

# EDINA SZABÓ-MELEG



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## RESEARCH AREA

As the principal investigator of the Membrane Nanotube Networks Research Group, my research focuses on the formation and function of membrane nanotubes, which provide direct connections between cells. I primarily study the cytoskeletal composition of these communication structures and their roles in various intercellular transport processes, with particular emphasis on the transport and spread of certain organelles and laboratory-safe model pathogens. The involvement of membrane nanotubes has been proposed in several neurodegenerative diseases and cancerous conditions, and there is a growing effort to explore their therapeutic applications. Therefore, the biomedical relevance of these intercellular bridges - only a few hundred nanometres in diameter - is undeniable.

## TECHNIQUES AVAILABLE IN THE LAB

Various molecular biology and biophysical techniques: sterile work in a BSL-2 laboratory, maintenance of cell cultures, cell and tissue labelling methods on live and fixed cells, inhibition and gene-silencing techniques, various transfection and electroporation methods, microscopic techniques (fluorescence, TIRF, laser-scanning confocal, super-resolution (SIM, STED), and electron microscopy), laser microdissection, expression and purification of recombinant proteins in an *E. coli* system when required, gel electrophoresis, as well as image and statistical analysis.

## SELECTED PUBLICATIONS

Madarász, T., Nyitrai, M., Szabó-Meleg, E. (2024) Efficient purification of soluble receptor for advanced glycation end-products from *Sus scrofa* lung tissue and synthesis of its binding ligand, glycated bovine serum albumin. *J Chromatogr B Analyt Technol Biomed Life Sci* 1247: 124326.

Halász, H., Tárnai, V., Matkó, J., Nyitrai, M., Szabó-Meleg, E. (2024) Cooperation of Various Cytoskeletal Components Orchestrates Intercellular Spread of Mitochondria between B-Lymphoma Cells through Tunnelling Nanotubes. *Cells* 13: 607.

Madarász, T., Brunner, B., Halász, H., Telek, E., Matkó, J., Nyitrai, M., Szabó-Meleg, E. (2023) Molecular Relay Stations in Membrane Nanotubes: IRSp53 Involved in Actin-Based Force Generation. *Int J Mol Sci* 24: 13112.