

CURRICULUM VITAE ET STUDIORUM

Marcello Iriti

Born in Siracusa, Italy, April 6th, 1973

1. Education

1998 - M.Sc. in Natural Sciences at the Milan State University, Italy

2003 – Ph.D. in Chemistry, Biochemistry and Ecology of Xenobiotics at the Milan State University, Italy

2. Fellowships

2003 - 2005: Post-doc at the Plant Virology Institute, National Research Council, Milan, Italy

2005 - NATO Postdoctoral Fellowship at the Department of Plant Physiology, Charles University of Prague, Czech Republic (topic: 'Chitosan-induced programmed cell death in tobacco BY2 cells')

3. Employment

2005 - 2015: Assistant Professor at the Institute of Plant Pathology, Department of Crop Protection and Department of Agricultural and Environmental Sciences, Milan State University

2015 - Associate Professor at the Department of Agricultural and Environmental Sciences, Faculty of Agricultural and Food Sciences, Milan State University

4. Italian Professorship

Plant Pathology (Full Professor)

Plant Physiology (Associate Professor)

Food Chemistry (Associate Professor)

5. Research Interests

Since 1999, has been studying the mechanisms of induced resistance in plant to biotic and abiotic stresses by natural and synthetic compounds, particularly chitosan and benzothiadiazole, and using different approaches (biochemistry, physiology, molecular biology, histo-cytochemistry, immunohistochemistry and electron microscopy). Among the plant defence mechanisms, programmed cell death (PCD) has been a major interest, and particular emphasis has been given to plant secondary metabolites involved in resistance to pathogens (phytoalexins), also known as bioactive phytochemicals or nutraceuticals, including polyphenols and carotenoids. One of the most interesting findings has been obtained in relevant food and medicinal plants, showing that treatments with plant activators, besides preventing fungal and viral infections, may improve their pharmaconutrient content, particularly in polyphenols (flavonoids, stilbenes, proanthocyanidins) and carotenoids, thus increasing the healthy potential of these plants (and, possibly, of the respective functional foods and

phytotherapeutic products). Other valuable results have been the discovery of melatonin and its isomers and phytosterols in grapes and derived products. These metabolites may act in synergy with polyphenols, thus contributing to explain the biological activities of grape products and their benefits for human health.

Also interested in the plant tolerance response to abiotic stresses (ultraviolet radiation, ozone and drought), focusing on the effects of atmospheric pollutants on the nutritional traits of food plants. Furthermore, a new ozone bioindicator plant species has been identified and a histo-cytochemical technique has been developed to validate ozone invisible symptoms, early before their appearance. A single-cell gel electrophoresis (comet) assay has also been adapted to plant material to monitor genotoxic effects of UV.

Author of more than 140 publications, including book chapters, reviews (some of which invited) and editorials (Scopus h-index: 32). Noteworthy, the article Iriti and Faoro 2007 (Review of innate and specific immunity in plants and animals, *Mycopathologia* 164, 57-64) is included in the list of top 20 articles in its domain since its publication (BioMedLib), and the article Iriti et al. 2010 (Melatonin in Mediterranean traditional diets, *Journal of Pineal Research* 49, 101-105, IF: 10.3) is in the top 10 cited articles published on this journal in 2010-2012.

6. Awards

2003 - Winner of the “Scaramuzzi Prize”, awarded by the Italian Society of Plant Pathology (SIPaV) for the best paper of the year by a young scientist (‘Does benzothiadiazole-induced resistance increase fitness cost in bean?’ *Journal of Plant Pathology* 85,41-47)

7. Teaching

Milan State University, Faculty of Agricultural and Food Sciences

2005 - 2013: Lecturer of Plant Secondary Metabolism

2005 - date: Lecturer of Plant Pathology

2010 - date: Lecturer of Plant Biology and Botany

2016 - date: Lecturer of Phytoiatry

2006 - 3th School of Plant Physiopathology (Italian Society of Plant Pathology - SIPaV) (topic: ‘Costs and benefits of induced resistance’)

2009 - 2013: Member of the Board of the Ph.D. Course in Experimental and Clinical Nutrition, PhD School in Biochemical, Nutritional and Metabolic Sciences, Milan State University

2010 - 4th School of Plant Physiopathology (Italian Society of Plant Pathology - SIPaV) (topic: ‘Effects of environmental pollution on plant secondary metabolism’)

2010 - 2011: Post-Graduate High School in Anti-aging Medicine, organized by AMIA (Association of Italian Anti-aging Medical Doctors) (topic: ‘Nutraceuticals, resveratrol and ascorbic acid in anti-aging’)

2013 - date: Member of the Board of the Ph.D. School in Sciences for Food Systems, Milan State University

8. Tutoring

2012 - Ph.D. Thesis: 'Effect of SAR inducers on grape secondary metabolites', by Sara Vitalini (PhD Programme in Plant Biology and Crop Productivity, Graduate School in Molecular Sciences and Plant, Food and Environmental Biotechnology, Milan State University)

2013 - Ph.D. Thesis: 'Effects of SAR inducers on quality and safety of the grape products', by Antonietta Ruggiero (PhD Programme in Food Science, Technology and Biotechnology, Graduate School in Molecular Sciences and Plant, Food and Environmental Biotechnology, Milan State University)

2014 - Co-tutor, Ph.D. Thesis: 'Effects of tropospheric ozone on ecophysiological parameters of relevant plant species', by Maamar Benchohra; Laboratory for Agro-biotechnology and Nutrition in Semi-arid Zones, Faculty of Natural Sciences and Life, Ibn Khaldoun University Tiaret, Algeria

9. Editorial Activity and Refereeing

Member of the Asian Council of Science Editors

Member of the Society of African Journal Editors

Associate Editor-in-Chief

International Journal of Molecular Sciences (IF 3.6)

Section Editor

Molecules (IF 3.0)

Medicine (IF 2.0)

Associate Editor

Cellular and Molecular Biology (IF 1.3)

Guest Editor

Mini-Reviews in Medicinal Chemistry (IF 2.6): Special Issue - Health Benefits of Dietary Polyphenols

International Journals of Molecular Sciences (IF 3.6): Special Issue - Molecular Research in Plant Secondary Metabolism

Molecules (IF 3.0): Special Issue - Phytochemicals: Biosynthesis, Metabolism and Biological Activities

International Journals of Molecular Sciences (IF 3.6): Special Issue - Plant Molecular Biology

International Journals of Molecular Sciences (IF 3.6): Special Issue - Molecular Research in Plant Secondary Metabolism 2015

Molecules (IF 3.0): Topical Collection - Phytochemicals: Biosynthesis, Metabolism and Biological Activities

International Journals of Molecular Sciences (IF 3.6): Special Issue - Nutrigenetics and Nutrigenomics

International Journals of Molecular Sciences (IF 3.6): Special Issue - Plant Innate Immunity
International Journals of Molecular Sciences (IF 3.6): Special Issue - Molecular Research on Global Climate Change and Atmospheric Pollution
International Journals of Molecular Sciences (IF 3.6): Special Issue - Pulses
Foods: Special Issue - Dietary Melatonin, a New Element in Food Science
International Journal of Environmental Research and Public Health (IF 2.1): Special Issue - Agrochemicals in the Agri-Food Chain
International Journal of Environmental Research and Public Health (IF 2.1): Mycotoxins in the Agri-Food Chain
International Journals of Molecular Sciences (IF 3.6): Special Issue - Metabolomics in the Plant Sciences 2017
International Journals of Molecular Sciences (IF 3.6): Special Issue - Plant Innate Immunity 2.0
Frontiers in Nutrition: Research Topic - Health-Promoting Effects of Traditional Mediterranean Diets
Frontiers in Nutrition: Research Topic - Functional Beverages.
International Journal of Tryptophan Research: Special Collection - Tryptophan: Occurrence, Bioavailability and Biological Activity
Evidence-Based Complementary and Alternative Medicine (IF 2.0): Special Issue - Natural Products and their Compounds in the Gynaecological Cancer Treatment
Evidence-Based Complementary and Alternative Medicine (IF 2.0): Special Issue - Natural Products in Breast Cancer Treatment and Chemoprevention
Cellular and Molecular Biology (IF 1.3): Special Issue - Biosynthesis, Metabolism and Biological Activities of Natural Products from Medicinal and Food Plants
International Journals of Molecular Sciences (IF 3.6): Special Issue - Pulses 2.0

Prize Award Committee

International Journal of Molecular Science 2015's Best Paper Award (International Journal of Molecular Science 2015, 16, 3700-3704).

Referee for Research Project Proposals, Postdoctoral Fellowships and PhD Theses

Restart 2016-2020 Programmes - Research Promotion Foundation; Project: 'Phytochemical analysis and determination of the antioxidant capacity of three endemic pharmaceutical plants of Cyprus'; Project Coordinator: Dr. Michail Plioukas (2017)

Restart 2016-2020 Programmes - Research Promotion Foundation; Project: 'Determination of antioxidant and aldose reductase inhibitory capacities of three endemic pharmaceutical plants of Cyprus'; Project Coordinator: Dr. Michail Plioukas (2017)

National Research Centre (Polish Ministry of Science and Higher Education); Project: 'Effectiveness of Anticancer Activity of DMU-214 (3'-hydroxy-3,4,5,4'-tetrametoxystilbene) in Personalized Treatment for Ovarian Cancer'; Principal Investigator: Dr Hanna Helena Piotrowska-Kempisty (2016).

National Research Centre (Polish Ministry of Science and Higher Education); Project: ‘HyperNano’: Understanding Plant Secondary Metabolic Changes in Response to Nanoparticles via an Integrated Omics Approach in *Hypericum perforatum*’; Principal Investigator: Dr Franklyn Gregory (2016).

Expert Panel Member of Biosciences 3 (BIO3), Research Council for Biosciences and Environment, Academy of Finland; February 21th-23th, 2016; Helsinki, Finland.

Agence Nationale de la Recherche; Project. ‘Research on the Origin and the Side Effects of Fungal Chitosan Stabilising Properties in Wine’; Scientific Coordinator: Prof Marguerite Dols-Lafargue (2016)

National Research Centre (Polish Ministry of Science and Higher Education); Project: ‘Essential oils, Propolis and Nanoparticles of Silver and Copper as an Alternative or Supporting Agent for Conventional Therapy and Prophylaxis of Infections Caused by the Yeast *Candida*’; Research Supervisor: Prof Sławomir Piotr Milewski (2015).

AgreenSkills postdoctoral fellowship programmes (www.agreenskills.eu); Project: ‘Effect of Preharvest Grapes Treatment with Elicitors and Nitrogen Compounds on the Concentration and Composition of Polysaccharides and Oligosaccharides in Wine’; Applicant: Dr Yolanda Ruiz-Garcia.

Hungarian Scientific Research Found; Project: ‘Interaction of MORC1 (CRT1) Family Members, as Participants in Multiple Layers of Plant Immunity, with Plant Hormones, Reactive Oxygen Species and Antioxidants’; Applicant: Prof Balázs Barna (2014).

Swiss National Science Foundation; Project: ‘Pharmacokinetic Optimization of Natural Products from Indian Plants by Metal Coordination’; Applicant: Prof Bruno Therrien (2014).

German Ministry of Education and Research; Project: ‘Utilizing Polyphenol Rich Grapevine Varieties for the Production of High Polyphenol Fruit Juice, Polyphenol Extracts and Leaves for Medical Purposes in a Sustainable Management System by Adapting Vineyard Training, Mechanical Harvesting’; Coordinator: Prof Ernst Rühl (2013).

National Research Centre (Polish Ministry of Science and Higher Education); Project: ‘Evolution of Brassicaceae Plant Secondary Metabolites Essential in Plant Immunity’; Research Supervisor: Dr Pawel Bednarek (2013).

Ph.D. Thesis: ‘Occupational Health Hazards in Government School Teachers of Visakhapatnam’, by S. Ram Prasad, GITAM University, Andhra Pradesh, India (2017).

Ph.D. Thesis in Microbiology: ‘Molecular Characterisation of *Pseudomonas aeruginosa* for Multidrug Resistance and Virulence’, by Waheed Ullah, University of Kohat, Pakistan (2016).

Ph.D. Thesis in Microbiology: ‘The Potential of Selected Flavonoids against Methicillin Resistant *Staphylococcus aureus*’, by Muhammad Usman Amin, University of Kohat, Pakistan (2015).

Ph.D. Thesis in Chemistry: ‘Phytochemical Investigations on *Asphodelus tenuifolius*, *Bonannia graeca*, *Artemisia alba* and Synthesis/Characterization of Prenylated Phenols’, by Muhammad Safder, University of Karachi, Pakistan (2011).

Referee for many Journals, among which:

Current Medicinal Chemistry; Food Chemistry; Food and Chemical Toxicology; Journal of Agricultural and Food Chemistry; Bulletin of the World Health Organization; Journal of Pineal Research; Journal of Nutritional Biochemistry; Nutrition; Food Research International; Nutrition Research; The Journal of Nutrition; Health & Aging; Public Health Nutrition; OncoTargets and Therapy; Drug Design, Development and Therapy; LWT - Food Science and Technology; American Journal of Enology and Viticulture; Critical Reviews in Biotechnology; Neurochemistry International; International Journal of Nanomedicine; Archives of Oral Biology; Planta; Plant Cell & Physiology; Plant Science; Plant Physiology and Biochemistry; Journal of Plant Physiology; Molecules; International Journal of Molecular Sciences; Environmental Pollution; Environmental and Experimental Botany; Environmental Science and Pollution Research; Talanta; Natural Products Communications; Natural Product Journal; Journal of Plant Pathology; Pesticide Biochemistry and Physiology; Phytopathologia Mediterranea; Journal of Phytopathology; Biologia Plantarum; Acta Physiologiae Plantarum; Research in Microbiology; Molecular Plant Pathology; Bioessays; PLOS ONE; Expert Opinion on Drug Delivery; Future Oncology; Marine Drugs; Biotechnology Advances.

10. International Congresses

10a. Invited and Plenary Lectures

2nd European Congress on Preventive, Regenerative and Anti-aging Medicine, Milan, Italy, 2010 (title of the presentation: ‘Grape Melatonin and Resveratrol: First Choice for the Cellular Anti-Aging Rescue Program’)

12th International Symposium of Natural Product Chemistry, Karachi, Pakistan, 2010 (title of the presentation: ‘Chemical Diversity of Grape Products - a Complex Blend of Bioactive Secondary Metabolites’)

Euro-FoodChem XVI, Gdansk, Poland, 2011 (title of the presentation: ‘Bioactivity of Grapevine (*Vitis vinifera* L.) Chemicals and Products: Focus on Antioxidant Power’)

1th Workshop on Pineal Gland - Melatonin: from Biology to Clinical Application, Brescia, Italy, 2012 (title of the presentation: ‘Melatonin in Traditional Mediterranean Foods, a New Element to Further Comprehend the Healthy Potential of an Ancient Dietary Style’)

3rd Recent Advances in Health and Medical Sciences, Limassol, Cyprus, 2012 (title of the presentation: ‘Healthy Potential of Grape Bioactive Metabolites: Putative Additive/Synergic Effects of Polyphenols and Melatonin’)

12th International Congress of Italian Federation of Life Sciences (FISV), Rome, Italy, 2012 (title of the presentation: ‘Melatonin, a Newly Focused Metabolite in Plant Neurobiology and Innate Immunity’)

Workshop on ‘Biodiversity and Nutrition in the Mediterranean Area, Milan, Italy, 2012 (title of the presentation: ‘Brief Introduction to Biodiversity’)

2nd Workshop on Pineal Gland - Melatonin: Clinical Application, Brescia, Italy, 2014 (title of the presentation: ‘Melatonin in Plant Foods’)

Current Status, Opportunities and Challenges in Medicinal Plants and Natural Product Research, Bardoli, Surat, Gujarat, India, 2014 (title of the presentation: ‘Melatonin in Medicinal and Food Plants: New Perspectives in Nutritional and Phyto-therapy’)

4th International Congress Magenta Osteoarea, Milan, Italy, 2015 (title of the presentation: ‘The Potential of Phytochemicals in Rheumatic Diseases: Focus on Antioxidant and Anti-Inflammatory Activities’)

Symposium International. Société, Agro-Biotechnologie, Environnement and Developpement Durable - Pour un Partenariat Nord-Sud Solidaire, Tiaret, Algeria, 2015 (title of the presentation: ‘Pathophysiology of Ozone Injury and Tolerance Mechanisms in Plants’)

14th Eurasia Conference on Chemical Sciences, Karachi, Pakistan, 2016 (title of the presentation: ‘Melatonin in Medicinal and Food Plants, A New Element in Phytochemical Research’)

4th International Congress of Society for Ethnopharmacology, Bardoli, Surat, Gujarat, India, 2017 (title of the presentation: ‘*Achillea moschata*, a Case Study of Alpine Ethnobotany’)

Analytica Conference 2018, Munich, Germany (title of the presentation: ‘Phytochemistry behind Mediterranean diet: health-promoting effects of phytochemical diversity’)

10b. Invited Speaker at EXPO, Milan 2015

Food as Medicine, Milan, Italy, 2015 (title of the presentation: ‘Functional Foods and Nutraceuticals’)

Wine: a Jewel to Enjoy Responsibly, Milan, Italy, 2015 (title of the presentation: ‘Light Wine Drinking in the Mediterranean Diet Perspective’)

10c. Chairing

12th International Symposium of Natural Product Chemistry, Karachi, Pakistan, 2010 (Session: ‘Isolation, Structure Elucidation and Synthesis of Natural Products’)

3rd Recent Advances in Health and Medical Sciences, Limassol, Cyprus, 2012 (Session: ‘Novel Therapeutics Approaches for Common and Rare Diseases’)

4th Recent Advances in Health and Medical Sciences, Paphos, Cyprus, 2013 (Session: ‘Antimicrobial and Anticancer Effects of Plant Products’)

4th Recent Advances in Health and Medical Sciences, Paphos, Cyprus, 2013 (Poster Session 5)

4th Recent Advances in Health and Medical Sciences, Paphos, Cyprus, 2013 (Round Table Discussion: ‘Natural Plant Products - Free Radicals, Oxidative Stress - Antioxidants’)

12th International Congress of Italian Federation of Life Sciences (FISV), Rome, Italy, 2012 (Session: ‘Plant Metabolism and Environmental Stress’)

Current Status, Opportunities and Challenges in Medicinal Plants and Natural Product Research, Bardoli, Surat, Gujarat, India, 2014 (Session: Genomics, Proteomics and Bioinformatics’)

Symposium International. Société, Agro-Biotechnologie, Environnement and Developpement Durable - Pour un Partenariat Nord-Sud Solidaire, Tiaret, Algeria, 2015

4th International Congress of Society for Ethnopharmacology, Bardoli, Surat, Gujarat, India, 2017 (Session: ‘Trends in Medicinal Plants Research: Global Scenario’)

10d. International Scientific Committees

3rd Recent Advances in Health and Medical Sciences (Vice-President), Limassol, Cyprus, 2012

4th Recent Advances in Health and Medical Sciences (Co-President), Paphos, Cyprus, 2013

5th Recent Advances in Health and Medical Sciences, Paphos, Cyprus, 2014

Current Status, Opportunities and Challenges in Medicinal Plants and Natural Product Research, Bardoli, Surat, Gujarat, India, 2014

6th Recent Advances in Health and Medical Sciences, Paphos, Cyprus, 2015

7th Recent Advances in Health and Medical Sciences, Paphos, Cyprus, 2016

8th Recent Advances in Health and Medical Sciences, Paphos, Cyprus, 2017

11. Visiting Professor

Université Ibn Khaldoun, Faculté des Sciences de la Nature et de la Vie, Laboratoire d’Agro-Biotechnologie et de Nutrition en Zones Semi-arides, Tiaret, Algérie (2015).

12. Scientific Societies

Founding Member of the Italian Society of Environmental Medicine (SIMA)

Member of the Scientific Committee of the Italian Society of Environmental Medicine (SIMA)
Member of the Italian Society of Plant Pathology (SIPaV)
Member of the Italian Society of Human Nutrition (SINU)
Member of the Working Group 'Pharmacognosy and Phytotherapy' of the Italian Pharmacological Society

13. Patents

'Compositions Comprising Rutin Useful for the Treatment of Tumors Resistant to Chemotherapy'
(WO2015036875A1; US20160213698; US9757405B2; EP3043821)
'Polyamidoamines for the Prevention and Treatment of Plant Diseases' (MI2013A002058)

14. Grants

2006: Infezione di protoplasti con trascritti infettivi di virus non trasmissibili per inoculazione meccanica (PUR 2006-2008)
2007: Effetti dell'induzione di resistenza con chitosano sulla diffusione degli ampelovirus e sul profilo polifenolico dell'uva (PUR 2006-2008)
2008: Ruolo dei batteri endofiti nel fenomeno del "recovery" in viti affette da giallumi (PUR 2006-2008)
2009: Effetti dell'inquinamento atmosferico sul contenuto di metaboliti secondari bioattivi in piante di interesse nutrizionale: aspetti salutistici e sicurezza alimentare (UnimiMI per il Futuro - 5 per Mille)
2009: Gli induttori di resistenza nel controllo delle fitoplasmosi della vite e nel miglioramento qualitativo dell'uva (PUR 90%)
2010-2014: Intelligent Sensing and Manipulation for Sustainable Production and Harvesting of High Value Crops, Clever Robots for Crops (<http://www.crops-robots.eu/>) (7th Framework Programme)
2014: Strategie e Tecnologie Innovative nel Controllo e nella Diagnosi delle Virosi e delle Fitoplasmosi della Vite (Piano di Sviluppo UniMI)
2015-2016: Impiego di Nanotecnologie e Nanomateriali in Ambito Agricolo e Forestale (Consorzio INNOVA FVG)
2015: Studio dell'Interazione Pianta - Fungo Durante il Processo d'Infezione di *Fusarium verticilloides* in Mais (DiSAA - Utilizzo dei Fondi Linea 2 - Piano di Sostegno alla Ricerca)
2017-2019: Semilavorati nutraceutici e tecnologici fermentati per il miglioramento nutrizionale e sensoriale di prodotti da forno tradizionali e gluten-free (Bando Linea R&S per Aggregazioni; Regione Lombardia)
2017-2019: Agricultural Intelligent Robotic-UAV for Selective Precision Spraying of Crops (Italy-Israel R&D Cooperation Program; MAECI, Italian Foreign Ministry)
2017: Composti Fitochimici nell'Alimentazione della Bovina da Latte: Valore Nutritivo, Produzione di Metano e Microbiota Ruminale (DiSAA - Utilizzo dei Fondi Linea 2 - Piano di Sostegno alla Ricerca)

15. Private Funding

2012-2013: Conversione di Linee Cellulari Tumoriali Chemioresistenti in Cellule Chemiosensibili
Mediante Sostanze di Origine Vegetale (Cercar di Paolo Maestri)

2015-2016: Melatonin Detection in Pistachios (Windstar Medical AG)

2018-2019: Efficacia di un Formulato Sperimentale nel Controllo delle Fitopatie (Aquadetox 3000)

2018-2019: Biodisponibilità delle Antocianine in Volontari Sani dopo Assunzione di Riso (Centro Ricerca
Riso - Sapise Coop. Agr.)

Milan, June 1st, 2018

Marcello Iriti PhD

A handwritten signature in black ink, appearing to read "Marcello Iriti", is centered below the typed name. The signature is written in a cursive, flowing style.