



# UNIVERSITÀ DI PAVIA

Anno Accademico 2018/2019

MOLECULAR PHARMACOLOGY	
Enrollment year	2018/2019
Academic year	2018/2019
Regulations	DM270
Academic discipline	BIO/14 (PHARMACOLOGY)
Department	DEPARTMENT OF BIOLOGY AND BIOTECHNOLOGY "LAZZARO SPALLANZANI"
Course	
Curriculum	PERCORSO COMUNE
Year of study	1°
Period	2nd semester (01/03/2019 - 14/06/2019)
ECTS	6
Lesson hours	48 lesson hours
Language	English
Activity type	ORAL TEST
Teacher	FORNERIS FEDERICO (titolare) - 4.5 ECTS FORNERIS FEDERICO (titolare) - 1.5 ECTS KIENLEN-CAMPARD PASCAL FRANCIS - 1.5 ECTS
Prerequisites	Knowledge of basic concepts of molecular biology and biochemistry, as well as protein structure and function. It is expected that students can easily visualize and interpret structural representations of proteins to understand their mechanisms of function.
Learning outcomes	The course will provide an advanced view on modern strategies for drug development and targeted therapeutics, starting from analysis of drug targets, their structures and functions.
Course contents	Molecular Pharmacology addresses the study of the molecular mechanisms and biological consequences of the interactions of drugs and other small molecules with biological targets. The course will comprehensively explore the topics of modern molecular pharmacology

	<p>with a strong focus on the structure-function relationships that enable the specific interactions between drugs and their biological targets. The material covered by this course include: i) modern biophysical and structural approaches to study molecular interactions; ii) basic principles of drug-receptor interactions; iii) principles of pharmacokinetics and pharmacodynamics; iv) structural biology of drug targets: ion channels, transporters, GPCRs, kinases, RTKs, signaling complexes, transcription factors, nuclear receptors, enzymes and mediators of inflammation, with examples of interacting drugs as tools to achieve knowledge of cell macromolecular structure and function; v) mechanism of action of various drugs commonly used in clinical practice; vi) drug discovery, development, optimization, structure-based drug design, structural vaccinology; vii) protein engineering, biotechnological drugs (recombinant proteins, drug delivery reagents, antibodies as therapeutics), and strategies to overcome the possible drawbacks associated with their usage; viii) pharmacogenetics and pharmacogenomics; ix) gene therapy and gene editing.</p>
<b>Teaching methods</b>	Lectures
<b>Reccomended or required readings</b>	<p>Bertram G. Katzung, Susan B. Masters, Anthony J. Trevor. Basic and clinical pharmacology, 13th Edition. (ed. McGraw-Hill)</p> <p>John Dickenson, Fiona Freeman, Chris Lloyd Mills, Christian Thode, Shiva Sivasubramaniam. Molecular Pharmacology: From DNA to Drug Discovery. (ed. Wiley)</p>
<b>Assessment methods</b>	Oral exam with open questions on course topics
<b>Further information</b>	The books will be integrated with slides from various structural biology, biochemistry and pharmacology books, and recent literature. Slides will be available only after lectures.
<b>Sustainable development goals - Agenda 2030</b>	<a href="#"><u>\$ibl legenda sviluppo sostenibile</u></a>