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RESEARCH AREA

The Circulatory Physiology Research Group, led by Prof. Zoltán Benyó, aims to investigate the molecular regulatory mechanisms of the circulatory system in an integrative (subcellular, cellular, tissue and organismal) manner. We use modern pharmacological, physiological and gene manipulation techniques to elucidate the normal and abnormal functioning of these regulatory processes and to provide a theoretical basis for the development of new therapeutic options for circulatory disorders in various pathologies. The working group is mainly composed of young physicians, pharmacists and biologists, with stable funding, modern methodological tools and international recognition.

TECHNIQUES AVAILABLE IN THE LAB

- Molecular biology methods (cloning and recombinant DNA techniques, RNA, DNA and protein isolation and electrophoresis, PCR and qPCR, RNA interference, western blot, chromatin immunoprecipitation, ELISA)
- Fluorescent microscopy
- Classical microbial methods
- FACS/ flow cytometry
- Wire and pressure myograph
- Cell culture and related techniques
- Mouse models of cardiovascular diseases

SELECTED PUBLICATIONS

Balla, H., Borsodi, K., Őrsy, P., Horváth, B., Molnár, P. J., Lénárt, Á., **Kosztelnik, M.**, ... Benyó, Z. (2023). Intracellular signaling pathways of muscarinic acetylcholine receptor-mediated detrusor muscle contractions. *Am J Physiol Renal Physiol* **325**(5): F618-F628.

Janovicz, A., Majer, A., **Kosztelnik, M.**, Geiszt, M., Chun, J., Ishii, S., ... Ruisanchez, É. (2023). Autotaxin-lysophosphatidic acid receptor 5 axis evokes endothelial dysfunction via reactive oxygen species signaling. *Exp Biol Med* **248**(20): 1887-1894.

Kutnyánszky, V., Hargitai, B., Hotzi, B., **Kosztelnik, M.**, Ortutay, C., Kovács, T., ... Vellai, T. (2020). Sex-specific regulation of neuronal functions in *Caenorhabditis elegans*: the sex-determining protein TRA-1 represses goa-1/Gα (i/o). *Mol Genet Genomics* **295**: 357-371.

Pápai, N., Kagan, F., Csikós, G., **Kosztelnik, M.**, Vellai, T., Varga, M. (2019). No correlation between endo- and exoskeletal regenerative capacities in teleost species. *Fishes* **4**(4): 51.

Kosztelnik, M., Kurucz, A., Papp, D., Jones, E., Sigmond, T., Barna, J., ... Kapuy, O. (2018). Suppression of AMPK/aak-2 by NRF2/SKN-1 down-regulates autophagy during prolonged oxidative stress. *FASEB J* **33**(2): 2372.