



EBERHARD KARLS  
UNIVERSITÄT  
TÜBINGEN



### **CSC-Tübingen PhD Scholarship Program**

2025/2026 application round: prospective PhD positions at the University of Tübingen

Faculty: Mathematisch-Naturwissenschaftliche Fakultät

Institute / Section / Subject: Institute of Evolution and Ecology / Evolutionary Biology of Invertebrates

Supervising Professor: Prof. Dr. Oliver Betz

About the Supervisor: Oliver Betz is a professor for Invertebrate Evolution and Ecology in Tübingen. He holds a Diploma in Biology from the Philipps-University in Marburg, received a PhD in Zoology from the University of Bayreuth (1994), and was an appointed (Senior) Scientific Assistant (C1, C2) from 1994-2002 at the Christian-Albrechts-University in Kiel, where he habilitated in the subjects zoology and ecology in 2002. From 1999-2001 he was a DFG-research scholar at the Field Museum of Natural History in Chicago (USA). In February 2004 he took over the professorship of Evolutionary Biology of Invertebrates at the University of Tübingen. His research focuses on the functional and ecological morphology of arthropods (mainly insects), with special emphasis on the integration of morphology and ecology, in order to improve our understanding of the function of morphological structures in their ecological (environment) and evolutionary (history) context. His work is based on a broad line-up of morphological, ecological and molecular methods. Current key aspects are (1) functional and ecological morphology of insects, (2) biomimetics, and (3) faunistics in the context of urban ecology. He has been reviewer for many zoological and ecological journals and funding agencies. He has served on various scientific boards such as, currently, the 'Competence Network Biomimetics – Plants and Animals as Concept Generators for Biomimetic Materials and Technologies' or the 'International Centre for Ethics in the Sciences and Humanities (IZEW) of the Universität Tübingen. From 2015 - 2019 he has been dean of education (Studiendekan) of the University of Tübingen for Biology. Link to English website: <https://uni-tuebingen.de/de/147741>

Specification/Project title: Comparative morphology, ultrastructure and function of the postabdomen of beetle larvae (Coleoptera)

Topic Description: The abdominal apex (postabdomen) of beetle larvae differ from the more anterior segments, because they are involved in locomotion, sensing, cocoon spinning, defense and / or respiration. Major developments of the postabdomen involve the transformation of segment 10 into a pygopod (a special attachment organ) and the development of terminal urogomphi (pseudocerci). Moreover, the postabdomen often comprises gland structures that release a secretion for defense or cocoon building. This project involves the comparative investigation of the ultrastructure of the postabdomen across beetle taxa using transmission and cryo-scanning electron microscopy, 3D

reconstructions based on histological section series and functional observational studies using videography.

Intended Degree: Dr. rer. nat.

Type of the PhD Study: 1) Full-time (complete doctoral studies at the University of Tübingen)

Required Degrees and Qualifications: Master of Science, Areas of expertise: zoology, entomology

Language Requirements: TOEFL iBT 95

Notes: Willingness to work in an electron microscopic lab and learn about entomological techniques. The PhD will require much effort in (ultra-)microtomic serial sectioning including fixation of fresh samples, staining, cutting and working with SEM and TEM (microscopes). Adult beetles will have to be collected in the field and reared in the lab to attain the larvae needed for further investigations.