

SDAŃSK UNIVERSITY 的 OF TECHNOLOGY

Subject card

Subject name and code	Immunology, PG_00054758								
Field of study	Biotechnology								
Date of commencement of studies	October 2021		Academic year of realisation of subject			2023/2024			
Education level	first-cycle studies		Subject group			Optional subject group 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	3		Language of instruction			Polish			
Semester of study	6		ECTS credits			3.0			
Learning profile	general academic profile		Assessment form			assessment			
Conducting unit	Katedra Biotechnolog	gii i Mikrobiologi	ii -> Faculty of	Chemistry					
Name and surname	Subject supervisor dr hab. inż. Lucyna Holec-Gąsior								
of lecturer (lecturers)	Teachers		dr hab. inż. Lucyna Holec-Gąsior						
			dr inż. Paweł Wityk						
Lesson types and methods	Lesson type	Lecture	Tutorial	Laboratory	Projec	t	Seminar	SUM	
of instruction	Number of study hours	15.0	0.0	15.0	0.0		15.0	45	
	E-learning hours inclu	uded: 0.0							
Learning activity and number of study hours	Learning activity Participation ir classes include plan		I didactic Participation in consultation hours		Self-study SUM				
Number of study 45 hours			3.0		27.0		75		
Subject objectives	The aim of the course is to provide knowledge of basic issues in the field of immunology.								
Learning outcomes	Course outcome		Subject outcome			Method of verification			
	K6_U06	Student - uses basic techniques and research tools used in the immunological laboratory; - performs basic analysis of the results of immunological tests detecting the presence of antibodies and antigens in biological material; - can independently perform simple immunological tests and distinguish the morphology of lymphatic organs and different populations of leukocytes; - performs simple tests of immunological parameters in the laboratory.			[SU4] Assessment of ability to use methods and tools [SU3] Assessment of ability to use knowledge gained from the subject				
	K6_W06		Student - defines and explains basic immunological processes; - knows and understands the basics of development and mechanisms of functioning of the immune system; - understands and can explain the meaning of concepts used in immunology and understands the mechanisms regulating the course of immune reactions.			[SW2] Assessment of knowledge contained in presentation [SW1] Assessment of factual knowledge			

Subject contents						
	 Introduction to the immune syst essential features of the immun and cellular elements). Acquired 	tem. The essence of the immune system. Main components and ne response. Innate immunity (anatomical barriers, secretory molecules d immunity.				
	 Cells involved in the immune response and their receptors. Interactions between cells in the process immune response 					
	 Lymphatic system. Central and Complement system as an elem Antigens. Types of antigens. Ba Antibodies and their receptors. Major histocompatibility complemajor histocompatibility comple Antigen recognition. Antigen recognition. Antigen recognicity, affinity, avidity, cross exogenous and endogenous an Protective vaccinations. Immune reactions used in diagr 	peripheral lymphatic organs structure nent of non-specific immunity. asic concepts, definitions. Characteriz Functions, structure. Types and struct x (MHC) antigens. MHC molecules s x (HLA). cognition by a B lymphocyte (antigen s-reactions). Antigen recognition by T tigen).	e and functions. zation of antigens. sture of antibodies. tructure and functions. Human -antibody reactions; antibody lymphocytes (presentation of			
	SeminarAnti-infective immunity. Imr Cancer immunology. Transplantatio Primary and secondary immunodefid immunology in modern diagnostics a vaccines. Psychoneuroimmunology. The immune system of the skin and Antibodies as reagents in immunoch	nune response in fungal and parasiti n and its rejection. Hypersensitivity re ciencies. Production of monoclonal a and scientific research. Conventional Evolution of immunity. Immunohema mucous membranes. New directions nemistry.	c infections. Immune tolerance. eactions. Autoimmune diseases. ntibodies. Application of vaccines. New generation atology. Reproductive immunology. of research in immunology.			
	 LaboratoryLaboratory classes - a block of five exercises, 3 hours each Introduction to immunology exercises. Occupational health and safety in the immunology laboratory, discussion of occupational health and safety regulations. Central and peripheral immune system and blood immune cells. Microscopic analysis of the morphological structure of central and peripheral lymphatic organs and individual types of leukocytes (viewing ready-made microscopic preparations). Serology reactions between antigen and antibody <i>in vitro</i>. Preparation of serum for serological tests; agglutination - detection of antigens using known antibodies and/or detection of specific antibodies using known antigens - qualitative and quantitative tests (serum titer). Precipitation reactions. Testing the activity of antisera by ring precipitation and gel immunodiffusion. Functional assessment of immune system cells. Isolation of cells in a density gradient and determination of cell viability. 					
Prerequisites and co-requisites	Knowledge of basic molecular biolog	gy issues required.				
Assessment methods	Subject passing criteria	Passing threshold	Percentage of the final grade			
and criteria	short tests, worksheets, reports	60.0%	25.0%			
	oral presentation	60.0%	25.0%			
	written test	60.0%	50.0%			
Recommended reading	Basic literature	 Roitt I., Brostoff J., Male D. Imr 2006. Gołąb J, Jakóbisiak M, Lasek V Scientific Publisher, 2014. Fanger M.W., Whelan A., Lydy lectures. PWN Scientific Publis Węgleński P. Molecular genetic (chapter on immune processes Ptak M., Ptak W., Szczepanik M Medical Publisher, 2010. 	nunololgy. Medical Publisher PZWL, V, Stokłosa T. Immunology. PWN ard P. M. Immunology. Short her, 2017 cs. PWN Scientific Publisher, 2012). M. Basics of immunology. PZWL			
	Supplementary literature	-				
	eResources addresses	Adresy na platformie eNauczanie:				
		https://enauczanie.pg.edu.pl/moodle/course/view.php?id=37228				

Example issues/ example questions/ tasks being completed	 What is the structure of the immune system? What elements are involved in the immune response? What is innate immunity and what are its mechanisms? What is acquired immunity and what are its mechanisms? What cells are involved in the immune response and what are their receptors? What is the structure of the lymphatic system? What is complement system? What is an antigen and what are the types of antigens? What is the structure and function of MHC molecules? What are antibodies and what are their receptors? What is the structure and function of MHC molecules? How are antipens recognized by B lymphocytes and T lymphocytes? What types of antibacterial and antiviral vaccines are there? What are the basic reactions between antigen and antibody <i>in vitro</i>?
Work placement	Not applicable