



Course Code PHAR 215	Course Title Molecular and Biochemical Pharmacology	Credits (ECTS) 6
Department Life & Health Sciences	Semester Spring	Prerequisites BIOL-112, 123, Phar 120
Type of Course Required	Field Pharmacy	Language of Instruction Greek/English
Level of Course 1 st Cycle	Year of Study 2 nd year	Lecturer Lefteris Zacharia/Maria Mastorikou
Mode of Delivery face-to-face	Work Placement N/A	Co-requisites None

Objectives of the Course:

The basic aim of the course is to teach students the molecular and biochemical basis of drug action. Many drugs act via receptors and other proteins that mediate cellular signaling. Such signaling proteins can be grouped into several families on the basis of their structural and functional similarities. Examples from each family are examined at the molecular level from a pharmacological, biochemical and biophysical point of view for insight into their structure, their mechanism of action, their modulation by drugs and the underlying dysfunctions toward which the drugs are directed. Basic principles of molecular pharmacology are introduced as a tool for decoding the relationship between dose and response across all families with an emphasis on the explicit nature of concepts such as potency and efficacy.

Learning Outcomes:

By the end of the course students should be able to:

- Know the molecular mechanism of action for the most important drugs.
- Know the nature of drug receptor and the different types of them
- Know the kinetics of drug-receptor/enzyme interactions
- Know the molecular role of neurotransmitters and hormones
- Have a clear idea on the basic, molecular and chemical concepts of phenomena like drug metabolism, biologic and oxidative stress.

Course Contents:

- Classify the different families of neurohumoral receptors and related proteins that mediate cellular signalling.
- Describe their mechanisms of action in molecular and mechanistic terms,

and indicate how their dysfunction can lead to disease.

- Explain the actions of agonists and antagonists in terms of fundamental physical-chemical properties and in the context of pharmacological and biophysical properties such as selectivity, potency, efficacy and the current-voltage relationship.
- Describe and differentiate among different theoretical models that have been developed to account for the functioning of receptors and for the relationship between dose and response.
- Describe and discuss the nature and importance of processes in which multiple proteins are recruited to and discharged from a dynamic complex during signalling.

Learning Activities and Teaching Methods:

Lectures, class discussion, assignments,

Assessment Methods:

Final Examination, course work

Required Textbooks/Reading:

Authors	Title	Publisher	Year	ISBN
Παπαδημητρίου E.	Μοριακή φαρμακολογία	Παρισιάνου A.E.		
Georges Vauquelin, Bengt von Mentzer	G Protein-coupled Receptors: Molecular Pharmacology	Wiley- e-book		

Recommended Textbooks/Reading:

Authors	Title	Publisher	Year	ISBN