

Subject card

Subject name and code	Basic genetics, PG_00146877						
Field of study	Genetics and Experimental Biology						
Date of commencement of studies	October 2025		Academic year of realisation of subject		2025/2026		
Education level	Bachelor's studies		Subject group		Obligatory subject group in the field of study 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	1		ECTS credits		2.0		
Learning profile	academic		Assessment form		exam		
Conducting unit	Faculty of Biology -> Rector						
Name and surname of lecturer (lecturers)	Subject supervisor		dr hab. Anna Wysocka				
	Teachers		dr hab. Anna Wysocka				
			prof. dr hab. Tadeusz Namiotko				
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	15.0	0.0	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 basic issues of genetics, in accordance with the current state of knowledge in this field.Deepening knowledge and understanding of the basic rules of heredity and the basis of genetic variation. To provide knowledge on the mechanisms of gene functioning and interaction, understanding the relationship between genotype and phenotype. Presentation of modern research methods and development of the ability to ask questions, make assessments and solve uncomplicated problems						

Learning outcomes	Course outcome	Subject outcome	Method of verification
	[GBEL3_W02] Knowledge of mathematics, physics, and chemistry is necessary for understanding biological phenomena and processes, as well as their application in research methodology.	describes the mechanisms and sources of variability of organisms; explains the rules of inheritance	[SW4] test/exam - oral or written
	[GBEL3_W03] The molecular mechanisms of genetic information transmission and gene expression, as well as the molecular and genetic basis of human physiology and diseases, including infectious diseases.	knows the genetic basis of disorders (traits) in animal and plant organisms	[SW4] test/exam - oral or written
	[GBEL3_K07] Lifelong learning and updating knowledge in the field of molecular genetics and other disciplines.	knows the limitations of his/her own knowledge and understands the need for continuous learning and development in the field of genetics	[SK8] observation of student's independent or team work
	[GBEL3_U01] Independently perform practical tasks in the field of biological sciences and related disciplines, formulate research problems, analyze their results, and draw conclusions.	is able to independently perform simple research tasks in the field of genetics, formulate research problems, analyse their results and draw conclusions	[SU1] oral statement/conversation/discussion
	[GBEL3_U04] Capable of reading scientific texts in English and Polish with comprehension, synthesizing the knowledge contained within them, preparing well-documented studies on biological issues, as well as those related to research commercialization.	can read and understand scientific texts in Polish and simple texts in English in the field of genetics; independently searches for and uses available sources of information, including electronic	[SU1] oral statement/conversation/discussion
	[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.	explains the theoretical basis of biological processes based on empirical data in researches and practical activities	[SW4] test/exam - oral or written
Subject contents	Mendelian inheritance with examples in plants, animals and humans. Inheritance inconsistent with Mendel's rules. Basic properties of genes (e.g. gene penetrance, trait expressivity, pleiotropy, modification, genetic anticipation). Multiple alleles. Interaction of allelic and non-allelic genes. Lethal genes. Sex-linked, sex-influenced, and sex-limited inheritance. Genetic basis of the sex determination. Inheritance of lineages traits. Mapping methods of the genes. Inheritance of quantitative traits. Multifactorial inheritance. Behavioral genetics. Mutagenesis. Genetic imprinting. Extranuclear inheritance in Eucaryota.		
Prerequisites and co-requisites			
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	final test (exam)	51.0%	100.0%

Recommended reading	Basic literature	Bal J. Molecular biology in medicine Elements of clinical genetics. PWN Warsaw, 2011. Boczkowski K. Outline of medical genetics. PZWL Warsaw, 1990. Brooker R. (ed.) Genetics: Analysis and Principles, 6-th edition. Mc Graw Hill. 2017 Charon K. M., Świtoński M. Animal genetics. PWN Warsaw, 2006. Charon K. M., Świtoński M. Genetics and genomics of animals. PWN Warsaw, 2019 Krebs J.E., Goldstein E.S., Kilpatrick S.T. Lewin's GENES XII. Jones & Bartlett Learning; 12th Edition. 2017. Oniszczenko W., Dragan W.Ł. Genetics of behavior in psychology and psychiatry. Wydawnictwo Naukowe SCHOLAR, Warsaw, 2008. Piątkowska B., Goc A., Dąbrowska G. A collection of tasks and questions in genetics, vol. I General genetics. NCU Publishing House, Toruń 1998. Węgleński P.: Molecular genetics. PWN Warsaw, 2012
	Supplementary literature	Korf B. R. Human genetics. Solving medical problems. PWN Warsaw, 2003. Plomin R., DeFries J.C., McClearn G.E., McGuffin P. Genetics of behavior. PWN Warsaw, 2001 Wysocka A., Lipowska M., Kilikowska A. 2010. Genetics in solving dyslexia puzzles: the overview. Acta Neuropsychologica, 8(4): 315-331 Wysocka A., Lipowska M. 2010. Genetic basis of the co-occurrence of ADHD and developmental dyslexia. Psychiatry and Clinical Psychology, 10 (3): 188-193
	eResources addresses	
Example issues/ example questions/ tasks being completed	1. Indicate an untrue sentence: a. in complete dominance, the dominant allele manifests itself phenotypically in heterozygous b. in incomplete dominance, the heterozygote manifests an intermediate trait value between the phenotypes of both homozygotes c. codominance is a type of allelic cooperation d. in incomplete dominance, heterozygotes always show a dominant trait, 2. Karyotype 47, XYY is an example: A. Monosomy C. Euploidy B. Polyploidy D. Aneuploidy	
Work placement	Not applicable	

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