



The Evolutionary Biology of Invertebrates group at the University of Tübingen (Germany) is searching for a

**PhD student in Insect Morphology & Systematics:
Comparative functional morphology of the head in modern rove beetles (Coleoptera, Staphylinidae)**

With more than 64,000 species, rove beetles (Staphylinidae) are the largest insect family. Extending previous work, in the present project we will follow an integrative functional and eco-morphological approach to investigating the comparative functional head morphology of modern, mostly predatory representatives of rove beetles. Based on Synchrotron micro-tomography data and scanning electron microscopic analyses of head morphology (mouthpart morphology, presence/ absence of head muscles including their origins and insertions, structure and organization of the hypopharynx-prementum complex, structure of the tentorium, sclerites of the prementum), the functional aspects of mouthparts will be combined with direct video observations of predatory and feeding behavior and interpreted in a phylogenetic context. In cooperation with the Field Museum of Natural History (Chicago, USA), we will examine comparatively 37 representatives of all subfamilies of the traditional Staphylinine group (and the main tribes for some). We will also gather morphometric data of the mandibles and the associated muscles to evaluate mandibular biting forces and closing velocities. 3D geometric morphometrics will be used to quantify head morphological differences between clades and feeding types. Based on a phylogenetic scheme adopted from published sources, we will perform character mapping analysis with the goal of recognizing evolutionary changes and novelties including the resulting functional consequences. A cladistic analysis will test the extent to which the internal head morphology can contribute to the clarification of open phylogenetic questions.

This project will help to (1) identify major developments in the evolution of head morphological characters within the Staphylinine group and (2) understand how these characters have contributed to the diversification of Staphylinidae in general. The comparison of head morphological characters with directly observed predatory and feeding behaviour will facilitate the interpretation of morphological patterns in a functional context.

We offer: DFG-funded PhD position (65%) for three years; work with Scanning Electron Microscopy, 3D-reconstruction software such as Amira for analysing μ CT data, and behavioural observations including highspeed videography. The working place is Tübingen, a university town in Southwest Germany. The position is scheduled for 3 years with an anticipated starting date of September 2019 (earlier starts possible). The salary is based on the German public tariff E13 TV-L (65%) and includes social benefits. The University seeks to raise the number of women in research and teaching and therefore urges qualified women to apply. Disabled candidates will be given preference in case of equal qualification.

We expect: MSc or equivalent degree in biology with profound knowledge in arthropod morphology & systematics and/ or insect ecology & evolution; good communication skills; fluency in English and/ or German; high motivation and interest in insect systematics, morphology and evolutionary biology; excellent writing skills and work organization capabilities.

Please send your application (CV, copies of certificates, letter of motivation, two names of potential referees) **by April 30** to Prof. Dr. Oliver Betz (sekretariat.invertebraten@biologie.uni-tuebingen.de). For details on our working group and other ongoing projects see: <https://uni-tuebingen.de/de/147780>

Prof. Dr. Oliver Betz

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