University of Gdańsk

Subject card

Subject name and code	Cytology, PG_00198277		
Field of study	Genetics and Experimental Biology		
Date of commencement of studies	October 2026	Academic year of realisation of subject	2026/2027
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	4.0
Learning profile	academic	Assessment form	credit
Conducting unit	Laboratory of Plant Cytology and Embryology -> Department of Experimental Biology and Plant Biotechnology -> Faculty of Biology -> Rector		
Name and surname of lecturer (lecturers)	Subject supervisor	dr Natalia Wiśniewska	
	Teachers		

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

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

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

.4. Ability to work safely in the laboratory, plan and conduct experiments using a light microscope, and record and interpret results

Learning outcomes

Course outcome	Subject outcome	Method of verification
[GBEL3_W01] A graduate has an advanced knowledge and understanding of: the structure and properties of the main types of biological macromolecules; the molecular mechanisms of basic metabolic pathways and genetic information flow; the sources of genetic variation in organisms and the mechanisms of evolution. They can explain the principles of inheritance, the differences in structure and function between prokaryotic and eukaryotic cells, as well as 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 [SW2] presentation/project/paper/ report
[GBEL3_K08] The graduate is prepared to: takes responsibility for equipment/materials entrusted to it and respects 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
[GBEL3_U03] The graduate is able to: use research apparatus and tools and, following the correct sequence of operations, carry out simple physical, biological or chemical observations and measurements in laboratory work in the 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

Subject contents

Laboratory exercises:1. Learning the techniques and research methods used in cytology2. Structure and function of a plant cell3. Cell growth and division4. Cell cycle and its regulation5. Genetic material of prokaryotic and eukaryotic cells, the impact of numerical and structural aberrations on the functioning of the body6. Cytoskeleton7. Polyploidization of cells8. Programmed cell death

Prerequisites and co-requisites

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
tests, presentation/project/paper/ report (laboratory reports, notebook), independent or team work.	51.0%	100.0%

Recommended reading	Basic literature	A. Literature required to pass the course: 1. 1. used during classes: • Alberts B. i wsp. Podstawy biologii komórki. 2005, PWN WarszawaKilarski, W. Strukturalne podstawy biologii komórki. PWN 2003 • Kłyszejko-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 1. 2. studied independently by the student: • 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 • Alberts B. (red.), Johnson A, Lewis J, et al. Wstęp do biologii molekularnej. Książka on-lineNew York: Garland Science, 2002 • Kozieradzka-Kiszkurno M, Płachno BJ. (2013): Diversity of plastid morphology and structure along the micropyle-chalaza axis of differentCrassulaceae. Flora 208: 128-137. • Pawlik, A., Wała, M., Hać, A., Felczykowska, A., & Herman-Antosiewicz, A. (2017). Sulforaphene, an isothiocyanate present in radish plants, inhibitsproliferation of human breast cancer cells. Phytomedicine, 29, 1-10. • Wiczk, A., Hofman, D., Konopa, G., & Herman-Antosiewicz, A. (2012). Sulforaphane, a cruciferous vegetable-derived isothiocyanate, inhibits proteinsynthesis in human prostate cancer cells. Biochimica et Biophysica Acta (BBA)-Molecular Cell Research, 1823(8), 1295-1305. • Pawlik, A., Wiczk, A., Kaczyńska, A., Antosiewicz, J., & Herman-Antosiewicz, A. (2013). Sulforaphane inhibits growth ofphenotypically different breast cancer cells. European journal of nutrition, 52(8), 1949-1958. • Hać, A., Domachowska, A., Narajczyk, M., Cyske, K., Pawlik, A., & Herman-Antosiewicz, A. (2015). S6K1 controls autophagosome maturation inautophagy induced by sulforaphane or serum deprivation. European journal of cell biology, 94(10), 470-481. • Płachno, B.J.; Kapusta, M.; Stolarczyk, P.; Świątek, P. Arabinogalactan Proteins in the Digestive Glands of Dionaea muscipula J.EllisTraps. Cells 2022, 11, 586. https://doi.org/10.3390/cells11030586
	eResources addresses	
Example issues/ example questions/ tasks being completed		
Work placement	Not applicable	

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