

Cell and Tissue Therapy. Tissue Bank

Code: 43319
ECTS Credits: 15

Degree	Type	Year	Semester
4314643 Transfusion Medicine and Advanced Cell Therapies	OB	0	2

Contact

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Other comments on languages

The working language is English but the use of Spanish is also allowed. The course material will also be in English.

Use of Languages

Principal working language: english (eng)

Teachers

Joaquim Vives Armengol

Prerequisites

Level B2 or equivalent in English.

Objectives and Contextualisation

We will begin by introducing cell therapy and basic concepts to continue with a more profound study of haematopoietic cell therapy, immunotherapy and regenerative medicine.

The module will take a close look at cell banks, umbilical cord blood, safety rules and quality control of biobanks, as well as the regulatory and ethical aspects.

Competences

- Apply the biological principles of cell therapies to the treatment of local and systemic pathological processes.
- Communicate and justify conclusions clearly and unambiguously to both specialist and non-specialist audiences.
- Continue the learning process, to a large extent autonomously.
- Design and develop research using appropriate methodologies.
- Integrate knowledge and use it to make judgements in complex situations, with incomplete information, while keeping in mind social and ethical responsibilities.
- Solve problems in new or little-known situations within broader (or multidisciplinary) contexts related to the field of study.
- Use acquired knowledge as a basis for originality in the application of ideas, often in a research context.

Learning Outcomes

1. Communicate and justify conclusions clearly and unambiguously to both specialist and non-specialist audiences.
2. Continue the learning process, to a large extent autonomously.
3. Describe the distinct concepts and processes of a tissue bank.
4. Design and develop research using appropriate methodologies.
5. Develop attitudes consistent with the medical deontological code.
6. Integrate knowledge and use it to make judgements in complex situations, with incomplete information, while keeping in mind social and ethical responsibilities.
7. Solve problems in new or little-known situations within broader (or multidisciplinary) contexts related to the field of study.
8. Understand current developments in the distinct concepts of regenerative medicine.
9. Understand the biological and technological bases of cellular immunotherapy.
10. Understand the distinct concepts and levels of ex-vivo cellular manipulation.
11. Use acquired knowledge as a basis for originality in the application of ideas, often in a research context.

Content

1. Introduction to stem cell therapies.
2. General concepts about stem cells.
3. Haematopoietic stem cells (HSC).
4. Immunotherapy.
 - 4.1. General concepts.
 - 4.2. Immunotherapy with T lymphocytes.
 - 4.2.1. Donor lymphocyte infusions (DLI).
 - 4.2.2. Cytotoxic T lymphocytes (CTL).
 - 4.2.3. T-regulating cells (Tregs).
 - 4.3 Natural killer cells (NK).
 - 4.4 Dendritic cells (DC).
 - 4.4.1. Paraimmunotherapy with T cells.
 - 4.4.2 Tolerogenics.
 - 4.5 T cells with Chimeric antigen receptor (CAR-T).
 - 4.6 Mesenchymal stromal cells (MSC).
5. Cell therapy for tissue and organ repair, regenerative medicine and advanced therapies.
6. Cell banks: umbilical cord blood.
7. Tissue banks.
8. Biobanks.
9. Ethical problems with cell and tissue therapy and biobanks: Why does cell and tissue therapy need to be have bioethics?

Methodology

The methodology for this course is active and constructive. It does not only contemplate the content but also reading, reflecting and applying knowledge to reasonably close situation to create meaningful learning.

Students will work on real life examples and case studies, reflecting on complex and relatively unstructured situations to find adequate solutions.

Faithful to the proposed methodology, students form the centre of the learning process and generate knowledge by interacting significantly with their peers, with the teaching materials and with the environment. This programme not only teaches training in a virtual environment but also allows them to experience their learning every day.

At the beginning of the unit, the teacher will present a learning plan to the group with specific objectives, learning activities, the necessary resources and recommended deadlines for each activity.

The dates for carrying out the activities are recommended in order to be able to follow the course. The only fixed dates are the beginning and end of each teaching unit. This means that students can do their own planning but they must respect the dates for the beginning and the end of each unit.

Students are recommended to work in a continuous and consistent manner and not allow tasks to accumulate around the deadlines, which may lead to haste, undue time pressure and not allow the students to enjoy their learning or carry out additional reflections. Also the course offers group activities which require synchronisation among the group.

Some of the activities must be send online to the teacher for assessment and receive feedback of progress. Teachers will return the work with comments and together the students can continue to think and learn. The deadline for each of these activities is the end of the teaching unit. Other activities will consist in discussion and working together in shared spaces.

Activities

Title	Hours	ECTS	Learning Outcomes
Type: Directed			
Discussions in the Virtual Campus	40	1.6	10, 8, 9, 3, 5, 4, 6, 7, 1, 2, 11
Type: Supervised			
Elaborations of projects	35	1.4	8, 3, 5, 4, 6, 7, 1, 2, 11
Virtual cases/Problem solving	35	1.4	8, 3, 5, 4, 6, 7, 1, 2, 11
Type: Autonomous			
Personal study	30	1.2	10, 8, 9, 3, 5, 4, 6, 7, 1, 2, 11
Reading articles/Reports of interest/Videos	30	1.2	10, 8, 9, 3, 5, 4, 6, 7, 1, 2, 11
Test/Scheme	30	1.2	10, 8, 9, 3, 5, 4, 6, 7, 1, 2, 11

Assessment

This module will be assessed as follows:

1. Moderated discussions on the online campus (Campus Virtual). These discussion account for 20% of the grade.
2. Work, tests, online cases and problem solving. These activities count for 60% of the grade.
3. Personal study, reading articles and reports of interest and/or videos. This individual work counts for 20% of the grade.

Assessment Activities

Title	Weighting	Hours	ECTS	Learning Outcomes
Exercise 1	7%	22	0.88	9, 4, 6, 7, 1, 2, 11
Exercise 10	7%	22	0.88	10, 5, 4, 6, 7, 1, 2, 11
Exercise 11	3%	10	0.4	5, 4, 6, 7, 1, 2, 11
Exercise 2	13%	20	0.8	8, 4, 6, 7, 1, 2, 11
Exercise 3 and 4	28%	45	1.8	3, 4, 6, 7, 1, 2, 11
Exercise 5 and 6	10%	12	0.48	5, 4, 6, 7, 1, 2, 11
Exercise 7 and 8	7%	22	0.88	10, 5, 4, 6, 7, 1, 2, 11
Exercise 9	7%	22	0.88	10, 5, 4, 6, 7, 1, 2, 11

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