

Course unit name: MASTER' S THESIS

1.- General information

Code	303003	Plan		ECTS	12
Type	Mandatory	Course	2023/2024	Periodicity	2 nd Semester
Department	Cancer Research Center				
Virtual Platform	Platform:	CICLOUD			
	URL de Acces:	http://cicloud.dep.usal.es/index.php/s/Gp0vghR305Y6glo/authenticate			

Faculty

Professors	ALMEIDA PARRA, Julia (PDI, USAL)	MATEOS MANTECA, MARÍA VICTORIA, (USAL)
	BLANCO VENAVENTE, Sandra (Científico titular, CSIC)	MORENO PÉREZ, Sergio (Profesor investigación, CSIC)
	BUENO NÚÑEZ, Andrés Avelino (Catedrático USAL)	MUÑOZ FÉLIX, José Manuel (Profesor Ayudante Doctor)
	CASTELLANO SÁNCHEZ, Esther (Científico titular, CSIC)	ORFAO DE MATOS, Alberto (Catedrático, USAL)
	DOSIL CASTRO, Mercedes (PDI, USAL)	PANDIELLA ALONSO, Atanasio (Profesor Investigación, CSIC)
	DROSTEN, Matthias (Investigador, CSIC)	PEREDA VEGA, José María de (Científico Titular, CSIC)
	ÉSPARIS OGANDO, Azucena (Contratado doctor ISCIII)	PÉREZ BLANCO, JONÁS SAMUEL (Prof Contratado Doctor)
	FERNÁNDEZ MEDARDE Alberto (PDI, USAL)	PÉREZ LOSADA, Jesús (Científico Titular, CSIC)
	FUENTES GARCÍA, Manuel (PDI, USAL)	PERICACHO BURGOS, Miguel (Profesor Contratado Doctor)
	GARCÍA BUSTELO Xosé Ramón (Profesor Investigación, CSIC)	RIVAS SANZ, Javier de las (Investigador, CSIC)
	GARCÍA SÁNCHEZ, Mª José (Catedrática, USAL)	RODRÍGUEZ BARBERO Alicia (PDI, USAL)
	GONZÁLEZ DÍAZ, Marcos (Catedrático, USAL)	SACRISTÁN MARTÍN, María de la Paz (PDI, USAL)
	GONZÁLEZ SARMIENTO, Rogelio (Catedrático, USAL)	SÁNCHEZ GARCÍA, Isidro (Investigador, CSIC).
	GUERRERO ARROYO, Carmen (PDI, USAL)	SANCHEZ-GUIJO MARTÍN, Fermín (Profesor USAL)
	HERNANDEZ RIVAS, Jesús María (Catedrático, USAL)	SÁNCHEZ MARTÍN, MANUEL A. (PDI, USAL)
	HOLGADO MADRUGA, Marina (PDI, USAL)	SÁNCHEZ NAVARRO, AMPARO (Catedrática USAL)
	HURTADO RODRÍGUEZ, Antoni (Investigador CSIC)	SANTAMARÍA, DAVID (Investigador, CSIC)
	LAZO-ZBIKOWSKI TARACENA, Pedro (Profesor investigación, CSIC)	SANTOS DE DIOS, Eugenio (Catedrático, USAL)
	LLANO CUADRA, Elena (PDI, USAL)	VICENTE MANZANARES, Miguel (Científico Titular, CSIC)
	MARTÍN PENDÁS, Alberto (Científico Titular, CSIC)	
Center	Cancer Research Center	

2.- The course in the context of the Master's Program

Training Module

End of the five block, the last block into which the academic year is divided. Second semester.

General aim of the subject

- Know how to elaborate a scientific manuscript, based on the experimental work carried out by the student during the Master's Degree.
- Know how to present, discuss and defend the research project carried by the student.

3.- Previous recommendations

Read and discuss scientific articles.

4.- Aims of the subject

Learning outcomes:

- Analytical skills
- Know how to synthesize the scientific information.
- Management and organization of scientific data.
- Increase the ability for oral and written communication.
- Planning capacity.
- Ethical commitment and responsibility with the data processing.
- Improve the capacity for autonomous work.

(The tutorials and support required by the student will be attended by the work director).

5.- Contents

Students will write a research manuscript in the format of a scientific paper, based on the original results obtained during their research training. This written Máster's Thesis will be submitted for presentation and defense before a board of examiners.

The table below shows the list of research project offered for practical training and their teaching staff.

RESEARCH PROJECT	RESEARCH GROUP
"Biological characterization of T- and NK-cell neoplasms"	Julia Almeida Parra
"Cancer epitranscriptomics"	Sandra Blanco Benavente
"Genomic stability: Regulation of replication and the DNA Damage Tolerance"	Andrés Avelino Bueno Núñez María Sacristán Martín
"Molecular mechanisms mediating tumour:stroma crosstalk"	M. Esther Castellano Sánchez
"Deregulation of ribosome production in cancer cells"	Mercedes Dosil Castro
"Molecular characterization of resistance mechanisms to targeted therapies in lung cáncer"	Matthias Drosten
"Identification of novel therapeutic targets for KRAS-mutant lung cancer"	
"Identification and validation of new oncogenic drivers in hematopoietic and solid tumors"	Xosé R. García Bustelo
"Development of new pharmacological strategies to block early oncogenic signaling proteins in cancer"	
"Clinical Pharmacokinetics of methotrexate"	María José García Sánchez
"Hereditary cancer and epigenetic modifiers in the treatment of cancer"	Rogelio González Sarmiento
"New treatments in hemopathies: from the laboratory to the clinic"	Marcos González Díaz
"Role of the bone marrow microenvironment in the pathology of multiple myeloma"	Mercedes Garayoa Berrueta
"Study of new therapeutic combinations and resistance mechanisms in multiple myeloma: targeted drugs and immunotherapies"	María Teresa Paíno Gómez
"Role of C3G in the biology of platelets and megakaryocytes. Understanding the role of C3G in hematopoiesis and hematopoietic stem cell (HSC) disorders"	Carmen Guerrero Arroyo
"Molecular Cytogenetics in Oncology"	Jesús María Hernández Rivas
"NGS and Big Data in hematological malignancies"	
"Mechanisms of hormone resistance and breast cancer"	Toni Hurtado
"Epigenetic regulation of chromatin and its implication in cancer, neurodegeneration and rare diseases"	Pedro Lazo-Zbikowski Taracena
"Development and characterization of new murine models of chromosomal instability and their involvement in cancer, aging and fertility"	Elena Llano Cuadra Alberto Martín Pendás

<p>“Role of the NGF/TrkA signaling pathway in pain, identification of potential therapeutic targets” “The Gab1 docking protein in breast cancer and its possible use as a therapeutic target”</p>	<p>Marina Holgado</p>
<p>“Molecular mechanisms regulating cell growth and division: implications in cancer and aging”</p>	<p>Sergio Moreno Pérez</p>
<p>“New strategies for treatment of non-angiogenic tumors and metastases”</p>	<p>José Manuel Muñoz Félix</p>
<p>“Characterization of the genetic alterations and signaling pathways involved in the clonal development and neoplastic transformation of B cells of subjects with clonal B lymphocytosis (MBL) vs patients with chronic lymphatic leukemia (LLC)”</p>	<p>Alberto Orfao de Matos Julia Almeida Parra Manuel Fuentes García</p>
<p>“Targeting ErbB/HER receptors in cancer”</p>	<p>Atanasio Pandiella Azucena Ésparis Ogando</p>
<p>“Structural biology of cell adhesion and signaling”</p>	<p>José María de Pereda Vega</p>
<p>“Population pharmacokinetics and dosage optimization strategies of high-dose methotrexate”</p>	<p>Jonás Samuel Pérez Blanco José Germán Sánchez Hernández</p>
<p>“Model-Informed Precision Dosing of anticancer drugs”</p>	<p>Amparo Sánchez Navarro</p>
<p>“Identification of the genetic components responsible for the influence of stem cells on the response to breast cancer treatment”</p>	<p>Jesús Pérez Losada</p>
<p>“Role of endoglin in angiogenesis and tumor angiogenesis”</p>	<p>Alicia Rodríguez Barbero Miguel Pericacho Bustos</p>
<p>“Bioinformatics and Functional Genomics in Cancer: discovery of biomarkers, gene signatures and regulators in omic data”</p>	<p>Javier de las Rivas Sanz</p>
<p>“Mechanisms responsible for clonal evolution with the aim of leukemia prevention”</p>	<p>Isidro Sánchez García</p>
<p>“Bone marrow-derived stem cells. biological characteristics & potential role in the development of hematological malignancies”</p>	<p>Fermín Sánchez-Guijo Martín Sandra Muntión</p>
<p>“Genome editing by CRISPR-Cas9 technology: generation of mouse models of human cancer and correction of human leukaemic stem cells”</p>	<p>Manuel A. Sánchez Martín</p>
<p>“Understanding KRAS behaviour at the inner membrane: implications for oncogenic output and therapeutic inhibition”</p>	<p>David Santamaría</p>
<p>“Structure and function of Ras oncogenes and their molecular regulators”</p>	<p>Eugenio Santos de Dios</p>
<p>“Force generation and mechanotransduction during metastasis and the anti-tumor immune response” “Epigenetics of force generation” “Biophysics of the cellular responses to chemotherapy and immunotherapy”</p>	<p>Miguel Vicente Manzanares</p>

6.- Skills to be acquired

Basic skills

- Capacity for analysis, global visions and synthesis of the obtained data.
- Critical thinking and understanding the importance of generated data in the global knowledge of that specific research area.

Specific skills

- Ability to integrate information from different sources to get the the most up-to-date knowledge about a molecular or cellular process.
- Know how to access information and data on highly specialized areas of biological research.
- Ability to distinguish those results or data with a significant impact in the specific topic.

Transversal skills

- Critical thinking and capacity to distinguish the scientific works that constitute an important contribution to the progress of knowledge.

7.- Teaching methodology

Student will be provided with all the laboratory tools and infrastructures necessary to carry out the project and to elaborate the final Master's thesis. Moreover, a direct supervision by the tutor will ensure the necessary ongoing support for the student.

8.- Estimated learning time

	Hours tutored by the teacher		Individual work (hours)	TOTAL HOURS
	Attendance required (hours)	Distance learning (hours)		
Lectures				
Practices	- In classroom			
	- In laboratory	200		200
	- In computer classroom			
	- Countryside			
	- Visualization classroom			
Seminars				
Work presentations and debates				
Tutorials	20			20
Online activities				
Work preparation			80	80
Other activities				
Exams - evaluation				
TOTAL	220		80	300

9.- Materials

Books

Other bibliographical, electronic references or any other type of resource

10.- Assessment

Assessments on the performance of the student

An Evaluation Committee, consisting of three professors of the Máster's Degree, will take care of the assessment.

The Evaluation Committee establishes the dates for the delivery and defense of the Master's Thesis (within the terms established in the academic calendar).

Assessments:

- Scientific and technical quality of work.
- Quality of the delivered material.
- Clarity of presentation (oral and written).
- Synthesis skill.
- Capacity for debate and argument defense.