University of Gdańsk

Subject card

Subject name and code	Cell biology, PG_00203417		
Field of study	Medical 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	3.0
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	dr Krzysztof Sitko dr Natalia Wiśniewska dr Emilia Brzezicka mgr Joanna Woźny	

Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	0.0	0.0	30.0	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	4.0	41.0	75

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
[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	The graduate is able to properly use basic equipment and research tools, is able to perform simple observations and measurements in laboratory work in the field of cell biology, and maintains the correct sequence of activities during histochemical staining.	[SU2] presentation/project/paper/ report [SU4] test/exam - oral or written [SU6] demonstration of practical skills [SU8] observation of student's independent or team work
[BIOLMEDL3_W01] has an advanced knowledge and understanding of the differences in the structure and function of prokaryotic and eukaryotic cells, the structure and properties of the various types of biological macromolecules, the molecular mechanisms of basic metabolic pathways and the flow of genetic information, and the sources of variation in organisms; explains the laws of inheritance	The graduate is able to explain the differences in the structure and functioning of prokaryotic and eukaryotic cells; presents the basic features of the structure and functions of plant and animal cells, can recognize cellular components in a microscopic image.	[SW4] test/exam - oral or written [SW2] presentation/project/paper/ report
[BIOLMEDL3_K06] Is responsible for the equipment/materials entrusted to him and his own work and respects the work of others	The graduate is responsible for the entrusted equipment (light microscopes, pernament specimens) and his/her own work, and respects the work of others.	[SK8] observation of student's independent or team work
[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	The graduate knows and understands the principles for assessing processes occurring at the cellular level and possesses advanced knowledge of the key techniques used in cell biology that may be applied in medical biology and diagnostics.	[SW4] test/exam - oral or written [SW1] oral statement/ conversation/discussion [SW2] presentation/project/paper/ report
[BIOLMEDL3_W02] has an advanced knowledge and understanding of the structure of the animal or human body, processes and functional relationships at the cellular, tissue, organ and organismal levels, as well as physiological and biochemical processes at an advanced level, and the mechanisms of the pathophysiology of diseases, and explains their relationship with behaviour and the organism’s	The graduate possesses an advanced knowledge and understanding of the structure of animal or plant organisms, as well as the functional processes and interdependencies at the cellular and tissue levels. The graduate is able to explain how these relate to an organism's adaptation to changing environmental conditions.	[SW4] test/exam - oral or written [SW2] presentation/project/paper/ report

Subject contents

Laboratory exercises:1. Learning the techniques and research methods used in cell biology2. 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 body.6. Polyploidization of cells.5. Programmed cell death, use of PCD in medical therapies.

Prerequisites and co-requisites

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
accuracy of experiments, documentation of results, correctness interpretation, notebook, preparation of presentation	51.0%	10.0%
tests	51.0%	90.0%

<table>
<tr><td rowspan="3">Recommended reading</td><td>Basic literature</td><td>A. Literature required to pass the course:A.1. used during classes:

• Alberts B. i wsp. Podstawy biologii komórki. 2005, PWN Warszawa
• Kilarski, W. Strukturalne podstawy biologii komórki. 2003, Wyd. Naukowe PWN
• Kłyszejko-Stefanowicz L. Cytobiochemia. 2002, Wyd. Naukowe PWN
• Wojtaszek P., Michejda J., Ratajczak, Biologia komórki roślinnej. T. 1 Struktura, T.2 Funkcja.2009, Wyd. Naukowe PWN
• Woźny A. i in. [red.] 2001. Podstawy biologii komórki roślinnej, Wyd. Naukowe UAM, Poznań

A.2. studied independently by the student:

• Rogalska S, J. Małuszyńska, M.J. Olszewska (red.). Podstawy cytogenetyki roślin. 2005, PWN, Warszawa</td></tr>
<tr><td>Supplementary literature</td><td>• Alberts B. (red.), Johnson A, Lewis J, et al. Wstęp do biologii molekularnej. 2002, Książka on-line New York: Garland Science
• Bowes B.G, Mauseth J.D Plant Structure. 2008, Jones & Bartlett Learning
• Litwin JA. Podstawy technik mikroskopowych. Wydawnictwo Uniwersytetu Jagiellońskiego, 1999, Kraków
• Mauseth J.D. Botany: An Introduction to Plant Biology. 2016, Jones & Bartlett Learning
• Wiśniewska N, Gdaniec A, Kowalkowska AK.2021. Micromorphological, histochemical and ultrastructural analysis of flower secretory structures in two species pollinated by flies (Diptera) of Asclepiadoideae Burnett. South African Journal of Botany 137: 60-67.
• Wiśniewska N, Kowalkowska AK, Kozieradzka-Kiszkurno M, Krawczyńska AT, Bohdanowicz J.2018. Floral features of two species of Bulbophyllum section Lepidorhiza Schltr.: B. levanae Ames and B. nymphopolitanum Kraenzl. (Bulbophyllinae Schltr., Orchidaceae). Protoplasma 255: 485-499</td></tr>
<tr><td>eResources addresses</td><td></td></tr>
<tr><td>Example issues/ example questions/ tasks being completed</td><td colspan="2"></td></tr>
<tr><td>Work placement</td><td colspan="2">Not applicable</td></tr>
</table>

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