

68409 - Morphology. Development. Biology

Información del Plan Docente

Academic Year	2017/18
Faculty / School	104 - Facultad de Medicina
Degree	353 - Master's in Introduction to Medical Research 530 - Master's in Introduction to Medical Research
ECTS	5.0
Year	---
Semester	Indeterminate
Subject Type	Optional
Module	---

1.General information

1.1.Introduction

1.- Morphogenesis, Teratogenesis in Human Development

.- It deals with the formation, growth, maturation and aging of the craniofacial and central nervous system, emphasizing the early development of the embryo

2.- Neurogenesis and neurodegeneration

.- It deals with different processes of nervous system genesis as well as degeneration at cellular level.

3.- Applications of basic research in embryology

.- The student will learn to prepare, organize and present one or more research topics within the attractive field of developmental biology, that is, in the dynamic temporal framework imposed by the life cycle, from fertilization to death.

1.2.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

1.3.Context and importance of this course in the degree

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

2.- 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.

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

3.- 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.

1.4.Activities and key dates

Course 2017 - 18 will be taught

In the Aula nº 12. Building "B" of the Faculty of Medicine: on Tuesdays 9, 16, 23 and 30 of January. February 6, 13, 20 and 27

2.Learning goals

2.1.Learning goals

1.- Know the embryonic development. Organogenesis, growth, maturation and aging of the craniofacial and nervous system. 2.- To analyse the processes of neurogenesis and neurodegeneration. To describe the process of tislular regeneration. To assess the relevance of stem cells in neurogenesis. To know the neurodegenerative process at cellular level. To identify different structures of nervous system using morphological techniques. 3.- 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.

2.2.Importance of learning goals

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

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

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

3.- 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.Aims of the course and competences

3.1.Aims of the course

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

Understand the successive states of prenatal development of the human being.

1.- 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.

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2.- 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.

3.- 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.

3.2.Competences

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

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

2.- To understand the process of neurogenesis and neurodegeneration through the knowledge of regenerative Medicine and neurodegenerative pathologies.

3.- To 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.

4.Assessment (1st and 2nd call)

4.1.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, dissection 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 (30%). Presentation Work

(30%). Dissection (30%). Content and exposure (10%).

5.Methodology, learning tasks, syllabus and resources

5.1.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.

5.2.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.

5.3.Syllabus

The course will address the following topics:

Topic 1. Morphogenesis, Teratogenesis in Human Development

- SN Development
- Cranio-facial development

Topic 2. Neurogenesis and neurodegeneration

- 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 3. 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

5.4.Course planning and calendar

Timetable

- TUESDAY: 9, 16, 23 and 30 January. 6, 13, 20 and 27 February.
- Location: Room nº 12. Building B of the Faculty of Medicine. From 16 to 20 hours

Provisional course planning

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1- Morphogenesis, Teratogenesis in Human Development 1.2 ECTS			
SN development	09-01-18	16-20h	Mª A. Escolar
Cranio-facial development	16-01-18	16-20h	M. Lahoz

2- Neurogenesis and neurodegeneration 1.9 ECTS			
Tisular regeneration: stem cells, dedifferentiation / trans differentiation	23-01-18	16-20h	M.J. Luesma
Introduction to techniques applied for their research	30-01-18	16-18,30h	M.J. Luesma
Neuron - glial interaction in degenerative processes	30-01-18	18,30-20h	M. Monzón
Application of morphological techniques in lab	06-02-18	16-20h	E. Monleón / M. Monzón

3- 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	13-02-18	16-20h	M. Sarasa

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Neurogenic cells inhibit differentiation of cardiogenic cells	20-02-18	16-20h	M. Sarasa
Studies to prevent Alzheimer's disease	27-02-18	16-20h	M. Sarasa

5.5.Bibliography and recommended resources