

Module name	Immunobiology
Module code	B-BA.096
ISCED code	0511: Biology
Study cycle	I°
Semester	winter
Responsible for this module	Iwona Wojda Department of Immunobiology email: wojda@poczta.umcs.lublin.pl
Language of instruction	English
Website	
Prerequisites	Basic knowledge from biology and chemistry
ECTS	5.0
ECTS points hour equivalents	Contact hours with academic teacher: 60 h (Lecture 30h, Laboratory, 30 h) Non-contact hours (student's own work)" 65 hours Studying literature and preparing for exam: 65 ECTS for contact and non-contact hours: 5 Total number of ECTS points for the module - 5.0
Learning outcomes verification methods	Method of verification of learning outcomes approved on the basis of Resolution of the Senate of Maria Curie-Skłodowska University No. XXII-39.6 / 12 of April 25, 2012, i.e. from the training cycle 2012/2013 Lectures: Exam: test 50% plus 1 point minimum to pass: W1, W2. K1 Laboratory: class attendance, laboratory exercises, ongoing monitoring of students' knowledge: W1, U1, U2, K1 Method of verification of learning outcomes approved on the basis of Resolution of the Senate of Maria Curie-Skłodowska University No. XXIV-27.18 / 19 of May 29, 2019, i.e. from the training cycle 2019/2020: Lectures: Exam: test 50% plus 1 point minimum to pass: W1, W2. K1 Laboratory: class attendance, laboratory exercises, ongoing monitoring of students' knowledge (colloquia after the exercises): U1, U2, U3,
Course full description	Lectures: - Red Queen Hypothesis, Host-pathogen antagonistic coevolution - Innate and acquired immunity; cellular and humoral - Janeway, Matzinger and Integrated model for infection recognition - Different strategies for 'remembering' infections found in living organisms: CRISPR / Cas system in bacteria and its use in biotechnology, Dscam receptors in insects, VLR receptors in jawless, somatic gene rearrangement in vertebrates - Annelides as a source of biologically active molecules

	<p>and as environmental bioindicators.</p> <ul style="list-style-type: none"> - Insects as objects for studying the mechanisms of innate immunity and as a source of bioactive compounds. Immunel proteins and peptides. - In vivo RNA interference technique for analyzing infection-regulated gene expression - Immune peptides, types, mechanism of action. - Methods for detecting antimicrobial activity in biological material: analysis of antimicrobial activity, lysozyme activity, phenol oxidase activity, coagulation index analysis - Limulus test - detecting the presence of pyrogens in the injection material <p>Basics of immunotoxicology</p> <p>Laboratory:</p> <p>Getting acquainted with the workshop's regulations and OHS coverage.</p> <p>The use of insects as model organisms on the example of greater wax moth <i>Galleria mellonella</i>.</p> <p>Involvement of the phenoloxidase system in defense reactions in invertebrates.</p> <p>The role of lysozyme in immune response.</p> <p>Analysis of antimicrobial activity of immune peptides.</p> <p>The role of extracellular proteases of entomopathogenic bacteria in breaking down insect resistance mechanisms based on the example of <i>G. mellonella</i>. Detection and analysis of proteolytic activity in <i>G. mellonella</i> larvae homogenates.</p>
Bibliography	The up-to date literature on the subjectis provided during classes.
Learning outcomes	<p>Based on the Resolution of the Senate of Maria Curie-Skłodowska University No. XXII-39.6 / 12 of April 25, 2012, i.e. from the 2012/2013 education cycle:</p> <p>In terms of knowledge, the graduate:</p> <p>W1. Understands the basic immune processes occurring in living organisms. K_W01</p> <p>W2. Knows basic laboratory and field analysis tools and techniques applied in immunobiology: KW_17</p> <p>In terms of skills, the graduate:</p> <p>U1: Plans and performs bioanalytical research based on immunobiological methods. K_U02</p> <p>U2: Formulates correct conclusions from experiments and observations in the area of immunobiological analysis: K_U07</p> <p>In terms of competence, the graduate:</p> <p>K1. Understands selected fragments of specialised scientific texts: K_K09</p>

	<p>Based on the Resolution of the Senate of Maria Curie-Skłodowska University No. XXIV-27.18 / 19 of May 29, 2019, i.e. from the training cycle 2019/2020</p> <p>In terms of knowledge, the graduate W1: Describes the relationships between organisms and the environmental pathogens: KW_02 W2: Identifies the relationships between immunobiology and other natural science disciplines, which facilitate understanding of the principles of organism function or provide a tool for interpretation and generalisation of acquired knowledge: KW_04:</p> <p>In terms of skills, the graduate: U1: Uses basic laboratory and field research tools and techniques applied in immunobiological analysis: K_U01 U2: Performs simple analyses of biological material looking for biological activity: antibacterial, antifungal, and designs simple analytical and preparatory procedures: K_U02 U3: Has an ability to conduct basic laboratory experiments in the area of immunobiology: K_U04</p> <p>In terms of competence, the graduate: K: Acknowledges the necessity of upgrading occupational competencies with respect to immune analysis: K_K02:</p>
Practice	
Teaching methods	Presentation, show, scientific discussions, practical training