

STEM CELL RESEARCH

STUDY PLAN 2022-2023

Coordinated by **Dr Roger Gomis**, ICREA Professor and Researcher at the IRB Barcelona

GENERAL INFORMATION

Subject Name	Regenerative medicine and stem cells
Code	566661
Type	Optional
Teaching	Second semester
Coordinator	Dr. Roger Gomis
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ECTS credits	3

OBJECTIVES

The overall objective of this module is to offer next generation scientists a meticulous training in regenerative medicine and stem cell so they can contribute to the stem cells biology knowledge with its clinical and therapeutic applications.

PRE-SKILLS AND REQUIREMENTS

General

The program proposes basic training in cancer biology and its development. The offered methodology intends to provide the necessary knowledge to create study and apply stem cells and its surroundings to experimental treatments in human beings.

Specific

Stem cell biology and methods used for identification. Types of stem cells: adult; hemopoietic: mesenchymal somatic and iPS. Regeneration and homeostasis: cellular therapies expectations. Development of advanced therapies, from the hypothesis to the patient.

THEMATIC BLOCKS

1. Introduction
2. Stem cell Biology
3. Methods for stem cells identification
4. Generating iPS cells
5. Adult stem cell
6. Progenitors and endothelial cells: angiogenesis

7. Production techniques: apheresis
8. Production factory in cell therapy
9. Regulation of the procurement, processing and administration of advanced therapies
10. Stem cell, cancer and development
11. Senescence, aging and reprogramming
12. Intestinal epithelium and Colorectal Cancer Stem Cells
13. Regeneration of hematopoiesis by progenitors transplantation
14. Platelet lysate as a source of cell growth factors
15. Lung Regeneration: pneumocytes transplant
16. Therapeutic vaccines generation: dendritic cell and infectious diseases
17. Mesenchymal cell: regeneration, immunosuppression and tumors
18. Gene Therapy
19. Chimeric antigen receptors generation
20. Future applications in cell therapy

METHODOLOGY

Total training hours: 3 credits ECTS x 25h/credit = 75h

- a) Face-to-face (32h)
 - Lectures
 - Computer sessions
 - Seminars
 - Laboratory Practices (subject to individual's availability)
 - Presentation of research projects (subject to individual's availability)

- b) Home training (43h)
 - Individual and group work

EVALUATION

Evaluation criteria:

To pass the module, students must obtain a minimum of 50 points. The score will be established as follows:

Attendance: 50% of the overall grade.

Attendance will be evaluated as: 95%-100% → 50 points / 80% - 95% → 40 points / 30-80% → 20 points / <30% → Subject Failure

Oral presentations: 50% of the overall score. (*Based on continuous evaluation during Journal Clubs*)

To pass the subject, students will have to fulfill three requisites: Attendance-score $\geq 20/50$, research project-score $\geq 20/50$, and overall score (attendance + research project) $\geq 50/100$.

Reevaluation: In case of failing the ordinary evaluation students will have to submit 2 critical appraisals. The re-evaluation final score will never get over 50 points.

REFERENCES

References will be recommended by each of the lecturers.