University of Gdańsk

Subject card

Subject name and code	Transgenic plants , PG_00197324		
Field of study	Biotechnology		
Date of commencement of studies	October 2026	Academic year of realisation of subject	2026/2027
Education level	Master's studies	Subject group	Obligatory subject group 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	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	0.0	0.0	5.0	10.0	15.0	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	5.0	40.0	75

Subject objectives	Student acquires knowledge of selected problems currently discussed in the literature regarding the use of biotechnology for the construction and breeding of transgenic plants and problems of related fields and scientific disciplines that are important in plant biotechnology. Acquires the skills to use scientific information fluently; can prepare an oral speech and presentation; takes part in the discussion. Acquires competences in awareness and understanding of the benefits and risks associated with conducting scientific research on transgenic and modified plants.

Learning outcomes

Course outcome	Subject outcome	Method of verification
[BIOTECHMU2_W06] The graduate has in-depth knowledge and understands the risks associated with conducting laboratory works, including those resulting from working with infectious material, GMOs and GMMs.	Using scientific information, including English-language information, regarding plant biotechnology and related scientific fields and disciplines, the student knows the risks associated with conducting laboratory research, including those resulting from working with GMOs and GMMs. Has the ability to critically analyze and select information, as well as the ability to use written and electronic sources and appropriate databases necessary to conduct research in the field of plant biotechnology and related scientific fields and disciplines.	[SW1] oral statement/ conversation/discussion [SW2] presentation/project/paper/ report
[BIOTECHMU2_W02] The graduate has in-depth knowledge of the application of laboratory techniques and methods of genetic modification of cells and organisms and their use in biotechnology.	Student has knowledge of selected problems currently discussed in the literature regarding the use of laboratory techniques and methods of genetic modification of cells and organisms for the construction and breeding of transgenic plants, as well as problems of related fields and scientific disciplines that are important in plant biotechnology.	[SW1] oral statement/ conversation/discussion [SW2] presentation/project/paper/ report
[BIOTECHMU2_K06] The graduate understands the impact of biotechnological achievements on health and quality of life and is aware of their risks, is able to critically and responsibly communicate them to society and engage in pro-social activities.	Student will acquire competences in the awareness and understanding of the benefits and threats related to conducting scientific research on transgenic plants and the introduction of advanced technologies using knowledge in the field of plant biotechnology, as well as recognizing and formulating ethical problems related to plant biotechnology.	[SK1] oral statement/conversation/ discussion [SK2] presentation/project/paper/ report [SK8] observation of student's independent or team work
[BIOTECHMU2_K04] The graduate understands the ethical dilemmas and risks associated with conducting scientific research and introducing highly advanced technologies using biotechnology; appreciates the importance of intellectual property; and acts ethically, reflecting on one's own worldview, attitudes and professional responsibility.	Student gains awareness of the social role of a biotechnology graduate, and in particular will understand the need to provide society with knowledge and opinions about the achievements of biotechnology in the field of breeding and the benefits of spreading genetically modified crops. Will understand and appreciate the importance of intellectual property and act ethically.	[SK1] oral statement/conversation/ discussion [SK2] presentation/project/paper/ report [SK8] observation of student's independent or team work

Subject contents

1. Methods of obtaining transgenic plants, selection and assessment of transformation efficiency.
2. *Arabidopsis thaliana* as a plant model for determining the functions of newly discovered genes.
3. Application of RNA interference in plant biotechnology.
4. The use of plant transformation to create varieties with new features: resistance to biotic factors (pathogens and pests).
5. The use of plant transformation to create varieties with new features: resistance to abiotic factors.
6. Production of plants with improved functional and technological features.
7. Production of recombinant proteins and vaccines in transgenic plants.
8. Commercialization of genetically modified crops.
9. Legal regulations regarding transgenic plants in the EU, Poland and around the world.
10. Ethical aspects of plant biotechnology and transgenic plant breeding.

Prerequisites and co-requisites

knowledge in the field of "Plant tissue and cell cultures", "Plant biotechnology"

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
Oral speech with a presentation in the field of plant biotechnology and the ability to conduct a discussion	51.0%	100.0%

Recommended reading	Basic literature	• Plant biotechnology. Collective work edited by St. Malepszy PWN Scientific Publishing House 2009. • Publications from selected journals dealing with broadly understood plant biology and biotechnology.
	Supplementary literature	-
	eResources addresses	
Example issues/ example questions/ tasks being completed		
Work placement	Not applicable	

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