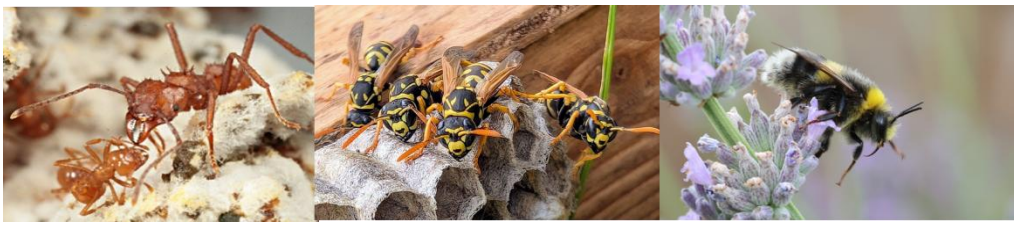
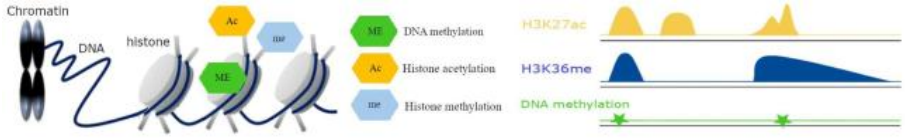
PhD Position: "Transcriptional Regulation of Odorant Perception"

The position is fixed term (65% according to TV-L 13, for 36 months), starting as soon as possible, at Senckenberg Biodiversity and Climate Research Institute, Frankfurt, Germany.

Collaboration with Freiburg University, Mainz University, TUM München, Würzburg University.





Understanding the evolution of complex communication systems requires investigating both signal production and signal perception. In insects, cuticular hydrocarbons (CHCs) are central to chemical communication, yet the genomic mechanisms underlying the ability to perceive particular CHC compound blends remain largely unknown. Odorant receptor (OR) gene expression levels change when their corresponding encoded receptor proteins bind to specific odorants. The aim of this project is to determine the epigenetic mechanisms in regulating OR gene expression, and whether this regulation is consistent across our hymenopteran study species. This multi-omics approach will yield key insights into the genomic basis of the evolution of complex chemical communication systems, revealing how sender and receiver traits have evolved in concert.

The project is in close collaboration with the research groups of PD Dr. Florian Menzel (Johannes Gutenberg University Mainz), PD Dr. Jan Büllesbach (Technical University of Munich), and Prof. Dr. Thomas Schmitt (University of Würzburg) and involves close cooperation with a second PhD student in the project who will lead the chemical ecology and comparative genomics analyses located in the groups of Prof. Dr. Oliver Niehuis and PD Dr. Volker Nehring (University of Freiburg).

We are recruiting a highly motivated PhD candidate with interest in molecular evolution, genomics, epigenetics, and chemical ecology to identify epigenetic mechanisms regulating odorant receptor expression, one of the key traits in chemical communication systems.

Your tasks

- **Conduct experimental work** and collect samples from three hymenoptera species from three odour blend treatments.
- **Perform essential laboratory work** (e.g. RNA extraction, library preparation)
- **Carry out bioinformatic analyse** multi-omics data
- **Publish** results in internationally peer-reviewed journals, and **present** those at international conferences
- Closely **collaborate** with the comparative genomics counterpart

Your profile

- Master's degree (or equivalent) in Biology, Evolutionary Biology, Molecular Biology, Bioinformatics or related field
- Strong interest in molecular evolution, genomics, epigenetics, and chemical ecology
- Prior experience with NGS data, R, another programming language is a plus
- Experience with formulating scientific questions, planning and executing a research project
- Very good English communication skills; curiosity, independence, and interest to collaboratively work in an interdisciplinary team

Desirable skills

- Experience in conducting experiments
- Experience in dissection of specific tissues
- Experience in molecular laboratory procedures, including RNA extraction, preparation of Enzyme-seq and CUT&Tag libraries
- Experience in the bioinformatic analyses of transcriptome, methylation and/or histone modification data

We Offer

- Access to an international network of scientists, policymakers, and research organizations
- Integration in an interdisciplinary consortium studying the "GEvol: Genomic Basis of Evolutionary Innovations (GEvol)" with additional training opportunities and collaborations across Germany.
- A dynamic working environment in Frankfurt, a diverse and vibrant city offering a high quality of life

How to apply?

Please upload your application (letter of motivation with a short description of your previous and current research foci, a CV, certificates of academic achievements, list of publications as well as letter(s) of recommendation, if available) **(as a single PDF file) on our website by April 6, 2026**.

If you have any specific questions about the position, please contact Dr. Barbara Feldmeyer at barbara.feldmeyer@senckenberg.de.