



International Leibniz Research School

For Microbial and Biomolecular Interactions

The Leibniz Institute for Natural Product Research and Infection Biology – Hans Knöll Institute – in cooperation with the Friedrich Schiller University and the Max Planck Institute for Chemical Ecology are offering an international graduate training program. The

International Leibniz Research School (ILRS Jena)

gives PhD students the possibility to prepare for their PhD exam in an ambitious program providing excellent research conditions.

We invite applications for a

PhD Student Position (Ref.No. 13/2011)

Inhibition of complement receptor mediated inflammatory reactions by *Candida albicans*

The human innate immune system is immediately activated on infection with the human pathogenic microbe *Candida albicans*. The foreign surface of the microbe activates the complement system and the central complement component C3 is cleaved to C3a and C3b and starts a self amplification system leading ultimately to the opsonisation and phagocytosis of the *Candida* cells. In addition active complement products are generated that attract macrophages, neutrophils and B cells and trigger strong inflammatory immune reactions. *Candida* uses several highly efficient evasion strategies to control and evade these complement mediated immune reactions such as secreting proteases to degrade the human molecules, as well as the recruitment of human complement regulators to turn down the complement activation process. One of these human proteins that is used by *Candida* is the plasma protein beta 2 glycoprotein 1 (b2GPI). Once bound to the surface of *Candida* the fungus prevents further cleavage of b2GPI to antimicrobial peptides by neutrophil secreted elastase and *Candida* is protected. In addition *Candida* exploits complement regulatory activities of b2GPI. These regulatory activities mediate the degradation of C3, C3b and iC3b by the human serine protease factor 1. iC3b is a ligand of Complement receptor 3 and 4 on inflammatory cells, and can induce inflammatory reactions in form of cytokine release. In this project the anti-inflammatory role of b2GPI will be characterized in general and in terms of an immune evasion molecule for *Candida albicans*.

We expect:

- a Master's degree (or equivalent) in Natural or Life Sciences. Research at ILRS is centred around "**Microbial and Biomolecular Interactions**". Candidates about to earn their degree are welcome to apply.
- high motivation and interest to join one of the research areas of ILRS
- an integrative and cooperative personality
- very good communication skills in English

We offer:

- a top-level research environment
- efficient supervision by a team of supervisors
- a comprehensive mentoring program (cf. Program of Study)

