University of Gdańsk

Subject card

Subject name and code	Biology of cancer cells, PG_00153619						
Field of study	Biotechnology						
Date of commencement of studies	October 2026		Academic year of realisation of subject		2026/2027		
Education level	Master's studies		Subject group		Obligatory subject group in the field of study 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	1		ECTS credits		2.0		
Learning profile	academic		Assessment form		credit		
Conducting unit	Intercollegiate Faculty of Biotechnology UG-MUG -> Rector						
Name and surname of lecturer (lecturers)	Subject supervisor		prof. dr hab. Anna Żaczek				
	Teachers						
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	0.0	0.0	0.0	0.0	30.0	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		15.0	50
Subject objectives	The objective of the course is to convey contemporary knowledge about the biology of cancer cells and the possibilities of its practical application in cancer therapy, including targeted therapy and immunotherapy.						

Learning outcomes

Course outcome	Subject outcome	Method of verification
[BIOTECHMU2_K01] The graduate consciously combines knowledge acquired in previous stages of education with knowledge acquired on an ongoing basis to solve problems in the field of biotechnology; consciously deepens and updates knowledge and improves qualifications related to biotechnology in the field of exact and natural sciences and medical and health sciences.	The student consciously integrates knowledge acquired in previous stages of education with current knowledge to solve problems in the field of cancer biology and treatment; actively deepens and updates their knowledge and enhances their qualifications related to biotechnology in the fields of science, natural sciences, medical sciences, and health sciences.	[SK1] oral statement/conversation/ discussion [SK2] presentation/project/paper/ report
[BIOTECHMU2_W03] The graduate has in-depth, specialized knowledge of therapy and diagnostic methods of human diseases, including the mechanisms of action of selected drugs, immunotherapy, cellular and gene therapy, understanding the ethical, legal and social dilemmas involved and being able to evaluate them from the perspective of the patient's well-being and the public interest.	The student acquires in-depth knowledge of new molecular targets and the latest diagnostic tools, allowing for the individualization of cancer treatment	[SW4] test/exam - oral or written
[BIOTECHMU2_U04] The graduate possesses the ability to proficiently use scientific information, including English, regarding biotechnology; critically analyses and selects information; uses electronic sources; has the ability to use appropriate databases.	The student is proficient in using scientific information, including English-language sources, related to cancer biology and translational oncology; critically analyzes and selects information; utilizes electronic sources; and is skilled in using appropriate databases	[SU2] presentation/project/paper/ report
[BIOTECHMU2_W01] The graduate has in-depth knowledge of complex biological phenomena at the molecular level and knows their importance for biotechnology, is able to analyze them in an interdisciplinary approach and assess their ethical, social and environmental implications.	The student demonstrates in-depth knowledge and understanding of the biological processes occurring in cancer cells and the cells of the tumor microenvironment.	[SW4] test/exam - oral or written

Subject contents

1. Molecular mechanisms of carcinogenesis, hallmarks of cancer
2. Genomic instability disorders
3. Disruptions in cellular signaling
4. Alterations in cell cycle regulation
5. Mechanisms of evading apoptosis
6. Invasion and metastasis, cancer dissemination cascade, phenotypic plasticity
7. Inducing or accessing vasculature
8. Mechanisms of action of anticancer drugs
9. Selected examples of molecularly targeted therapies (imatinib in chronic myeloid leukemia, gefitinib and erlotinib in non-small cell lung cancer, trastuzumab and lapatinib in breast cancer, anti-angiogenic therapies), introduction to clinical trials
10. Pharmacodiagnostic tools for the individualization of cancer treatment

Prerequisites and co-requisites

Knowledge of issues related to molecular and cellular biology

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
rozmowa	51.0%	1.0%
egzamin pisemny	51.0%	40.0%
egzamin pisemny	51.0%	40.0%
prezentacja	51.0%	10.0%
prezentacja	51.0%	9.0%

Recommended reading

Basic literature	"The Biology of Cancer" by Weinberg (current edition), materials prepared by the teacher, including her own publications, and the "Cancer Cell Biology" script prepared as part of the project "PWP: University of Tomorrow: Internationalization of Education at the University of Gdańsk through Cooperation with the University of Houston-Downtown"
Supplementary literature	students independently search for and select materials related to the classes, using library and electronic information sources
eResources addresses	

Example issues/ example questions/ tasks being completed

Work placement	Not applicable

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