

Subject card

Subject name and code	Molecular biology of nucleic acids, PG_00153604						
Field of study	Biologia molekularna kwasów nukleinowych						
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	1		ECTS credits		3.0		
Learning profile	academic		Assessment form		exam		
Conducting unit							
Name and surname of lecturer (lecturers)	Subject supervisor		prof. dr hab. Igor Konieczny				
	Teachers		prof. dr hab. Igor Konieczny				
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 aim of the course is understanding the molecular basis of metabolism of nucleic acids, acquire knowledge allowing to interpret and analyze the results of contemporary research concerning nucleic acids. Get acquainted with complex issues of biology of nucleic acids and the significance of these processes in biotechnology. Students will acquire knowledge concerning the newest research on nucleic acids and will perfect their English to the extent that will allow them to understand utterances and read, with understanding, scientific literature concerning molecular biology of nucleic acids.						
Learning outcomes	Course outcome		Subject outcome		Method of verification		
	[BIOTECHMU2_W04] The graduate knows and understands selected problems of biotechnology currently discussed in the literature		Knowlage of molecular biology of nucleic acids		[SW4] test/egzamin - ustny lub pisemny		
	[BIOTECHMU2_W01] The graduate knows and understands complex biological phenomena at the molecular level, their importance for biotechnology		Understanding of complex issues of molecular biology of nucleic acids		[SW4] test/egzamin - ustny lub pisemny [SW5] realizacja zadania problemowego		
	[BIOTECHMU2_U05] The graduate is able to use English language in the scope enabling the understanding of statements and reading with comprehension of literature and scientific studies in the fields of science and scientific disciplines relevant to biotechnology; is able to prepare a short written study and an oral presentation in English		English language skills allowing understanding of issues connected with molecular biology of nucleic acids		[SU4] test/egzamin - ustny lub pisemny		

Subject contents	- History of research on metabolism of nucleic acids - key experiments - Notions of replicon and operon - DNA replication initiation in bacterial chromosomes and extrachromosomal genetic elements - DNA replication initiation in eukaryotic cells - Structure of Rep proteins - Helicases - structure, the role in the process of DNA replication - Primosom complex - synthesis of DNA replication starters - RNA and DNA dependent polymerases - structure, properties, molecular basis of the synthesis of nuclear acids - Structure of the E. coli Pol III holoenzyme complex - Mechanism of synthesis of leading and lagging strands in prokaryotic and eukaryotic cells - DNA repair - kinds of DNA repair, enzymes taking part in repair - Topology and dynamics of chromosomes and extrachromosomal genetic elements - Mobile genetic elements - Molecular basis of transposition process		
Prerequisites and co-requisites			
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	English	50.0%	25.0%
	Understanding	50.0%	45.0%
	Knowlage	50.0%	30.0%
Recommended reading	Basic literature	Genes by Benjamin Levin	
		Molecular Biology of the Cell by Alberts at all	
		Molecular Biology of Nucleic Acid Węgrzyn and Konieczny	
	Supplementary literature	Essential cell biology by Bruce Alberts at all	
	eResources addresses		
Example issues/ example questions/ tasks being completed			
Work placement	Not applicable		

Document generated electronically. Does not require a seal or signature.