

M.Sc. in Horticultural Genetics and Biotechnology (120 ECTS)

AIMS :

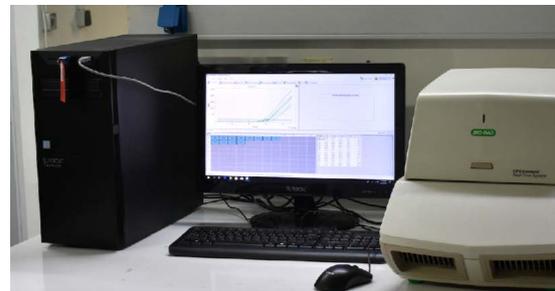
The major aim of the Horticultural Genetics & Biotechnology programme is to provide students with a thorough grounding in the mechanisms, capabilities, uses and limitations of plant biotechnological methods and available technological platforms so that they will be able to apply them to problems related to horticultural production and product quality. MSc graduates can pursue an academic career in biotechnology, genetics and/or molecular biology, or they can choose to work in agribusiness or in agricultural governmental bodies.

Objectives:

The students shall:

- acquire specific technical skills in plant biotechnology and genetics;
- develop conceptual knowledge and critical thinking skills and learn to design

- and test hypotheses related to horticultural research on plant biology and physiology;
- learn to clearly communicate research outputs and the rationale and knowledge underpinning these outputs;
- demonstrate an understanding of the advantages and limitations of -omics technological platforms (genomics, metabolomics) and how they are used to solve problems;
- learn how to find and cite sources;
- learn how to use knowledge acquired from model plants such as Arabidopsis to formulate research approaches for their horticultural crops of interest.



Requirements

Applicants must have the academic level that qualifies them to undertake postgraduate level studies in their home country or the equivalent of a minimum of four years of undergraduate studies. Their degree must also be in a discipline compatible with the area of specialization requested. Additional conditions may be required for certain programmes.

The working language of MAICH is English. Selection is made on the basis of the files submitted by applicants, with priority given to applicants from CIHEAM member countries, and takes into account

Scholarships

Qualified candidates may be eligible for scholarships that fully or partly cover tuition, teaching material, board, lodging, health insurance and an allowance.

How to Apply



Applications to study at MAICH must be made through the online application form that can be accessed by this link:

<https://www.maich.gr/education/admissions>

Research Interests

Plant Molecular Physiology

- Molecular mechanisms of fruit ripening
- Regulation of abscission in tomato
- Olives' adaptation to climate change
- Omics for the study of olives
- Low oxygen sensing in plants

Agrofood Forensics

- Authentication and adulteration of olive oil

Plant Phenomics

- Identification of varietal origin of plant organs

Information

For more information, visit our website

at: <https://bit.ly/2Sde0sr> or send

inquiries to panagiot@maich.gr

Educational Sequence

The programme is organized in 5 Units (60 ECTS)

Part 1 - The Master of Science Program – Coursework

Semester I

October 2021 — February 2022

HOB510.22114.0 - INTRODUCTION TO ADVANCED BIOLOGY AND BIOTECHNOLOGICAL TOOLS (21 ECTS)

Content: Biochemistry (3 credits)
Cell Biology (3 credits)
Genetics (3 credits)
Molecular Biology (4 credits)
Plant Phenomics (4 credits)
Introduction to Bioinformatics & Systems Biology (4 credits)

HOB520.1913.0 - APPLIED GENETICS (9 ECTS)

Content: Molecular Breeding (3 credits)
DNA methods for Authentication and Traceability of Agricultural and Food products (3 credits)
Genetic association studies (3 credits)

Semester II

February 2022 — June 2022

HOB530.1904.0 - ARABIDOPSIS GENETICS (9 ECTS)

Content: Principles of Arabidopsis Genetics (3 credits)
Mutant Analysis of Arabidopsis (3 credits)
Arabidopsis Transformation and Analysis of Transgenic Plants (3 credits)

HOB540.21813.0 - HORTICULTURAL BIOTECHNOLOGY (18 ECTS)

Content: Molecular Biology of Ethylene (3 credits)
Molecular Biology of Fruit Ripening (3 credits)
Phytonutrients: Production/regulation and human health (4 credits)
Nutritional Genomics (3 credits)
CA Storage and Molecular Basis of Hypoxia and Laboratory (5 credits)

HOB500.1312.0 - EXTENDED ESSAY (3 ECTS)

Part 2 - The Master of Science Program – Independent Research and Thesis

(Project - 9 months duration, 60 ECTS)

Students develop the ability to design hypotheses and test them through experimentation, to clearly communicate research outputs and ideas, and to write scientific English. In addition, they become competent in a wide range of plant molecular biology and biotechnology techniques, such as plant nucleic acid extractions, gene expression analysis, transgenic plant analysis, and the use of basic bioinformatics tools, cloning techniques, and genetic concepts for mutants.



Facilities

Laboratory of Plant Molecular Biology & Biotechnology

The aim of the Plant Molecular Biology & Biotechnology laboratory is to provide the infrastructure for training students and support the research interests of the Horticultural Genetics & Biotechnology Department.

Laboratory of Plant Molecular Histology

Part of the Plant Biotechnology & GMO Testing Laboratory, this facility contains the infrastructure necessary for histochemical staining of plant tissues, in-situ hybridization and in-situ PCR experiments. The equipment includes a state of the art LEICA RM2155 microtome, an Applied Biosystems in-situ PCR, a LEICA EG1140H paraffin embedding station, a LEICA EG1140C cooling plate and a LEICA TP1020 automatic tissue processor.

Laboratory of Horticultural Products Quality

Part of the Plant Biotechnology Laboratory, this facility comprises infrastructure necessary for the post-harvest quality assessment of fruits and vegetables. The equipment includes a gas-chromatograph, a facility for controlled atmosphere experiments, an oxygen/CO2 analyzer and the equipment necessary for assessing the physicochemical properties of horticultural products.



CIHEAM
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