University of Gdańsk

Subject card

Subject name and code	Biology of cancer, PG_00203471						
Field of study	Medical Biology						
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 Specialty 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	2.0			
Learning profile	academic		Assessment form	exam			
Conducting unit	Department of Medical Biology and Genetics -> Faculty of Biology -> Rector						
Name and surname of lecturer (lecturers)	Subject supervisor		prof. dr hab. Anna Herman-Antosiewicz				
	Teachers						
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	20.0	0.0	0.0	0.0	0.0	20
	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	20		3.0	27.0	50	
Subject objectives	Gaining knowledge about the epidemiology of cancer, the biology of cancer and methods of preventing and treating these diseases. Understanding the relationship between lifestyle, genetics, epigenetics and the cancerogenesis process.						

Learning outcomes

Course outcome	Subject outcome	Method of verification
[BIOLMEDMU2_W03] has an in-depth understanding of the structure and functions of the human body, biological causes of disorders, lesions and social dysfunctions, and methods of their evaluation using biochemical, molecular, parasitological or neurobiological methods	- understands the molecular mechanisms of cancer development, mechanisms of applied therapies, their advantages and disadvantages, and trends in cancer treatment	[SW4] test/exam - oral or written
[BIOLMEDMU2_K02] is ready to recognize the importance of knowledge in solving cognitive and practical problems and to seek expert advice when having difficulty solving a problem on his own	- recognizes the importance of knowledge in designing anti-cancer strategies, understands the need to seek opinion of experts in this field	[SK8] observation of student's independent or team work
[BIOLMEDMU2_U06] knows and applies English-language specialized vocabulary of biological and medical sciences in daily professional/scientific activities	- knows and uses English-language specialist vocabulary concerning cancer issues	[SU4] test/exam - oral or written
[BIOLMEDMU2_W01] has an in-depth knowledge of scientific fields and disciplines relevant to medical biology and the studied specialty and knows their main development trends	- understands the molecular mechanisms of cancer development, mechanisms of applied therapies, their advantages and disadvantages, and trends in cancer treatment	[SW4] test/exam - oral or written

Subject contents

Molecular and environmental causes of cancer. Cancer epidemiology. Stages of cancer. Oncogenes and tumor suppressors. Signal transduction most often dysregulated in cancers. Metabolic changes in cancer cells. Tumor microenvironment. Angiogenesis. Metastasis. Dormant and cancer stem cells. Anticancer therapies.

Prerequisites and co-requisites

Ability to read and understand biological texts in English. Basic knowledge of molecular biology and biochemistry.

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
written test exam with a pool of open questions	51.0%	100.0%

Recommended reading

Basic literature	Robert A Wienberg. Biology of Cancer, 2014, 2nd ed, GARLAND PUBLISHERS (niektóre rozdziały są dostępne online) Lodish H, Berk A, Zipursky L, Matsudaira P, Baltimore D, Darnell J. Molecular Cell Biology,4th ed, 2000, New York: W. H. Freeman; available online Alberts B, Johnson A, Lewis J, Raf f M, Roberts K, Walter P. Molecular Biology of Cell, 4th ed, New York: Garland Science; available online
Supplementary literature	- Pyrczak-Felczykowska A, Reekie TA, Jąkalski M, Hać A, Malinowska M, Pawlik A, Ryś K, Guzow-Krzemińska B, Herman-Antosiewicz A. (2022) The Isoxazole Derivative of Usnic Acid Induces an ER Stress Response in Breast Cancer Cells That Leads to Paraptosis-like Cell Death Int J Mol Sci. 2022 Feb 4;23(3):1802. - Zdrowowicz M, Spisz P, Hać A, Herman-Antosiewicz A, Rak J. (2022) Influence of Hypoxia on Radiosensitization of Cancer Cells by 5-Bromo-2'- deoxyuridine. Int J Mol Sci. 2022 Jan 27;23(3):1429. - Pawlik A., Słomińska-Wojewódzka M., Herman-Antosiewicz A. (2016) Sensitization of estrogen receptor-positive breast cancer cell lines to 4-hydroxytamoxifen by isothiocyanates present in cruciferous plants. Eur J Nutr 55(3):1165-80 - Kaczyńska A., Herman-Antosiewicz A. (2017) Combination of lapatinib with isothiocyanates overcomes drug resistance and inhibits migration of HER2 positive breast cancer cells. Breast Cancer 24(2): 271-280 - Prełowska M., Kaczyńska A., Herman-Antosiewicz A. (2017) 4-(Methylthio)butyl isothiocyanate inhibits the proliferation of breast cancer cells with different receptor status. Pharmacol Reports 69(5): 1059-1066 and other published review and experimental works provided to students on an ongoing basis.
eResources addresses	

Example issues/ example questions/ tasks being completed

Work placement

Not applicable

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