PhD position available at the Zoological Institute & Museum
University of Greifswald, Germany

Biotremology & multimodal communication in the spider *Pisaura mirabilis*

A **Research Assistant (f/m/d) (PhD candidate) (65% TVL13) position** is available in the DFG funded project "*Chemical and vibratory communication: testing the role of spider silk in a reproductive context*" in a joint collaboration project of **Monika J.B. Eberhard, University of Greifswald** and Cristina Tuni, LMU Munich. The position is limited to a period of 3 years, starting ideally in January 2022.

Project Rationale

Animals communicate with each other using a wide range of sensory modalities, including chemical, vibratory and visual signals. The complex interplay between these signals is crucial for their survival and reproduction. Hence, understanding the functional role of multimodal signalling is key to the study of animal communication, and remains a major objective for behavioural ecologists. Spiders represent a particularly well-suited taxonomical group for studying the evolutionary function of vibratory- and chemical-based signalling. In the present project, we aim to uncover the functional roles of vibratory and chemical signals, as well as their interaction, by addressing silk-borne communication between the sexes in the spider *Pisaura mirabilis* (Pisauridae). In the course of the project, the PhD candidate will explore the functional role of male (and female) vibrational signals in a reproductive context by assessing whether vibratory courtship confers fitness benefits to the signaller. We will reveal whether *P. mirabilis* males are able to plastically adjust their vibratory performance to variation in female reproductive quality. We will additionally explore the role of silk in facilitating the transmission of vibratory signals. Furthermore, we will determine the use and integration of male multimodal communication components in females by assessing the interplay between vibratory and chemical courtship signalling, in close collaboration with a second PhD project based at LMU Munich who will focus on the chemical communication in *P. mirabilis*.

Tasks:

- Laser-vibrometer recording and behavioural analysis of male (and female) vibratory courtship in different contexts (see Eberhard et al. 2020 Behav. Ecol. Sociobiol. 74; Eberhard et al. 2020 Ethology 127, for details on *P. mirabilis* vibratory signals)
- Conducting playback and mate choice experiments
- Investigate fitness outcome (paternity share) of mating trials using microsatellite analyses
- Assess transmission characteristics of signals on various substrates and dragline silk
- Design and conduct experiments combining vibratory and chemical signalling
- Scientific publication and attendance of congresses

Your profile

The successful candidate holds a degree (M.Sc.) in a relevant field (e.g., zoology, ethology, evolutionary biology or other related biological discipline) and has a sound knowledge in behavioural ecology and experimental work. Ideally, the candidate has the necessary practical skills to conduct recordings with a laser-vibrometer and analyse vibratory/acoustic signals. Knowledge of competitive microsatellite PCR technique, multivariate statistical analysis of behavioural data (preferably in R) and publication

experience in scientific journals are an asset. Furthermore, very good organizational and communication skills are required. Excellent English skills, oral as well as written are expected; German language skills are helpful but not mandatory. Since the present position is linked to a second PhD project conducted at LMU Munich, a strong sense of team spirit and the disposition to conduct part of the research at LMU Munich (ca. 3 months) is important.

We offer a creative, appreciative working environment with a high degree of personal responsibility in a diverse and motivated team. You will benefit from a research network of national and international cooperation partners, especially with the collaborators at LMU Munich.

About Greifswald: Founded in 1456, the University of Greifswald is one of the oldest universities in Germany and the Baltic Sea Region. Its research strength mainly originates in the intensive interdisciplinary collaboration of the five faculties, including University Medicine. Cutting-edge research is based on the solid foundation provided by an excellent research infrastructure. Greifswald's position right next to the Baltic Sea makes it an attractive location for studying, teaching and research. It's rich in cultural events and stunning nature, and a great place to live!

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.

Applications with all usual documents (cover letter, CV, research experience (topics of BSc/MSc theses), scans of degree certificates, contact details of 2 referees) are to be sent **via email as a single PDF** document with reference to the job advertisement number **21/Wi31** by **30 September 2021** to Dr. Monika Eberhard (monika.eberhard@uni-greifswald.de).

Please contact Dr. Monika Eberhard (monika.eberhard@uni-greifswald.de) for further information and in case you have any questions concerning the position or project.

For official job announcement in German: click here.