From commensalism to pathogenesis

The gut is believed to be the main reservoir of *Candida albicans*, where the fungus lives as a harmless commensal, in a peaceful cohabitation with “the good” bacteria. However, *C. albicans* can invade this tissue and enter the bloodstream (translocation) due to alterations of the gut’s physiology. A major risk factor is the use of antibiotics. In fact, it has been shown that the removal of protective bacteria from the gut is a prerequisite for the translocation of the fungus into the bloodstream. From here, the fungus can infect almost all organs and finally cause sepsis. Our aim is to elucidate which factors (of the fungus as well as of the host) are responsible for the shift of *C. albicans* to a pathogenic state.

We are using genome-wide transcription profiling techniques on *in vitro* (translocation and damage of host cells), *ex vivo* (perfused gut) and *in vivo* (mouse) infection models for translocation. Genes associated with colonization or translocation will be analyzed in detail with a focus on those with previously unknown function.

Another aspect which will be studied in detail is the shift from commensalism to a pathogenic state, by establishing a commensal gut model, where *C. albicans* grows in equilibrium with protective probiotic bacteria on intestinal epithelial tissue.

Publications


Hsieh SH, Brunke S, Brock M (2017) Encapsulation of antifungals in micelles protects *Candida albicans*
during gall-bladder infection. *Front Microbiol* 8, 117. Details PubMed Open Access


Stefanie Allert

Phone: +49 3641 532-1141 Email: stefanie.allert@leibniz-hki.de
Sophie Austermeier

Leon Cyranca
Osama Elshafee

Phone: +49 3641 532-1225 Email: osama.elshafee@leibniz-hki.de

Dr. Mark Sebastiaan Gresnigt

Phone: +49 3641 532-1305 Email: mark.gresnigt@leibniz-hki.de
Dr. Lydia Kasper

Phone: +49 3641 532-1219 Email: lydia.kasper@leibniz-hki.de
Antonia Last

Phone: +49 3641 532-1595 Email: antonia.last@leibniz-hki.de

Dr. Selene Mogavero

Phone: +49 3641 532-1568 Email: selene.mogavero@leibniz-hki.de