

Subject card

Subject name and code	Principles of immunology , PG_00193175						
Field of study	Biotechnology						
Date of commencement of studies	October 2025	Academic year of realisation of subject			2025/2026		
Education level	Master's studies	Subject group			Obligatory subject group in the field of study		
Mode of study	full-time studies	Mode of delivery			at the university		
Year of study	1	Language of instruction			Polish		
Semester of study	2	ECTS credits			3.0		
Learning profile	academic	Assessment form			exam		
Conducting unit	Intercollegiate Faculty of Biotechnology UG-MUG -> Rector						
Name and surname of lecturer (lecturers)	Subject supervisor		prof. dr hab. Marcin Okrój				
	Teachers		prof. dr hab. Marcin Okrój				
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	30.0	0.0	0.0	0.0	0.0	30
	E-learning hours included: 0.0						
Learning activity and number of study hours	Learning activity	Participation in didactic classes included in study plan	Participation in consultation hours		Self-study	SUM	
	Number of study hours	30	5.0		40.0	75	
Subject objectives	The course aims to make students familiar with the structure and organization of the immune system. During the lectures, students will learn the principles of innate and adaptive immunity. Detailed knowledge about molecular mechanisms of antigen presentation, production of antibodies, cellular response, eradication of pathogens and tumor cells as well as pathomechanisms of chosen autoimmune diseases and immunodeficiencies will be provided. The lectures are taught in English.						
Learning outcomes	Course outcome		Subject outcome		Method of verification		
	[BIOTECHMU2_W03] The graduate knows and understands concepts of therapy and diagnostic methods of human diseases, including the mechanisms of action of selected drugs, immunotherapy and gene therapy.		The student knows the pathogenesis of chosen diseases of the immune system and immune deficiencies. The student knows the challenges that emerge from bacterial, viral, and fungal infections as well as the principles of dedicated therapies and immunotherapy.		[SW4] test/exam - oral or written		
	[BIOTECHMU2_W01] The graduate has in-depth knowledge of complex biological phenomena at the molecular level and knows their importance for biotechnology.		The student knows the pillars and organization of the immune system. The student knows molecular mechanisms that enable the functionality of the immune system and the activity of its particular components.		[SW4] test/exam - oral or written		

Subject contents	<p>1. Evolution of immune system. General characteristics of human immune system: cells and organs of immune system, innate and acquired immunity, role of bone marrow</p> <p>2. Mechanisms of innate immunity: skin, tissue and organ barriers, secretions, PAMP, DAMP, PRRs, phagocytes, complement system, ADCC and CDCC activities</p> <p>3. Mechanisms of acquired immunity: development and selection of B and T lymphocytes, rearrangement of genes coding for antibodies and TCR, subpopulations of lymphocytes, major histocompatibility complex (MHC), signal transduction through antigen-binding receptors, immune deficiencies, production and application of poly- and monoclonal antibodies</p> <p>4. Communication between components of immune system, cytokines</p> <p>5. Antiviral and anti-infection response</p> <p>6. Autoimmunity and hypersensitivity reactions</p> <p>7. Role of programmed cell death in immunology</p> <p>8. Tumor immunology</p> <p>9. Psychoneuroimmunology</p>											
Prerequisites and co-requisites	Admission to the lecture exam is possible after passing the laboratory exercises in the subject.											
Assessment methods and criteria	<table border="1"> <thead> <tr> <th data-bbox="456 978 786 1010">Subject passing criteria</th> <th data-bbox="799 978 1141 1010">Passing threshold</th> <th data-bbox="1153 978 1487 1010">Percentage of the final grade</th> </tr> </thead> <tbody> <tr> <td data-bbox="456 1016 786 1048">single choice test</td> <td data-bbox="799 1016 1141 1048">51.0%</td> <td data-bbox="1153 1016 1487 1048">100.0%</td> </tr> <tr> <td data-bbox="456 1055 786 1106">students' activity and answers during the lectures</td> <td data-bbox="799 1055 1141 1106">0.0%</td> <td data-bbox="1153 1055 1487 1106">0.0%</td> </tr> </tbody> </table>	Subject passing criteria	Passing threshold	Percentage of the final grade	single choice test	51.0%	100.0%	students' activity and answers during the lectures	0.0%	0.0%		
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single choice test	51.0%	100.0%										
students' activity and answers during the lectures	0.0%	0.0%										
Recommended reading	Basic literature	<ol style="list-style-type: none"> <li data-bbox="807 1113 1479 1144">1. A.K. Abbas Cellular and Molecular Immunology (5th edition. 2003) <li data-bbox="807 1218 1479 1270">2. Immunologia pod redakcją Jakuba Gołąba, Marka Jakóbsiaka i Witolda Laska, PWN 2007 (Polish) <li data-bbox="807 1321 1479 1352">3. Roitts Essential Immunology, 12th edition (2006) <li data-bbox="807 1404 1479 1435">4. Goldsby Kuby Immunology, 7th Edition (2013) 										
	Supplementary literature	<ol style="list-style-type: none"> <li data-bbox="807 1464 1479 1496">1. C.A. Janeway Immunobiology, 5th Edition <li data-bbox="807 1547 1479 1579">2. R.R. Rich Clinical Immunology, 3rd Edition <li data-bbox="807 1630 1479 1662">3. Nature Reviews Immunology (journal) 										
	eResources addresses											

<p>Example issues/ example questions/ tasks being completed</p>	<p>NET is an acronym of:</p> <ul style="list-style-type: none"> a) neutrophil extracellular trap b) neuroendocrine eotaxin transporter c) non-essential transcytosis (e.g. of sIgA) d) none of above <p>Specialized phagocytes are common in:</p> <ul style="list-style-type: none"> a) all animals b) some invertebrates and all vertebrates c) higher plants and vertebrates d) only in vertebrates
<p>Work placement</p>	<p>Not applicable</p>

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