

Until 2017

We research in host-pathogen interactions with focus on Chlamydiales and pathogenic fungi

- Transcriptomics
- In vivo-induced antigen technology
- Protein-protein interactions
- Microbiome-host interactions
- Melanin and aspergillus
- PET/CT and infection, bone metabolism and inflammation

Research in the Department of Cell and Molecular Biology is devoted to the flow of molecular information during host-pathogen interactions. As model hosts, we use human cell lines, mice and chicken embryos in ovo. Our main interest lies in the the pathogens of Chlamydiales and pathogenic fungi. Within this framework, we aim at the elucidation of how infections proceed in living organisms (imaging) and how infected organs react on a molecular level (e.g. comparative genomics, transcriptomics and interactomics). Imaging is performed by means of our latest generation positron emission tomography-computed tomography (PET-CT) instrument that provides co-registered images, i.e. it combines the high spatial resolution and anatomical detail of the CT with the molecular, quantifiable images obtained by the PET. Thereby, comparative genomics, transcriptomics and interactomics require a next generation sequencing process.

In order to be capable of capturing host-specific solutions effectively, we have set out to adopt and to develop highly advanced micro- and nanosystems, which allow the simultaneous handling of multiple samples within sets of different biomolecules under nearly identical experimental conditions. At present we are focussing on multicolor hyperspectral imaging of biomolecules on solid body surfaces and in infected living cells.