SYLLABUS

Name of the department / clinic providing the course: Department of Functional Genomics

Course title: Nutrigenomics

Course profile: academic

Speciality: -

Level of course unit: international doctoral school
Course unit title: Nutrigenomics
Course unit code:-
Type of course unit: elective
Course aims: The aim of the course is for students to learn about the interaction of diet with the research areas of proteomics, metabolomics and transcriptomics and their role in physiological and pathological processes (obesity, respiratory, circulatory and metabolic diseases). The relationship between diet and genetic predispositions to lifestyle diseases will also be discussed, as well as individual/ethnic/age-related differences that determine the individual impact of dietary components on their genomes and phenotypes.

Form of study: on-line
Year and semester of study: summer semester
Types of educational activities and number of hours allocated:

Subject	Language course	Self-study	Lecture	Exercises	Laboratory	Seminar	Practical	e-learning	Profession practice	Other (what?)	ECTS points
						5					

Number of ECTS credits allocated and their structure according to students' form of learning: -

Names of course unit's faculty: Faculty of Biomedical Sciences, Faculty of Medicine

Prerequisites: molecular biology and genetics

Learning activities and teaching methods:
Seminars - verbal communication; multimedia presentation, practical part: analysis of scientific articles and SNP databases, discussion, demonstration, project

Course unit content:
Lectures (2 hours): The topics of the lectures will be related to the following issues:
1. The influence of dietary ingredients on the expression of genetic information - molecular mechanisms
2. Nutrigenomics and nutrigenetics in the prevention of lifestyle diseases. The role of an immunomodulatory diet
3. The importance of diet in preventing mechanisms related to cellular aging.
4. Dietary supplementation in people with genetic diseases
5. Genetic tests in the field of nutrigenetics and nutrigenomics available on the market
6. Innovative tools for personalizing nutrition
7. Gene polymorphism databases, medical databases

Practical part (3 hours, individual work):
1. Analysis of the relationship between diet and the regulation of gene expression in pathological/physiological conditions based on literature data and databases
or
2. Analysis of the relationship between gene polymorphisms and diet and the risk of developing lifestyle diseases based on literature data and databases**.**

Course objectives:

Knowledge:
After graduating, the student knows and understands:
- theoretical and general issues in the field of nutrigenomics
- has knowledge about genetic disorders in diet-related diseases
- can justify the relationship between diet and gene expression

Skills:
After graduating, the student is able to:
- search, evaluate and use scientific information from medical databases and critically analyze the data included therein
- develop and present data and draw conclusions based on research results
- communicate, analyze and evaluate the possibilities of using the acquired knowledge

Attitudes and transferrable (generic) competencies:
After graduating, the student is ready to:
- critically assess the achievements within a given scientific or artistic discipline, critically assess one's contribution to the development of a given scientific or artistic discipline, recognize the importance of knowledge in solving cognitive and practical problems

Required and recommended learning resources (readings):

Required:
1. Savini, Isabella; Gasperi, Valeria; and Catani, Valeria M (July2016) Nutrigenetics. In: eLS. John Wiley & Sons, Ltd:Chichester.
2. Marco Malavolta, Eugenio Mocchegiani Molecular Basis of Nutrition and Aging - 1st Edition – Elsevier, Academic Press, ISBN: 978-0-12-801816-3
3. Nutrigenomics and the Future of Nutrition. Washington (DC): National Academies Press (US); 2018
4. Omar Ramos-Lopez , Fermín I Milagro, Hooman Allayee, Agata Chmurzynska, Myung Sook Choi, Rui Curi, Raffaele De Caterina, Lynnette R Ferguson, Leticia Goni, Jing X Kang, Martin Kohlmeier, Amelia Marti, Luis A Moreno, Louis Pérusse, Chandan Prasad, Lu Qi, Ram Reifen, Jose I Riezu-Boj, Rodrigo San-Cristobal, Jose Luis Santos, J Alfredo Martínez „Guide for Current Nutrigenetic, Nutrigenomic, and Nutriepigenetic Approaches for Precision Nutrition Involving the Prevention and Management of Chronic Diseases Associated with Obesity„ J Nutrigenet Nutrigenomics . 2017;10(1-2):43-62
6. Chmurzyńska A. Nutrigenomika PZWL Wydawnictwo Lekarskie , 2022
7. Catherine M. Phillips Nutrigenetics and Metabolic Disease: Current Status and Implications for Personalized Nutrition Nutrients 2013, 5, 32-57
8.Panczyk M. Nutrigenetyka i nutrigenomika – zastosowanie technologii „omics" w optymalizacji żywienia człowieka. Pediatric Endocrinology, Diabetes and Metabolism 2013, 19, 2, 70-77
9. Neelakanta Pillai Padmakumari Soumya, Saraswathy Mini, Shali Kochuvelickakathu Sivan, Sukanta Mondal Bioactive compounds in functional food and their role as therapeutics. Bioactive Compounds in Health and Disease 2021; 4(3): 24-39

Recommended:-
Assessment methods and criteria: Attendance at the seminar, active participation and completion of planned tasks during classes.

Additional information:
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Statement and signature of the course leader:

I hereby state that the content of the curriculum included in the syllabus below is the result of my individual work completed as part of a work contract/cooperation resulting from a civil law contract and that author rights to this title are not the property of a third party.