

GÁBOR NYIRI

Lead Researcher



HUN-REN Institute of Experimental Medicine
Network and Integrative Neuroscience Research Group

TITLE OF HIS PRESENTATION

A Newly Discovered Reward Center in the Brain

RESULTS FOR THE TALENTUM PRIZE 2026 NOMINATION

His research group discovered a previously unknown brainstem nucleus that suppresses a brain region responsible for negative experiences, helping to control reward, motivation, and emotional balance

RESEARCH AREA

My research group focuses on the sub-cortical control of learning and memory processes. We study these questions from synaptic-level electron microscopy studies to viral neuronal tracing methods and behavioral-level studies.

TECHNIQUES AVAILABLE IN THE LAB

My research group uses a variety of neuroscience techniques including, but not limited to: immunohistochemistry, light and electron microscopy, RNAscope, brain surgery to explore and monitor neural pathways, optogenetics, chemogenetics, in vivo electrophysiology, fiber photometry, miniscope calcium imaging and a variety of behavioral techniques.

SELECTED PUBLICATIONS

Zichó, K., Balog, B. Z., Sebestény, R. Z., Brunner, J., Takács, V., Barth, A. M., Seng, C., Orosz, Á., Aliczki, M., Sebők, H., Mikics, É., Földy, C., Szabadics, J., Nyiri, G. (2025) Identification of the subventricular tegmental nucleus as brainstem reward center. *Science* **387(6732)**: eadr2191.

Zichó, K., Sos, K. E., Papp, P., Barth, A. M., Misák, E., Orosz, Á., Mayer, M.I., Sebestény, R.Z., Nyiri, G. (2023) Fear memory recall involves hippocampal somatostatin interneurons. *PLoS Biol* **21(6)**: e3002154.

Szőnyi, A., Sos, K.E., Nyilas, R., Schlingloff, D., Domonkos, A., Takács, V.T. Pósfai, B., Hegedüs, P., Priestley, J.B.J.B., Gundlach, A.L.A.L., Gulyás, A.I.A.I., Varga, V., Losonczy, A., Freund, T.F., Nyiri, G. (2019) Brainstem nucleus incertus controls contextual memory formation. *Science* **364(6442)**: eaaw0445.

Szőnyi, A., Zichó, K., Barth, A.M., Gönczi, R.T.R.T., Schlingloff, D., Török, B., Sipos, E., Major, A., Bardóczy, Z., Sos, K.E.K.E., Gulyás, A.I.A.I., Varga, V., Zelena, D., Freund, T.F., Nyiri, G. (2019) A, Median raphe controls acquisition of negative experience in the mouse. *Science* **366(6469)**: eaay8746.

Takács, V.T., Cserép, C., Schlingloff, D., Pósfai, B., Szőnyi, A., Sos, K.E.K.E., Környei, Z., Dénes, Á., Gulyás, A.I.A.I., Freund, T.F., Freund, T.F., Nyiri, G. (2018) Co-transmission of acetylcholine and GABA regulates hippocampal states. *Nat Commun* **9**: 2848.