

ATTILA GÁCSE



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RESEARCH AREA

Infectious diseases are one of the leading causes of mortality worldwide, killing millions of people every year. While bacteria and viruses cause the majority of deadly infections, notably the number of fungal diseases is increasing at an alarming rate. In fact, it is estimated that nearly as many people die annually from invasive fungal infections as from the greatly feared tuberculosis (1.4 million) or malaria (1.2 million). Our research program focuses on the most common human fungal pathogens, the opportunistic *Candida* species with special focus on *C. parapsilosis*. We investigate the basic mechanisms of fungal pathogenesis and host immunity, and we aim to improve diagnosis and identify novel biomarkers of infection. Recently, we also investigate the role of the human "mycobiome" in health and disease development and progression.

TECHNIQUES AVAILABLE IN THE LAB

In vitro infection models using phagocytes (murine and human cell lines, primer immune cells). Measurement of fungal cell phagocytosis with Flow Cytometry or microscopy, cytokines-chemokines with ELISA, host damage with LDH-assay. Quantitative imaging using FlowSight. In vivo infection models using wild type and transgenic mice. Colony formig unit measurements from different organs, histological analysis, immune cell preparation from infected animals. Basic and advanced molecular techniques, qRTPCR, Western blot, Southern blot, CRISPR/Cas9 technology, GATEWAY-cloning system.

SELECTED PUBLICATIONS

Tóth, A., Zajta, E., Csonka, K., Vágvolgyi, C., Netea, M.G., **Gácsér, A.** (2017) Specific pathways mediating inflammasome activation by *Candida parapsilosis*. **Sci Rep** 7: 43129.

Pryszcz, L.P., Nemeth, T., Saus, E., Ksiezopolska, E., Hegedusova, E., Nosek, J., Wolfe, K.H., **Gácsér, A.***, Gabaldon, T.* (2015) The Genomic Aftermath of Hybridization in the Opportunistic Pathogen *Candida metapsilosis*. **PLOS Genetics** 11: e1005626.

Tóth, R., Alonso, M.F., Bain, J.M., Vágvolgyi, C., Erwig, L-P., **Gácsér, A.** (2015) Different *Candida parapsilosis* clinical isolates and lipase deficient strain trigger an altered cellular immune response. **Front Microbiol** 6: 1102.

Toth, A., Csonka, K., Jacobs, C., Vagvolgyi, C., Nosanchuk, J.D., Netea, M.G., **Gácsér, A.** (2013) *Candida albicans* and *Candida parapsilosis* Induce Different T-Cell Responses in Human Peripheral Blood Mononuclear Cells. **J Infect Dis** 208: 690-698.

Lázár-Molnár, E.*, **Gácsér, A.***, Freeman, G.J., Almo, S.C., Nathenson, S.G., Nosanchuk, J.D. (2008) The PD-1/PD-L costimulatory pathway critically affects host resistance to the pathogenic fungus *Histoplasma capsulatum*. **Proc Natl Acad Sci USA** 105: 2658-2663.