University of Gdańsk

Subject card

Subject name and code	Basics of cellular and molecular immunology, PG_00147115		
Field of study	Genetics and Experimental Biology		
Date of commencement of studies	October 2025	Academic year of realisation of subject	2026/2027
Education level	Bachelor's studies	Subject group	Obligatory subject group in the field of study Subject group related to scientific research in the field of study
Mode of study	full-time studies	Mode of delivery	at the university
Year of study	2	Language of instruction	Polish
Semester of study	4	ECTS credits	2.0
Learning profile	academic	Assessment form	credit
Conducting unit	Laboratory of Protein and Nucleic Acid Biochemistry -> Department of General and Medical Biochemistry -> Faculty of Biology -> Rector		
Name and surname of lecturer (lecturers)	Subject supervisor	dr hab. Dorota Żurawa-Janicka	
	Teachers		

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	4.0	16.0	50

Subject objectives	Understanding the mechanisms of the immune response at the molecular level

Learning outcomes

Course outcome	Subject outcome	Method of verification
[GBEL3_U09] Plan and pursue one's education autonomously and in a focused manner.	- learns independently and in a targeted way GM1_U09	[SU1] oral statement/conversation/ discussion [SU4] test/exam - oral or written
[GBEL3_K07] Lifelong learning and updating knowledge in the field of molecular genetics and other disciplines.	- understands the need for lifelong learning and updating knowledge in molecular genetics and other areas of GM1_K07	[SK1] oral statement/conversation/ discussion
[GBEL3_W06] the development and current state of knowledge, as well as the latest trends in molecular genetics and related fields; indicating their relationship with other disciplines in the natural or medical sciences and the possibilities of their practical application.	- focuses on the current state of knowledge in the field and the latest trends in molecular genetics and immunology and indicates their relationship with other disciplines of natural or medical sciences and the possibility of their use in practice GM1_W06	[SW4] test/exam - oral or written
[GBEL3_U04] Capable of reading scientific texts in English and Polish with comprehension, synthesizing the knowledge contained within them, preparing well-documented studies on biological issues, as well as those related to research commercialization.	- reads scientific texts in English and Polish with understanding, synthesizes the knowledge contained in them, prepares well-documented studies of biological problems GM1_U04	[SU1] oral statement/conversation/ discussion
[GBEL3_W03] The molecular mechanisms of genetic information transmission and gene expression, as well as the molecular and genetic basis of human physiology and diseases, including infectious diseases.	- knows the mechanisms that regulate the expression of genes associated with the immune response and understands the mechanisms of the immune response at the molecular and cellular level, the underlying romum of diseases resulting from immunity disorders GM1_W03	[SW4] test/exam - oral or written

Subject contents

Introduction to immunobiology, including cells and tissue of the immune system, the structure of immunoglobulins, active and passive immunity.

Innate immunity including signal transduction pathways from Toll-like receptors, expression of genes associated with the development of inflammation, complement.

Mechanisms of adaptive immunity (humoral and cellular), in particular, events at the molecular levels, including: the structure of immunoglobulin genes and mechanisms involved in the generation of a wide panel of immunoglobulins of different classes (recombination of immunoglobulin genes, somatic hypermutations in affinity maturation, mechanisms of class-switching), the structure of TCR genes and the molecular basis of TCR diversity, the major histocompatibility complex (MHC) the structure of MHC genes, the MHC polymorphisms and function.

B and T cells activation and effector mechanisms of the immune response

Selected topics on immune disorders: autoimmune diseases, allergies, transplant immunology, tumor immunology.

Prerequisites and co-requisites

Completion of courses: Introduction to Biochemistry, Basics of Genetics. Knowledge of the structure and properties of basic types of biological macromolecules, molecular mechanisms of the flow of genetic information and the regulation of its expression.

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
final test	51.0%	100.0%

Recommended reading	Basic literature	Used during classes Abbas et al. Cellular and Molecular Immunology. 10th Ed. Elsevier Inc. 2022. Male et al. Immunology. 9th Ed. Elsevier Inc. 2020. Murphy et al. Janeways Immunobiology. 9th Ed. Garland Science 2017. Original and review articles from scientific journals Literature for self-learning Abbas et al. Immunologia funkcje i zaburzenia układu immunologicznego. Red. wyd. pol. J. Żeromski. Edra Urban & Partner, 2015. Lydyard et al. Immunologia. Krótkie wykłady. Wydawnictwo Naukowe PW Gołąb et al. Immunologia. Wydawnictwo Naukowe PWN. 2017.
	Supplementary literature	Review articles on basic immunology from scientific journals
	eResources addresses	
Example issues/ example questions/ tasks being completed		
Work placement	Not applicable	

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