Międzynarodowa Środowiskowa Szkoła Doktorska
przy Centrum Studiów Polarnych
w Uniwersytecie Śląskim w Katowicach

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Title of PhD project: "Morphological and molecular diversity of the Black peach aphid *Pterochloroides persicae* (Insecta, Hemiptera, Aphididae) in different geographical areas of the world".

The leading unit: University of Silesia in Katowice

Requirements:

1. Completed master's degree studies in biology, biotechnology or related. Knowledge of research topics related to insect morphology and molecular biology,
2. Knowledge of entomological issues (characters, biology and importance of insects, characters of hemiptera, features and biology of aphids),
3. Knowledge of morphological research methods (light microscopy, fluorescence microscopy, scanning electron microscopy),
4. Knowledge of molecular research methods in barcoding, haplotype analysis and phylogenetic analyses of insects,
5. Knowledge of English enabling communication, reading and writing scientific papers.

Tasks description:

1. Morphometric analyses of materials from entomological collections,
2. Morphological analyses using scanning electron microscopy (SEM),
3. Analyses using molecular biology techniques (including barcoding and haplotype analysis),
4. Preparation of scientific articles and conference presentations;
5. Regular reporting of work progress;
6. Assistance in the daily scientific, didactic and organizational tasks of the unit, including joint care of measurement equipment.

Summary of a doctoral project:

Pterochloroides Mordvilko, 1914 (Hemiptera, Aphididae: Lachninae) is a monotypic genus of aphids from the subfamily Lachninae, characterized by the presence of paired spinal tubercles on the dorsal side of the abdomen. Black peach aphid – *Pterochloroides persicae* (Cholodkovsky, 1898) is a serious pest of fruit tree crops of the genus *Prunus* (*P*. *persica*, *P*. *armeniaca*, *P*. *spinosa*), naturally occurring in northern Africa, the Middle and Near East, and alien to southern Europe. As a common species, *P*. *persicae* has not been comprehensively studied so far in terms of morphological and molecular variability depending on the location, environment of occurrence and the host plant. The proposed project aims to conduct detailed and comparative morphological (analysis of antennal and other body sensilla and analysis of intraspecific variability) and molecular (DNA barcoding, haplotype analysis) analyses of *P*. *persicae* representatives from different areas of its occurrence (Africa, Southern Europe,

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Pakistan, India, etc.), possible from different host plants. The analyses will be conducted based on detailed morphometric measurements of individual body parts and sensilla of two basic morphs (apterous and alate viviparous females) using light microscopy and scanning electron microscopy (SEM). Molecular analyses will be conducted using mitochondrial and nuclear markers. The project results will provide new data on the influence of wide geographical distribution on morphological and molecular variability of aphids.

Other information:

The work will be carried out under supervision of: dr Mariusz Kanturski, prof. UŚ, Faculty of Natural Sciences, University of Silesia in Katowice
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