PAB3104

Plant Genetics & Systems Biology

Coordinator: Ronan Sulpice

Lecturers: Sinead Waters, Ronan Sulpice

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Interests: plant systems biology, algae, biomass, plant breeding, metabolism.

https://sulpice-lab.com/

Module Description:

This module examines plant growth, development and interactions with the biotic and abiotic environment in a holistic manner taking into account regulation at the levels of gene expression, enzyme activities, and the role of specific metabolites. The course is taught through lectures and tutorials/online labs enabling students to appreciate how plants can adapt in various environments.

Learning Outcomes:

LO1 Develop an appreciation of how plant systems biology research is designed, performed and presented.

LO2 Outline the mechanisms of cellular development at meristems and vascular tissue.

LO3 Discuss the importance of interactions with the environment that control plant growth and flowering time.

LO4 Critique the importance of secondary metabolites for interactions between plants and their environment.

LO5 Explain how and why plants can sense changes in their nutrient status and adjust their growth and metabolism over different time-scales accordingly.

LO6 Describe the role of the circadian clock in plant metabolism.

Module Assessment:

The assessment of this modules is based on **an exam (60%) and continuous assessment (CA – 40%).**

CA: The Ca consists in writing a short publication. The data used to write the publication are obtained by students in a lab. The lab consists in analysing the growth performance and protein content / starch content of a seaweed (Ulva spp) grown under replete and nitrogen deprived conditions. Students will also be helped to analyse the data obtained, build the graphs / make the statistical analyses necessary for writing the publication during a computer lab.

Sinéad Waters

Interests: Genomics and microbiomes in agriculture, Greenhouse gas mitigation.

Lecture Topics

1. Plant complexity at cellular and organellar levels
2. photosynthesis
3. Assimilation of nutrients
4. Phototropism and gravitropism
5. Plant growth and regulation
6. Circadian clock