



## Subject card

Subject name and code	Molecular Virology, PG_00058420						
Field of study	Biotechnology						
Date of commencement of studies	February 2023	Academic year of realisation of subject			2023/2024		
Education level	second-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	1	Language of instruction			Polish		
Semester of study	2	ECTS credits			1.0		
Learning profile	general academic profile	Assessment form			assessment		
Conducting unit	Department of Microbiology -> Faculty of Chemistry						
Name and surname of lecturer (lecturers)	Subject supervisor	dr hab. Beata Zalewska-Piątek					
	Teachers	dr hab. Beata Zalewska-Piątek					
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	15.0	0.0	0.0	0.0	0.0	15
	E-learning hours included: 0.0						
	Additional information: Word-based methods, the so-called stating: lecture						
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	15	2.0		8.0		25
Subject objectives	The aim of the course is to familiarize with the basic issues concerning molecular virology, such as pathogenicity mechanisms of plant and animal viruses, unusual subviral factors and the use of bacteriophages in medicine and biotechnology.						
Learning outcomes	Course outcome	Subject outcome			Method of verification		
	[K7_U03] an propose applications of model organisms, microorganisms, viruses and biomolecules derived from them to perform bioprocesses and obtain desired substances	Student is able to analyze the effectiveness of available vaccines based on DNA, RNA, viral proteins or bacteriophages in terms of newly emerging viral diseases.			[SU2] Assessment of ability to analyse information [SU3] Assessment of ability to use knowledge gained from the subject		
	[K7_W03] has a structured knowledge of biotechnological applications of model organisms, microorganisms and viruses in the context of conducting bioprocesses and obtaining desired substances	Student knows how to use bacteriophages and the enzymes they encode in medicine and biotechnology.			[SW2] Assessment of knowledge contained in presentation [SW3] Assessment of knowledge contained in written work and projects		
	[K7_K02] is aware of the limitations and the necessity of continuous development of knowledge and technology; understands the need for education and constant training	student analyzes the available knowledge regarding new viruses and those re-emerging and the diseases caused by them.			[SK3] Assessment of ability to organize work [SK2] Assessment of progress of work		
Subject contents	1. Protective viral vaccines in the context of emerging viral diseases. 2. Atypical pathogenic forms of viruses - subviral factors (Satellites, Viroids, Prions - genetic organization, replication mechanisms, pathogenicity - examples of diseases). 3. Atypical pathogenic forms of viruses, subviral factors - prions (characteristics of prion proteins, species specificity, prion diseases, transmission of infections). 4. Bacteriophages and phage therapy as a potential method of prevention and treatment of infectious diseases in humans and animals. 5. Bacteriophages as a tool of modern biotechnology, potential applications. 6. Pathogenicity mechanisms of plant viruses (circulating and non-circulatory viruses) and animal viruses (inhibition of transcription and translation, cell membrane fusion, apoptosis, immune deficiency, immortalization and virus-induced cell transformation mechanisms). 7. Final test.						
Prerequisites and co-requisites	Fundamentals of virology and molecular biology.						

Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Score including lecture. Final result (%) = result from lecture - test of choice (%) x 0.6.	60.0%	100.0%
Recommended reading	Basic literature	Piekarowicz A. Basics of molecular virology. PWN. 2021.	
	Supplementary literature	Flint S.J., Enquist L.W., Racaniello V.R., Skalka A.M. Principles of virology. ASM Press. 2009.	
	eResources addresses	Adresy na platformie eNauczenie: Wirusologia molekularna - wykład WCh 2023/24, Biotechnologia II stopień - Moodle ID: 31458 <a href="https://enauczenie.pg.edu.pl/moodle/course/view.php?id=31458">https://enauczenie.pg.edu.pl/moodle/course/view.php?id=31458</a>	
Example issues/ example questions/ tasks being completed	Antiviral vaccines. The use of bacteriophages in phage therapy and biotechnology. Prions - spongiform encephalopathies, diagnostics and potential therapy. Sequence analysis of viral genomes.		
Work placement	Not applicable		