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RESEARCH AREA

My scientific interest is in the biology of cutaneous pigment cells (epidermal melanocytes) and their neoplastic forms (melanoma cells). My PhD thesis focused on the nuclear presence and possible functions of N-methyl-D-aspartate type glutamate receptors in melanoma cells. I also participated in several projects on cellular and molecular biology related experiments of melanocytes and melanoma cells, including the importance of different chain-length hyaluronic acids, their synthases and receptors, the effects of PACAP neuropeptide related signalling, the role of clock genes and the functions of the cytoskeleton components, called septins. After obtaining my PhD degree, I joined the Chondro-omics group of Dr. Csaba Matta and started to work on the "omics" field, focusing on cell surface proteins (the so-called surfaceome) of melanocytes and melanoma cells using proteomics, bioinformatics, and network biology methods. I'm also interested in proteomics of subcellular membranes and exosomes of pigment cells.

TECHNIQUES AVAILABLE IN THE LAB

In addition to basic cell and tissue culture work, our laboratory offers molecular biology-based expression studies (qPCR, western blot), immunocytochemistry reactions and confocal microscopy to map subcellular localisation, as well as cellular function related experiments (cell proliferation, cell migration). Through our collaborative partners, we can analyse proteins of pigment cells using proteomic methods (mass spectrometry) and gain new insights into them using bioinformatics and network biology tools.

SELECTED PUBLICATIONS

Hajdú, T., Juhász, T., Szűcs-Somogyi, C., Rácz, K., Zákány, R. (2018) NR1 and NR3B Composed Intranuclear N-methyl-d-aspartate Receptor Complexes in Human Melanoma Cells **Int J Mol Sci** 191929.

Hajdú, T., Kovács, P., Zsigrai, E., Takács, R., Vágó, J., Cho, S., Sasi-Szabó, L., Becsky, D., Keller-Pintér, A., Emri, G., Rácz, K., Reglődi, D., Zákány, R., Juhász, T. (2021) Pituitary Adenylate Cyclase-Activating Polypeptide (PACAP) has inhibitory effects on melanoma cell proliferation and migration in vitro. **Front Oncol 11:** 681603.

Matta, C., Lewis, R., Fellows, C., Diszhazi, G., Almassy, J., Miosge, N., Dixon, J., Uribe, MC., May, S., Poliska, S., Barrett-Jolley, R., Fodor, J., Szentesi, P., **Hajdú, T.**, Keller-Pinter, A., Henslee ,E., Labeed, FH., Hughes, MP., Mobasheri, A. (2021) Transcriptome-based screening of ion channels and transporters in a migratory chondroprogenitor cell line isolated from late-stage osteoarthritic cartilage. **J Cell Physiol 236:** 7421-7439

Vágó, J., Katona, É., Takács, R., Dócs, K., **Hajdú, T.**, Kovács, P., Zákány, R., van der Veen, DR., Matta, C. (2022) Cyclic uniaxial mechanical load enhances chondrogenesis through entraining the molecular circadian clock. **J Pineal Res 73:** e12827.

Vágó, J., Takács, R., Kovács, P., **Hajdú, T.**, van der Veen, DR., Matta. (2023) Combining biomechanical stimulation and chronobiology: a novel approach for augmented chondrogenesis? **Front Bioeng Biotechnol 11:** 1232465.