

Molecular Genetics of Eukaryotes

Code: 104121
ECTS Credits: 6

Degree	Type	Year	Semester
2500890 Genetics	OB	2	1

Contact

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Use of languages

Principal working language: spanish (spa)
Some groups entirely in English: No
Some groups entirely in Catalan: No
Some groups entirely in Spanish: Yes

Teachers

Maria Antonia Velázquez Henar

Prerequisites

-To review the basics concepts in Genetics and Biochemistry learned during the first year of the Genetics degree. To know and understand the Mendelian principles and transmission of genetic information, the chromosomal theory of inheritance, cell cycle and nuclear division.

- Comprehension English skills

Objectives and Contextualisation

The fundamentals of Eukaryotic Molecular Genetics are explained in this course. This course takes place in the second-year of the Genetics degree providing the fundamental molecular knowledge of inheritance. The course is focus to give the current information on Molecular Genetics regarding gene structure and function, DNA replication, transcription and translation, as well as regulatory mechanisms of the transmission of the genetic information. In addition, the students will be familiar with some of the main molecular techniques and their applications in life sciences and health. Then, this course looks at the molecular basis of inheritance which principles were learned during the first year in the Genetics course. Complementary to this course are the Eukaryotic Molecular Genetics laboratory practices that is simultaneously teach in the Combined Laboratory III course, and the Molecular Biology of Prokaryotes and the Instrumental Techniques courses.

The educational objectives are as follows:

- 1) Acquisition of the basic concepts in molecular genetics as well as the composition of the nucleic acids and their roles in the molecular processes.
- 2) To obtain the essential knowledge about the processes driving the flow of genetic information, from DNA replication, transcription and translation in the organisms.
- 3) To be familiar with the regulatory processes of gene expression.

Content

- 1- Introduction to Molecular Genetics
- 2- The nature of genetic material
- 3-Eukaryotic genome organization
- 4-Eukaryotic chromosome structure
- 5-Replication and recombination of genetic material
- 6-Transposable elements
- 7-Eukaryotic transcription
- 8-RNA categories and processing mechanisms
- 9-Genetic code and the translation process
- 10-Eukaryotic gene regulation
- 11- Modification and processing mechanisms of proteins and cellular cycle regulation