

Curriculum vitae

Rita Musetti

Education

Master Science Degree (scores 110/110 "cum laude") in Natural Sciences in March 1989 at University of Parma (Italy).

Fellowship at University of Parma (1989-1992) on plant-pathogen interactions and specialization in Electron Microscopy.

2022 - now Full Professor University of Padova

- Teaching MSc courses: Control of Plant pathogens
- Teaching BSc courses: Grapevine Pathology; Plant Disease Control in Organic Crops
- Research: Plant pathology, Plant-pathogen Interactions, Plant ultrastructural and molecular response to viruses and phytoplasmas

2015 - 2022 Associate Professor University of Udine

- Teaching MSc courses: Grapevine Physiopathology
- Teaching BSc courses: Forest Pathology, Grapevine Pathology
- Research: Plant pathology, Plant-pathogen Interactions, Plant ultrastructural and molecular response to viruses and phytoplasmas

1992 - 2015 Scientist University of Udine

- Teaching MSc courses: Plant cytopathology
- Teaching BSc courses: Forest Pathology
- Research: Plant pathology, Plant-pathogen Interactions, Plant ultrastructural and molecular response to viruses and phytoplasmas

Visiting Scientist activity

- **July 1993, Visiting Scientist at the Institute of Plant Virology (IVV-CNR) Turin (Italy):**
Project: Immuno Electron Microscopy (IEM) techniques applied to plant virology (Supervisor Dr. R.G. Milne)
- **March 1- May 24, 2012, Visiting scientist** at the Justus Liebig University of Giessen (Germany). *Project: Development of methods for studying translocation of phloem-limited pathogenic phytoplasmas* founded by Deutscher Akademischer Austausch Dienst (DAAD Grant n° A/11/04104 PI1), (Supervisor Prof. A. J. E. van Bel)

Research interests

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Number of citation in Scholar: 2997 H index: 32

Number of citation in Scopus: 1924 H index: 27

Rita Musetti has pluriannual experience in the study of the diseases of grapevine and fruit trees, with competences in epidemiology, diagnosis and plant/pathogen interactions, activities accredited by publications in international scientific journals (see "*Publications*" section). One of the main research activity is about the cytological, biochemical and molecular responses of the host plants to phytoplasma attack. The fine interaction of phytoplasmas with the phloem sieve elements is investigated, both in crop (apple trees, grapevines, tomato plants) and in test plants, such as *Catharanthus roseus*, *Vicia faba*, *Arabidopsis thaliana*. Mechanisms regulating plant defense responses to phytoplasmas are also object of study. Scientific activity is also focused on endophyte/pathogen/host plant interactions. The possibility to use grapevine endophytic fungi (or their secondary metabolites) as biocontrol agents against *Plasmopara viticola* is investigated: results obtained have been successfully submitted to italian and international patent applications. Other research activities are focused on emergent diseases of grapevine and kiwifruit.

Lab Skills

Light and Fluorescence Microscopy, Transmission Electron Microscopy (TEM), TEM X-ray microanalysis

Main research projects

Principal Investigator of the following projects:

Project Agribio: "Organic agriculture: innovative strategies for crop protection", funded by Province of Trento (Italy). Role: Research Unit head

Project "Sister": "Studies on the relationship among endophytic fungi belonging to *Alternaria* spp. and *Vitis vinifera* and their potential as biocontrol agents against *Plasmopara viticola*", founded by Area Science Park, Trieste. Role: Project Manager

AGER Project n° 2010-2106: Grapevine Yellows: innovative technologies for the diagnosis and the study of plant/pathogen interactions. Role: Lead Partner

MIUR FFABR 2017 Funding for basic research activities

Project Start-up 2018-2019: Functional analysis of SEOR2 gene as resistance factor in plant-phytoplasma interaction (Founded by University of Udine, PDM_VQR3_DI4A_PJ_BASE_COMPETITIVA). Role: Lead Partner.

Participant in the following projects:

PRIN 1997 9707181882_011 funded by Italian Ministry of University: Aspetti epidemiologici di virosi delle graminacee.

PRIN 1999 9907188198_002 funded by Italian Ministry of University: Epidemiologia di malattie da fitoplasmi dei fruttiferi diffusi da psille e ricerca di genotipi autoctoni tolleranti.

PRIN 2002 2002078913_003 funded by Italian Ministry of University: Biodiversity of fruit crops phytoplasmas.

PRIN 2005 2005074429_001 funded by Italian Ministry of University: Study of S.A.R. (Systemic Acquired Resistance) and 'recovery' phenomenon in plants affected by phytoplasmas.

Program Interreg IIIA/Phare CBC Italia-Slovenia 2000-2006. "Recupero e valorizzazione di varietà di fruttiferi di qualità per un arricchimento della biodiversità e a sostegno della frutticoltura biologica nelle aree transfrontaliere".

Project "GIAVI" 2004-2007: Grapevine yellows: a limiting factor for grapevine production, funded by Italian Ministry for Agriculture and Forestry (MiPAAF DM652/7303/03 19/12/2003).

COST Action FA0807: Integrated Management of Phytoplasma Epidemics in Different Crop Systems. Current status and perspectives of phytoplasma disease research and management.

Project MEMORA - Sviluppo di sistemi per il monitoraggio ed il controllo delle più importanti problematiche fitosanitarie nella filiera dell'actinidia regionale. PSR Friuli Venezia Giulia 2014-2020, Misura 16.1.

Project FALARES - Salvare il fagiolo di Lamon da virosi distruttive che ne compromettono la coltivazione, il reddito e la sua storica biodiversità. PSR Veneto 2014-2020. CUP: G76C18000120002.

Doctoral school participation:

- **Università degli Studi di PARMA, "Biologia vegetale"**
From AY **2003** - Cycle: **XIX**
- **Università degli Studi di PARMA, "Biologia vegetale"**
From AY **2004** - Cycle: **XX**
- **Università degli Studi di UDINE, "ECONOMIA, ECOLOGIA E TUTELA DEI SISTEMI AGRICOLI E PAESISTICO-AMBIENTALI"**
From AY **2008** - Cycle: **XXIV**
- **Università degli Studi di UDINE, "Scienze e Biotecnologie agrarie"**
From AY **2010 onwards**

Patents

Antifungal composition containing the Endophyte fungus *Alternaria alternata* and or its metabolites, as antagonist agents of *Plasmopara viticola*. International Publication Number WO 2008/007251 A3.

The use of the endophyte fungus *Alternaria alternata* as antagonist agent of *Plasmopara viticola* and the use of the secondary metabolites, belonging to the class of Diketopiperazines (DKPs), as antagonist substances of *Plasmopara viticola*, are the subjects of the present invention. An additional subject of the present invention is a process for producing an antagonist extract against *Plasmopara viticola* from *Alternaria alternata*. Italian and international applications have been filed regarding the invention. The invention is interesting for companies that operate in the production and marketing of active products against plant pathogens, in particular against

Plasmopara viticola. The products could be used both in conventional (if synthesized) and in organic or integrated viticulture. The secondary metabolites of *Alternaria alternata*, the use thereof is proposed according to the present invention, are known compounds belonging to the chemical family of Diketopiperazines (DKPs). The Diketopiperazines are small peptide derivatives which can be found in nature both in the animal and vegetable kingdom. They have a simple chemical configuration, they are stable to proteolysis, their synthetic routes are well known, therefore they can be synthesized easily in laboratory. In medical field, they are used as antibiotics and synthetic vaccines, as chemotherapeutic products and as antihypertensive agents; in agriculture they have been utilized against abiotic stresses and as antibacterial and antifungal substances but never reported against grapevine pathogens and in particular against *Plasmopara viticola*.

Editorial experience

- *Associate Editor* of the Journal: Molecular Plant-Microbe Interactions (2013- 2014);
- *Editorial Board Member* of the Journal: Journal of Phytopathology (from march 2021 onwards)
- *Editor of the book*: Phytoplasma: Methods and Protocols. Springer Science+Business Media LLC, 233 Spring Street New York USA (2019) doi: 10.1007/978-1-4939-8837-2
- *Reviewer activity* for different international peer-reviewed Journals