

Research Group of Plant and Environmental Biotechnology (BIOPLANET)



University of Thessaly
Department of Biochemistry and Biotechnology



Assoc. Prof. Kalliope Papadopoulou
Plant – Microbe Interactions
Plant Biotechnology

Assoc. Prof. Dimitrios Karpouzas
Environmental Microbiology and
Biotechnology



Who are we?

.....and the rest of the gang plus...

Dr. G. Tanou
Ext. Collaborator
AUTH
Proteomics



Dr Maria Tourna
PostDoc

Dr. S. Vasileiadis
Ext. Collaborator
Un. Adelaide
Bioinformatics



Dr Chiara Perruchon
PostDoc



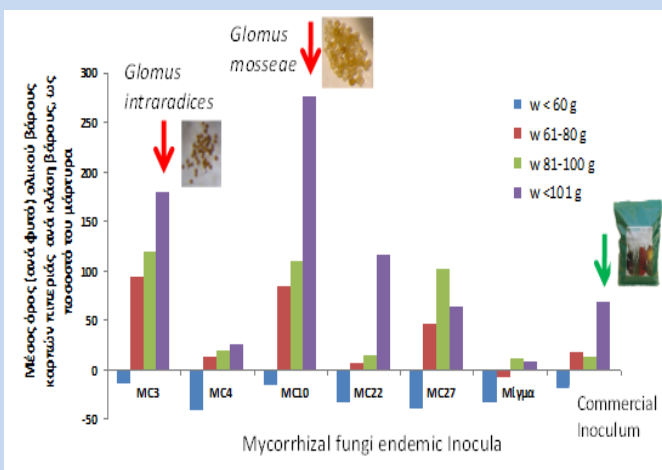
What are our research priorities?

Plant Microbe – Interactions

• Arbuscular mycorrhizal fungi: ecology and function



THALIS Contribution of Mycorrhizae to the sustainability of marginal Med. ecosystems – development of mycorrhizal inocula



Support of New SMEs: Isolation of indigenous AM fungi and development of mycorrhizal inocula used for rhizosphere inoculations and the production of soil improvers

Collaborators:

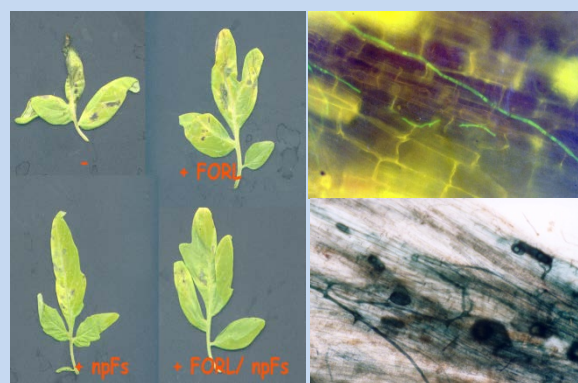
Dr K. Ehalotis
Agricultural Univ.
Athens



Dr I. Ipsilantis
Aristotle University
Thessaloniki



• Endophytic fungi suppressive to plant pathogens

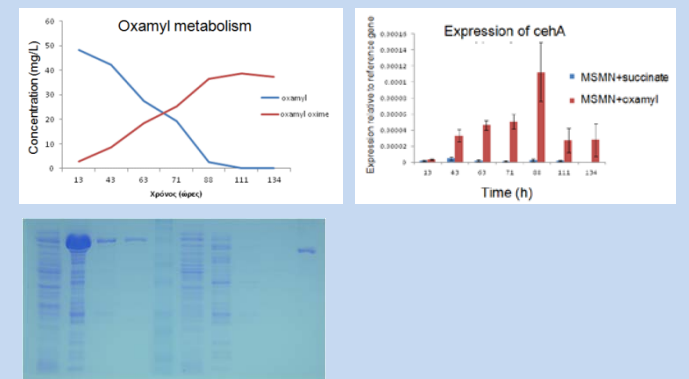


An endophytic *Fusarium solani* strain which is suppressive to tomato soil pathogen *F. oxysporum* f.sp. rl and induces systemic resistance to foliar pathogens

Environmental Microbiology & Biotechnology

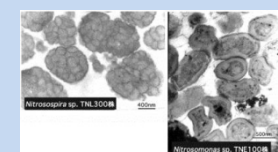
• Microbial degradation of pesticides

Functional analysis of the microbial metabolism of carbamate and organophosphorus pesticides



• Toxicity of pesticides to soil microbes

Assessing the toxicity of pesticides on soil microbes using a wide array of standardized methods and bioindicator functional microbial groups



Ammonia oxidizers



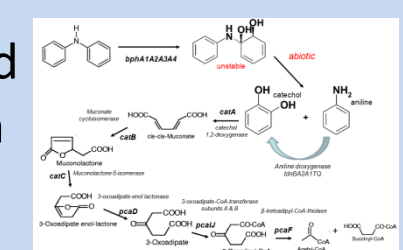
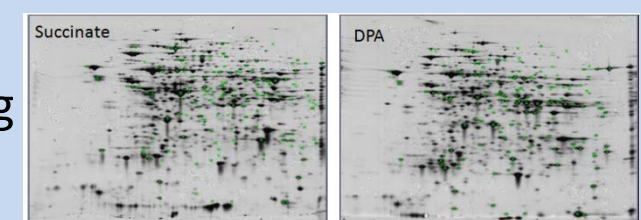
Arbuscular mycorrhizal fungi

LOVE TO HATE: Pesticides – Felicity or curse for the soil microbes



• Biodepuration of agro-industrial effluents

Degradation of pesticides used in the fruit packaging industry by soil bacteria: Elucidating the catabolic mechanisms via omics and their use in biodepuration and bioaugmentation



ΑΡΙΣΤΕΙΑ II, BIOREMIATOMICS project



Recent Relevant Publications

- Karpouzas, D.G., et al (2014) A tiered assessment approach based on standardized methods to estimate the impact of nicosulfuron on the abundance and function of the soil microbial community. *Soil Biology and Biochemistry* 75: 282-291
- Perruchon C., Patsioura V., Vasileiadis S., Karpouzas D.G., (2014) Isolation and characterization of a *Sphingomonas haloaromaticamansable* to degrade the fungicide *ortho*-phenylphenol. *Pest Management Science (in press)*
- Hadar Y, Papadopoulou KK. (2012) Suppressive composts: microbial ecology links between abiotic environments and healthy plants. *Ann. Rev. Phytopath.* 50:133-153
- Rousidou C.,Karpouzas D.G.,(2013) Bio-pesticides: Harmful or harmless to ammonia oxidizing microorganisms? The case of a *Paecilomyces lilacinus*-based nematicide. *Soil Biology & Biochemistry* 67:98-105
- Ipsilantis I., Samourelis C., **Karpouzas D.G.**, (2012) The impact of botanical pesticides on arbuscular mycorrhizal fungi. *Soil Biology and Biochemistry* 45: 147-155