters and LPA receptor for epilepsy and migraine drug development

Technology #1856

“Lead Inventors: Synaptic Pharmaceutical Corporation

STV Reference: 1852-1856

Epilepsy and migraine drug development using gene strain for transporter genes: GABA is the major inhibitory neurotransmitter in the CNS. Maintenance of proper GABA levels prevents epileptic seizures. Inhibitors of GABA, taurine, and related transporters may represent an important class of therapeutics for the treatment of epilepsy, migraine, ischemia, myoclonus, spasticity, and chronic pain.

Lysophosphatidic acid (LPA) is a glycerophospholipid whose signaling is involved in cell proliferation, neurite retraction, platelet aggregation, smooth muscle contraction, tumor cell invasion, neurotransmitter release, chloride efflux, and chemotaxis. LPA receptors are important potential therapeutic targets for cancer, autoimmune disease, ischemia-reperfusion injury, thrombosis, neuropathic pain, infertility, even hair loss.

Gene strain epilepsy and migraine drug development: Patents for the technologies below were awarded to Synaptic Pharmaceutical Corporation between the years 1996-2001, and later donated to Columbia University.

• Mammalian (rat) taurine transporter gene
• Mammalian (rat) and human GABA transporter genes GAT-2 and GAT-3
• Human betaine/GABA transporter hBGT-1 gene, and methods for identifying compounds that bind the transporter
• Mammalian rB21a orphan transporter gene
• Human LPA receptor gene

Applications:

**Taurine/GABA transporter genes:** drug screening and diagnostic tests for • epilepsy • migraine • ischemia • myoclonus • spasticity • chronic pain

**LPA receptor gene:** drug screening and diagnostic tests for • cancer • autoimmune disease • ischemia-reperfusion injury • thrombosis • neuropathic pain • infertility • hair loss

Advantages: • Novel genes • Promising therapeutic target • Many potential indications

Patent Status: US Patents 5658786, 6225115, 5712148, 5766848, 5559021, 6210967 (see links below)

Licensing Status: Available for Licensing


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