University of Gdańsk

Subject card

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| Subject name and code | Cytology, PG_00146874 | | |
| 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<br>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 | exam |
| 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_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 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] 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 aware of the use of basic research equipment and tools in cytology. | [SU8] observation of student's independent or team work |
| [GBEL3_K08] The graduate is prepared to: takes responsibility for equipment/materials entrusted to it and respects 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 |

**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.

Kłyszejko-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

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

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