

DYNAMICS OF CELL WALL AND SECRETED PROTEINS OF THE PATHOGENIC FUNGUS *CANDIDA ALBICANS* IN RESPONSE TO CLINICALLY RELEVANT STRESS CONDITIONS

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The fungus *Candida albicans* is living in the majority of the human population usually without having any effect on their health. Sometimes it causes relatively mild superficial infections. Nevertheless, when the host's immune system is severely weakened, *C. albicans* can gain access to the bloodstream and spread throughout the whole body. If not detected and properly treated in time a bloodstream infection is able to rapidly kill the patient. Conventional methods for diagnosis take two days, making faster diagnostics necessary. New resistances emerge against the already existing antifungal drugs resistances, hence new antifungal treatments are needed.

The wall proteins and secreted proteins of *C. albicans* are very dynamic under changing environmental conditions. These proteins play an important role for *C. albicans* fitness and virulence. They serve fundamental roles, like tissue adhesion and invasion, biofilm formation, nutrient acquisition and defense against the host's immune system. In the human host *C. albicans* has to cope with a variety of challenges. It grows in sites where oxygen levels are high, like on the skin, as well in niches where very low oxygen levels are found, such as in the gut. *C. albicans* is able to acquire iron, which is rarely found in a freely available form in the human body but is essential for its survival. It also adapted to survive in the presence of antifungal drugs and at high temperatures, like during fever.

We are investigating how the cell wall and secreted proteins of *C. albicans* contribute to the fungus' survival and virulence under these medically relevant stress conditions. We are applying mass spectrometry to measure qualitative as well as quantitative changes of these proteins that might help *C. albicans* adapting to these conditions. Our research will improve the understanding of how *C. albicans* copes with various infection-associated stress conditions as well as how cell wall and secreted protein levels are controlled. Importantly it might lead to the identification of new potential targets for vaccine development and diagnostic markers.