

Ph.D. Student position: The diversity and evolution of insect microbial symbionts
at the Institute of Zoology and Biomedical Research at Jagiellonian University in Kraków, Poland

The Department of Developmental Biology and Morphology of Invertebrates at the Institute of Zoology and Biomedical Research of Jagiellonian University in Kraków, Poland **is seeking a motivated Ph.D. Student** to join the project „*The patterns, factors, and drivers of insect microbiome variability*”, funded by the National Science Centre (NCN) Opus 21 project no. 2021/41/B/NZ8/04526.

The goal of the project is to address a series of questions about the diversity, specificity, transmission, and roles of insect microbial symbionts. The research will focus on hoppers (Auchenorrhyncha), a diverse and ecologically and economically significant clade of hemipterans (true bugs) that includes planthoppers, leafhoppers, treehoppers, spittlebugs, and cicadas. Their nutrient-limited diet of plant sap is supplemented by specialized heritable bacterial symbionts that produce amino acids and vitamins. These symbionts co-diversify with hosts - but in many insect lineages, they were joined or replaced by other microbes that contribute nutritional functions. Many of them also host heritable facultative endosymbionts such as *Wolbachia* and *Rickettsia* that may affect insect reproduction, resistance to natural enemies, or abilities to vector plant pathogens. All these microbes can play critical importance in insect biology, but there is rapidly accumulating evidence that the infections may vary among insect clades, species, populations, and even individuals sampled at the same time, at the same site.

The Ph.D. Student will address these questions using a combination of field collections across Central Europe and Baltic countries, high-throughput sequencing and bioinformatic analysis of host and symbiont marker genes and metagenomes, and microscopy (light microscopy, transmission electron microscopy [TEM], fluorescence *in-situ* hybridization [FISH]). The Student will be encouraged to work closely with other team members and project collaborators in Poland and abroad and supported in pursuing their related ideas. **The Student will be based at one of the top research institutes in the fields of Ecology and Evolution in Central Europe**, in a medieval city known as the cultural capital of Poland, with good access to outdoor recreation opportunities and well-connected to the rest of Europe.

The student will be supported by a generous 30-month tax-free stipend from the Opus 21 research grant. The preferred start date in the project is 1st of October 2023.

Requirements:

- M.Sc. degree in Biology or a related field by 18th September 2023;
- PhD Student - biology program in the Ph.D. School at JU, effective on 1.10.2023
- Demonstrated interest in Evolution, Entomology, Microbiology, and/or Genomics;
- Experience with, or a keen interest in learning, Bioinformatics, and Computational Biology;
- Strong English language, communication, and organizational skills;
- Previous experience with insect diversity, ecology, evolution and symbioses, molecular biology, microbiome surveys, phylogenomics and/or comparative genomics, microscopy techniques, and willingness to travel are advantageous.

The applicants should send a cover letter, a CV with a list of scientific achievements, and a signed copy of a formal statement concerning the processing of personal data to Dr hab. Anna Michalik (a.michalik@uj.edu.pl) by **18th of September 2023**.

The results will be announced by 22th of September 2023.

The applications will be considered by a selection committee according to the regulations about scientific scholarships in research projects financed by the National Science Centre, Poland (https://www.ncn.gov.pl/sites/default/files/pliki/uchwaly-rady/2019/uchwala25_2019-zal1_ang.pdf)