Course name: Invertebrate immunology (USOS Code: B-BE.231E)

ECTS: 5

No. of hours: 15 (15 lectures + 30 classes)

Course coordinator: Prof. dr hab. Małgorzata Cytryńska

Prerequisites: Basic knowledge in biochemistry, microbiology, and molecular biology.

Course description: The module covers the knowledge in the area of invertebrate immunity.

Lectures: Essential features of invertebrate immunity on the example of insect innate immunity. Recognition of non-self (pathogen/microbial associated molecular patterns, pattern recognition receptors). Mechanisms of invertebrate immunity: anatomical and physiological barriers, cellular response (types of hemocytes, phagocytosis, nodulation, encapsulation), humoral response (hemolymph coagulation, phenoloxidase system, defense peptides and proteins). Regulation of gene expression of defense peptides in Drosophila. The role of proteins containing immunoglobulin domains in invertebrate immunity (hemolin, Dscam, FREPs). Entomopathogenic organisms.

Labs: Galleria mellonella (Lepidoptera) as a model organism (isolation of fat body, microscopic observation of hemocytes). Analysis of phenoloxidase activity in hemolymph of naive and immune-challenged insects. Detection of antimicrobial activity (lysozyme, defense peptides) in G. mellonella hemolymph. The role of proteases of entomopathogenic bacteria in overcoming the insect immune response

Recommended literature: Recommended papers of the current scientific literature.