Doctoral student/research assistant

University of Greifswald, Faculty of Mathematics and Natural Sciences, Greifswald, Germany

Application Deadline: 04-Jan-2021
Start date: Spring 2021
Website: https://zoologie.uni-greifswald.de/en/organization/departments/general-and-systematic-zoology

Qualifications

We are looking for an enthusiastic scientist with an MSc (or equivalent) in zoology, evolutionary biology or other related biological disciplines. Excellent spoken and written English skills and solid grasp of zoology and animal physiology are expected. Experience in electrophysiological methods is an asset. As the project will be conducted in close collaboration with the Pheromone Group in Lund it includes a longer research visit in Sweden.

The salary for positions is 65% of TVL13. Interested candidates are strongly encouraged to contact Gabriele Uhl prior to applying if they have questions.

The University would like to increase the proportion of women in areas in which they are underrepresented. Applications from women are particularly welcome and will be treated with priority if they have the same qualifications and as long as there are no clear reasons, which make a fellow applicant more suitable. Severely disabled applicants with the same qualifications will be considered with preference.

Description

We investigate diverse topics in the fields of reproductive biology, behavioural ecology, functional morphology and systematics from an evolutionary perspective. In this DFG funded PhD project, we investigate spider chemical communication.

The chemical sense plays a pivotal role in all living beings. It is used to recognize and differentiate between chemicals that emanate from resources, from conspecifics or heterospecifics. In arthropods, sensing of all modalities other than vision is performed with modified cuticular sensilla, and there are specific sensilla for gustation e.g. (tip-pore) and olfaction (e.g. wall-pore). In spiders, there is clear evidence for gustation with tip-pore sensilla, however, wall-pore sensilla seem to be absent. Therefore, how spiders smell has remained a conundrum – despite a large body of behavioural evidence for olfaction. To explore the *Wheres* and *Hows* of spiders chemical sensing we focus on the wasp spider *Argiope bruennichi*, for which we have a sensilla map for all body appendages, know the volatile sex pheromone and can draw on a large body of knowledge on the species' mating behaviour. The sensilla on walking legs and pedipalps will be explored as to differences in ultrastructure and physiological response to gustatory or olfactory signals. The in-depth studies on function will be complemented by an exploration of the spider chemosensory receptors and visualisation of receptor gene expression.

Our overall aim is a comprehensive contribution to our understanding of the structure, function and evolution of chemosensory organs within spiders and arthropods. The investigations will be performed in close collaboration with the *Pheromone Group* at the University of Lund (Christer Löfstedt, Hong-Lei

Wang, Dan-Dan Zhang) and in tandem with another project that focusses on the ultrastructural aspects of the sensilla.

Electrophysiological and Molecular Analysis of Chemosensory Sensilla

Tasks:

- behavioural analysis on the how and when sensilla are used in different contexts
- Analysis of the functional disparity of sensilla (SEM, TEM) depending on location on the body
- Analysis of receptor genes
- exploring chemosensory receptor gene expression (FISH)
- comparative-functional sensilla analyses in a cursorial and a web-building species
- Scientific publication and attendance of congresses

Application Materials

Applications with all usual documents (cover letter, CV, research experience, reference letters, degree certificates, and a list of publications) are to be sent with via email (one PDF, max 5 MB) with reference to the job advertisement number **20/Wi47** by **04 January 2021** to Prof. Dr. Gabriele Uhl (gabriele.uhl@uni-greifswald.de).

Submit applications and further questions to:

Contact Person
Prof. Dr. Gabriele Uhl

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