Universidad Zaragoza

Academic Year: 2024/25

66159 - Adoptive cell therapy

Teaching Plan Information

Academic year: 2024/25
Subject: 66159 - Adoptive cell therapy
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

The general objective of the subject is to provide the student with the fundamental knowledge about the different types of cellular immunotherapy for the treatment of cancer. The main sources and methods to isolate/produce cells and the different methods to expand, activate and/or modify them will be described.

In order to take this subject, it is advisable that students have taken the required subjects of the first four month term.

2. Learning results

The student, in order to pass this subject, must demonstrate the following results:

-Knowledge of the main milestones in the history of cellular immunotherapy in cancer.

-Knowledge of the main types of cellular immunotherapy in cancer.

-Differentiation between the types of cellular immunotherapy and their possible application according to tumour antigenicity.

-Understanding how different types of cellular immunotherapy can be combined to eliminate tumours with high immunological heterogeneity.

-Understanding the difference between autologous and allogeneic cell therapy and the risks and benefits associated to each of them.

-Knowledge of the different methods to expand and activate macrophages, CD8, NK and NKT T cells.

-Knowledge of the composition and function of a chimeric antigen receptor (CAR).

-Knowledge of the evolution of CAR cell design and the different types of CAR cells.

-Knowledge of the databases required to design a CAR

-Knowledge of the different methods to generate T cells with transgenic receptors and CAR cells.

-Knowledge of the limitations of cellular immunotherapy and its possible side effects in both haematological and solid tumours.

-Knowledge of current legislation and the necessary procedures to carry out a clinical trial with cellular immunotherapy.

3. Syllabus

1. History of cancer cellular immunotherapy.
2. Therapy with autologous and allogeneic NK cells.
3. Therapy with unmodified T cells.
4. Therapy with other types of T cells.
5. Techniques for the genetic modification of immune cells.
6. Therapy with modified T cells.
7. Chimeric Antigen Receptors (CARs)
8. CART cell therapy.
9. Other types of CAR cells.
10. Clinical management of the patient treated with CAR cells.
11. Technical and legal aspects of CAR cell therapies.
12 - Future perspectives in cellular immunotherapy.

4. Academic activities

-Participative master classes. Acquisition of basic knowledge through participative lectures. 1.5 ECTS.
-Preparation of problems and exercises by students to be solved in the classroom. 0.5 ECTS.
-Presentation and exposition of a work by the students in a seminar. 1 ECTS

5. Assessment system

The student must demonstrate achievement of the intended learning results through the following assessment activities:
-Practical problem solving: 25% of the grade
-Seminars to be presented by the students: 50% of the grade
-Active participation in master classes: 25% of the grade.

6. Sustainable Development Goals

3 - Good Health & Well-Being
4 - Quality Education
8 - Decent Work and Economic Growth