

LÁSZLÓ ACSÁDY

research professor



Institute of Experimental Medicine
Thalamus Research Group

TITLE OF HIS PRESENTATION

Heterogeneity of the cortical communication with the thalamus

RESULTS FOR THE TALENTUM PRIZE 2024 NOMINATION

Discovery of a fundamental regional difference in the long range cortical communication that can help to understand the regional heterogeneity of normal and pathological brain activity.

RESEARCH AREA

The main research focus of the Thalamus Research Group is to decipher the network mechanisms of the thalamocortical circuits that underlies higher order cognition as well as its pathological and alterations. To this end we utilize cell type specific investigations at morphological, physiological and behavioral levels to reveal how nucleus specific synaptic organization of thalamic circuits provides a framework for plastic behavioral and neuronal response to environmental challenges.

TECHNIQUES AVAILABLE IN THE LAB

Microscopy and image analysis: light microscopy, confocal, super-resolution and electron microscopy. Morphology: track tracing techniques, pre- and post-embedding immunocytochemistry. Physiology: measurement of extra- and intracellular activity, optogenetic methods, 2-photon microscopy. Behavioural analysis: manual and machine learning based behavioural analysis, correlated physiological and behavioural studies. Statistical and programming skills.

SELECTED PUBLICATIONS

Acsády, L. (2018) Heartless beat or beatless heart? *Nat Neurosci* 21: 649-651.

Acsády, L., Harris, K.D. (2017) Synaptic scaling in sleep. *Science* 355: 457-457.

Acsády, L. (2017) The thalamic paradox. *Nat Neurosci* 20: 901-902.

Fiath, R., Beregszaszi, P., Horvath, D., Wittner, L., Aarts, A.A., Ruther, P., Neves, H.P., Bokor, H., Acsady, L., Ulbert, I. (2016) Large-scale recording of thalamocortical circuits: in vivo electrophysiology with the two-dimensional electronic depth control silicon probe. *Journal of Neurophysiology* 116: 2312-2330.

Halassa, M.M., Acsády, L. (2016) Thalamic Inhibition: Diverse Sources, Diverse Scales. *Trends in Neurosciences* 39: 680-693.