University of Gdańsk

Subject card

Subject name and code	Plant in vitro cultures, PG_00146898		
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 Optional subject group
Mode of study	full-time studies	Mode of delivery	at the university
Year of study	1	Language of instruction	Polish polish
Semester of study	2	ECTS credits	1.0
Learning profile	academic	Assessment form	
Conducting unit	Katedra Biologii Eksperymentalnej i Biotechnologii Roślin -> Faculty of Biology		
Name and surname of lecturer (lecturers)	Subject supervisor	dr hab. Wojciech Pokora	
	Teachers		

Lesson types

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	0.0	15.0	0.0	0.0	0.0	15

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	15	2.0	8.0	25

Subject objectives

To familiarize students with the complexity and diversity of biological processes occurring in plant tissues grown in in vitro cultures. Providing knowledge in the field of planning specialized experimental work and knowledge of basic techniques of working with plant cultures in vitro.

Learning outcomes

Course outcome	Subject outcome	Method of verification
[GBEL3_W05] the principles of research planning based on achievements in biological sciences and related fields, the potential application of their results in practice, the principles of operation of equipment and apparatus used in molecular genetics research, and the principle of interpreting biological phenomena and processes based on empirical data in research and practical activities, with consideration for sustainable use of biological diversity.	The graduate knows the principles of planning research based on the achievements of biological sciences and the possibilities of using their results in practice, the principles of operation of equipment and apparatus used in research in the field of in vitro plant cultures and the principle of interpreting phenomena and biological processes based on empirical data in research work and practical actions, taking into account the sustainable use of biodiversity	[SW3] text preparation/written work
[GBEL3_K01] The utilization of theoretical knowledge in laboratory and production practice.	The graduate s ready to use theoretical knowledge in laboratory practice and production	[SK5] implementation of a problem task

<table>
<tr><td>Subject contents</td><td colspan="3">Basic methods of conducting plant in vitro cultures. Hormonal regulation of somatic variability of selected plant tissues. Elimination of plant bacteria and viruses through apical meristem cultures and thermo- and chemotherapy. Characterization of the physiological state of cell suspensions. Induction of biosynthesis, acquisition and identification of selected secondary plant metabolites. Obtaining haploid plants for further breeding work. Overcoming barriers to non-crossability through in vitro pollination. Culture of mature and immature hybrid embryos.</td></tr>
<tr><td>Prerequisites and co-requisites</td><td colspan="3">lack</td></tr>
<tr><td>Assessment methods and criteria</td><td colspan="3"><table><tr><th>Subject passing criteria</th><th>Passing threshold</th><th>Percentage of the final grade</th></tr><tr><td>activity in classes</td><td>51.0%</td><td>25.0%</td></tr><tr><td>final paper</td><td>51.0%</td><td>75.0%</td></tr></table></td></tr>
<tr><td rowspan="3">Recommended reading</td><td>Basic literature</td><td colspan="2">Malepszy S. (red.). 2009. Biotechnologia Roślin, PWN, Warszawa.
Michalik B. [red.] 2009. Hodowla roślin z elementami genetyki i biotechn
Michalczyk D. (red.) 2008. Wykłady i ćwiczenia z roslinnych kultur in vitr
www.wbp.olsztyn.pl/~krist/skrypt/start.php
Najnowsze naukowe publikacje przeglądowe z zakresu roślinnych kultur</td></tr>
<tr><td>Supplementary literature</td><td colspan="2">Eckstein, A. (2017). Auksyny: wszechstronne cząsteczki sygnałowe. Pos
Eckstein, A., Zięba, P., & Gabryś, H. (2012). Sugar and light effects on th
in vitro. Journal of Plant Growth Regulation, 31(1), 90-101. Loyola-
Vargas V.M., Vázquez-
Flota F. (red.). 2006. Plant Culture Protocols. W: Methods in molecular B
Jersey.
Pokora W., Aksmann A. & Z. Tukaj Functional characteristics of green al
photosystems deficient mutants cultured under photoautotrophic, mixotr
Rojek J, Tucker MR, Pinto SC, Rychłowski M, Lichocka M, Soukupova H
dependent vesicular traffic affects female gametophyte development in A
320-340. doi: 10.1093/jxb/eraa430
Rojek J, Pawełko Ł, Kapusta M, Naczk A, Bohdanowicz J. 2015. Exoge
in Arabidopsis thaliana. Acta Societatis Botanicorum Poloniae 84: 28730
Rojek J, Kuta E, Kapusta M, Ihnatowicz A, Bohdanowicz J. 2013. The ir
autonomous endosperm development in unfertilized ovules of Arabidops</td></tr>
<tr><td>eResources addresses</td><td colspan="2">Adresy na platformie eNauczanie:</td></tr>
<tr><td>Example issues/ example questions/ tasks being completed</td><td colspan="3"></td></tr>
<tr><td>Work placement</td><td colspan="3">Not applicable</td></tr>
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