Universidad Zaragoza

Academic Year: 2024/25

66153 - Distinct approaches to cancer immunotherapy

Teaching Plan Information

Academic year: 2024/25
Subject: 66153 - Distinct approaches to cancer immunotherapy
Faculty / School: 104 - Facultad de Medicina
Degree: 637 - Masters degree in Tumor Immunology and Cancer Immunotherapy
ECTS: 6.0
Year: 1
Semester: First semester
Subject type: Compulsory
Module:

1. General information

The objectives of this subject include:

-To know the main types of immunotherapy in cancer and how to differentiate between active and passive immunotherapy as well as its implication for the treatment of patients according to their immunological status.

-To know the mechanism that regulates the activity of the different types of immunotherapy, the role that tumour antigens play in them and their relationship with the efficacy and toxicity of the treatments.

-To know how to differentiate the different types of immunotherapy based on the use of antibodies or based on cell therapy and their possible application according to tumour antigenicity.

-To be able to design an immunotherapy treatment against a tumour with defined immunological characteristics and to combine different types of immunotherapy to eliminate tumours with high immunological heterogeneity.

Sufficient computer resources with Internet access are required to access the online content.

2. Learning results

Upon completion of this subject, the student will be able to:

1. Know the main milestones in the history of cancer immunotherapy.
2. Know the main types of immunotherapy in cancer.
3. Differentiate between active and passive immunotherapy and the role they play in the treatment of patients according to their immune status.
4. Know the mechanism that regulates the activity of the different types of immunotherapy.
5. Understand the different types of tumour antigens and their relationship to treatment efficacy and toxicity.
6. Know how to differentiate between antibodies with their own anti-tumour activity and those that regulate the anti-tumour activity of the patient's immune system.
7. Know how to differentiate between the different types of cell therapy and their possible application according to tumour antigenicity.
8. Understand how different types of immunotherapy can be combined to eliminate tumours with high immunological heterogeneity.
9. Be able to design an immunotherapy treatment against a tumour with defined immunological characteristics.

3. Syllabus

1. History of cancer immunotherapy.
2. Adjuvants. Types and mechanisms of action
3. Cytokines.
4. Tumour antigens. Identification and validation of tumour antigens. Bioinformatics tools.
5. Cancer vaccines.
6. Dendritic cell therapy.
7. Antibodies against tumour antigens.
8. Antibodies against immune checkpoints.
9. Adoptive cell therapy (ACT).
10. Combinations of different immunotherapies and with other treatments.
11. New immunotherapy treatments based on modulation of the inflammatory response.
12. Microorganisms as modulators of the anti-tumour immune response.

4. Academic activities

- **Theoretical classes:** one-hour lectures in which the necessary and general theoretical contents of the subject are presented in order to develop the competencies. It is in the general interest of the faculty to encourage participation.
- **Problem solving and case studies:** problem solving or discussion of practical cases related to the different approaches of immunotherapy in cancer with permanent attendance and supervision by teachers.
- **Seminars:** application of the competencies acquired by the student, which will be reflected in the presentation in class.
- **Incorporation of materials to the ADD (Anillo Digital Docente)** that are considered elements of consultation for all those involved in the subject.

Tutorials: Students may request personal tutorials through the subject´s internal email. For this purpose, a convenient time slot will be agreed upon at the beginning of the term

5. Assessment system

A. Attendance and participation in the lectures:

Attendance to the master classes is MANDATORY. Minimum attendance shall be 80%.

It will have a weighting of 30% of the total final grade.

B. Problem solving and case studies:

The student will prepare a structured REPORT on the problems and cases developed during the problem and case sessions, which will include the answers to a questionnaire related to the activities conducted in those sessions. The reasoning capacity used to answer the different problems and cases will be assessed. It will have a weighting of 30% of the total final grade.

C. Seminars: Students will present in class the design of an immunotherapy treatment against a tumour with defined immunological characteristics, explaining the most relevant aspects from the cancer immunotherapy point of view. It will have a weighting of 40% of the total of the final grade.

6. Sustainable Development Goals

3 - Good Health & Well-Being
4 - Quality Education
9 - Industry, Innovation and Infrastructure