

**Subject card**

<b>Subject name and code</b>	Basics of animal transgenesis, PG_00153611						
<b>Field of study</b>	Biotechnology						
<b>Date of commencement of studies</b>	October 2024	<b>Academic year of realisation of subject</b>			2024/2025		
<b>Education level</b>	postgraduate studies	<b>Subject group</b>			Obligatory subject group in the field of study		
<b>Mode of study</b>	full-time studies	<b>Mode of delivery</b>			at the university		
<b>Year of study</b>	1	<b>Language of instruction</b>			Polish Some of the terminology presented during the lecture can only be in English due to the lack of equivalents in Polish.		
<b>Semester of study</b>	1	<b>ECTS credits</b>			2.0		
<b>Learning profile</b>	academic	<b>Assessment form</b>					
<b>Conducting unit</b>							
<b>Name and surname of lecturer (lecturers)</b>	<b>Subject supervisor</b>		dr hab. Patrycja Koszałka				
	<b>Teachers</b>		dr hab. Patrycja Koszałka				
<b>Lesson types</b>	<b>Lesson type</b>	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	<b>Number of study hours</b>	15.0	0.0	0.0	0.0	0.0	15
	E-learning hours included: 0.0						
<b>Learning activity and number of study hours</b>	<b>Learning activity</b>	Participation in didactic classes included in study plan		Participation in consultation hours		Self-study	SUM
	<b>Number of study hours</b>	15		5.0		30.0	50
<b>Subject objectives</b>	Providing contemporary knowledge of (1) theoretical foundations of the molecular basis for introducing genetic changes into the animal genome, with knowledge of the advantages and disadvantages of each method and problems related to the phenotypic analysis of modifications, (2) methodology necessary in working with animals and their tissues in the process of genetic modification of animals, (3) applications of transgenic animals in science and economy, (4) specialized terminology and conceptual framework related to the acquisition, analysis and use of genetically modified animals.						
<b>Learning outcomes</b>	<b>Course outcome</b>		<b>Subject outcome</b>			<b>Method of verification</b>	
	[BIOTECHMU2_W02] The graduate knows and understands the use of laboratory techniques and methods of genetic modification of cells and organisms and their use in biotechnology		The student knows and understands the basics of working with animals and their tissues in the process of genetic modification of animals and their application in science and economy.			[SW4] test/exam - oral or written	
	[BIOTECHMU2_W01] The graduate knows and understands complex biological phenomena at the molecular level, their importance for biotechnology		The student knows and understands the molecular basis for introducing genetic changes into the animal genome, as well as the advantages and disadvantages of individual methods, along with possible problems related to the phenotypic analysis of modifications.			[SW4] test/exam - oral or written	

Subject contents	<p>1. Introduction to animal transgenesis - basic definitions.</p> <p>2. Methodology related to working with laboratory animals and their tissues, e.g.</p> <ul style="list-style-type: none"> <li>- elements of embryology and basic breeding and surgical procedures necessary for transgenesis</li> <li>- obtaining and culturing embryonic stem cells.</li> </ul> <p>3. Basic biological phenomena that should be taken into account when targeting genome modification and analysis of phenotypic changes, e.g. karyotype disorders, parental imprinting, inheritance of phenotypic traits.</p> <p>4. Germline mutagenesis - the broadest section (approx. half of the program content) including an extended discussion of basic genome modification techniques using e.g. defective viruses, transposons, artificial chromosomes, DNA recombination (including methods using DSBs such as CRISPR/Cas9) and system of specific recombinases/integrases.</p> <p>5. The most common methods of obtaining transgenic animals - theoretical, practical, advantages, disadvantages and applications.</p> <p>6. Use of transgenic animals.</p>											
Prerequisites and co-requisites	It is required to obtain knowledge, skills and competences related to molecular and cellular biology and genetic engineering.											
Assessment methods and criteria	<table border="1" data-bbox="448 904 794 1005"> <thead> <tr> <th data-bbox="448 904 794 936">Subject passing criteria</th> <th data-bbox="794 904 1141 936">Passing threshold</th> <th data-bbox="1141 904 1487 936">Percentage of the final grade</th> </tr> </thead> <tbody> <tr> <td data-bbox="448 936 794 967">BIOTECHMU2_W01</td> <td data-bbox="794 936 1141 967">51.0%</td> <td data-bbox="1141 936 1487 967">50.0%</td> </tr> <tr> <td data-bbox="448 967 794 1005">BIOTECHMU2_W02</td> <td data-bbox="794 967 1141 1005">51.0%</td> <td data-bbox="1141 967 1487 1005">50.0%</td> </tr> </tbody> </table>	Subject passing criteria	Passing threshold	Percentage of the final grade	BIOTECHMU2_W01	51.0%	50.0%	BIOTECHMU2_W02	51.0%	50.0%		
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BIOTECHMU2_W02	51.0%	50.0%										
Recommended reading	Basic literature	Variable literature sources provided in lecture materials.										
	Supplementary literature	For those interested, a script "Basics of animal transgenesis" prepared as part of the project "PWP: University of Tomorrow: Internationalization of education at the University of Gdańsk through cooperation with the University of Houston-Downtown". It is now outdated but contains interesting, basic literature sources and specific exercises.										
	eResources addresses	Adresy na platformie eNauczenie: ATC-MWB-MU2DZ-(2024/2025) Podstawy Transgenezy Zwierząt - Moodle ID: 12323 <a href="https://mdl.ug.edu.pl/course/view.php?id=12323">https://mdl.ug.edu.pl/course/view.php?id=12323</a>										
Example issues/ example questions/ tasks being completed												
Work placement	Not applicable											

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