

State-of-the-Art Infection Models

Infection models are essential tools in infection biology. They are necessary to study pathogenesis, for the identification of fungal factors contributing to virulence and for the determination of risk factors that affect host susceptibility. Furthermore, the development of novel diagnostic and therapeutic strategies would not be possible without infection models, including laboratory animals.

Therefore, the aim of this course is to provide hands-on training for different infection models that are used to study host-fungus interaction both *in vitro* and *in vivo*. The training includes state-of-the-art downstream analyses that provide molecular information on the infection process as well as aspects of the immunological response.

Hands-on training will be performed in groups of five, supervised by at least one tutor, and additional assistants whenever necessary. The experiments are designed to cover the following areas:

1. *In vitro* infection models, using cell culture
2. Interaction with immune cells *in vitro*, using primary immune cells and cell culture
3. murine infection models, including *in vivo* imaging
4. downstream analyses such as pathology and histology in murine models, determination of immune responses in *in vivo* experiments, and transcription analysis
5. alternative complex infection models.

For educational purposes, downstream analyses (e.g. analysis of immune responses) will be performed using samples obtained in other experiments. This will allow to analyze the infection models in more detail and from different perspectives. We will use fungal strains having different levels of virulence to obtain results which then can be discussed and interpreted, to deepen the analytical part of the course.

In addition to the hands-on experiments, lectures given by experts in the field will not only provide state-of-the-art scientific background for the experiments, but also cover further scientific aspects of host-fungal interactions which cannot be covered in the practical part of the course. Joint lunch and coffee breaks as well as social evenings will provide ample opportunities for informal exchange and discussions between participants and lecturers.