

Subject card

Subject name and code	Genetics, PG_00154406						
Field of study	Biology						
Date of commencement of studies	October 2025		Academic year of realisation of subject			2026/2027	
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	2		Language of instruction			Polish	
Semester of study	3		ECTS credits			3.0	
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						
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						
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	Familiarizing with the basic and current genetic issues						
	Broadening the knowledge/understanding of the laws of heredity and the genetic variation.						
	Providing knowledge on the gene function/interaction, understanding the relationship: genotype-phenotype						
	Developing the ability to analyse pedigrees and determine the probability of inheriting genes						
	Familiarizing with methods of analysing the population genetic structure and factors disturbing the population balance						
	Presentation of research methods and development of the ability to ask questions, make assessments, solve uncomplicated genetic problems						

Learning outcomes	Course outcome	Subject outcome	Method of verification
	[BIOLL3_W05] The graduate knows the rules and describe the mechanisms of life at the population, biocenosis and ecosystem levels and the temporal and spatial determinants of biodiversity	explains the basic rules and describes the mechanisms of genetic diversity at the population level and the temporal and spatial determinants of biodiversity	[SW4] test/exam - oral or written
	[BIOLL3_W02] The graduate knows the structure and properties of biological macromolecules, the molecular mechanisms of basal metabolic pathways and genetic information flow and the sources of variation in organisms; the rules of inheritance	knows and understands the mechanisms of genetic information flow and the sources of organisms variability, explains the rules of inheritance	[SW4] test/exam - oral or written
	[BIOLL3_U05] The graduate will be able to synthesise data from a variety of sources and draw appropriate conclusions	synthesizes information about modern research methods in genetics and draws adequate conclusions on this basis	[SU1] oral statement/conversation/discussion
	[BIOLL3_U03] The graduate, under the guidance of a mentor, is able to carry out simple tasks or research expertise typical of the biological sciences	awareness of responsibility for one's own work and readiness to comply with the rules of teamwork and take responsibility for jointly implemented tasks	[SU1] oral statement/conversation/discussion
	[BIOLL3_K04] The graduate is ready to take responsibility for their own work and to follow the rules of teamwork and responsibility for shared tasks	is aware of the responsibility for their own work and readiness to comply with the rules of teamwork and take responsibility for jointly implemented tasks	[SK8] observation of student's independent or team work
Subject contents	Mendelian inheritance with examples in plants, animals and humans. Inheritance inconsistent with Mendel's rules. Basic properties genes (e.g. gene penetrance, trait expressivity, pleiotropy, modification, genetic anticipation). Multiple alleles. Gene interaction allelic and non-allelic. Lethal genes. Sex-linked, sex-influenced, and sex-limited inheritance. Genetic lineage. Methods of genetic mapping. Inheritance of quantitative traits. Multifactorial inheritance. Behavioural genetics. Issues of mutagenesis. Epigenetics. Genetic basis of ontogeny of multicellular organisms. Structure of genomes. Extranuclear inheritance in Eucaryota. Genetic structure of the population. Genetic equilibrium. Factors influencing allele frequency in populations.		
Prerequisites and co-requisites			
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	final test	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., Mc Cleam G.E., McGuffin P. Genetics of behavior. PWN Warszawa, 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. Point out the wrong sentence: a. in complete dominance, the dominant allele manifests itself phenotypically in heterozygote b. in incomplete dominance, the heterozygote manifests an intermediate trait value between the phenotypes of both homozygotes c. codominance is a type of allelic gene interaction d. in incomplete dominance, heterozygotes always manifest 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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