

66157 - New methods for research in Oncolmmunology

Teaching Plan Information

Academic year: 2024/25

Subject: 66157 - New methods for research in Oncolmmunology

Faculty / School: 104 - Facultad de Medicina

Degree: 637 - Masters degree in Tumor Immunology and Cancer Immunotherapy

ECTS: 3.0

Year: 1

Semester: Second semester

Subject type: Optional

Module:

1. General information

This subject provides students with the tools to deepen their preclinical research in oncoimmunology.

The need to study the interaction of tumour cells with those of the immune system has required a constant progress in the development of preclinical models that are capable of simulating the behaviour of the cells in vivo.

The use of animal models is complex and expensive because of the need to simulate the human immune response in them.

Therefore, the emergence of advanced biomimetic in vitro preclinical models represents a new and highly valuable tool for research in this area of knowledge.

2. Learning results

- General knowledge of different alternative methods to animal experimentation.
- Basic knowledge of microfluidics
- Basic microfluidic manufacturing skills
- Advanced knowledge of biomimetic cell culture (3D, Organoids, Organ on chip)
- Advanced knowledge of organ on chip models

3. Syllabus

THEORETICAL SESSIONS

Subject rules and objectives / introduction

Spheroids

Organoids

Introduction to tissue engineering + biomaterials

Bioreactors

In silico models - Digital Twins

Organ on Chip - Introduction/materials/manufacturing

Tissue on chip - Body on Chip

Extracorporeal organ preservation

Hypoxia / ischemia

Microbiota

Applications in immunology

PRACTICAL SESSIONS

Three-dimensional cultures

Microfluidic chip cultures

4. Academic activities

The subject consists of lectures that provide the theoretical foundation, seminars that provide a theoretical-practical explanation of how alternative methods would be applied to practical investigation cases and the requirements/characteristics of the different methods, as well as of practical sessions that include examples of the use of the technologies in a real-world environment.

Hours are distributed as follows:

Participative master class: 12 hours

Seminars: 6 hours

Presentation and explanation of a work: 4 hours.

Experimentation in the laboratory or in clinical practice: 8 hours

Student work: 45 hours

5. Assessment system

Assessment criteria are as follows:

Active participation in the lectures and seminars: 10% of the final grade

Written work done by the students 45%.

Explanation of their work in oral presentation: 45 %.

6. Sustainable Development Goals

3 - Good Health & Well-Being

4 - Quality Education