



J O B O F F E R

1 PhD Position

12.05.2017

The MPI for Chemical Ecology, Department of Entomology, has an opening for a

PhD student (m/f) on a **DFG-funded project**

Project Description: The charismatic longhorned beetles (Coleoptera: Cerambycidae) are part of the most diverse group of wood-feeding (xylophagous) animals on Earth. Larvae of these beetles have evolved to thrive on a highly challenging and sub-optimal environment - wood material - where they have to cope with the structural polysaccharides of the plant cell wall which make the bulk of their food. Earlier research indicated that cerambycid beetle larvae break down cellulose, hemicelluloses and pectins themselves by producing plant cell wall degrading enzymes (PCWDEs), independent of symbionts. Yet, the corresponding genes and the way they evolved remain elusive in this group of beetles. By combining gene discovery by sequencing beetle midgut transcriptome using RNA-Seq, to phylogenetic analyses and rapid screening of enzymatic activity by expressing the corresponding cDNAs in heterologous expression systems, this project aims to identify and characterize the genes encoding PCWDEs and to determine their evolutionary history in Cerambycidae. This research will provide information on how host plants and feeding behavior have shaped the composition of these gene families during the evolution of Cerambycidae; and on how PCWDEs contributed to build and maintain the biodiversity of this family of beetles. This project also opens the exciting possibility that screening the gut transcriptome of longhorned beetles represents an alternative to microorganisms for the discovery of new and better PCWDEs for use in industrial biotechnology, in particular for the improvement of biofuel production from plant biomass.

We are looking for a motivated student with a University degree (M.Sc. or equivalent) with a focus on bioinformatics and molecular evolution, with a strong will to work in the wet lab. We expect good verbal and written communication skills. Experience working with RNA-Seq data (assembly and analysis) and molecular evolution methodologies (phylogenetic analyses among others...) is required. Knowledge of different wet lab techniques (e.g. PCR; DNA, RNA and protein extraction; Western Blot; Enzyme assays; insect cell and/or bacterial cultures) is a plus.

We offer excellent technical equipment and close supervision in an international environment. A structured PhD program is offered by our graduate school (IMPRS) which provides interdisciplinary training by seminars, lectures and scientific workshops. The payment and benefits are based on the TVöD guidelines and the appointment is for 3 years with possibility of extension. **Application deadline: July 1st.**

The Max Planck Society is committed to increasing the number of individuals with disabilities in its workforce and therefore encourages applications from such qualified individuals. Furthermore, the Max Planck Society seeks to increase the number of women in those areas where they are underrepresented and therefore explicitly encourages women to apply.

Application: Questions concerning the project or the position are welcome and should be addressed to Dr. Yannick Pauchet. To apply, please email a statement of motivation, CV and a letter of reference as a single PDF file to [ypauchet \[at\] ice.mpg.de](mailto:ypauchet@ice.mpg.de).

