68409 - Morphology. Development. Biology

Información del Plan Docente

Academic Year	2018/19
Subject	68409 - Morphology. Development. Biology
Faculty / School	104 - Facultad de Medicina
Degree	530 - Master's in Introduction to Medical Research
ECTS	5.0
Year	1
Semester	Indeterminate
Subject Type	Optional
Module	---

1.General information

1.1.Aims of the course

The subject and its expected results respond to the following approaches and objectives:

1.-To Learn about in-vitro technologies that allow to better understand the progression of brain tumors.

To analyse the processes of neurogenesis and neurodegeneration in central and enteric nervous system (CNS and ENS, respectively) models.

To know cellular mechanisms of regeneration and neuronal degeneration.

2.-To Understand some of the general processes that operate in the development, construction and maintenance of organisms.

To know some of the methodologies, tools and instrumental procedures used in the study and analysis of the development processes.

3.-To Know the basic phenomena that lead to model the external appearance of the embryo and the fetus.

To know scientifically the failures of development mechanisms and to interpret their consequences.

To understand the successive states of prenatal development of the human being.

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1.2.Context and importance of this course in the degree

1.-Relevance of the microenvironment for tumor progression and its ability to respond to different treatments.

Short introduction about the concept of Regenerative Medicine: assessment of stem cells and the relevance of neurogenesis.

Studies about cellular interaction (neuron-neuroglia) in neurodegeneration.

Introduction to lab techniques for identification of cellular components of nervous system.

2.-Integrate biological and structural knowledge of living beings, from the molecular and cellular level, in the dynamic time frame imposed by the life cycle, from fertilization to death.

3.- With the previous training favor the creation of attitudes in the application of the different approaches that provides structure and development.

1.3.Recommendations to take this course

This is an optional subject of the second semester of the Master, which aims to introduce the student in the critical analysis of the basic principles and fundamentals of science Compulsory attendance

2.Learning goals

2.1.Competences

By passing the subject, the student will be more competent to ...

1.- Understand the relevance of the tissue microenvironment in tumorogenicos of the central nervous system processes

Understand the process of neurogeneis and neuodegeneration through the knowledge of regenerative Medicine and neurodegenerative pathologies.

2.- Understand some of the general processes that operate in the development, construction and maintenance of the organisms and to know some of the methodologies, tools and instrumental procedures used in the study and analysis of the development processes.

3.- Select, order and hierarchize the embryological and anatomical knowledge to obtain a scientific, complete and integrated vision of the healthy man.

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2.2.Learning goals

1.- Be able to:

Identify relevant characteristics of the microenvironment consideration in diseases of the nervous tissue

Analyse the processes of neurogenesis and neurodegeneration

Describe the process of tisular regeneration

Assess the relevance of stem cells in neurogenenesis.

Know the neurodegenerative process at cellular level.

Identify different structures of nervous system using morphological techniques.

2.-The student should be able to prepare at least one subject from the broad field of developmental biology to present it in writing or orally in a seminar. The subject will be selected by the student of the syllabus that will be provided by the teacher.

3.- To Know the embryonic development. Organogenesis, growth, maturation and aging of the craniofacial and nervous system.

2.3.Importance of learning goals

The student, to overcome this subject, must demonstrate the following results ...

1.- Learning will allow you to learn new techniques of great utility in current biomedical research and give you tools to analyze, with critical spirit, micro-environmental aspects in the development and progression of the disease in which investigate.

They should know to critically understand breaking news with scientific and diffusion source about regenerative Medicine and neurodegenerative pathologies.

2.- The work done during the course of this subject is very useful for the student in the face of his training as doctors, researchers and even teachers, as they must exercise in the tasks that are inherent to these professions. In addition, the student will learn some useful new data to face his later professional training.

3.- Know how to properly use the sources of knowledge (natural, bibliographical, documentary) necessary in Embryology and in Human Anatomy for its application.

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3.Assessment (1st and 2nd call)

3.1.Assessment tasks (description of tasks, marking system and assessment criteria)

The student must demonstrate that he has achieved learning outcomes in the following assessment activities

Participation: It will be related to the degree of attendance and attitude during the development of the sessions

Guided work: Critical analysis of a topic in relation to one of the blocks selected from all offered, which are indicated at the beginning of the course development.

Assessment: attendance, participation, work and discussion will be evaluated.

Grading System

The qualification will be made in numerical scale of 0 to 10, with expression of a decimal, to which the corresponding qualitative qualification can be added: 0 - 4,9 Suspended (SS). 5.9-6.9 Approved (AP) -7.0-8.9 Noteworthy. 9.0-10 Outstanding (SB).

The qualification is obtained from the result of combining the most recent: Active presence (45%). Presentation Work (45%). Content and exposure (10%).

4.Methodology, learning tasks, syllabus and resources

4.1.Methodological overview

The methodology followed in this course is oriented towards achievement of the learning objectives. The course has a fundamentally theoretical / practical orientation. A wide range of teaching and learning tasks are implemented, such as lectures, practice sessions, and discussions.

4.2.Learning tasks

The course includes the following learning tasks:

- Lectures. Each topic included in the course syllabus will be presented, analyzed and discussed.
- Practice sessions. Practical application of the theoretical contents.
- Guided assignments on proposed topics. They should include the following points: objectives, general methodology, analysis of results and personal assessment.
- Bibliography and ADD (virtual platform). A wide range of sources available under student request, guidance during the preparation of the assignment.
- Tutorials for students whenever they needed in the agreed times.

4.3.Syllabus

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The course will address the following topics:

Topic 1. Neurogenesis and neurodegeneration

- Engineering fabrics and microtecnologicas applications for the study of brain tumors
- Tissue repair: stem cells, dedifferentiation / transdifferentiation
- Introduction to the techniques applied for research
- Neuro-glial interaction in neurodegenerative processes
- Application of morphological techniques in the laboratory

Topic 2. Applications of basic research in embryology

- An example of translational research: How basic research in embryology can lead to the development of new therapies
- Neurogenic cells inhibit differentiation of cardiogenic cells
- Studies to prevent Alzheimer's disease

Topic 3. Morphogenesis, Teratogenesis in Human Development

- Cranio-facial development

4.4.Course planning and calendar

Timetable

TUESDAY: 8, 15, and 22 January. 5, 12, 19, 26 and 27 (Wednesday) February.

Location: Room nº 4. Building B of the Faculty of Medicine. From 16 to 20 hours

Provisional course planning

1.- Neurogenesis and neurodegeneration 2,5 ects			
Engineering fabrics and microtecnologicas applications for the study of brain tumors	08-01-19	16-20h	I. Ochoa
Tissue repair; Desdiferenciación/transdifferentiation	15-01-19	16-20h	M.J.Luesma
Techniques for the SNE-muscle study.	22-01-19	16-18,30h	M.J.Luesma
Neurodegenerative diseases: interaction	22-01-19	18,30-20h	M. Monzón

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glia-neurona			
Microscopic techniques for research in neurobiology	05-02-19	16-20h	M. Monzón/ E. Monleón

2.- Applications of basic research in embryology 1,9 ects			
An example of translational research: How basic research in embryology can lead to the development of new therapies	12-02-19	16-20h	M. Sarasa
Neurogenic cells inhibit differentiation of cardiogenic cells	19-02-19	16-20h	M. Sarasa
Studies to prevent Alzheimer's disease	26-02-19	16-20h	M. Sarasa

3.- Morphogenesis, Teratogenesis in Human Development 0,6 ects			
Cranio-facial development	27-02-19	16-20h	M. Lahoz

4.5.Bibliography and recommended resources