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RESEARCH AREA

Our research concerns the complement system of innate immunity, particularly the function and regulation of the alternative complement pathway, the structure and function of factor H and factor H-related proteins. Complement is involved in the pathomechanism of several diseases. Dysregulation of the alternative pathway, polymorphisms and mutations in factor H or anti-factor H autoantibodies play a role in various diseases, including age-related macular degeneration (a leading cause of blindness in the Western world) and the kidney diseases atypical hemolytic uremic syndrome and dense deposit disease). Our main aim is to unveil the physiological roles of factor H and factor H-related proteins, in order to understand their role in diseases, which could then lead to tailored treatments in the future.

TECHNIQUES AVAILABLE IN THE LAB

- recombinant protein expression
- in vitro mutagenesis
- ELISA
- complement activation assays
- SDS-PAGE and Western blot
- flow cytometry
- microscopy
- biomolecular interaction studies
- cell culture and cellular assays

SELECTED PUBLICATIONS

Matola, A. T., Fülöp, A., Rojkovich, B., Nagy, G., Sármay, G., **Józsi, M.**, & Uzonyi, B. (2023). Autoantibodies against complement factor B in rheumatoid arthritis. **Front Immunol 14**: 1113015.

Papp, A., Papp, K., Uzonyi, B., Cserhalmi, M., Csincsi, Á. I., Szabó, Z., Bánlaki, Z., Ermert, D., Prohászka, Z., Erdei, A., Ferreira, V. P., Blom, A. M., & **Józsi, M.** (2022). Complement Factor H-Related Proteins FHR1 and FHR5 Interact With Extracellular Matrix Ligands, Reduce Factor H Regulatory Activity and Enhance Complement Activation. **Front Immunol 13**: 845953.

Kárpáti, É., Kremlitzka, M., Sándor, N., Hajnal, D., Schneider, A. E., & **Józsi, M.** (2021). Complement Factor H Family Proteins Modulate Monocyte and Neutrophil Granulocyte Functions. **Front Immunol 12**: 660852.

Uzonyi, B., Szabó, Z., Trojnár, E., Hyvärinen, S., Uray, K., Nielsen, H. H., Erdei, A., Jokiranta, T. S., Prohászka, Z., Illes, Z., & **Józsi, M.** (2021). Autoantibodies Against the Complement Regulator Factor H in the Serum of Patients With Neuromyelitis Optica Spectrum Disorder. **Front Immunol 12**: 660382.

Kárpáti, É., Papp, A., Schneider, A. E., Hajnal, D., Cserhalmi, M., Csincsi, Á. I., Uzonyi, B., & **Józsi, M.** (2020). Interaction of the Factor H Family Proteins FHR-1 and FHR-5 With DNA and Dead Cells: Implications for the Regulation of Complement Activation and Opsonization. **Front Immunol 12**: 1297.