UNIVERSITÀ DI PAVIA

Anno Accademico 2021/2022

NEUROCHEMISTRY AND MOLECULAR NEUROPHARMACOLOGY

Enrollment year	2021/2022
Academic year	2021/2022
Regulations	DM270
Academic discipline	BIO/14 (PHARMACOLOGY)
Department	DEPARTMENT OF BIOLOGY AND BIOTECHNOLOGY "LAZZARO SPALLANZANI"
Course	NEUROBIOLOGY
Curriculum	PERCORSO COMUNE
Year of study	1°
Period	2nd semester (01/03/2022 - 14/06/2022)
ECTS	9
Lesson hours	72 lesson hours
Language	Italian
Activity type	WRITTEN TEST
Teacher	BRAMBILLA RICCARDO (titolare) - 9 ECTS
Prerequisites	Fundamental notions of cytology and pharmacology
Learning outcomes	Integrated knowledge of some molecular, cellular and functional processes in the central nervous system (CNS). Acquisition of advanced knowledge of drug-receptor interactions for rational design of novel drugs.
Course contents	Neurochemistry. Molecular and functional aspects of the blood brain barrier (BBB); astrocyte and neuron interplay; energy metabolism, metabolic rate for oxygen and glucose; mitochondrial activity and reactive oxygen species; calcium homeostasis; major inhibitory and excitatory neurotrasmitter systems (synthesis, metabolism, receptors and reuptake); neurodegeneration. Molecular Neuropharmacology. Drug-receptor theories; drug potency and efficacy; inverse agonism, partial agonism and biased agonists;

	hormesis; examples of neurotoxins; systems for drug delivery to the central nervous system (CNS); drugs acting on the GABA metabolism; opiates, endogenous oppioids and non steroidal antinflammatory drugs; anesthetic and antiepyleptic drugs.
Teaching methods	Frontal lecturing
Reccomended or required readings	The power point slides in pdf format are provided by the teacher. Molecular Pharmacology from DNA to drug discovery (Wiley-Blackwell); Molecular Neuropharmacology, a foundation for Clinical Neuroscience (Nestler EJ, Hyman SE, Malenka RC), third edition. pdfs of most important paper of the topics.
Assessment methods	written examination: 5 open questions- 2 hours time
Further information	written examination: 5 open questions- 2 hours time
Sustainable development goals - Agenda 2030	The goals