

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

AIMS: The major aim of the Horticultural Genetics & Biotechnology programme is to provide the 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 follow an academic career in biotechnology, genetics and/or molecular biology as well as a career in agrobusinesses private sector and agricultural governmental bodies.

OBJECTIVES: The students shall:

a) acquire specific technical skills in plant biotechnology and genetics;

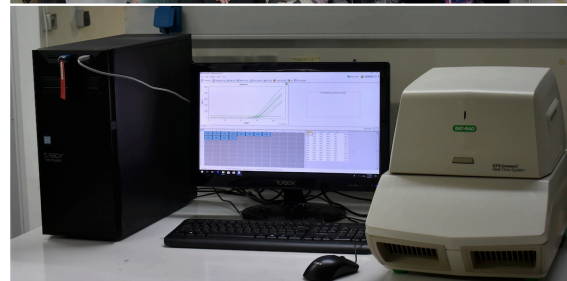
b) develop conceptual knowledge and critical thinking, hypothesis design and testing on plant biological and physiological themes pertinent to horticultural research;

c) communicate clearly research outputs, and the rationale and knowledge underpinning these outputs;

d) demonstrate understanding of advantages and limitations of -omics (genomics, metabolomics,) technological platforms and how are used for problem solving approaches;

e) ability to source information;

f) efficient use of knowledge acquired from model plants such as Arabidopsis in order 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 equivalent to a minimum of four years 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 – priority being given to applicants from CIHEAM

member countries, and takes account of their academic results, professional experience acquired in the chosen field of specialization, reference letters and their competence in English.

The documentation required by MAICH includes:

1. Academic records and transcripts
2. Graduation degree
3. Proof of english language competence
4. Two letters of recommendation.

Scholarships

Qualified candidates may be eligible for scholarship covering fully or partly: tuition, teaching material, board, lodging, health insurance and compensation.

How to Apply



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

<http://www.maich.gr/admissions/application>

Research Interests

Plant Biotechnology and Molecular Biology:

The Functional Role of Prolyl 4 Hydroxylases in Plant Growth and Development

- flower senescence
- fruit ripening
- hypoxic, anoxic responses

Agrofood Forensics:

The case of Olive oil

Olive Genomics

Phenomics

Bioinformatics

Information

For more information, visit our website at: <http://www.maich.gr/hort> or send inquiries to panagiot@maich.gr

Semester I

October 2018— February 2019

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)

Semester II

February 2019 – June 2019

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

(Project - 9 months duration, 60 ECTS)

All the students develop the ability to hypothesis design and testing 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, basic bioinformatics tools and cloning techniques, basic genetic concepts for mutants and transgenic plants analysis.



Facilities

Laboratory of Plant Molecular Biology & Biotechnology

The aim of the Plant Molecular Biology & Biotechnology laboratory is to provide the infrastructure for training of students and support the research interests of the Horticultural Genetics & Biotechnology Department. State of the art equipment such as: qPCR, Affymetrix microarray system, genetic analyzers support research activities.

Laboratory of Plant Molecular Histology

This facility is part of the Plant Biotechnology & GMO Testing laboratory and comprises 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 Parafin embedding station, a LEICA EG1140C cooling plate and a LEICA TP1020 automatic tissue processor.

Laboratory of Horticultural Products Quality

This facility is part of the plant biotechnology laboratory and comprises infrastructure necessary for post-harvest quality assessment of fruits and vegetables. The equipment includes a gas-chromatograph, facility for controlled atmosphere experiments, an oxygen/CO₂ analyzer and necessary equipment for assessing the physicochemical properties of hort products.



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