

Volha Skrahina

Phone: +49 3641 532-1067 Email: volha.skrahina@leibniz-hki.de

The role of micronutrients during fungal infections

Metals are involved in many crucial biological processes. Zinc and iron, for example, are considered important micronutrients, and their availability is more and more recognized as a central factor in bacterial and fungal infections. Competition for metals between host and pathogenic microorganisms therefore is critical for the outcome of any infection. Humans and other mammals restrict access to essential metals to prevent infection in a process known as 'nutritional immunity'. This leads to a constant struggle for micronutrients, both between different colonizing microorganisms, and microorganisms and their host during commensal stage and infection. The analyses of pathogens' metal acquisition systems present a promising new therapeutics target.

In the vast majority of humans, the polymorphic yeast *Candida albicans* coexists as a harmless commensal within the normal microbial flora. However, this fungus may also cause severe infection when the microbial flora is disturbed, the immune system of the host is compromised and/or the epithelial barriers are damaged.

The aim of the project is to investigate the transcriptional response of *C. albicans* to iron and zinc limitation, which simulates the conditions the fungus encounters in the host. Using recently developed advanced platforms, such as microarrays and CIHP-on-chip technology, will allow us to determine the basis of transition metal uptake regulation by fungi and its possible relevance during infection.

Publications

Skrahina V, Brock M, Hube B, Brunke S (2017) *Candida albicans* Hap43 Domains Are Required under Iron Starvation but Not Excess. *Front Microbiol* 8, 2388. Details PubMed

Supervisor

Bernhard Hube

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