

Subject card

Subject name and code	Plant in vitro cultures, PG_00146899						
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			2.0		
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	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		3.0		17.0	50
Subject objectives	Acquainting students with knowledge in the field of planning specialized experimental work. Acquiring the ability to use 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.					[SW4] test/exam - oral or written	
	[GBEL3_U01] Independently perform practical tasks in the field of biological sciences and related disciplines, formulate research problems, analyze their results, and draw conclusions.		The graduate is able to independently perform simple practical tasks in the field of in vitro plant cultures			[SU5] implementation of a problem task [SU6] demonstration of practical skills	
	[GBEL3_K01] The utilization of theoretical knowledge in laboratory and production practice.		The graduate is ready to use theoretical knowledge in laboratory practice and production			[SK5] implementation of a problem task [SK6] demonstration of practical skills	

Subject contents	Basic methods of conducting of plant in vitro cultures. Hormonal regulation of selected somatic variability 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 metabolites. Obtaining haploid plants for further breeding work. Overcoming barriers to non-crossability through in vitro pollination. Culture of plant mature and immature hybrid embryos.		
Prerequisites and co-requisites	lack		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	written work	51.0%	50.0%
	practical work	51.0%	50.0%
Recommended reading	Basic literature	Malepszy S. (red.). 2009. Biotechnologia Roślin, PWN, Warszawa. Michalik B. [red.] 2009. Hodowla roślin z elementami genetyki i biotechnologii. Michalczyk D. (red.) 2008. Wykłady i ćwiczenia z roślinnych kultur in vitro www.wbp.olsztyn.pl/~krist/skrypt/start.php Najnowsze naukowe publikacje przeglądowe z zakresu roślinnych kultur in vitro	
	Supplementary literature	Eckstein, A. (2017). Auksyny: wszechstronne cząsteczki sygnałowe. Pożądane i niepożądane efekty. <i>Acta Societatis Botanicorum Poloniae</i> 84: 287-300. Eckstein, A., Zięba, P., & Gabryś, H. (2012). Sugar and light effects on the growth and development of Arabidopsis thaliana in vitro. <i>Journal of Plant Growth Regulation</i> , 31(1), 90-101. Loyola-Vargas V.M., Vázquez-Flota F. (red.). 2006. Plant Culture Protocols. W: <i>Methods in molecular biology</i> . Ed. by J. Rojek, W. Pokora, W. Aksamann, A. & Z. Tukaj. Functional characteristics of green algal mutants deficient in photosystems cultured under photoautotrophic, mixotrophic and heterotrophic conditions. <i>Journal of Applied Phycology</i> 22: 1-10. Rojek J, Tucker MR, Pinto SC, Rychłowski M, Lichočka M, Soukupova H. Auxin-dependent vesicular traffic affects female gametophyte development in Arabidopsis thaliana. <i>Plant Physiology</i> 158: 320-340. doi: 10.1093/jxb/eraa430 Rojek J, Pawełko Ł, Kapusta M, Naczka A, Bohdanowicz J. 2015. Exogenous auxin affects the development of Arabidopsis thaliana. <i>Acta Societatis Botanicorum Poloniae</i> 84: 287-300. Rojek J, Kuta E, Kapusta M, Ichnatowicz A, Bohdanowicz J. 2013. The influence of auxin on autonomous endosperm development in unfertilized ovules of Arabidopsis thaliana. <i>Plant Physiology</i> 158: 320-340. doi: 10.1093/jxb/eraa430	
	eResources addresses	Adresy na platformie eNauczanie:	
Example issues/ example questions/ tasks being completed			
Work placement	Not applicable		

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