



Universidad  
de Navarra

### *Clinical Challenges in Medical Oncology (MInvB)*

*Guía docente 2025-26*

#### INTRODUCTION

#### Clinical challenges in medical oncology

Clinical Challenges in Medical Oncology aims to provide the biomedical researcher with the basic clinical knowledge needed to understand the main medical syndromes presented by cancer patients. In addition, how the neoplastic disease evolves overtime from the time of diagnosis will be addressed focusing on the clinical relevance of the metastatic processes, the main diagnostic techniques used in the clinic and the principal treatment modalities (including targeted therapies and immunotherapy) regularly employed against cancer. Therefore, the unmet clinical needs presented by cancer patients in real medical practice will be exposed to foster clinically-relevant research hypothesis aimed to answer in the laboratory, those unsolved questions. Moreover, human cell lines, mouse models and research techniques more frequently used for translational research in oncology will be presented and discussed. All these contents and knowledge result critical to develop a clinically-relevant cancer translational research project.

Professor:

**Dra. Marta Santisteban, Department of Oncology, Clínica Universidad de Navarra (**  
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Credits: 2 ECTS

Degree: Master in Biomedical Research

Module: II

Area: Specialty in Cancer

Department and School: Oncology, School of Medicine

Calendar description: second semester

Classroom and schedule: Specified in the [Master calendar](#)

**Type of subject:** Required in the specialty of Cancer and elective for the other specialties

- Language: English

#### LEARNING OUTCOMES (Competencies)

Basic competences

- BC6: Possess and understand knowledgeable facts that serve as a basis or opportunity for being original in the development and/or application of ideas, frequently within the context of research.
- BC7: The students will be able to apply acquired knowledge and problem solving abilities to fields outside this program, including that which is new and scarcely known, within a more



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ample or multidisciplinary context related to the research, development and innovation of drugs.

- BC8: The students will be able to integrate concepts and manage the complex task of drawing valid conclusions from information which, in spite of being incomplete or limited, includes reflections regarding social and ethical responsibilities linked to the application of general knowledge, specific concepts and common sense to the research, development and innovation of drugs.

- BC9: The students will learn to relay their conclusions -and the most recent facts and reasoning supporting said conclusions- to specialized personnel and to the general public in a clear and precise manner.

- BC10: The students will have acquired learning abilities that will permit them to continue studying in a self-directed and autonomous manner.

## General competences

- CG1: Ability to deal with biomedical challenges in depth, from different viewpoints, identifying the state of present-day science.

- CG2: Identification of significant questions or hypotheses regarding biomedical issues or problems and definition of the steps necessary to resolve such questions.

- CG3: Possession of creative ability and originality in order to be able to respond to the questions raised in biomedical research.

- CG4: Ability to select and use appropriate techniques in order to efficiently and accurately carry out biomedical research work.

- CG6: Possession of critical ability, both when reading scientific biomedical literature and when interpreting the results of experiments.

- CG7: Ability to orally communicate biomedical research matters or data in a fluent way, in both Spanish and English, taking into account the audience for which the presentation is intended.

- CG8: Ability to write correct, precise and well-structured texts about different types of biomedical research work.

## Cancer specialty competences

- CEE3: Identification of possible targets for therapeutic intervention, as well as the main resistance mechanisms of cancer cells against antitumor therapies.

- CEE4: Advanced knowledge of immune defense mechanisms against viral and bacterial infections and the development of tumors. Knowledge of immunotherapy principles and strategies.

- CEE6: Knowledge and understanding of the strategies followed when facing research and /or diagnosis problems related to cancer biology.

- CEE7: Ability to select appropriate techniques in order to respond to questions posed within the field of cancer research and to use said techniques to obtain precise and reproducible results which allow valid and objective conclusions to be drawn.



## PROGRAM

The subject is organized in 2-hour sessions:

### **Lecture 1: Basic introduction to Oncology applied to translational research.**

- 1.1: Etiology and cancer statistics.
- 1.2: Principal diagnostic techniques (CT scan, PET scan, MRI).

### **Lecture 2: Basic concepts in cancer treatment.**

- 2.1: Local therapies: Surgery and radiation therapy.
- 2.2: Systemic classic therapies: chemotherapy.

### **Lecture 3: Targeted therapies: the endocrine approach.**

- 3.1: Hormonal therapies
- 3.2: Strategies to reverse hormonal resistance

### **Lecture 4: The immune system.**

- 4.1: Role and mechanism of action of the immune system on carcinogenesis.
- 4.2: Cell therapy against cancer

### **Lecture 5: New treatments against cancer.**

- 5.1: Targeted therapies for personalized treatment.
- 5.2: Pharmacologic immunotherapy (mAbs) as a revolution in cancer therapy.

### **Lecture 6: Cancer resistance to therapy.**

- 6.1: Mechanisms of resistance and selection of predictive biomarkers.
- 6.2: Human samples for translational research. Liquid biopsies in cancer diagnosis and treatment monitoring.

### **Lecture 7: From bench to bed.**

- 7.1: Identification of the clinical problem, writing the project and looking for funding
- 7.2: From preclinical models to clinical trials

## EDUCATIONAL ACTIVITIES

This is a subject of 2 ECTS (50 h). The work is distributed as follows:

### 1. Class activities: (0.66 ECTS, 16.5 h)

- Lecture format (0.56 ECTS, 14 h)



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The lectures are based on the presentation of a topic by the professor. The content of the classes is based on this theory program. Power point slides will be made available to students in advance through ADI.

– 7 sessions, 2-hours each.

- Final exam (0.1 ECTS, 2.5 h)

Every student will have to explain in short oral presentations (10 minutes) in front of the whole class, the scientific rationale, hypothesis and objectives of the translational project (Introduction), the methodology proposed and timeline for the experiments and activities (Material and Methods), the expected results and potential limitations of the project (Results), the potential clinical application of the results obtained (Clinical Relevance) and the budget needed for the accomplishment of the experiments (Budget). Questions from the professor and other students will have to be addressed after the presentation. Scientific references are needed to support the relevance, interest and feasibility of the project.

– 1 session, 2.5-hours

## 2. Personal work: (1.34 ECTS, 33.5 h)

- Personal work (1.34 ECTS, 33.5 h)

Student's personal work is part of the learning process. It involves the use of scientific sources of information to go into detail about the contents explained in the lectures. Student's personal work is an opportunity to show how the knowledge gained can be combined with the scientific creativity to design and write a clinically-relevant feasible translational research project in oncology. A written project proposal will be evaluated and scored by the professors. Each student will prepare a short power point presentation summarizing the research proposal.

## EVALUATION

### •Assistance to 80% of the classes

•To obtain a pass in this subject it is necessary to obtain a **final grade of 5 (50%)** or above.

•Continuous assessment: 10%

•Written project abstract: 45%

•Oral presentation: 45%

•Re-sit examinations:The oral presentation offers students another opportunity to be assessed on their knowledge. The continuous assessment and the project proposal grades are retained despite failure in the oral part of the course.

•Grades: 10-9.0:A; 8.9-7.0:B; 5.0-6.9:C; 0-4.9:D



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•Those students with a final grade of 9 or above are eligible for Honors.

## OFFICE HOURS

To contact with the professors ask for an appointment by e-mail:

Marta Santisteban ([msantisteb@unav.es](mailto:msantisteb@unav.es))

## BIBLIOGRAPHY AND RESOURCES

- Vincent T. DeVita Jr, Theodore S. Lawrence, Steven A. Rosenberg, Ronald A. DePinho, Robert A. Weinberg. "DeVita, Hellman, and Rosenberg's Cancer: Principles and Practice of Oncology". 9th Edition. Lippincott Williams & Wilkins. [Find it in the Library](#) (e-book)