

PÉTER BAI



University of Debrecen
Faculty of Medicine
Department of Medical Chemistry

Address: Egyetem tér 1., H-4032 Debrecen, Hungary

RESEARCH AREA

The laboratory carries out exploratory and applied research in three main areas. We carry out investigations to understand the metabolic and non-oncological roles of PARP enzymes that were originally described as DNA repair proteins. The primary aim of these investigations is to facilitate the repurposing of clinically available, registered PARP inhibitors and to understand the role of these enzymes in cells. Oncological diseases are accompanied by changes to the composition of the bacterial communities (the microbiome) of the human body that is termed oncobiosis. The connections between tumors and the microbiome are bidirectional. Our aim is to understand the mechanisms through which neoplasias induce oncobiosis and those through which oncobiosis supports the growth and metastasis formation of tumors. We are developing diagnostic procedures in that field. Finally, in collaboration with the Department of Organic Chemistry at the University of Debrecen we are developing organic metal ion complexes with selective cytostatic property against tumors.

TECHNIQUES AVAILABLE IN THE LAB

The laboratory offers the possibility to learn, besides basic biochemistry and molecular biology techniques, oximetry and the characterization of the cellular energy sensor web. Furthermore, we employ metabolic and oncological animal models that can be absorbed. We work in close clinical collaboration, therefore, we offer a possibility to peek into organizing and conducting clinical studies.

SELECTED PUBLICATIONS

Kovács, T., Mikó E., Ujlaki, G., Yousef, H., Csontos, V., Uray K., **Bai, P.** (2021) The involvement of oncobiosis and bacterial metabolite signaling in metastasis formation in breast cancer. **Cancer and Metastasis** **40**: 1223-1249.

Szántó, M., Gupte, R., Kraus, L.W., Pacher, P., **Bai, P.** (2021) PARPs in lipid metabolism and related diseases. **Progress in Lipid Research** **84**: 101117.

Kacsir, I., Sipos, A., Bényei, A., Janka, E., Buglyó, P., Somsák, L., **Bai, P.***, Bokor É.* (2022) Reactive oxygen species production is responsible for antineoplastic activity of osmium, ruthenium, iridium and rhodium half-sandwich type complexes with bidentate glycosyl heterocyclic ligands in various cancer cell models. **International Journal of Molecular Medicine** **23**: 813 *shared last authors

Curtin, N., Bányai, K., Thaventhiran, J., Le, Quesne, J., Helyes, Z., **Bai, P.** (2020) Repositioning PARP inhibitors for SARS-CoV-2 infection (COVID-19); a new multi-pronged therapy for ARDS? **British Journal of Pharmacology** **177**: 3635-3645.

Mikó, E., Vida, A., Kovács, T., Ujlaki, Gy., Trencsényi, Gy., Márton, J., Sári, Zs., Kovács, P., Boratkó, A., Hujber, Z., Csonka, T., Antal-Szalmás, P., Watanabe, M., Gombos, I., Csoka, B., Kiss, B., Vigh, L., Szabó, J., Méhes, G., Sebestyén, A., Goedert, J.J., **Bai, P.** (2018) Lithocholic acid, a bacterial metabolite reduces breast cancer cell proliferation and aggressiveness. **BBA – Bioenergetics** **1859**: 958-974.