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Intracellular survival of *Candida glabrata* in phagocytes

Although *Candida glabrata* is an emerging pathogen with increasing importance in hospital-associated (nosocomial) systemic infections, little is known about the basic pathogenicity mechanisms and interplay of this fungus with the host immune system. During infection, phagocytes are key players of the innate immune response to *C. glabrata*. However, although *C. glabrata* is efficiently phagocytosed, the fungus not only survives phagocytosis, but even replicates within monocyte-derived macrophages. Therefore it is likely that this fungus employs immune evasion strategies to survive in its human host. Indeed, our data indicate that *C. glabrata* modifies phagosome maturation, residing in a non-acidic late endosomal compartment of macrophages.

In my PhD project I aim to identify factors or activities involved in fungal inhibition of phagosome maturation and further characterize the intracellular compartment, in which the fungus resides. Therefore I want to elucidate the presence of stage specific markers such as the proton pump vATPase, responsible for acidification of *C. glabrata* containing phagosomes, or the lysosomal tracer dextran, which is also planned to be used to identify mutants lacking the ability to arrest phagosome maturation. Furthermore the isolation of *C. glabrata* containing phagosomes in cooperation with Dr. Norbert Reiling/Borstel/Germany followed by proteomics is intended.

A related subproject will focus on the interaction of *C. glabrata* with a second type of phagocytic cells of the innate immune response: polymorphonuclear leucocytes (PMNs), which act as the main defense

mechanism against the related opportunistic pathogen *C. albicans*. A selection of mutants which have shown attenuated survival in macrophages will be analyzed for their interaction facing PMNs.

Publications

Gerwien F, Safyan A, Wisgott S, Brunke S, Kasper L, Hube B (2017) The Fungal Pathogen *Candida glabrata* Does Not Depend on Surface Ferric Reductases for Iron Acquisition. *Front Microbiol* 8, 1055. Details PubMed

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Supervisor

Bernhard Hube

Start of PhD

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Doctoral Disputation

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