

PhD position on the Molecular basis of balanced color polymorphisms in grasshoppers

A PhD position on the *Molecular basis of balanced color polymorphisms in grasshoppers* is advertised as part of the current call for International Max Planck Research School *The Exploration of Ecological Interactions with Molecular and Chemical Techniques*. This is one of 12 projects that are advertised with the 2019 recruitment (see <http://imprs.ice.mpg.de>).

Background: All species are phenotypically variable, but in some species, multiple distinct color morphs coexist in local populations. Such color polymorphisms are often conspicuous and if they are not transient, they are maintained by balancing selection. The Orthopterans (bush-crickets, crickets and grasshoppers) represent a fascinating group in which multiple color polymorphisms are shared among species. This offers a replicated system for studying the eco-evolutionary processes that create and maintain color polymorphisms. One cornerstone in understanding these processes is knowledge about the molecular basis of the color phenotype. This project aims to tackle this question in color polymorphic Acridid grasshoppers.

Project Description: We will use the enigmatic club-legged grasshopper as the main model system. The species is color polymorphic with the widespread co-occurrence of green and brown morphs in most local populations. This green-brown polymorphism is shared with about 25% of the European Orthopterans and breeding experiments with our species show that the color polymorphism is genetically inherited. The species also shows a subtler polymorphism in that the brown morphs occurs as a plain and a pied variant. This polymorphism is phylogenetically less widespread, but is also shared among many species. Breeding experiments with our species show that it is heritable, but that the genetic basis is more complex than in the green-brown polymorphism. The project aims to uncover the genetic basis of both polymorphisms using genomic mapping, differential expression analysis using RNAseq and chemical analysis of the color synthesis pathway. The work will thus involve laboratory and bioinformatic analyses. While focusing on a single species primarily, the project also aims to use the option for comparative analyses with other color-polymorphic Orthopterans.

Candidate profile: We seek a bright and highly motivated candidate with

- a strong background in evolutionary genetics
- demonstrated expertise in statistic, computation and/or bioinformatics
- scientific and critical attitude
- curiosity, creativity, and ambition
- excellent time management and organizational skills
- interest to interact with scientists in our group working on eco-evolutionary topics
- good communication skills
- proficiency in written and spoken English

Application procedure

Please apply through the application portal of the IMPRS <http://imprs.ice.mpg.de/ext/index.php?id=application>
Note that the **deadline for application has been extended to 30th May 2019**.

More information: For more information on this specific project please contact Prof. Dr. Holger Schielzeth, Friedrich Schiller University Jena, Institute of Ecology und Evolution, Population Ecology Group, Dornburger Str. 159, 07743 Jena, Germany, E-Mail: holger.schielzeth@uni-jena.de. For general information about the IMPRS please check the website <http://imprs.ice.mpg.de>.