# BEÁTA SPERLÁGH

**Institute of Experimental Medicine**
**Molecular Pharmacology Research Group**

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## RESEARCH AREA

ATP is one of the most versatile molecule in the living cells: it is well known as the universal "energy currency", and as a building block of DNA, but it is also an important signalling substance of intercellular communication. This latter function of ATP is mediated by ionotropic P2X and metabotropic P2Y receptors. The general scientific mission of my research is to understand the ATP mediated signalling in the normal and pathological nervous system; and thereby to identify new therapeutic targets for the treatment of CNS diseases. We employ multidisciplinary approaches to study purinergic mechanisms, including studies on the release and action of ATP, mapping and identification of purinergic receptors under physiological conditions and in animal models of various neurological and psychiatric disorders and clinical studies. The main focus of our current interest is to identify the role of P2X7 receptors and the coupled signalling pathways (NLRP3-IL-1beta) in animal models of autism, schizophrenia and mood disorders as well as that of the metabotropic P2Y12 receptors in the pathophysiology of pain and Parkinson's disease.

## TECHNIQUES AVAILABLE IN THE LAB

Multiplex gene and protein expression analyses, light and electronmicroscopic immunhistochemistry, neurotransmitter release studies and other neurochemical techniques in vitro and in vivo, optogenetics, patch-clamp electrophysiology, two-photon microscopy, in vivo behavior studies in animal models of CNS disorders.

## SELECTED PUBLICATIONS

Szabó, D., Tod, P., Gölöncsér, F., Román, V., Lendvai, B., Otrokocsi, L., **Sperlágh, B.** (2022) Maternal P2X7 receptor inhibition prevents autism-like phenotype in male mouse offspring through the NLRP3-IL-1β pathway. **Brain Behav Immun 101:** 318-332.

Iring, A., Tóth, A., Baranyi, M., Otrokocsi, L., Módis, L.V., Gölöncsér, F., Varga, B., Hortobágyi, T., Bereczki, D., Dénes, Á., **Sperlágh, B.** (2022) The dualistic role of the purinergic P2Y12-receptor in an in vivo model of Parkinson's disease: Signalling pathway and novel therapeutic targets. **Pharmacol Res 176:** 106045.

Gölöncsér, F., Baranyi, M., Iring, A., Hricisák, L., Otrokocsi, L., Benyó, Z., **Sperlágh, B.** (2021) Involvement of P2Y12 receptors in a nitroglycerin-induced model of migraine in male mice. **Br J Pharmacol 178:** 4626-4645.

Horváth, G., Otrokocsi, L., Beko, K., Baranyi, M., Kittel, Á., Fritz-Ruenes, P.A., **Sperlágh, B.** (2019) P2X7 Receptors Drive Poly(I:C) Induced Autism-like Behavior in Mice. **J Neurosci 39:** 2542-2561.

Bekő, K., Koványi, B., Gölöncsér, F., Horváth, G., Dénes, Á., Környei, Z., Botz, B., Helyes, Z., Müller, C.E., **Sperlágh, B.** (2017) Contribution of platelet P2Y12 receptors to chronic Complete Freund's adjuvant-induced inflammatory pain. **J Thromb Haemost 15:** 1223-1235.