LITHUANIAN UNIVERSITY OF HEALTH SCIENCES

International **Summer School** Practice

Genetic studies of honey bees

Honey bees (Apis mellifera) play an important role in agricultural ecosystems and are essential pollinators, while also being of significant economic and ecological importance. Their health and survival are influenced by a variety of environmental, biological and genetic factors. Understanding the genetic mechanisms underlying important biological traits may contribute to a better understanding of honey bee health and adaptation.

The aim of this research internship is to introduce students to the principles and practical application of molecular genetic methods in honey bee research. During the internship, students will have an opportunity to participate in selected stages of a research project, including biological sample preparation, DNA and/or RNA extraction, PCR-based analysis, gene expression analysis and electrophoretic or other molecular analysis of the obtained products. Depending on the specific research direction, particular attention may be given to genes involved in the honey bee immune response and their potential role in resistance to pathogens.

Students will become familiar with basic laboratory procedures, principles of molecular genetics, experimental design and the interpretation of molecular genetic data. The practical work will be complemented by analysis and discussion of the obtained results, allowing students to develop their skills in scientific data interpretation and research methodology.

The specific research question and experimental design will be adapted to the student's academic background and experience, as well as to the ongoing research activities of the laboratory. The internship will provide students with practical experience in molecular genetic research and an opportunity to develop competencies relevant to further studies and a scientific career.