University of Gdańsk

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	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 2.Mechanisms of innate immunity: skin, tissue and organ barriers, secretions, PAMP, DAMP, PRRs, phagocytes, complement system, ADCC and CDCC activities 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 4.Communication between components of immune system, cytokines 5.Antiviral and anti-infection response 6.Autoimmunity and hypersensitivity reactions 7.Role of programmed cell death in immunology 8.Tumor immunology 9.Psychoneuroimmunology
Prerequisites and co-requisites	Admission to the lecture exam is possible after passing the laboratory exercises in the subject.

Assessment methods and criteria

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%

Recommended reading

Basic literature	1. A.K. Abbas Cellular and Molecular Immunology (5th edition. 2003) 2. Immunologia pod redakcją Jakuba Gołąba, Marka Jakóbisiaka i Witolda Laska, PWN 2007 (Polish) 3. Roitts Essential Immunology, 12th edition (2006) 4.Goldsby Kuby Immunology, 7th Edition (2013)
Supplementary literature	1. C.A. Janeway Immunobilogy, 5th Edition 2. R.R. Rich Clinical Immunology, 3rd Edition 3. Nature Reviews Immunology (journal)
eResources addresses	

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

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