

As part of the DFG-funded SPP GEvol, we are looking to appoint two PhD students to projects studying the evolution immune innovations in insects (ImmuNov, PI Dr. Vincent Doublet) as well as the evolution of interactions between transposons and their Drosophila host (FlyInnovation, PI Prof. Lena Wilfert).

Please find the ads below

Position 1 - ImmuNov

Fully funded PhD position in evolutionary genomics of insect immunity at the University of Ulm, Germany.

Title: ImmuNov - Genomics and epigenomics of immune innovations in insects.

We are recruiting a PhD student to study the evolution of innate immunity in insects. The project involves comparative analysis of the gene expression response (i.e. transcriptomics) of several insect species against generalist pathogens, and of the epigenetic regulation of immunity. The focus will be on genetic novelty and understanding how and how often new genes emerged and acquired an immune function in the evolutionary history of insects.

The student will join a dynamic team (including four postdocs and three PhD students) led by Prof. Lena Wilfert, working on different aspect of insect disease ecology and evolutionary biology. Moreover, this project will be part of a multi-team program across Germany focusing on genetic innovation in insects (<http://www.gevol.com>). The goal of the DFG funded Priority Programme GEvol is to collaboratively and interdisciplinarily exploit new computational and OMICS methods to reveal the history of genomes in the insect taxon by comparative genomics. This priority project offers excellent opportunities for collaboration and networking with leading institutes in evolutionary biology, in addition to planned collaborations with Prof. Siegfried Roth (Uni Köln), Prof. Stefanie Becker (TiHo Hannover) and Prof. Judith Korb (Uni Freiburg). The position is for 3 years (salary scale TV-L 13, 65%), with a preferred starting date in October 2022.

The post will include experimental infections of diverse insect species and the use of multi-OMICS approaches to reveal gene expression, and the analysis of molecular evolution and regulation of immune genes by comparative genomics. The successful applicant will be able to develop research objectives, contribute to the process of securing funds and make presentations at conferences and other events.

Applicants will possess a relevant Master degree in evolutionary biology or a related field of study. The successful applicant should have expertise in the fields of molecular biology or evolutionary genomics. Applicants should ideally have expertise in molecular techniques, experimental pathology and/or bioinformatics. Experience in working with live insects would be desirable. The successful applicant will be able to work autonomously but also collaboratively and will have excellent oral and written

English language skills.

The position will be based at the University of Ulm, at the Institute of Evolutionary Ecology and Conservation Genomics. Ulm is a delightful historic city on the Danube in Southwestern Germany; it is one hour from the Alps, Lake Constance, Munich and Stuttgart. Additionally, the position includes work in partner labs in Cologne, Freiburg and Hannover.

For further information, please contact Dr. Vincent Doublet vincent.doublet@uni-ulm.de. The closing date is the 27th of June 2022. Applications should include a cover letter describing your motivation and research interest, a CV and digital copy of your MSc/Diploma certificates and transcript of records. The job advert with detailed information on profile and responsibilities, as well as the link to the online application system can be found here [<https://stellenangebote.uni-ulm.de/jobposting/708c1ddd23ef897ae655c1970f26ef99bcce5749>]. Please only apply via the online system.

Position 2 - FlyInnovation

Fully funded PhD position in evolutionary genetics of Drosophila-transposon interactions at the University of Ulm, Germany.

Title - FlyInnovation - Are telomere specific retroelements an innovative solution to the end-replication problem?

This PhD project in evolutionary insect genetics studies potential conflict and collaboration between transposons and their Drosophila hosts. The position is funded for three years as part of the project FlyInnovation at the University of Ulm, Germany, and is part of the large interdisciplinary DFG funded Priority Programme GEvol.

Eukaryotes face a challenge: they must protect coding DNA from getting shorter with each round of cell replication. Telomeres are a widespread solution to this challenge. These repetitive DNA motifs cap chromosome ends and protect coding DNA. Because telomeres and telomerase (the enzyme that maintains telomeres) are vital to chromosome integrity they are highly evolutionarily conserved. This makes the Diptera unusual – flies have lost telomeric repeats and telomerase. Among the Diptera, Drosophila are unique: they are the only genus we know of where transposable elements (TEs) are the sole means of maintaining chromosome ends. These TEs act like telomerase, extending telomeric regions by successive transposition. This system has been heralded as a clear-cut example of TE domestication but evidence in support of this idea is lacking. We will unite theoretical and empirical approaches to determine if telomere-specific TEs are an innovative means of preserving chromosome ends in the absence of telomerase, or selfish genetic elements avoiding host-silencing in a genomic safe-site.

This project works alongside a theoretician who will apply methods from ecology to model the evolutionary dynamics of TEs. This studentship will test these models, and link TE abundance and diversity to phenotype to understand if TEs and hosts are cooperating, or in conflict. This will involve large scale laboratory experimentation with multiple insect species, molecular analyses (qPCRs, preparing samples for sequencing) and cytological analyses (oligopainting and Fluorescence in Situ Hybridization). The project will also entail analyzing molecular data and phylogenetic analyses.

This PhD studentship is part of a collaborative project with Dr. Pete Csuppon (University of Münster), working within the DFG funded Priority Programme GEvol. The goal of GEvol is to collaboratively and interdisciplinarily exploit new computational and OMICS methods to reveal the history of genomes in the insect taxon by comparative genomics. At the institute of Evolutionary Ecology and Conservation Genomics, an interactive and international team studies diverse topics in evolutionary ecology, including host-pathogen interactions (Prof. Wilfert), insect evolutionary genetics and metabolomics (Dr. Ruth Archer), conservation genomics (Prof. Sommer) and pollinator ecology (Profs. Ayasse and Tschapka), with the possibility to collaborate with Prof. Niessing (Institute of Pharmaceutical Biotechnology) on FISH analysis.

Applicants will possess a relevant Master degree in evolutionary biology or a related field of study. The successful applicant should have expertise in the fields of evolutionary ecology, genetics or evolutionary genomics. Applicants should ideally have expertise in experimental quantitative genetics, molecular techniques and/or bioinformatics. Experience in working with live insects would be desirable. The successful applicant will be able to work autonomously but also collaboratively and will have excellent oral and written English language skills.

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For further information, please contact Prof. Lena Wilfert (lana.wilfert@uni-ulm.de) or Dr. Ruth Archer (rutharcher0@gmail.com). The closing date is the 27th of June 2022. Applications should include a cover letter describing your motivation and research interest, a CV and digital copy of your MSc/Diploma certificates and transcript of records. The job advert with detailed information on profile and responsibilities, as well as the link to the online application system can be found here <https://stellenangebote.uni-ulm.de/jobposting/d7f4aa4e8e7ece88e62127477c8d7e4347cfef23>