

68409 - Morphology. Development. Biology

Syllabus Information

Academic year: 2023/24

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: Second semester

Subject type: Optional

Module:

1. General information

Objectives:

- 1- To know the mechanisms of cellular/tissue regeneration.
- 2- To analyse the processes of neurogenesis through central nervous system and enteric models.
- 3- To know regenerative medicine strategies as possible therapeutic tools in genetic pathologies.
- 4- To know the basic phenomena that lead to model the external aspect of the embryo and foetus.

These goals are aligned with the Sustainable Development Goals (SDGs) of the United Nations Agenda 2030 (<https://www.un.org/sustainabledevelopment/es/>), so that the acquisition of the learning results of the subject provides training and competence to contribute to some extent to their achievement:

- Goal 5: Gender equality.
- Goal 11: Sustainable cities and communities.
- Goal 13: Climate action.
- Goal 17: Partnerships to achieve the objectives

2. Learning results

The student should be able to:

- Describe the processes of tissue repair/regeneration.
- Analyse the processes of neurogenesis.
- Identify the different structures of the nervous system using morphological techniques.
- Describe diagnostic techniques for genetic and metabolic diseases.
- Know the aetiology and consequences of certain genetic pathologies and their therapeutic possibilities with a focus on regenerative medicine.
- Know the craniofacial embryonic development.
- Produce a work within the contents related to the subject.

3. Syllabus

1. Neurogenesis

- Tissue repair: stem cells, mitosis, dedifferentiation/ transdifferentiation.
- Introduction to applied research techniques
- Application of morphological techniques in the laboratory

2. Diagnostic techniques for genetic and metabolic diseases:

- PCR, Sanger sequencing, Taqman probes, mass genotyping, ELISA and Luminex.

- Gene therapy, genomic editing and personalized genomic medicine
3. Genetic pathologies and regenerative medicine
 - Introduction to mitochondrial pathology
 - Laboratory techniques for your research
 - Therapeutic possibilities through regenerative medicine
 4. Morphogenesis in human development
 - Craniofacial development

4. Academic activities

The program offered to the student to help them achieve the expected results includes the following activities....

Face-to-face classes, guided assignments, ADD (Anillo Digital Docente), bibliography, tutorials.

- Theoretical classes: each chapter of the contents of the syllabus will be presented, analysed and discussed.
- Directed works on proposed topics should include the following items: objectives, general methodology, analysis of results and personal evaluation.
- Tutoring is provided to the student upon request to help with the preparation of the specific work.

5. Assessment system

The student must demonstrate that they has achieved the expected learning results by means of the following assessment activities:

Participation: collaborative and cooperative attitude during the development of the sessions. Attendance to at least 50% of the expository sessions is mandatory.

Directed work: critical analysis of a topic in relation to one of the blocks selected among all those offered, to be indicated by the teacher involved in their supervision.

The final written report of the work done and delivered in pdf format on the last day of class of the subject will be assessed.

Final objective test: cooperative defence of the work presented and subsequent discussion.

The grade will be obtained by combining the following parameters: Active participation (30%);

Directed Work (30%); Final objective test (40%).

Grading system:

Numerical scale from 0 to 10, with one decimal: 0- 4.9 Fail. 5.9- 6.9 Passed. 7.0- 8.9 Outstanding. 9.0-10 Excellent.