# EDIT MIKÓ

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## RESEARCH AREA

Changes in the composition of the microbiome occurring during neoplasia is termed oncobiosis and the transformed microbiome is the oncobiome. Oncobiosis itself cannot induce tumors, but can promote tumor growth and metastasis formation. The oncobiome supports a set of cancer hallmarks, including avoidance of immune destruction, activation of invasion and metastasis, induction of inflammation and angiogenesis, and deregulation of cellular energetics.

Bacteria can secrete metabolites that either exert their effects locally or through the circulation reach distantly located cancer cells and influence their behavior. We identified several cytostatic bacterial metabolites in breast cancer. Bacterial metabolites are very diverse in terms of their chemical structure and include secondary bile acids that play a role in carcinogenesis. In breast cancer, secondary bile acids induce oxidative stress, reprogram cellular metabolism, leading to cytostasis, inhibition of the epithelial-mesenchymal transition and metastasis. Bacterial biosynthesis of bile acids is reduced early in breast cancer. The metabolite activated pathways are protective in breast cancer, decreased expression of markers involved in these pathways are associated with cancer progression and poor clinical prognosis. In our research the role of bile acids in carcinogenesis is primarily studied in breast cancer and pancreatic adenocarcinoma.

## TECHNIQUES AVAILABLE IN THE LAB

- Cell viability, Cell invasion assays
- Examination of the oxidative stress responses
- Western blot
- Quantitative PCR
- Seahorse analyis
- Immunofluorescence

## SELECTED PUBLICATIONS

Schwarcz, S., Kovács, P., Kovács, T., Ujlaki, G., Nyerges, P., Uray, K., Bai, P., **Mikó, E.** (2023) The pro- and antineoplastic effects of deoxycholic acid in pancreatic adenocarcinoma cell models. **Mol Biol Rep 50:** 5273-5282.

Režen, T., Rozman, D., Kovács, T., Kovács, P., Sipos, A., Bai, P., **Mikó, E.** (2022) The role of bile acids in carcinogenesis. **Cell Mol Life Sci 79:** 243.

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 Metastasis Rev 40:** 1223-1249.

Kovács, P., Csonka, T., Kovács, T., Sári, Z., Ujlaki, G., Sipos, A., Karányi, Z,, Szeőcs, D., Hegedűs, C., Uray, K., Jankó, L., Kiss, M,, Kiss, B., Laoui, D., Virág, L., Méhes, G., Bai, P., **Mikó, E.** (2019) Lithocholic Acid, a Metabolite of the Microbiome, Increases Oxidative Stress in Breast Cancer. **CANCERS (Basel). 11:** 1255.

**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., Vígh, 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. **Biochimica et Biophysica Acta-Bioenergetics 1859:** 958-974.