



## Subject card

Subject name and code	Cancer Cell Biology, PG_00058248						
Field of study	Biotechnology						
Date of commencement of studies	February 2024		Academic year of realisation of subject		2024/2025		
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		4.0		
Learning profile	general academic profile		Assessment form		exam		
Conducting unit	Department of Pharmaceutical Technology and Biochemistry -> Faculty of Chemistry						
Name and surname of lecturer (lecturers)	Subject supervisor		dr hab. Ewa Augustin				
	Teachers		dr hab. Ewa Augustin				
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	30.0	0.0	15.0	0.0	0.0	45
	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	45		5.0		50.0	100
Subject objectives	The aim of the course is to teach students with the molecular mechanisms of the carcinogenesis.						
Learning outcomes	Course outcome		Subject outcome		Method of verification		
	[K7_W05] knows the basis of civilization diseases, including cancer, and chemical structures and properties of various groups of active substances, including anticancer drugs		The student has knowledge about the mechanisms of carcinogenesis and the biological properties of potential chemotherapeutics.		[SW3] Assessment of knowledge contained in written work and projects [SW1] Assessment of factual knowledge		
	[K7_K04] is aware of the need to solve problems and perform tasks, independently formulate questions to solve a given problem or task; is able to plan the execution of a larger task by dividing it into partial tasks and draw up an appropriate schedule		The student is able to independently perform assigned tasks, solve problems and prepare raports of the obtained results.		[SK5] Assessment of ability to solve problems that arise in practice [SK3] Assessment of ability to organize work [SK2] Assessment of progress of work		
	[K7_U02] has practical skills in commonly used biochemical methods including enzyme activity and kinetics assays, electrophoresis, western blotting, ELISA assays, fluorescence microscopy, flow cytometry		The student knows and is able to use biochemical methods, such as: electrophoresis, ELISA tests, western blotting, flow cytometry.		[SU4] Assessment of ability to use methods and tools [SU3] Assessment of ability to use knowledge gained from the subject [SU1] Assessment of task fulfilment		
Subject contents	Cancer development phases.  Factors causing cancer, epidemiology of cancer in Poland and in the world.  Oncogenes and suppressor genes.  Metastasis and angiogenesis. Telomeres and telomerase. Disorders of cell cycle control.  Cell death. Cellular senescence.  Cancer stem cells.  Cancer biomarkers.						

Prerequisites and co-requisites	Knowledge in the field of cell biology, biochemistry, molecular biology, the basics of genetics and genetic engineering.		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	lecture	60.0%	60.0%
	laboratory	60.0%	40.0%
Recommended reading	Basic literature	R.A. Weinberg. The biology of cancer. 2014.  G. Drewa. Genetyka medyczna. Podręcznik dla studentów. 2011.  J. Bał. Biologia molekularna w medycynie. Elementy genetyki klinicznej. PWN 2011.  L. Pecorino. Biologia molekularna nowotworów w praktyce klinicznej. Edra URBAN&PARTNER, 2018, 2023.	
	Supplementary literature	L. Peccorino. Molecular biology of cancer. Mechanisms, targets and therapeutics. 2008.	
	eResources addresses	Adresy na platformie eNauczanie: Biologia komórki nowotworowej wykład 2024/2025 - Moodle ID: 40491 <a href="https://enauczanie.pg.edu.pl/moodle/course/view.php?id=40491">https://enauczanie.pg.edu.pl/moodle/course/view.php?id=40491</a> Laboratorium biologii komórki nowotworowej 2024/2025 - Moodle ID: 40492 <a href="https://enauczanie.pg.edu.pl/moodle/course/view.php?id=40492">https://enauczanie.pg.edu.pl/moodle/course/view.php?id=40492</a>	
Example issues/ example questions/ tasks being completed	The role of oncogenes and suppressor genes in cancer transformation.  Molecular basis of angiogenesis.  Telomerase as a target for anti-cancer therapy.		
Work placement	Not applicable		

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