

Subject card

Subject name and code	Cytology, PG_00146874						
Field of study	Genetics and Experimental Biology						
Date of commencement of studies	October 2025		Academic year of realisation of subject		2025/2026		
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	1		Language of instruction		Polish		
Semester of study	1		ECTS credits		2.0		
Learning profile	academic		Assessment form				
Conducting unit	Faculty of Biology -> Rector						
Name and surname of lecturer (lecturers)	Subject supervisor		prof. dr hab. Małgorzata Kozieradzka-Kiszkurno				
	Teachers						
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	30.0	0.0	0.0	0.0	0.0	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		6.0		14.0	50
Subject objectives	1. Understanding the basics of functioning of organisms at the cell level. 2. Understanding the structure of prokaryotic and eukaryotic cells. 3. Ability to analyze the relationship between the structure of cellular structures and their functions.						

Learning outcomes	Course outcome	Subject outcome	Method of verification
	[GBEL3_K08] Responsibility for entrusted equipment/materials and respect for the work of others.	-The graduate is aware of responsibility for the entrusted equipment/materials, and his work and respects the work of others.	[SK8] observation of student's independent or team work
	[GBEL3_W01] Understanding the structure and properties of basic types of biological macromolecules, molecular mechanisms of metabolic pathways and genetic information flow, as well as sources of genetic variability in organisms and mechanisms of evolution; explaining the rules of inheritance, elucidating differences in the structure and functioning of prokaryotic and eukaryotic cells, and understanding the structure and functional relationships at the cellular and tissue levels.	- The graduate describes the structure and properties of basic types of biological macromolecules, mechanisms of basic metabolism pathways and sources.	[SW4] test/exam - oral or written
	[GBEL3_U03] Proficient in using research equipment and tools, while following the correct sequence of procedures, to conduct basic physical, biological, or chemical observations and measurements in laboratory work within the field of biological sciences.	- The graduate is aware of the use of basic research equipment and tools in cytology.	[SU8] observation of student's independent or team work
Subject contents	Modern research techniques used in cytology. The phenomenon of life. Levels of organization of life (molecular, organismal, species and population). Organization of cells in prokaryotic and eukaryotic organisms. Construction and functioning of each cellular compartments. Genetic material of prokaryotic and eukaryotic cells, the influence of numerical and structural aberrations on functioning of the body. Cytoskeleton. Cell cycle and its regulation. Types of cell death.		
Prerequisites and co-requisites			
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Test	51.0%	100.0%
Recommended reading	Basic literature Alberts B, Heald R, Johnson A, Morgan D, Raff M (2022) Molecular Biology of the Cell, Norton & Company Alberts B. i wsp. Podstawy biologii komórki. 2005, PWN Warszawa Kilarski, W. Strukturalne podstawy biologii komórki. PWN 2003. Klyszejko-Stefanowicz L. Cytobiochemia. 2002, Wyd. Naukowe PWN Rogalska S, J. Małuszyńska, M.J. Olszewska (red.). 2005. Podstawy cytogenetyki roślin, PWN, Warszawa Wojtaszek P., Michejda J., Ratajczak, Biologia komórki roślinnej. T.1 Struktura, T.2 Funkcja. PWN 2008/2009 Woźny A. i in. [red.] 2001. Podstawy biologii komórki roślinnej, Wyd. Naukowe UAM, Poznań Rogalska S, J. Małuszyńska, M.J. Olszewska (red.). 2005. Podstawy cytogenetyki roślin, PWN, Warszawa		

	Supplementary literature	Litwin JA. 1999. Podstawy technik mikroskopowych. Wydawnictwo Uniwersytetu Jagiellońskiego, Kraków Kozieradzka-Kiszkurno M, Płachno BJ. (2013): Diversity of plastid morphology and structure along the micropyle-chalaza axis of different Crassulaceae. <i>Flora</i> 208: 128-137. Pawlik, A., Wała, M., Hać, A., Felczykowska, A., & Herman-Antosiewicz, A. (2017). Sulforaphane, an isothiocyanate present in radish plants, inhibits proliferation of human breast cancer cells. <i>Phytomedicine</i>, 29, 1-10. Wicz, A., Hofman, D., Konopa, G., & Herman-Antosiewicz, A. (2012). Sulforaphane, a cruciferous vegetable-derived isothiocyanate, inhibits protein synthesis in human prostate cancer cells. <i>Biochimica et Biophysica Acta (BBA)-Molecular Cell Research</i>, 1823(8), 1295-1305. Pawlik, A., Wicz, A., Kaczyńska, A., Antosiewicz, J., & Herman-Antosiewicz, A. (2013). Sulforaphane inhibits growth of phenotypically different breast cancer cells. <i>European journal of nutrition</i>, 52(8), 1949-1958. Hać, A., Domachowska, A., Narajczyk, M., Cyske, K., Pawlik, A., & Herman-Antosiewicz, A. (2015). S6K1 controls autophagosome maturation in autophagy induced by sulforaphane or serum deprivation. <i>European journal of cell biology</i>, 94(10), 470-481. Płachno, B.J.; Kapusta, M.; Stolarczyk, P.; Świątek, P. Arabinogalactan Proteins in the Digestive Glands of <i>Dionaea muscipula</i> J. Ellis
	eResources addresses	Adresy na platformie eNauczanie:
Example issues/ example questions/ tasks being completed		
Work placement	Not applicable	

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