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RESEARCH AREA

Studying the functional interaction between immune cells and tumour cells. Our research involves the generation of chimera antigen receptor-expressing macrophage (CAR-M) cells by lentiviral transduction that efficiently kill Her2+ tumour cells. We use THP-1 monocyte-derived cells to express CARs. Our primary objective is to optimize monocyte-CAR-M differentiation. Subsequently, we polarize the differentiated CAR-M cells into M1 phenotypic macrophages. The tumour killing ability of CAR-M cells will be studied using high-throughput confocal microscopy in a live cell model.

TECHNIQUES AVAILABLE IN THE LAB

Co-culturing immune - tumour cells. Generation of chimeric antigen receptor expressing macrophage cells (CAR-M) by lentiviral transduction. Methods of immunohistochemistry in live cell models. Application of high-throughput microscopy to live cell systems. Determination of mRNA and protein levels of cytokines produced by macrophage cells by qRT-PCR and ELISA.

SELECTED PUBLICATIONS

Skopál, A., Kéki, T., Tóth, PÁ., Csóka, B., Koscsó, B., Németh, ZH., Antonioli, L., Ivessa, A., Ciruela, F., Virág, L., Haskó, Gy., **Kókai, E.** (2022) Cathepsin D interacts with adenosine A2A receptors in mouse macrophages to modulate cell surface localization and inflammatory signalling. **J Biol Chem** **298**: 101888.

Mészáros, B., Papp, F., Mocsár, G., **Kókai, E.**, Kovács, K., Tajti, G., Panyi, G. (2020) The voltage-gated proton channel hHv1 is functionally expressed in human chorion-derived mesenchymal stem cells. **Sci Rep** **10**: 7100.

Hegedüs, É., **Kókai, E.**, Nánási, P., Imre, L., Halász, L., Jossé, R., Antunovics, Zs., Webb, MR., Hage, AE., Pommier, Y., Székvölgyi, L., Dombrádi, V., Szabó, G. (2018) Endogenous single-strand DNA breaks at RNA polymerase II promoters in *Saccharomyces cerevisiae*. **Nucleic Acids Res** **46**: 10649-10668.

Csóka, B., Törő, G., Vindeirinho, J., Varga, ZV., Koscsó, B., Németh, ZH., **Kókai, E.**, Antonioli, L., Suleiman, M., Marchetti, P., Cseri, K., Deák, Á., Virág, L., Pacher, P., Bai, P., Haskó, G. (2017) A2A adenosine receptors control pancreatic dysfunction in high-fat-diet induced obesity. **FASEB J** **31**: 4985-4997.