

Teaching guide

IDENTIFICATION DETAILS

Degree:	Biotechnology
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Field of Knowledge:	Science
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Faculty/School:	Experimental Science
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Course:	MOLECULAR GENETICS AND REGULATION OF GENE EXPRESSION
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Type:	Compulsory
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ECTS credits:	6
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Year:	3
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Code:	2034
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Teaching period:	Fifth semester
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Area:	Genetics
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Module:	Biochemistry and Molecular Biology
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Teaching type:	Classroom-based
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Language:	Spanish
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Total number of student study hours:	150
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SUBJECT DESCRIPTION

La asignatura de Genética Molecular es una asignatura obligatoria de carácter semestral que se imparte en el tercer curso del Grado en Biología. Esta asignatura está integrada dentro del módulo de Bioquímica y Biología Molecular, el cual tiene como objetivo formativo "dar una visión completa acerca de la estructura y función de las biomoléculas esenciales para la organización celular y los procesos metabólicos necesarios para el crecimiento y desarrollo de todos los organismos vivos". Siendo el objetivo específico del módulo que cubre la asignatura de Genética Molecular "estudiar la organización del material genético y los mecanismos de expresión y regulación génica, que dirigen el funcionamiento a nivel molecular, tanto de organismos procarióticos como eucarióticos".

Así como en Genética Clásica se puede hablar de un punto de partida con los principios establecidos por Mendel, en Genética Molecular es difícil hablar de un punto de partida único, ya que si bien el DNA fue descubierto por Miescher en 1869 y la transformación por Griffith en 1928, ambos no se relacionaron hasta que en 1944 Avery demuestra que el principio transformante es el DNA. En 1953 Watson y Crick sugieren una estructura para el DNA en forma de doble hélice dextrógira, esta fecha puede considerarse simbólicamente como el nacimiento de la Genética Molecular. Desde entonces hasta la actualidad la acumulación de información sobre la estructura y función de los genes, tanto de organismos procarióticos como eucarióticos, ha sido constante y es de esperar que lo siga siendo en un futuro próximo.

La asignatura de Genética Molecular es una asignatura básica y completamente necesaria, ya que proporciona al alumno unos conocimientos sobre la estructura y función del material genético imprescindibles para que pueda abordar y comprender posteriormente el resto de las asignaturas del Grado en Biotecnología.

SKILLS

Basic Skills

Students must have demonstrated knowledge and understanding in an area of study that is founded on general secondary education. Moreover, the area of study is typically at a level that includes certain aspects implying knowledge at the forefront of its field of study, albeit supported by advanced textbooks

Students must be able to apply their knowledge to their work or vocation in a professional manner and possess skills that can typically be demonstrated by coming up with and sustaining arguments and solving problems within their field of study

Students must have the ability to gather and interpret relevant data (usually within their field of study) in order to make judgments that include reflections on pertinent social, scientific or ethical issues

Students must be able to convey information, ideas, problems and solutions to both an expert and non-expert audience

Students must have developed the learning skills needed to undertake further study with a high degree of independence

General Skills

To have acquired the ability for analytical, synthetic, reflective, critical, theoretical and practical thought.

To develop an ability to search for, take in, analyse, sum up and relate information.

To be familiar with the basic principles and theories of human and experimental sciences.

Specific skills

To be familiar with and describe the molecular mechanisms regulating DNA replication and repair, RNA transcription and processing and mRNA translation.

To identify and describe the mechanisms regulating gene expression in prokaryotic and eukaryotic organisms.

To identify the structure and describe the nature, organisation and function of genetic material in molecular terms in eukaryotic and prokaryotic organisms.

To be able to describe, quantify, analyse and critically assess the results of experiments performed in the laboratory.

Capacity for written and oral communication of the knowledge acquired.

To be able to apply the theoretical knowledge acquired for solving problems and practical cases linked to the various subjects.

To analyse and sum up key ideas and content regarding all manner of texts; to discover the theses incorporated within them and the issues raised; and to make critical judgments about their form and content.

DISTRIBUTION OF WORK TIME

CLASSROOM-BASED ACTIVITY	INDEPENDENT STUDY/OUT-OF-CLASSROOM ACTIVITY
60 hours	90 hours