

Until 2015

We investigate the pathogenesis and adaptation of fungal pathogens.

- Nutrient acquisition and metabolism of pathogenic fungi during infection
- *In vivo* real-time imaging of fungal infections in murine model systems
- Secondary metabolites of *Aspergillus terreus*

In recent years, life-threatening fungal infections have become more important. This is mainly due to increasing numbers in patients under immunosuppressive regimens. Unfortunately, the scientific knowledge on fungal infections, as well as therapeutic strategies are limited.

For this reason, we are investigating the potential of pathogenic fungi to acquire and metabolise host-derived nutrients. In this research, we are looking for metabolic processes common in different fungal species, but also on pathways specific for selected pathogens to resemble the great variety of possible host-pathogen interactions. Since nutrient acquisition is essential for successful host colonisation, the aim of these studies is the definition of new antimycotic targets.

Studies of the infection process frequently use conventional infection models that can only provide snapshots of the infection from which then the broader picture of the disease progression has to be assembled. Therefore, we are developing *in vivo* imaging systems that allow the visualisation of disease progression in individual living animals in temporal and spatial resolution. This enables the monitoring of antimycotic therapy efficacy under *in vivo* conditions and permits the detection of

cryptic niches of infection that may be overlooked by histological analyses.

Last, but not least, using *Aspergillus terreus* as a model organism, we investigate the impact of secondary metabolites on fungal pathogenesis and environmental adaptation. Selected metabolites are tested for their biologic activities to draw conclusions on the connection between natural product synthesis and environmental factors.