

IAS Seminar

Topic: **Image-based Systems Biology of Fungal Infections**

Speaker: Prof. Dr. Marc Thilo Figge, Applied Systems Biology, Leibniz Institute for Natural Product Research and Infection Biology, Hans-Knöll Institute, Jena

Contents: During the past two decades the frequency of life-threatening infections in humans by fungal pathogens has increased significantly. Our current research is focused on two major human pathogens – the filamentous fungus *Aspergillus fumigatus* and the yeast *Candida albicans* – and we aim at unraveling their pathogenicity mechanisms for the identification of new drug targets.

We apply the image-based systems biology approach to investigate dynamical, functional and morphological aspects of fungal pathogenicity. This approach seeks to take full advantage of the information contained in microscopy images. It thereby establishes an essential connective link between experimental and theoretical examination of biological processes at a quantitative level. In general, image-based systems biology includes the following aspects: (i) acquisition and automated analysis of image data for high-content and high-throughput screening, (ii) quantitative description of biological processes by appropriate characteristic measures, and (iii) construction of image-derived spatiotemporal models and predictive computer simulations.

This talk reviews recent applications of the image-based systems biology approach in the context of fungal infections and beyond. Since the investigation of biological systems is nowadays often routinely accompanied by microscopy experiments, we generally encourage exploiting the valuable information contained in image data by quantitative analyses.

Time: Tuesday, 29 April 2014, 10:30

Venue: Jülich Supercomputing Centre, Seminarraum, building 16.3, 2nd floor, room 406

Anyone interested is cordially invited to participate in this seminar.

sgd Prof. Dr. Dr. Thomas Lippert