

GÁBOR TURU



**HUN-REN Research Centre for Natural Sciences
Institute of Molecular Life Sciences**

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RESEARCH AREA

Our research group studies the molecular “communication systems” that control cellular functions through receptors located on the cell surface. One of our main interests is understanding how signal transmission occurs through G protein-coupled receptors (GPCRs) and β -arrestins — proteins that play key roles in many physiological processes.

Using modern laboratory techniques — including microscopy, cellular signaling assays, protein interaction analyses, and bioinformatics approaches — we map how these molecular interactions are formed and how they determine the effects of different drugs.

Our goal is to identify novel signaling mechanisms that could contribute to the development of more precisely targeted and safer therapeutics.

TECHNIQUES AVAILABLE IN THE LAB

Students in our lab can learn the fundamentals of cell-based experiments, signaling assays (BRET, fluorescence microscopy), and protein interaction analyses. They gain hands-on experience in cell culture, transfection, and receptor activation studies, as well as in data processing and bioinformatics analysis. Through these projects, students are introduced to the experimental toolkit of modern molecular pharmacology and signal transduction research.

SELECTED PUBLICATIONS

Tóth, A. D., **Turu, G.**, & Hunyady, L. (2024). Functional consequences of spatial, temporal and ligand bias of G protein-coupled receptors. *Nat Rev Nephrol* **20**(11): 722–741.

Tóth, A. D., Szalai, B., Kovács, O. T., Garger, D., Prokop, S., Soltész-Katona, E., Balla, A., Inoue, A., Várnai, P., **Turu, G.**, & Hunyady, L. (2024). G protein-coupled receptor endocytosis generates spatiotemporal bias in β -arrestin signaling. *Sci Signal* **17**(842): eadi0934.

Tóth, A. D., Soltész-Katona, E., Kis, K., Gutí, V., Gilzer, S., Prokop, S., Boros, R., Misák, Á., Balla, A., Várnai, P., Turiák, L., Ács, A., Drahos, L., Inoue, A., Hunyady, L., & **Turu, G.** (2024). ArreSTick motif controls β -arrestin-binding stability and extends phosphorylation-dependent β -arrestin interactions to non-receptor proteins. *Cell Rep* **43**(5): 114241.

Tóth, A. D., Garger, D., Prokop, S., Soltész-Katona, E., Várnai, P., Balla, A., **Turu, G.**, & Hunyady, L. (2021). A general method for quantifying ligand binding to unmodified receptors using Gaussia luciferase. *J Biol Chem* **296**: 100366.

Tóth, A. D., Prokop, S., Gyombolai, P., Várnai, P., Balla, A., Gurevich, V. V., Hunyady, L., & **Turu, G.** (2018). Heterologous phosphorylation-induced formation of a stability lock permits regulation of inactive receptors by β -arrestins. *J Biol Chem* **293**(3): 876–892.