

Subject card

Subject name and code	Cytology, PG_00146873						
Field of study	Genetics and Experimental Biology						
Date of commencement of studies	October 2024	Academic year of realisation of subject	2024/2025				
Education level	undergraduate studies	Subject group	Obligatory subject group 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	4.0				
Learning profile	academic	Assessment form					
Conducting unit	Pracownia Cytologii i Embriologii Roślin -> Katedra Biologii Eksperymentalnej i Biotechnologii Roślin -> Faculty of Biology						
Name and surname of lecturer (lecturers)	Subject supervisor	dr Natalia Wiśniewska					
	Teachers	dr Natalia Wiśniewska					
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	0.0	0.0	45.0	0.0	0.0	45
	E-learning hours included: 0.0						
	Additional information: laboratory						
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	10.0	45.0	100		
Subject objectives	<p>1. Understanding the basics of functioning of organisms at the cell level.</p> <p>2. Understanding the structure of prokaryotic and eukaryotic cells.</p> <p>3. Ability to analyze the relationship between the structure of cellular structures and their functions</p> <p>4. Ability to work safely in the laboratory, plan and conduct experiments using a light microscope, and record and interpret results</p>						

Learning outcomes	Course outcome	Subject outcome	Method of verification
	[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 understands the importance of individual compartments in the functioning of cells and explains their role in the adaptation of cells to changing environmental conditions or the function performed in a plant or animal body.	[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 able to properly use chemical equipment, tools and reagents. Is able to plan and perform simple experiments and chemical stainings as well as interpret the obtained results.	[SU8] observation of student's independent or team work
	[GBEL3_K08] Responsibility for entrusted equipment/materials and respect for the work of others.	The graduate is able to properly work with a light microscope and knows the principles of occupational health and safety. Is able to work safely in the laboratory and conduct experiments.	[SK8] observation of student's independent or team work
Subject contents	<p>Laboratory exercises: 1. Learning the techniques and research methods used in cytology 2. Structure and function of a plant cell 3. Cell growth and division 4. Cell cycle and its regulation 5. Genetic material of prokaryotic and eukaryotic cells, the impact of numerical and structural aberrations on the functioning of the body 6. Cytoskeleton 7. Polyploidization of cells 8. Programmed cell death</p>		
Prerequisites and co-requisites			
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	tests, reports on laboratory work, notebook, teamwork (preparation of presentations).	51.0%	100.0%
Recommended reading	<p>Basic literature</p>	<p>A. Literature required to pass the course:</p> <ol style="list-style-type: none"> used during classes: <ul style="list-style-type: none"> Alberts B. i wsp. Podstawy biologii komórki. 2005, PWN Warszawa Kilarski, W. Strukturalne podstawy biologii komórki. PWN 2003 Kłyszajko-Stefanowicz L. Cytobiochemia. 2002, Wyd. Naukowe PWN 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 studied independently by the student: <ul style="list-style-type: none"> Rogalska S, J. Małuszyńska, M.J. Olszewska (red.). 2005. Podstawy cytogenetyki roślin, PWN, Warszawa 	

	Supplementary literature	<ul style="list-style-type: none"> • Litwin JA. 1999. Podstawy technik mikroskopowych. Wydawnictwo Uniwersytetu Jagiellońskiego, Kraków • Alberts B. (red.), Johnson A, Lewis J, et al. Wstęp do biologii molekularnej. Książka on-line New York: Garland Science, 2002 • 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. • Wiczak, 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., Wiczak, 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 Traps. <i>Cells</i> 2022, 11, 586. https://doi.org/10.3390/cells11030586
	eResources addresses	Adresy na platformie eNauczanie:
Example issues/ example questions/ tasks being completed		
Work placement	Not applicable	

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