

DEVELOPMENT OF CWP-BASED VACCINES AGAINST CANDIDIASIS AND DETECTION OF DIAGNOSTIC MARKERS

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Patients with a weakened immune system and especially in intensive care units are increasingly contracting fungal infections. These infections are often life-threatening. *Candida albicans* is the most common of these infectious fungi. Depending on how suppressed the immune response is, this can lead to unpleasant infections of the skin and mucosa, but also invasive, blood stream infections. Usually, almost half of these infections are fatal within a week, highlighting the need for faster diagnostics and better preventative measures, i.e. a vaccine.

The first contact with the host cell is established by proteins on the wall of the fungus. They have been shown to play a crucial role in both infections and resistance to the immune system. We are particularly interested in this layer of proteins that is directly attached to the cell wall of the fungus or is released into the environment. Environment specific changes are important for *C. albicans* to thrive in different niches in the host during an infection. We also are interested in how the predominant growth form change in *C. albicans*, from spheric yeast cells to elongated hyphal cells, affect the proteins on the wall.

The goals of my project are three fold. Firstly, we want to increase the basic understanding of these attached wall proteins and the secreted proteins and how their composition and abundance changes in infection related conditions. To this end, we want to quantify the wall proteins using mass spectrometry. Secondly, we want to develop methods that allow faster diagnostics based on these secreted proteins that are abundant in many growth conditions. Thirdly, we want to identify targets for the development of a vaccine against *C. albicans*. To identify parts of the proteins that are suitable for vaccine development, we will use prediction algorithms to assess their ability to elicit an immune response. Using these results we will assemble and test a vaccine protein that is comprised of the most immune-stimulating peptides of these proteins.