

SUBJECT TEACHING GUIDE

M1353 - Pharmacogenetics and Pharmacogenomics

Master's Degree in Mental Health Research

Academic year 2022-2023

1. IDENTIFYING DATA					
Degree	Master's Degree in Mental Health Research			Type and Year	Optional. Year 1
Faculty	Faculty of Medicine				
Discipline	Subject Area: New Mechanisms and Molecular Targets in the Treatment of Psychic Disorders				
Course unit title and code	M1353 - Pharmacogenetics and Pharmacogenomics				
Number of ECTS credits allocated	3	Term	Semester based (2)		
Web					
Language of instruction	Spanish	English Friendly	No	Mode of delivery	Online Training

Department	DPTO. FISILOGIA Y FARMACOLOGIA
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Other lecturers	ALVARO MARCELINO DIAZ MARTINEZ JOSE PEDRO VAQUE DIEZ MARIA BLANCA SANCHEZ SANTIAGO BÁRBARA ARIAS SAMPÉRIZ BLANCA GUTIERREZ MARTINEZ

3.1 LEARNING OUTCOMES

- Knowing the fundamentals of pharmacokinetic bases underlying the interindividual variability in drug therapeutic or toxic responses.
- Applying pharmacogenetic concepts to optimize drug therapy individualization.

4. OBJECTIVES

1. Explain the relevance of pharmacogenetics and pharmacogenomics in the treatment of mental health disorders.
2. Provide the students with tools to carry out a critical analysis of the current and future knowledge on pharmacogenetics and pharmacogenomics.

6. COURSE ORGANIZATION

CONTENTS	
1	Historical perspective and current situation of pharmacogenetics and pharmacogenomics.
2	Genetic variants of clinical relevance. Methodologies for their study. Strategies in the study design. Pharmacogenomic studies: GWAS, proteomics and epigenomic.
3	Sequence Databases I: genomic browsers, expression data, reference data, search engines, HapMap and Haploview.
4	Sequence Databases II: searchers of functional SNPs, functional annotation, sequence alignments applications.
5	Interindividual variability in the drug response I. Pharmacogenetics and pharmacokinetics.
6	Interindividual variability in the drug response II. Pharmacodynamics and pharmacogenetics
7	Genetic influence on the side effects associated with psychotropic drugs.
8	Polymorphisms in the study of drug response and efficacy. Applications of pharmacogenetics and pharmacogenomics in the diagnosis and treatment efficacy in psychiatry.
9	EMA (European Medicines Agency) and the FDA (Food and Drug Administration) recommendations regarding the implementation of pharmacogenetics and pharmacogenomics in clinical practice.
10	Role of pharmacogenetics and pharmacogenomics in biomedical R & D and health systems.
11	Ethical and legal aspects. Basis for the approach to the legal implications of personalized medicine.
12	A written essay.

7. ASSESSMENT METHODS AND CRITERIA

Description	Type	Final Eval.	Reassessn	%
Tests, exercises and problems.	Activity evaluation with Virtual Media	No	No	30,00
A written essay.	Activity evaluation with Virtual Media	No	Yes	50,00
Participation in forums.	Activity evaluation with Virtual Media	No	No	15,00
Student's portfolio	Others	No	No	5,00
TOTAL				100,00
Observations				
Observations for part-time students				
N/A				

8. BIBLIOGRAPHY AND TEACHING MATERIALS

BASIC

Armijo JA. "Influencia de los factores genéticos, la edad y el embarazo sobre la respuesta a los fármacos". En Farmacología Humana 6ª edición. Florez J, Armijo JA, Mediavilla A editores. Editorial Elsevier (2014).

Liou SY, Stringer F, Hirayama M. The impact of pharmacogenomics research on drug development. Drug Metab Pharmacokinet. 2012;27(1):2-8.

McDonagh EM, Whirl-Carrillo M, Garten Y, Altman RB, Klein TE. From pharmacogenomic knowledge acquisition to clinical applications: the PharmGKB as a clinical pharmacogenomic biomarker resource. Biomark Med. 2011 Dec;5(6):795-806.

Sadee W. Pharmacogenomic biomarkers: validation needed for both the molecular genetic mechanism and clinical effect. Pharmacogenomics. 2011 May;12(5):675-80.

Scott SA. Personalizing medicine with clinical pharmacogenetics. Genet Med. 2011 Dec;13(12):987-95.

Wang L, McLeod HL, Weinshilboum RM. Genomics and drug response. N Engl J Med. 2011 Mar 24;364(12):1144-53.