

VIRÁG VAS



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RESEARCH AREA

My current work focuses on tumor cell biology and signaling processes:

(1) discovering the previously unknown function of the Tks4 protein in lung and colon cancer and investigating its usability as a biomarker (DOI: 10.3389/fmolb.2024.1414805; DOI: 10.1091/mbc.E24-03-0103), and

(2) exploring new therapeutic approaches based on diverse tumor cell biology and signal transduction effects of the RAS protein. During the 2020 pandemic lockdown, I published papers summarizing current issues in RAS protein research (DOI: 10.1007/s10555-020-09912-8, DOI: 10.3390/cells10030667, DOI: 10.1007/s10555-020-09918-2). Recently, our tumor cell biology research was supported by grant 2020-1.1.6-JÖVŐ-2021-00004 (title: Development of Targeted Therapy for Human Tumors Expressing Mutant KRAS Oncogene).

Building on this work and joining the program of the National Academy of Sciences, our planned research aims to investigate molecular-level processes of intracellular signaling in healthy and tumor cells. Specifically, we will study signaling systems that influence cell growth in human cancer cells cultured in the laboratory, with a focus on signaling through the Tks4 and the RAS proteins.

TECHNIQUES AVAILABLE IN THE LAB

Sterile laboratory work, cancer cell line maintenance, fluorescence microscopy, recombinant protein production and purification, RT-qPCR, Western blot, database analysis

SELECTED PUBLICATIONS

Takács, T., László, L., Tilajka, Á., Novák, J., Buday, L., & Vas, V. (2024). Insulin receptor substrate 1 is a novel member of EGFR signaling in pancreatic cells. *Eur J Cell Biol* 103(4): 151457.

Tilajka, Á., Kurilla, A., László, L., Lovrics, A., Novák, J., Takács, T., Buday, L., & Vas, V. (2024). Predictive value analysis of the interaction network of Tks4 scaffold protein in colon cancer. *Front Mol Biosci* 11: 1414805.

László, L., Kurilla, A., Tilajka, Á., Pancsa, R., Takács, T., Novák, J., Buday, L., & Vas, V. (2024). Unveiling epithelial plasticity regulation in lung cancer: Exploring the cross-talk among Tks4 scaffold protein partners. *Mol Biol Cell* 35(8): ar111.

Kurilla, A., László, L., Takács, T., Tilajka, Á., Lukács, L., Novák, J., Pancsa, R., Buday, L., & Vas, V. (2023). Studying the Association of TKS4 and CD2AP Scaffold Proteins and Their Implications in the Partial Epithelial-Mesenchymal Transition (EMT) Process. *Int J Mol Sci* 24(20): 15136.

László, L., Maczelka, H., Takács, T., Kurilla, A., Tilajka, Á., Buday, L., Vas, V., & Apáti, Á. (2022). A Novel Cell-Based Model for a Rare Disease: The Tks4-KO Human Embryonic Stem Cell Line as a Frank-Ter Haar Syndrome Model System. *Int J Mol Sci* 23(15): 8803.

Buday, L., & Vas, V. (2020). Novel regulation of Ras proteins by direct tyrosine phosphorylation and dephosphorylation. *Cancer Metastasis Rev* 39(4): 1067–1073.