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RESEARCH AREA

Anti-tumour effect of exercise-derived microRNAs: Regular exercise is known to protect against the development of many chronic diseases, including cancer. Our research has mapped the health protective effects of microRNAs at the molecular level. Levels of several micro-RNAs that protect against the development of tumours, including lung tumours, are elevated, based on our own data and literature. These micro-RNAs have a long-term preventive effect, but in the short term they may have an adjuvant oncotherapeutic, i.e. additional anti-tumour effect. Investigation of the toxic effects of the SARS2 viral spike protein: COVID-19 disease, caused by SARS-CoV-2, affects many tissues and organs. Although it has become known as a respiratory disease, it actually attacks the kidneys, heart/circulatory system, digestive system and central nervous system as well. Some articles have raised the toxicity of Spike protein and its degradation products in aqueous solution on cells. Our working hypothesis is that Spike protein and its degradation products released from SARS-CoV-2 viruses during infection of epithelial cells exert toxic effects. We test this working hypothesis in a conventional 2D, conventional 3D cell culture system.

TECHNIQUES AVAILABLE IN THE LAB

- PCR types (conventional PCR, qPCR, digital PCR)
- Gene expression studies (Taqman Array)
- RNA interference, CRISPR
- Transient and stable genetic manipulation

SELECTED PUBLICATIONS

Garai, K., Adam, Z., Herczeg, R., Banfai, K., Gyebrovski, A., Gyenesei, A., Pongracz, JE., Wilhelm, M., **Kvell, K.** (2021) Physical Activity as a Preventive Lifestyle Intervention Acts Through Specific Exosomal miRNA Species-Evidence From Human Short- and Long-Term Pilot Studies. **Front Physiol** 12: 658218.

Garai, K., Adam, Z., Herczeg, R., Katai, E., Nagy, T., Pal, S., Gyenesei, A., Pongracz, JE., Wilhelm, M., **Kvell, K.** (2019) Artificial Neural Network Correlation and Biostatistics Evaluation of Physiological and Molecular Parameters in Healthy Young Individuals Performing Regular Exercise. **Front Physiol** 10: 1242.

Banfai, K., Ernszt, D., Pap, A., Bai, P., Garai, K., Belharazem, D., Pongracz, JE., **Kvell, K.** (2019) „Beige” Cross Talk Between the Immune System and Metabolism. **Front Endocrinol (Lausanne)** 10: 369

Banfai, K., Garai, K., Ernszt, D., Pongracz, JE., **Kvell, K.** (2019) Transgenic Exosomes for Thymus Regeneration. **Front Immunol** 10: 862

Ernszt, D., Banfai, K., Kellermayer, Z., Pap, A., Lord, JM., Pongracz, JE., **Kvell, K.** (2017) PPARgamma Deficiency Counteracts Thymic Senescence. **Front Immunol** 8: 1515.