

Subject card

Subject name and code	Methods in plant in vitro cultures, PG_00154715						
Field of study	Biology						
Date of commencement of studies	October 2024		Academic year of realisation of subject			2024/2025	
Education level	postgraduate studies		Subject group			Obligatory subject group in the field of study Optional subject group 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	2		ECTS credits			3.0	
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	30.0	0.0	0.0	0.0	0.0	30
	E-learning hours included: 0.0						
	Additional information: wykład z prezentacją multimedialną						
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	To familiarise students with the complexity and diversity of biological processes occurring in plant tissues grown in in vitro culture. To acquaint students with the planning of specialised experimental work. To familiarise students with the role of genetically modified plants in the development of biological sciences and the emergence of new research directions and disciplines.						
Learning outcomes	Course outcome		Subject outcome			Method of verification	
	[BIOLMU2_W04] the graduate has an in-depth knowledge of the chosen specialisation in the biological sciences		Graduates will have an in-depth knowledge of in vitro culture methods			[SW4] test/exam - oral or written	
	[BIOLMU2_U07] the graduate is able to critically confront biological information from a variety of sources and, on this basis, draw valid conclusions		The graduate critically confronts information on plant breeding methods in in vitro culture in vitro cultures and on this basis draws justified conclusions			[SU4] test/exam - oral or written	
	[BIOLMU2_W01] the graduate knows and understands natural phenomena and processes at different levels of complexity		The graduates understands the biological phenomena and processes occurring in plant tissues grown in in vitro cultures			[SW4] test/exam - oral or written	
	[BIOLMU2_K07] the graduate is ready to systematically update biological knowledge and information on its practical applications		The graduate systematically updates biological knowledge and information on its practical applications			[SK4] test/exam - oral or written	

Subject contents	Basic methods of in vitro culture. Influence of culture conditions on the growth and development of plants in vitro. The role of light in plant morphogenesis in in vitro cultures. Applications of hormones and growth regulators in in vitro cultures. The molecular basis of morphogenetic processes in in vitro cultures. Elimination of plant bacteria and viruses by apical meristem cultures and thermo- and chemotherapy. Characterisation of the physiological state of cell suspensions, synchronous cultures. Induction of biosynthesis, extraction and identification of selected secondary metabolites. Obtaining haploid plants for further breeding work. Overcoming barriers to non-crossability through pollination and in vitro fertilisation. Cultures of mature and immature hybrid embryos. Somatic hybridisation. Genetically modified organisms.		
Prerequisites and co-requisites	lack		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	written exam	51.0%	100.0%
Recommended reading	Basic literature	Malepszy S. (red.). 2009. Biotechnologia roślin, PWN, Warszawa artykuły z czasopism naukowych	
	Supplementary literature	Eckstein, A. (2017). Auksyny: wszechstronne cząsteczki sygnałowe. Postępy Biologii Komórki, 44(3). Eckstein, A., Zięba, P., & Gabryś, H. (2012). Sugar and light effects on the condition of the photosynthetic apparatus of Arabidopsis thaliana cultured 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 Biology. Humana Press, Totowa, New Jersey	
	eResources addresses	Adresy na platformie eNauczanie:	
Example issues/ example questions/ tasks being completed			
Work placement	Not applicable		

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