Development of molecular detection methods of selected soft fruit pathogens

(Project: Ecofruits – BIOSTRATEG)

Healthy ecosystems are essential for increasing resilience and sustainable crop production, which requires the development of environmental monitoring principles based on biological indicators, including microbiological biodiversity. The general objective of the project, within which research for the doctoral thesis will be carried out, is the development of new biotechnological solutions in the diagnosis, control and monitoring of key fungal pathogens in organic fruit cultivation, ensuring biodiversity protection and sustainable production.

The subject of the proposed doctoral thesis includes the development of fast and sensitive methods for the detection of key, selected fungal pathogens in the organic cultivation of soft fruits. The aim of the research is to develop detection methods of selected fungi based on molecular biology techniques, in particular: polymerase chain reaction (PCR), loop-mediated isothermal amplification (LAMP) and next generation sequencing (NGS). The research will include the development of detection methods for individual phytopathogenic fungi, as well as the development of multiplex type reactions, for the detection of several species. The proposed topic also includes metagenomic analyzes of fungal communities on selected soft fruit plantations.

Scientific supervisor: prof. dr hab. Magdalena Frąc, assistant supervisor: dr Jacek Panek

Candidate profile:

- master’s degree in biology, environmental protection, biotechnology or other Life Sciences
- very good command in English, including specialist terminology
- knowledge of molecular biology methods and microbiological and biochemical techniques used in environmental research
- proven record of research activities (e.g. extracurricular research training period, research internships, participation in scientific conferences),
- ability to use bioinformatics and statistical software to elaborate results
- teamwork skills, motivation, creativity, independence