



UNIVERSITÀ DEGLI STUDI DI PALERMO

DEPARTMENT	Biomedicina, Neuroscienze e Diagnostica avanzata		
ACADEMIC YEAR	2020/2021		
MASTER'S DEGREE (MSC)	NEUROSCIENCES		
INTEGRATED COURSE	CELL BIOLOGY AND ANATOMY - INTEGRATED COURSE		
CODE	21032		
MODULES	Yes		
NUMBER OF MODULES	2		
SCIENTIFIC SECTOR(S)	BIO/13, BIO/16		
HEAD PROFESSOR(S)	DI FELICE VALENTINA	Professore Ordinario	Univ. di PALERMO
OTHER PROFESSOR(S)	CONIGLIARO ALICE	Professore Associato	Univ. di PALERMO
	DI FELICE VALENTINA	Professore Ordinario	Univ. di PALERMO
CREDITS	12		
PROPAEDEUTICAL SUBJECTS			
MUTUALIZATION			
YEAR	1		
TERM (SEMESTER)	1° semester		
ATTENDANCE	Mandatory		
EVALUATION	Out of 30		
TEACHER OFFICE HOURS	CONIGLIARO ALICE Monday 15:00 18:00 Sezione di Biologia e Genetica del Dipartimento BiND in via Divisi 83, oppure attraverso la piattaforma TEAMS. A causa di possibili impegni istituzionali o riunioni di lavoro potrebbe non essere possibile ricevere gli studenti nel giorno e alle ore indicate, pertanto sarebbe preferibile fissare un appuntamento tramite e-mail.		
	DI FELICE VALENTINA Thursday 12:00 13:00 Sulla Chat di Teams		

DOCENTE: Prof.ssa VALENTINA DI FELICE

PREREQUISITES	Knowledge of General Biology, according to the requirements of access to the Master's Degree in Neurosciences. The student must have basic knowledge of main processes that regulate the activity of the cells. For example DNA replication; Transcription, Protein Synthesis; Cell Cycle; Mitosis and Meiosis
LEARNING OUTCOMES	Knowledge and understanding ability- Acquisition of the specific language of the disciplines of Biology; - knowledge and understanding of the fundamental biological processes of neurons; -knowledge and understanding of the cellular and genetic basis of some of the neurodegenerative diseases. Achievement of the minimum knowledge of the human body, position and structure of individual organs. Knowledge of the relationships between the different apparatuses and alterations of anatomical and functional integrity capable of causing disease. Ability to independently distinguish, organize and apply: - knowledge of the basic biological processes of cells and organisms; - the main methodologies of cell biology and molecular genetics. The student must be able to recognize an organ from its microscopic structure in order to be able to move easily in biomedical applications. The acquired basic knowledge is fundamental for the study of human physiology and for the understanding of etiological events capable of altering the organism's homeostasis and generating disease. Autonomy of judgment. Being able to evaluate and integrate, independently: - the knowledge acquired in biology and genetics in the study of the nerve cell; - the implications of the alterations of biological processes at the basis of cell life of the main human neurodegenerative diseases. Ability to analyze and summarize the formation of critical thinking on the topics studied and to evaluate the changes induced by the environment on the human organism. Have a critical approach in relation to the topics covered for the subsequent application in the field of biotechnological methodologies. Communication skills Ability to communicate and illustrate, in a simple way, even to a non-expert public, the processes of biology in the study of neuronal differentiation. Acquire the ability to describe the human body using appropriate terminology. Interact with other professional figures involved in diagnostic-therapeutic pathways through efficient group work. Learning skills Ability to correctly use the sector-specific scientific bibliography for a continuous updating of knowledge in the biomedical field and more specifically of neuroscience. Ability to learn and follow suitably, using the knowledge acquired in the course, the subsequent teaching courses of the Master degree.
ASSESSMENT METHODS	The oral test consists of a conversation usually lasting 20-30 minutes in order to check the knowledge of the topics of the course related to the remaining two thirds of the program. The final Evaluation will also consider the assessment reached in the ongoing evaluation. Final vote will be expressed according the following scheme: 30-30 e Lode: A-A+ Excellent 27-29: B Very good 24-26: C Good 21-23: D Satisfactory 18-20: E Sufficient 1-17: F Fail
TEACHING METHODS	Lessons in the classroom; Lessons in laboratory or in bioinformatic classroom.

MODULE CELL BIOLOGY

Prof.ssa ALICE CONIGLIARO

SUGGESTED BIBLIOGRAPHY

Neuroscience – 1 ott 2018

Dale Purves, George Augustine, David Fitzpatrick, William Hall, Anthony LaMantia et al.

AMBIT	50508-Discipline del settore nutrizionistico e delle altre applicazioni
INDIVIDUAL STUDY (Hrs)	98
COURSE ACTIVITY (Hrs)	52

EDUCATIONAL OBJECTIVES OF THE MODULE

Identify the fundamental biological structures, the organization and functioning of a nerve cell; Distinguish and compare the different adhesion molecules and their role in the biology of the nerve cell; Analyze and interpret the mechanisms that regulate the differentiation of the neuronal stem cell; To interpret the cell signaling mechanisms and their role in the neuronal differentiation process; Distinguish, recognize and interpret the various technologies for the creation of animal models for the study of the most common neurodegenerative diseases.

SYLLABUS

Hrs	Frontal teaching
6	The cellular organization of the nervous system; Molecular and cellular biology of the neuronal and Glial cells (Microglial and macroglial cells); The Blood-Brain- Barrier: Structure ad Function
6	Cell Adhesion molecules and Neurogenesis
2	Mechanisms of neuronal migration and differentiation, neuritogenesis
2	Neural stem cells and their use in neurodegenerative diseases
4	Cytoskeleton & molecular motors (axonal transport);
4	Biology of ionic channels and receptors
6	Neuropeptides, neurotransmitters and their signalling
2	Novel mechanisms of intercellular communications in Nervous System: the extracellular vesicles
4	Technologies to create the Transgenic models for Neurosciences
4	Genetic and epigenetic bases of the main neurodegenerative diseases
Hrs	Workshops
4	Cell culture in vitro: substrate preparation and cells seeding; Topic on working in a sterile environment.
4	Microscopy techniques; cell counting.
4	Cells fixation and processing for morphological analysis; Histological processing of slices in preparation to microscopy sessions

MODULE HUMAN ANATOMY

Prof.ssa VALENTINA DI FELICE

SUGGESTED BIBLIOGRAPHY

Human Anatomy – 6 gen 2017

Ph. D. Martini, Frederic H. (Autore), Ph.D. Tallitsch, Robert B. (Autore), Ph.D. Nath, Judi L. (Autore), M.D. Ober, William C. (Illustratore)...

AMBIT	50505-Discipline del settore biomedico
INDIVIDUAL STUDY (Hrs)	98
COURSE ACTIVITY (Hrs)	52

EDUCATIONAL OBJECTIVES OF THE MODULE

To learn the basic knowledge of the human body in order to be able to recognize an organ and to identify the function and position. Learn the structure and function of each apparatus in order to understand Human Physiology. Learning the basic techniques of the study of Human Anatomy and modern applications in the biomedical field.

SYLLABUS

Hrs	Frontal teaching
4	Microscopic and macroscopic anatomy. Levels of organization. Basic functions of a living being. Organ systems of the human body. Position and movement terminology. Overview of all the apparatuses of the human body.
10	The Skeletal System
2	The muscular system
4	The Cardiovascular system
2	The lymphatic system
6	The digestive system
2	The respiratory system
4	The Urinary and endocrine systems
2	The integumentary systems
4	The reproductive system
Hrs	Workshops
6	Organ dissections, preparation of tissue samples for histology, immunofluorescence and confocal. Basics of bright field, fluorescence, straight, inverted microscopes.
6	Operation of the confocal microscope and its potential applications.