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RESEARCH AREA

Volatile molecules can be used to detect diseases at an early stage and determine different food properties. We are currently analysing samples from lung cancer patients (exhaled air, urine, skin odour samples) using dogs, electronic nose, and GC-IMS. For infectious diseases, we identify viral respiratory diseases and various bacterial pathogens. Plant-based beverages and insect-containing foods will be analysed for ingredient identification and clustering of food.

TECHNIQUES AVAILABLE IN THE LAB

Volatile molecule sampling. Electronic nose and GC-IMS (gas chromatograph coupled to ion mobility spectrometer) measurements. Data analysis methods (large databases, dimension reduction of multivariate databases, cluster analysis).

SELECTED PUBLICATIONS

Zand, A., Enkhbilguun, S., Macharia, J. M., Budán, F., **Gyöngyi, Z.**, Varjas, T. (2023) Tartrazine Modifies the Activity of DNMT and HDAC Genes—Is This a Link between Cancer and Neurological Disorders? *Nutrients* **15**: 2946.

Nowrasteh, G., Zand, A., Raposa, L. B., Szabó, L., Tomesz, A., Molnár, R., Kiss, I., Orsós, Z., Gerencsér, G., **Gyöngyi, Z.**, Varjas, T. (2023) Fruit Extract, Rich in Polyphenols and Flavonoids, Modifies the Expression of DNMT and HDAC Genes Involved in Epigenetic Processes. *Nutrients* **15**: 1867.

Papp, Z., Bouchelaghem, S., Szekeres, A., Meszéna, R., **Gyöngyi, Z.**, Papp, G. (2021) The scent of antifungal propolis. *Sensors* **21**: 2334.

Kanaan, R., Farkas, N., Hegyi, P., Soós, A., Hegyi, D., Németh, K., Horváth, O., Tenk, J., Mikó, A., Szentesi, A., Balaskó, M., Szakács, Z., Vasas, A., Csupor, D., **Gyöngyi, Z.** (2021) Rats sniff out pulmonary tuberculosis from sputum: a diagnostic accuracy meta-analysis. *Sci Rep* **11**: 1877.

Bérczi, B., Gerencsér, G., Farkas, N., Hegyi, P., Veres, G., Bajor, J., Czopf, L., Alizadeh, H., Rakonczay, Z., Vigh, É., Erőss, B., Szemes, K., **Gyöngyi, Z.** (2017) Association between AIRE gene polymorphism and rheumatoid arthritis: a systematic review and meta-analysis of case-control studies. *Sci Rep* **7**: 14096.