Supervisor Project Idea

Supervisor

Insert a brief CV and/or external link, the total number of publications, the ORCID link, 5 of the most significant/recent publications, and a list of funded projects and awards. max 300 words

Gianfranco Romanazzi, Professor of Plant Pathology at Università Politecnica delle Marche, orcid https://orcid.org/0000-0003-0390-4008, 155 papers, H-Index 40 (Scopus). Prof. Romanazzi coordinates national and international projects, including PRIMA "Innovative Sustainable technologies TO extend the shelf-life of Perishable MEDiterranean fresh fruit, vegetables and aromatic plants and to reduce WASTE – StopMedWaste", MAECI Italy-China "Biosynthesis regulation of metabolic markers and correlation with quality safety during fruit decay (BioQuaSA), Euphresco Network "Basic substances as an environmentally friendly alternative to synthetic pesticides for plant protection (BasicS)", and COST FA22134 Action "Sustainable Network for agrofood loss and waste prevention, management, quantification and valorisation (FoodWaStop)". He was included in 2% Top Scientists in 2023 and awarded as Euphresco Scientist of the month in September 2023. He is President of Italian Association for Plant Protection (AIPP) since 2020, and Chair of ISPP Seed Pathology Committee since February 2024.

Recent publications

- Prusky D., Romanazzi G. 2023. Induced resistance in fruit and vegetables: a host physiological response limiting postharvest disease development. Annual Review of Phytopathology 61, 279-300, https://doi.org/10.1146/annurev-phyto-021722-035135
- Moumni M., Brodal G., Romanazzi G. 2023. Innovations in seedborne pathogen management. Food Security 15, 1365-1382, https://doi.org/10.1007/s12571-023-01384-2
- Álvarez-García S., Moumni M., Romanazzi G. 2023. Antifungal activity of volatile organic compounds from essential oils against the postharvest pathogens *Botrytis cinerea*, *Monilinia fructicola*, *Monilinia fructigena*, and *Monilinia laxa*. Frontiers in Plant Science 14, 1274770, https://doi.org/10.3389/fpls.2023.1274770
- Romanazzi G., Moumni M. 2022. Chitosan and other edible coatings to extend shelf life, manage postharvest decay, and reduce loss and waste of fresh fruits and vegetables. Current Opinion in Biotechnology 78, 102834, https://doi.org/10.1016/j.copbio.2022.102834
- Romanazzi G., Orçonneau Y., Moumni M., Davillerd Y., Marchand P.A. 2022. Basic substances, a sustainable tool to complement and eventually replace synthetic pesticides in the management of pre and postharvest diseases: reviewed instructions for users. Molecules 27, 3484, https://doi.org/10.3390/molecules27113484

Research Group Description

Provide the name the reference department and a brief description of the research group, including external links, and available instrumentations and infrastructures. max 300 words

Prof. Romanazzi is affiliated to the Department of Agricultural Food and Environmental Sciences of Università Politecnica delle Marche. The Research Group have experience in the detection and molecular characterization of phytopatogenic fungi, gene expression in plant tissues, identification of natural compounds with NMR, and mainly application of sustainable strategies to manage pre and postharvest disease of plants, both in the field and postharvest. Here is the list of participants to the Research Group:
Prof. Lucia Landi (https://orcid.org/0000-0003-1533-0873), Prof. Sergio Murolo (https://orcid.org/0000-0001-7269-1734), Dott. Marwa Moumni (https://orcid.org/0000-0003-3201-2105), Dott. Sarah Makau (https://orcid.org/0000-0003-4598-1968), Dott. Simone Piancatelli (https://orcid.org/0009-0005-6104-7894), Dott. Lucrezia D'Ortenzio (https://orcid.org/0009-0003-4596-7653), Dott. Mehdiye Tunc (https://orcid.org/0009-0009-9717-3576).
Available instruments: equipment for production of media, isolation, and classical identification of plat pathogens, qRT-PCR, Digital Droplet PCR, Bench NMR Spinsolve80. Cooperation with packinghouses, organic and IPM wineries, stone fruit orchards, vegetable seed industry, companies producing biocontrol solutions for plant protection, etc.

Title and goals

Provide the title of the topic and a short summary of the project idea. max 200 words

TITLE OF THE PROJECT: **Innovative compounds in plant protection to reduce food loss and waste of fresh fruit and vegetables**

GOALS OF THE PROJECT: More than half of fresh fruit and vegetables is lost moving from the growers to the retailer, or wasted from the retailer to the consumer home, so it is mandatory to set up strategies to half this amount, to meet sustainable development goals (SDGs) where numbers 2 and 12 relate to 'Zero Hunger' and 'Responsible Consumption and Production', respectively. These SDGs, and in particular Target 2.4 sustainable food production and resilient agricultural practices and target 12.3 halve per capita global food waste at the retail and consumer levels and reduce food losses along production and supply chains, including postharvest losses by 2030.
The project have the aims to set up lab and field trials to i) test in the lab *in vitro* the effectiveness of natural compounds (chitosan, essential oils, biocontrol agents) toward plant pathogens; ii) verify in postharvest trials the effectiveness of selected compounds on fresh fruit (citrus, stone fruit, strawberry, table grapes); iii) apply in the field (e.g. vineyard) selected strategies to control main diseases (downy mildew, powdery mildew, gray mold) through sustainable and innovative strategies (induced resistance, biosolutions, natural compounds).

Contact details (*including email address of the supervisor*)

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