

		Teaching Guid	le		
	Identifying	y Data			2016/17
Subject (*)	Citoxenética			Code	610G02022
Study programme	Grao en Bioloxía				
	-	Descriptors			
Cycle	Period	Year		Туре	Credits
Graduate	1st four-month period	Fourth		Optativa	6
Language	Spanish				· · ·
Teaching method	Face-to-face				
Prerequisites					
Department	Bioloxía Celular e Molecular				
Coordinador	Mendez Felpeto, Josefina E-mail josefina.mendez@udc.es				
Lecturers	Martinez Martinez, M. Luisa		E-mail	m.l.martinez@	udc.es
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Web	www.udc.es/grupos/xenomar				
General description	This is a course focusing on the st	udy of eukaryotic chi	omosome fro	om the structural, fur	ctional and evolutionary
	perspective. In this area seek to im	prove the knowledg	e acquired in	the molecular genet	ics and genetic materials. Specia
	emphasis on the organization of th	e genetic material a	nd their implic	ations in the evolution	on of genomes, their variation and
	handling will be done.				

	Study programme competences / results				
Code	Study programme competences / results				
A1	Recoñecer distintos niveis de organización nos sistemas vivos.				
A2	Identificar organismos.				
A11	Identificar e analizar material de orixe biolóxica e as súas anomalías.				
A16	Realizar cultivos celulares e de tecidos.				
A26	Deseñar experimentos, obter información e interpretar os resultados.				
A29	Impartir coñecementos de Bioloxía.				
A30	Manexar adecuadamente instrumentación científica.				
A31	Desenvolverse con seguridade nun laboratorio.				
B1	Aprender a aprender.				
B2	Resolver problemas de forma efectiva.				
B3	Aplicar un pensamento crítico, lóxico e creativo.				
B5	Traballar en colaboración.				
B6	Organizar e planificar o traballo.				
B8	Sintetizar a información.				
B9	Formarse unha opinión propia.				
B10	Exercer a crítica científica.				
B11	Debater en público.				

Learning outcomes				
Learning outcomes			mme	
			competences /	
		results		
To understand the fundamentals involve when learning about chromosome and familiar with the basic methodology employed	A1	B1		
for the study of chromosomes.		B2		
Tools for cytogenetics.		B3		
	A16	B5		
	A30	B6		
	A31	B11		



	A1	B1	
	A16	B2	
Deepen your knowledge of the organization of hereditary material with an evolutionary approach through the study of	A26	B3	
chromosomes and their variations.	A30	B5	
	A31	B6	
		B8	
		B9	
		B10	
		B11	
Search and use of different literature and databases that allow carrying out the scientific approach to a topic related to	A29	B3	
chromosomes sources, organization, function and evolution.		B8	
Management information sources of interest in cytogenetics.		B9	
		B10	

	Contents
Торіс	Sub-topic
Block 1 Structural and Organization Genomes	1Organization of genomes from viruses to eukaryotes. Evolutionary aspects.
	2The chromosomes are chromatin
	3Levels of organization
	4 - Structure of metaphase chromosomes
	5Induced chromosome structure: Bands vs isocoras.
	6Linkage and mapping
Block 2 Chromosomes, celular reproduction and function	1Control of the cell cycle. Cycle disorders
	2 - Evolution of the mitotic mechanism
	3replication and chromosomal regions
	4Evolution of meiosis and its genetic consequences. Meaning of sexual
	reproduction.
	5 - Different karyotypes and their use
	6Chromosomes and gene function
Block 3Chromosome variation and evolution	1Chromosomal rearrangements and their significance in evolution.
	2Genetic consequences of numerical and structural variations .
	3 Chromosomal polymorphisms: evolutionary aspects.
Block 4 Cytogenetics applications.	1The chromosomes in plants and animals. Evolutionary aspects.

	Plannin	g		
Methodologies / tests	Competencies /	Teaching hours	Student?s personal	Total hours
	Results	(in-person & virtual)	work hours	
Collaborative learning	A1 A2 A11 A16 A26	15	44	59
	A29 A30 A31 B1 B2			
	B3 B5 B6 B8 B9 B10			
	B11			
Oral presentation	B5 B6 B8 B10 B11	3	0	3
Objective test	A1 B3 B8 B9	3	10	13
Guest lecture / keynote speech	A29 B1	28	28	56
Laboratory practice	A11 A16 A26	15	0	15
Personalized attention		4	0	4
(*)The information in the planning table is for	r guidance only and does not	take into account the l	neterogeneity of the stud	lents.

Methodologies



Methodologies	Description
Collaborative learning	Students work in groups of 2 or 3 and work collaboratively to effectively solve an assigned topic each block. They should learn
	to arrange and organize work among them. Perform appropriate to the subject under study literature searches .
	It is a mandatory activity
Oral presentation	The collaborative work by the group, will be presented orally at the end of each block. Throughout the course there will be at
	least three oral presentations for each student. It will consist of transmitting the rest of the seminar co-dossier prepared by the
	gruo (2-3 students) together.
	Each team member will present a part of the joint seminar, trying to fit it in coordination with their peers. It is a mandatory
	activity.
Objective test	Students will perform a final test consisting of different short questions that reflect different aspects learned throughout the
	course
	It is mandatory activity.
Guest lecture /	The teacher explains the fundamental contents of each thematic block and identifies the associated activities.
keynote speech	Attendance at these lectures and interactive sessions will be positively evaluated.
	The assitance will be assessed.
Laboratory practice	Laboratory practices related to the development of chromosomes and karyotypes were developed.
	It will be know the cell cultures, making the karyotype and develop some method of chromosome banding.

Personalized attention				
Methodologies	Description			
Laboratory practice	Throughout the course, the teacher will be available during the hours of interactive lectures, group tutorials / small group and			
Collaborative learning	arning individual tutoring for answering questions, guiding the development of seminars / group work and all matters related to the			
	organization of matter.			

		Assessment	
Methodologies Competencies /		Description	
	Results		
Oral presentation	B5 B6 B8 B10 B11	Clarity and precision in the presentation will be assessed. Suitable and current	30
		content. Synthesis capacity, motivation and debate. Both the submitted writen report	
		and oral presentation will contribute to the assessment.	
Laboratory practice	A11 A16 A26	Take into account the interest to learn techniques on chromosomes, skill in the	10
		laboratory experiments ability to solve chromosomes and the attitude and ability to	
		function in the laboratory.	
Collaborative learning	A1 A2 A11 A16 A26	Students will form working groups and the way teamwork is valued, how they solve	15
	A29 A30 A31 B1 B2	the problems, the strategy when conducting literature searches to resolve the issue	
	B3 B5 B6 B8 B9 B10	raised and its ability to incorporate new knowledge acquired in years above. Group	
	B11	work and coordination are essential in this regard. Their aptitude and attitude will be	
		assessed throughout the course.	
Objective test	A1 B3 B8 B9	The final test will take place on the field marked by the Faculty. Consist of a few short	35
		questions about the novel contributions learned in the course ideas and reflection of	
		learning as well as the realization in the responses, personal opinions and scientific	
		literature specific answers to questions will be assessed.	



Guest lecture /	A29 B1	In the keynote session, the teacher will explain the fundamental contents of each	10
keynote speech		thematic block of matter. Attendance at these classes enables the treatment of	
		questions and issues that may arise and further clarifies and organizes collaborative	
		work group will be further developed and that will be lectures on oral presentations.	
		Assisting them continuously is recommended.	

Assessment comments

The final test and practical clases are essential and mandatory activity.

In the case of justified exceptional circumstances, additional measures may be taken so that the student can pass the subject, such as flexibility in the delivery date of supervised projects, flexibility in practice schedules or a global assessment test of the learning results.

Sources of information Basic - Brown T.A. Genetics: A molecular approach (third edition). Chapman & Hall 1998-Brown, T.A. Genomas (Tercera edición). Editorial Médica Panamericana S.A. 2008-The evolution of te genomes. Edited by T.Ryan Gregory. Elsevier Academic Press. 2005-Lacadena, J.R. Citogenética Editorial Complutense S.A. 1996- Lewin, B. Genes IX. McGrawHill Education 2008-Lima de Faria, A. One hundred years of chromosome research and what remains to be learned. Kluwer Academic Publishers 2003- Lynch M. The origins of genome architecture Sinauer Associates, Inc Publishers. 2007-Macgregor, H.C. An Introduction to Animal Cytogenetics. Chapman & Hall 1993-Macgregor, H. & Varley, J. Working with Animal Chromosomes (second edition) John Wiley & Sons. Toronto 1988-Wagner R.P.; Maguire M.P. & Stalling R.L. Editorial Wiley-Liss 1993 Complementary En primer lugar, los alumnos consultarán los libros recomendados en las materias de Genética y Genética Molecular para recordar los contenidos y conocimientos adquiridos previamente. A continuación realizarán una búsqueda bibliográfica específica en libros, artículos de revisión, publicaciones específicas que permitan incrementar el aprendizaje de la materia, teniendo como eje fundamental el cromosoma mitótico.La realización de una buena búsqueda bibliográfica estará presente en todas las valoraciones de las actividades propuestas.

Recommendations

Subjects that it is recommended to have taken before

Citoloxía/610G02007 Xenética/610G02019

Xenética molecular/610G02020

Subjects that are recommended to be taken simultaneously

Subjects that continue the syllabus

Other comments

The active participation will be assessed in classroom activities. Consulting the recommended bibliography

(*)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.