

MÁTÉ TÓTH



Institute of Experimental Medicine
Laboratory of Translation Behavioural Neuroscience

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RESEARCH AREA

Our behavioral neuroscience research focuses on translational research questions, i.e. to explore the neurobiological mechanisms of mental disorders (mainly anxiety-affective and posttraumatic stress disorders). We use and develop clinically valid animal models of these disorders in order to explore the etiological background on multiple levels: what molecular and neural network alterations mediate pathological changes and vulnerabilities for these conditions. We apply mostly 'top-down' approach by using relevant behavioral paradigms to catch an important aspect of the disorder (e.g. fear generalization or passive coping) and then we investigate the underlying molecular and network characteristics/mechanisms by means of qPCR, immunohistochemistry, and microscopic techniques. Subsequently, we test the casual importance of these mechanisms (e.g. by chemogenetics).

TECHNIQUES AVAILABLE IN THE LAB

Behavioral testing (emotional, cognitive, social and other characterizations), its proper design-execution, quantification by automated systems/software; behavior manipulation techniques such as pharmacology, chemogenetics, optogenetics; brain sampling (microdissection, histology) and immunohistological labeling; visualization by confocal microscopy, and gene expression analysis by qPCR.

SELECTED PUBLICATIONS

Bruzsik, B., Biro L., Zelena, D., Sipos, E., Szezik, H., Sárosdi, K.R., Horváth, O., Farkas, I., Csillag, V., Finszter, C.K., Mikics, E., **Tóth, M.** (2021) Somatostatin Neurons of the Bed Nucleus of Stria Terminalis Enhance Associative Fear Memory Consolidation in Mice. *J Neurosci* **41(9)**: 1982-1995.

Biro, L., Sipos, E., Bruzsik, B., Farkas, I., Zelena, D., Balázsfi, D.,* **Tóth, M.**, *Haller, J. (2018) Task Division within the Prefrontal Cortex: Distinct Neuron Populations Selectively Control Different Aspects of Aggressive Behavior via the Hypothalamus. *J Neurosci* **38(17)**: 4065-4075.

Tóth, M., Flandreau, El., Deslauriers, J., Geyer, MA., Mansuy, IM., Merlo Pich, E., Risbrough, VB. (2016) Overexpression of Forebrain CRH During Early Life Increases Trauma Susceptibility in Adulthood. *Neuropsychopharmacology* **41(6)**: 1681-90.

Tóth, M., Gresack, JE., Bangasser, DA., Plona, Z., Valentino, RJ., Flandreau, El., Mansuy, I., Merlo-Pich, E., Geyer, MA., Risbrough, V. (2014) Forebrain-Specific CRF Over-Production During Development is Sufficient to Induce Enduring Anxiety and Startle Abnormalities in Adult Mice. *Neuropsychopharmacology* **39(6)**: 1409-19.

Halász, J., **Tóth, M.**, Mikics, E., Hrabovszky, E., Barsy, B., Barsvári, B., Haller, J. (2007) The effect of neurokinin1 receptor blockade on territorial aggression and in a model of violent aggression. *Biol Psychiatry* **63(3)**: 271-8.