

Molecular Biology and Biotechnology of Plants

Code: 100963
ECTS Credits: 6

Degree	Type	Year	Semester
2500253 Biotechnology	OT	4	0

Contact

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Use of languages

Principal working language: catalan (cat)
Some groups entirely in English: No
Some groups entirely in Catalan: Yes
Some groups entirely in Spanish: No

External teachers

Irma Roig Villanova

Prerequisites

There are no mandatory prerequisites.

Objectives and Contextualisation

The general goal of this subject is to provide the required knowledge to understand the molecular bases of plant biology, as well as the techniques and basic aspects of plant biotechnology, with important social implications as well as the use of transgenic plants or Genetically Modified Organisms (GMOs).

At the end of this subject, students should be able to have their own criteria on issues of plant biotechnology with social repercussion, based on contrasting knowledge. The topics that will be addressed in the subject can be seen in the content section.

Content

The subject will be organized in two sections: a first section in which theoretical knowledge will be imparted and a second one in which students will learn by the resolution of different scientific problems.

In relation to the first section of the subject, students will learn the following concepts and knowledge:

- Structure of a plant gene: from the transcription to the functional protein.
- Plant transformation: via *Agrobacterium tumefaciens*, via bio-ballistics, via chemical mutations.

-Generation of transgenic plants by over-expression of a gene of interest (with the promoter 35S), or repression with the technique of RNAi.

-Gene-editing using the CRISPR-Cas technique.

-Mutants: what they are, why they are used for, how are they generated, the importance of mutant collections.

-Arabidopsis thaliana as a model organism and its comparison with other plants.

-Use of bioinformatics platforms for molecular biology studies.

-omics techniques for the study of the regulation of gene expression.

In relation to the second section of the subject, students will have to solve proposed problems in the field of plant molecular biology.

The theoretical content will be evaluated with an exam that will be the main body of the final mark.