

Subject card

Subject name and code	Molecular biology of Eukaryota, PG_00211074						
Field of study	Medical Biology						
Date of commencement of studies	October 2026		Academic year of realisation of subject			2027/2028	
Education level	Bachelor's studies		Subject group			Obligatory subject group in the field of study 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	2		Language of instruction			Polish	
Semester of study	4		ECTS credits			2.0	
Learning profile	academic		Assessment form			credit	
Conducting unit							
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	0.0	0.0	15.0	0.0	0.0	15
	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	15		3.0		32.0	50
Subject objectives	1. Understanding the synthesis of proteins and the regulation of this process in eukaryotic cells 2. Familiarization with the main mechanisms of intracellular protein transport 3. Learning and understanding the processes related to the variability of genetic material and its consequences 4. Familiarization with the most important signaling pathways for DNA damage or stopping DNA replication 5. Acquiring the ability to use laboratory methods and techniques for studying the biology of eukaryotic cells						

Learning outcomes	Course outcome	Subject outcome	Method of verification
	[BIOLMEDL3_K01] is aware of the importance of lifelong learning and keeping up to date with developments in medical biology and related disciplines, and applies this knowledge to the planning and design of professional activities	understands the need for lifelong learning and updating knowledge regarding the molecular basis of the functioning of eukaryotic cells and having application in medical biology	[SK2] presentation/project/paper/report [SK8] observation of student's independent or team work
	[BIOLMEDL3_K06] Is responsible for the equipment/materials entrusted to him and his own work and respects the work of others	is responsible for and respects the entrusted equipment/materials and his/her own work, and the work of others	[SK8] observation of student's independent or team work
	[BIOLMEDL3_W08] has an advanced understanding of the development and current state of knowledge and the latest trends in medical biology; indicates their relationship with other disciplines of natural or medical sciences	is familiar with the current state of knowledge and the latest trends in molecular biology of eukaryotic cells and indicates their relationship with other scientific disciplines natural or medical sciences, especially in the field of medical biology	[SW4] test/exam - oral or written
	[BIOLMEDL3_W10] has an advanced understanding of the principles of assessing processes and phenomena occurring within the body, using physical or chemical measurements, and possesses advanced knowledge of experimental methods and the key techniques of the biological sciences that may be applied in medical biology and diagnostics	knows the most important techniques for material testing genetic - its expression, variability and cell response to disorders these processes, which may have applications in medical biology and diagnostics	[SW4] test/exam - oral or written [SW2] presentation/project/paper/report
	[BIOLMEDL3_U01] is able to use and operate basic research equipment and tools employed in molecular-biochemical analysis or neurobiology and, following the correct sequence of steps, carries out simple physical, biological or chemical observations and measurements in laboratory work in the field of biological or medical sciences	uses basic equipment and research tools in cell manipulation and, maintaining the correct the sequence of activities, performs simple experiments with the use of eukaryotic cells	[SU1] oral statement/conversation/discussion [SU8] observation of student's independent or team work
Subject contents	Eukaryotic cell culture methods, viability/metabolic activity tests, methods for testing the mutagenic potential of chemical agents, methods for examining the course of the cell cycle or apoptosis of human cells.		
Prerequisites and co-requisites	Basic knowledge of cell biology, molecular biology, biochemistry, genetics		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	the final grade is determined on the basis of points obtained from partial tests and exercise reports	51.0%	100.0%
Recommended reading	Basic literature	1. Molecular Cell Biology, Lodish H., Berk A., Zipursky S.L., Matsudaira P., Baltimore D., Darnell J.E.; W.H. Freeman and Company, 2016 2. Molecular Biology of the Cell, Alberts B., Johnson A., Lewis J., Raff M., Roberts K., Walter P.; 2014 3. Genes VIII, Lewin B., Benjamin Cummings, 2004	

	Supplementary literature	materials indicated by the lecturer, e.g. 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. <i>Int J Mol Sci.</i> 2022 Jan 27;23(3):1429 Hać A., Brokowska J., Rintz E., Bartkowski M., Węgrzyn G., Herman-Antosiewicz A. (2019) Mechanism of selective anticancer activity of isothiocyanates relies on differences in DNA damage repair between cancer and healthy cells. <i>Eur J Nutr.</i> 6:1249-61 Herman-Antosiewicz A, Lew KL, Xiao H, Singh SV. (2007) Induction of p21 protein protects against sulforaphane-induced mitotic arrest in LNCaP human prostate cancer cell line. <i>Mol Cancer Ther.</i> 6: 1673-81. Herman-Antosiewicz A, Stan SD, Hahm ER, Xiao D, Singh SV. (2007) Activation of a novel ataxia-telangiectasia mutated and Rad3 related/ checkpoint kinase 1-dependent prometaphase checkpoint in cancer cells by diallyl trisulfide, a promising cancer chemopreventive constituent of processed garlic. <i>Mol Cancer Ther.</i> 6:1249-61 Slominska-Wojewodzka M, Gregers TF, Walchli S, Sandvig, K. (2006) EDEM Is Involved in Retrotranslocation of Ricin From the Endoplasmic Reticulum to the Cytosol. <i>Mol Biol Cell</i>, 17: 1664-75. Slominska-Wojewodzka M, Sandvig, K. (2015) The Role of Lectin-Carbohydrate Interactions in the Regulation of ER-Associated Protein Degradation. <i>Molecules</i>, 20: 9816-46. Nowakowska-Gołącka J, Sominka H, Sowa-Rogozińska N, Słomińska-Wojewódzka M. (2019) Toxins Utilize the Endoplasmic Reticulum-Associated Protein Degradation Pathway in Their Intoxication Process. <i>Int J Mol Sci</i>, 20 (6).
	eResources addresses	
Example issues/ example questions/ tasks being completed		
Work placement	Not applicable	

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