LÁSZLÓ VÉCSEI

University of Szeged
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RESEARCH AREA

Our main research interest is the experimental and clinical investigation of the pathomechanism and possible therapeutic targets of neurological diseases. With the aid of MR imaging and electrophysiological recordings we search for the characteristic features of multiple sclerosis, Alzheimer's disease, Parkinson's disease and given headache disorders. From cerebrospinal fluid and from blood samples we determine biomarkers, which could help the diagnosis confirmation and provide details about the course of the diseases. In genetic studies, we investigate the genetic background of multiple sclerosis and Parkinson's' disease. The foundation of these experiments is our Biobank of human tissue samples, which we collect continuously. In our animal models we examine the molecular background of neurological disorders, particularly the protective effects of kynurenic acid derivatives. The kynurenine system is our main research target, which is involved in the patho-mechanism of numerous neurological disorders due to the modulatory effects on glutamatergic neurotransmission. In previous experiments, these molecules were effective in the experimental models of headache, Huntington's disease, epilepsy and stroke. Our aim is to further elucidate the mechanisms of effect and potential therapeutic value of this molecules.

TECHNIQUES AVAILABLE IN THE LAB

MR imaging and data processing, clinical electro-physiological recordings, transcranial direct/alternating current stimulation, RNA and DNA isolation, different PCR and ELISA methods, immunohistochemistry, Western blotting, behavioral experiments on animals, HPLC.

SELECTED PUBLICATIONS

Vécsei, L., Szalárdy, L., Fülöp, F., Toldi J. (2013) Kynurenines in the CNS: recent advances and new questions. **Nat Rev Drug Discov 12:** 64-82.

Szpisjak, L., Zadori, D., Klivenyi, P., **Vecsei, L.** (2019) Clinical characteristics and possible drug targets in autosomal dominant spinocerebellar ataxias. **CNS Neurol Disord Drug Targets 18:** 279-293.

Fakan, B., Szalardy, L., **Vecsei, L.** (2019) Exploiting the Therapeutic potential of Endogenous Immunomodulatory Systems in Multiple Sclerosis-Special Focus on the Peroxisome Proliferator-Activated receptors (PPARs) and the Kynurenines. **Int J Mol Sci 20:** 426.

Boros, FA., Klivényi, P., Toldi, J., **Vécsei, L.** (2019) Indoleamine 2,3-dioxygenase as a novel therapeutic target for Huntington's disease. **Expert Opin Ther Targets 23:** 39-51.

Veréb, D., Szabó, N., Tuka, B., Tajti, J., Király, A., Faragó, P., Kocsis, K., Tóth, E., Kincses, B., Bagoly, T., Helyes, Z., **Vécsei, L.**, Kincses, ZT. (2018) Correlation of neurochemical and imaging markers in migraine: PACAP38 and DTI measures. **Neurology 91:** 1166-1174.

Vécsei, L., Lukács, M., Tajti, J., Fülöp, F., Toldi, J., Edvinsson, L. (2018) The therapeutic impact of new migraine discoveries. **Curr Med Chem 26:** 6261-6281.

Boros, FA., Bohár, Z., **Vécsei, L.** (2018) Genetic alterations affecting the genes encoding the enzymes of the kynurenine pathway and their association with human diseases. **Mutat Res 776:** 32-45.

Hertelendy, P., Toldi, J., Fülöp, F., **Vécsei, L.** (2018) Ischemic Stroke and Kynurenines: Medicinal Chemistry Aspects. **Curr Med Chem 25:** 5945- 5957.

Edvinsson, L., Tajti, J., Szalárdy, L., **Vécsei, L.** (2018) PACAP and its role in primary headaches. **J Headache Pain 19:** 21.

Zádori, D., Veres, G., Szalárdy, L., Klivényi, P., **Vécsei, L.** (2018) Alzheimer's Disease: Recent Concepts ont he Relation of Mitochondrial Disturbances, Excitotoxicity, Neuroinflammation, and Kynurenines. **J Alzheimers Dis 62:** 523-547.

Körtési, T., Tuka, B., Tajti, J., Bagoly, T., Fülöp, F., Helyes, Z., **Vécsei, L.** (2018) Kynurenic Acid Inhibits the Electrical Stimulation Induced Elevated Pituitary Adenylate CyclaseActivating Polypeptide Expression in the TNC. **Front Neurol 8:** 745.

Annus, Á., Bencsik, K., Obál, I., Kincses, ZT., Tiszlavicz, L., Höftberger, R., **Vécsei, L.** (2018) Paraneoplastic neuromyelitis optica spectrum disorder: A case report and review of the literature. **J Clin Neurosci 48:** 7-10.