



Teaching Guide

Identifying Data					2014/15
Subject (*)	Biología Celular Avanzada		Code	610441003	
Study programme	Mestrado Universitario en Biología Molecular , Celular e Xenética				
Descriptors					
Cycle	Period	Year	Type	Credits	
Official Master's Degree	1st four-month period	First	Obligatoria	3	
Language	SpanishGalician				
Prerequisites					
Department	Biología Celular e Molecular				
Coordinador	Yañez Sanchez, Julian	E-mail	julian.yanez@udc.es		
Lecturers	Díaz Prado, María Luz Manso Revilla, Maria Jesus Yañez Sanchez, Julian	E-mail	luz.diaz@udc.es maria.jesus.manso@udc.es julian.yanez@udc.es		
Web					
General description	<p>Actualmente a biología celular como disciplina medrou e madurou significativamente de xeito que os seus límites conceptuais son moitas veces difusos e difíciles de definir. Así, Citoloxía, Bioquímica, Biología Molecular, Xenética e Fisioloxía celular superponse en moitos aspectos. En realidade, calquer avance substancial destas áreas implica a utilización de metodoloxías tipificado nunha ou máis dunha área.</p> <p>Este curso céntrase na estrutura e función dos compoñentes celulares cunha visión holística das interaccións entre eses compoñentes para asegurar o bo funcionamento da célula. Sabemos que non é posible cubrir nun único curso de todos os avances en profundidade, polo que trátanse ao longo do curso de aqueles aspectos de relevancia particular para dar unha idea da complexidade subxacente procesos celulares.</p> <p>Como éste é un curso avanzado, presume-se que os alumnos teñan coñecementos básicos de Biología celular, xenética, fisioloxía, bioquímica e biología molecular.</p>				

Study programme competences

Code	Study programme competences
A3	Skills of using usual techniques and instruments in the cellular, biological and molecular research: that are able to use techniques and instruments as well as understanding potentials of their uses and applications.
A9	Skills of understanding the structure and dynamics of proteins to individual and proteomic level, as well as the techniques that are necessary to analyze them and to study their interactions with other biomolecules.
B9	Skills of preparation, show and defense of a work.
C1	Skills of expressing correctly, so much of oral form as written, in the official languages of the autonomous region.

Learning outcomes

Subject competencies (Learning outcomes)	Study programme competences		
Skills of understanding the functioning of cells through the structural organization.	AR6	BR9	CC1
Skills to apply immunohistochemical techniques to the study of cell components	AR1		

Contents

Topic	Sub-topic
Introduction to cell	Cell Domains and the origin of multicellularity. Integrative view of the eukaryote cell
Structure and dynamics of the cell nucleus	Structure of nuclear envelope Nucleocytoplasmic traffic. Cell nucleus organization: chromatinic territories and nuclear subdomains.



Biogenesis, trafficking and functions of the cell endomembrane system	<p>Structure and membrane domains.</p> <p>Membrane compartments and vesicular trafficking.</p> <p>Traffic RE-Golgi complex.</p> <p>Endosomes and endocytosis.</p> <p>Traffic between the Golgi complex and endosomes.</p> <p>The secretory pathway of the Golgi complex: conventional and unconventional exocytosis.</p> <p>Lipid trafficking between compartments.</p> <p>Post-translational targeting of cytosolic proteins to organelles.</p> <p>Degradation of cellular components.</p>
Cytoskeleton and cell dynamic.	<p>Microtubules and associated proteins.</p> <p>Microtubule complex structures.</p> <p>Microfilaments and associated proteins.</p> <p>Cell motility and contractile systems.</p> <p>Cytoskeleton and cytokinesis.</p> <p>Intermediate filaments. Septins.</p>
Interactions cell to cell and cell to extracellular matrix	<p>Cell adhesion and junctions</p> <p>Extracellular matrix molecules</p> <p>Pathological alterations of the extracellular matrix.</p>

Planning

Methodologies / tests	Ordinary class hours	Student?s personal work hours	Total hours
Guest lecture / keynote speech	10	20	30
Document analysis	6	15	21
Laboratory practice	7	14	21
Mixed objective/subjective test	2	0	2
Personalized attention	1	0	1

(*)The information in the planning table is for guidance only and does not take into account the heterogeneity of the students.

Methodologies

Methodologies	Description
Guest lecture / keynote speech	Face sessions of approximately 60 minutes on the contents of the program. For a full exploitation of these sessions, it is recommended that students have previously read on their own fundamental aspects of these topics in the recommended texts.
Document analysis	It will consist of individual reading of recent research articles or reviews in Cell Biology designated by the lecturer complementing the given lectures. In classroom sessions each student will present a brief summary in limited time and will provide the basis for a posterior general discussion.
Laboratory practice	It will consist of the application of immunohistochemical methods for the analysis and study of certain cellular structures or components.
Mixed objective/subjective test	It will consist of an exam with choice questions and/or short questions on the contents of the topic treated in lectures and seminars.

Personalized attention

Methodologies	Description
Guest lecture / keynote speech	Students will be attended personally for any question raised along the course

Assessment



Methodologies	Description	Qualification
Document analysis	The degree of understanding of the subject and its presentation in the indicated time so as original graphical abstract will be assessed. Active participation in the discussion of presentations is also valued. Skill B9 will be here valued.	30
Mixed objective/subjective test	It will consist of short answer and multiple choice questions on the contents of the topics covered in the keynote sessions and seminars. Skill A6 will be assessed	70

Assessment comments

Semipresential students may substitute attendance of seminars (Journal Club) by a single written review paper on some aspect related to the syllabus and agreed with the lecturer. For the second call (July) the exam will have the 100% consideration for the final qualification, both in the case of face and online teaching/learning.

Honors will be awarded among students submitted at the first call.

Sources of information

Basic	<ul style="list-style-type: none">- Pollard, T.D; Earnshaw WC (2002, 2008). Cell Biology. Saunders- Alberts, B.; Johnson A.; Lewis, J.; Raff, M.; Roberts, R. & Walter, P (2008). Molecular Biology of the cell. Garland
Complementary	- Lodish, H.; Berk, A.; Zypursky, S.; Matsudaira, P.; Baltimore, D.; Darnell, J. (2013). Molecular cell biology. Macmillan

Recommendations

Subjects that it is recommended to have taken before

Subjects that are recommended to be taken simultaneously

Subjects that continue the syllabus

Other comments

(*)The teaching guide is the document in which the URV publishes the information about all its courses. It is a public document and cannot be modified. Only in exceptional cases can it be revised by the competent agent or duly revised so that it is in line with current legislation.