



# 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, the University Hospital Jena and the Max Planck Institute for Chemical Ecology are offering an international graduate training programme. The

### International Leibniz Research School (ILRS Jena)

gives doctoral researchers the possibility to prepare for their PhD exam in an ambitious program providing excellent research conditions. We invite applications for a

### Doctoral Researcher Position (Ref.No. ILRS\_04/2018)

#### Exploring the Role of Light in Microalgal-Pathogen Interactions

Eukaryotic unicellular photosynthetic organisms (microalgae) are key contributors to CO<sub>2</sub> fixation. Light plays a major role in their life as source of energy and/or as source of information for photosynthesis, their developmental cycles and the entrainment of their circadian clocks. The green biflagellate alga *Chlamydomonas reinhardtii* has served for decades as a model to study light-driven reactions in microalgae. In *C. reinhardtii*, different sensory blue light receptors (phototropin, a plant and an animal-like Cryptochrome abbreviated as PHOT, pCRY and aCRY, respectively) are involved in the above mentioned processes (Petroutsos *et al.*, *Nature* 2016; Zou *et al.*, *Plant Physiol* 2017; Müller *et al.*, *Plant Physiol* 2017). One of them, aCRY, is also able to absorb in the red region of the visible spectrum. Here, we want to study the potential influence of blue and red light on the interaction of microalgae with bacteria taking *C. reinhardtii* and *Pseudomonas* species that markedly inhibit algal growth as model (Aiyar *et al.*, *Nat Commun*, 2017). In nature, microalgae are usually associated with other microorganisms and these interactions can be beneficial for both organisms or antagonistic. Despite the importance of such interactions, relatively little is known about abiotic factors such as chemical mediators or the influence of light shaping microalgal communities. In higher plants, it has been shown recently that blue- and red-light receptors from *Pseudomonas* are relevant for plant-pathogen interactions. Here, we aim to study if algal and/or bacterial blue- and red light receptors play a role in the microalgal-bacterial interaction. Therefore, we will use photoreceptor mutants of *C. reinhardtii* and *Pseudomonas*. The interactions will be analyzed in a light-dark regime, under constant darkness and constant light as well as under different light qualities and quantities, representing different environmental conditions. Our studies will allow us to visualize the role of light in microalgal-pathogen interactions.

#### We expect:

- a Master's degree (or equivalent allowing you to pursue a PhD degree) 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.
- experience in relevant methodological skills: routine molecular biology techniques, microbiological culturing, bio-/chemical analysis
- high motivation to join one of the research areas of ILRS

- creativity and interest in shaping your own thesis project
- an integrative and cooperative personality with enthusiasm for actively participating in our lively community
- very good communication skills in English

**We offer:**

- a top-level research environment
- efficient supervision by a team of advisors
- a comprehensive mentoring programme
- courses in state-of-the-art technologies and soft skills
- strong communication and interaction between the involved institutions
- Jena – **City of Science**: innovative business activities, successful scientific centres and a vibrant cultural scene around the famous Friedrich Schiller University

The three-year Doctoral Researcher position is available starting from June 2018. The position will be financially supported according to TV-L (salary agreement for public service employees). HKI is an equal opportunity employer.

Further information:

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The application process is handled exclusively online. Please acquaint yourself with the scientific projects offered on our [website](#). **Please note that you can choose up to 3 projects of interest in your application. It is only necessary to fill in the application form for your first preference of projects; the other two projects can be selected in the application form.** In order to apply via the online application portal, go to

<https://jobs.hki-jena.de/jobs/Doctoral-Researcher-mf-Exploring-the-Role-of-Light-in-Micr-de-j140.html>

**Deadline for application: March 26, 2018.**

Successful applicants will be invited to attend a recruitment meeting in Jena (envisaged date: May 24-25, 2018).



The ILRS is part of the “Jena School for Microbial Communication” (JSMC) which has been established in 2006 as an umbrella organisation of three existing Research Training Groups. The JSMC is funded by the **German Excellence Initiative**.