University of Gdańsk

Subject card

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|---|---|---|---|
| Subject name and code | Arabidopsis thaliana in the biomedical research development, PG_00197632 | | |
| Field of study | Biotechnology | | |
| Date of commencement of studies | October 2025 | Academic year of realisation of subject | 2026/2027 |
| Education level | Bachelor's studies | Subject group | Obligatory subject group in the field of study<br>Optional subject group<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 | 2 | Language of instruction | Polish |
| Semester of study | 4 | ECTS credits | 1.0 |
| Learning profile | academic | Assessment form | credit |
| Conducting unit | Laboratory of Plant Protection and Biotechnology -> UG Institute of Biotechnology -> Intercollegiate Faculty of Biotechnology UG-MUG -> Rector | | |
| Name and surname of lecturer (lecturers) | Subject supervisor | dr Anna Ihnatowicz | |
| | Teachers | | |

**Lesson types**

| Lesson type | Lecture | Tutorial | Laboratory | Project | Seminar | SUM |
|---|---|---|---|---|---|---|
| Number of study hours | 12.0 | 0.0 | 0.0 | 0.0 | 0.0 | 12 |

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 | 12 | 2.0 | 11.0 | 25 |

**Subject objectives**

The aim of the course is to introduce students to molecular (BIOTECHL3_W01) and cellular (BIOTECHL3_W02) processes of key importance for biology and biotechnology, which were first discovered and studied in *Arabidopsis thaliana* as a model plant, and which contributed to the development of biomedical research important for the protection of human health and the development of new therapies.

**Learning outcomes**

| Course outcome | Subject outcome | Method of verification |
|---|---|---|
| [BIOTECHL3_W02] The graduate knows and understands at an advanced level selected processes at the cell, tissue and organism level, important from the biological point of view | The student knows and understands selected processes at the cellular, tissue and organismal level that were first discovered and studied in Arabidopsis thaliana as a model plant and that are biologically important. | [SW4] test/exam - oral or written<br>[SW2] presentation/project/paper/ report |
| [BIOTECHL3_W01] The graduate possesses structured and advanced knowledge of biological phenomena at the molecular level and understands their importance for biotechnology. | The student understands basic biological phenomena at the molecular level, of key importance for biology and biotechnology, which were first discovered and studied in Arabidopsis thaliana as a model plant, knows their importance for biotechnology. | [SW4] test/exam - oral or written<br>[SW2] presentation/project/paper/ report |

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| Subject contents | • Cryptochromes and the biological clock and circadian rhythm.<br>• Epigenetic modifications and chromatin remodeling.<br>• The role of chromatin remodeling complexes. DNA methylation.<br>• Studies of light signaling in plants and research directions related to mammalian carcinogenesis, DNA damage and lipid metabolism.<br>• CSN signalosome (COP9).<br>• Auxins, ubiquitination systems and human diseases.<br>• Innate immunity and intracellular receptors.<br>• Receptor kinases, ion transport and G protein-dependent signaling.<br>• ARGONAUTE proteins and RNA silencing.<br>• Genetic variation and genome-wide association studies (GWAS). |
| Prerequisites and co-requisites | |
| Assessment methods and criteria | |

| Subject passing criteria | Passing threshold | Percentage of the final grade |
|---|---|---|
| test/exam - written | 51.0% | 75.0% |
| pptx presentation based on a selected scientific publication | 51.0% | 25.0% |

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| Recommended reading | Basic literature | Literature sources given during lectures |
| | Supplementary literature | -- |
| | eResources addresses | |
| Example issues/ example questions/ tasks being completed | -- | |
| Work placement | Not applicable | |

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