University of Gdańsk

Subject card

Subject name and code	Functional analysis of DNA sequences in Eukaryot, PG_00149286		
Field of study	Medical Biology		
Date of commencement of studies	October 2024	Academic year of realisation of subject	2026/2027
Education level	undergraduate studies	Subject group	Obligatory subject group in the field of study Optional subject group
Mode of study	full-time studies	Mode of delivery	at the university
Year of study	3	Language of instruction	Polish
Semester of study	6	ECTS credits	1.0
Learning profile	academic	Assessment form	
Conducting unit	Pracownia Molekularnych i Komórkowych Podstaw Strategii Nutr -> Katedra Biologii i Genetyki Medycznej -> Faculty of Biology		
Name and surname of lecturer (lecturers)	Subject supervisor	dr Marta Moskot	
	Teachers		

Lesson types

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	0.0	0.0	15.0	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	3.0	7.0	25

Subject objectives

1. Familiarization with genetic sequence databases.

2. Acquisition of the ability to use methods and techniques for sequence analysis in Eukaryotes (GOrilla, AmiGO, ShinyGO databases).

3. Identification of the role of a protein product based on molecular pathway analysis (KEGG database).

4. Functional analysis of DNA sequences using results obtained from databases (GEO).

Learning outcomes

Course outcome	Subject outcome	Method of verification
[BIOLMEDL3_U05] synthesises data from different sources and draws appropriate conclusions from them	Student makes a synthesis contained in the available sources knowledge, preparing well documented studies biological problems.	[SU1] oral statement/conversation/ discussion [SU5] implementation of a problem task
[BIOLMEDL3_W12] is oriented in the development and current state of knowledge and the latest trends in medical biology; indicates their relationship with other disciplines of natural or medical sciences	The student is able to find and verify the tools and describe the results of the analyses carried out with their use.	[SW1] oral statement/ conversation/discussion [SW3] text preparation/written work
[BIOLMEDL3_W02] describes the structure and properties of basic types of biological macromolecules, molecular mechanisms of the pathways of basal metabolism and flow of genetic information, and sources of variation in organisms; explains the rules of inheritance	Student understands the meaning of biological processes in functioning of cells and whole eukaryotic organisms.	[SW1] oral statement/ conversation/discussion [SW5] implementation of a problem task
[BIOLMEDL3_K01] understands the need for lifelong learning and to update his/her knowledge of medical biology and related disciplines	The student acquires knowledge about new databases and methods analysis, and the possibility of their applications.	[SK1] oral statement/conversation/ discussion [SK5] implementation of a problem task
[BIOLMEDL3_U06] reads with understanding scientific texts in Polish and simple texts in English in the field of medical biology; independently searches and uses available sources of information, including electronic sources	The student, after learning about the presented content in expands on its own knowledge by familiarizing yourself with additional materials.	[SU1] oral statement/conversation/ discussion [SU5] implementation of a problem task

Subject contents

Basic methods and research approaches of genetics. Gene ontology, annotation of eukaryotic DNA sequence. Bioinformatics methods for the study of gene expression, function and regulation. Bioinformatics databases data and their application in the functional comparative analysis of organisms.

Prerequisites and co-requisites

Basic knowledge about cell biology, molecular biology, genetics

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
Analyses made using the programs and databases learned during the classes	51.0%	100.0%

Recommended reading

Basic literature	The Gene Ontology Handbook, Christophe Dessimoz, Nives Škunca, 2017
Supplementary literature	Scientific publications in the field of ontological analysis, with particular emphasis on taking into account the work describing the methodology used in the during classes, programs and databases.
eResources addresses	Uzupełniające Adresy na platformie eNauczanie:

Example issues/ example questions/ tasks being completed

1. Searching for pathways and genes assigned to selected processes or diseases.2. Gene ontology analysis (GO).3. Functional analysis of DNA sequences with GEO database.

Work placement

Not applicable

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