

CURRICULUM VITAE

Name



Paola BONFANTE

**Birth
Nationality**

Born in Torino, May 7, 1947
Italian

**Present address
and role**

Department of Life Science and Systems Biology Viale Mattioli 25 - 10125
Torino

E-mail: paola.bonfante@unito;
Skype [paolabonfante](#)
Full Professor of Plant Biology (till November 2017)
Currently: Professor Emerita

https://en.wiki.topitalianscientists.org/Paola_Bonfante

Education

- Italian Thesis in Biological Sciences, University of Torino (1970).
- PhD equivalent in Soil Mycology- CSMT, National Council of Research, Torino, ITALY (1970-1973)

Key qualifications

Research Field: Biology of Plant-Microorganism Interactions and Sustainability.

More than ninety per cent of land plants live associated to bacteria and fungi, which act as biofertilisers and bioprotectors against pathogens. They build up a plant microbiota which offers a crucial tool to develop new strategies for a more sustainable agriculture. In this context, mycorrhizas, i.e. plant.fungal associations, play a crucial role in plant mineral nutrition, potentially enhancing plant productivity.

Research Group coordination and main discoveries: The group she has coordinated has a research tradition on the biology of symbiotic associations, mainly mycorrhizas, and fungal taxonomy which dates back to 1975. PB spent a long part of her scientific activity studying the intimate interactions that occur between symbiotic fungi and plants as well as between bacteria and fungi, using cellular and molecular approaches. Applying DNA technologies, early in the nineties, she provided some of the first contributions to the knowledge of mycorrhizal diversity in natural as well as in cultivated fields. The main scientific missions of the group have been and still are: To understand the cellular and molecular basis of plant-fungal interactions in mycorrhizas; to define the molecular-biochemical basis of the fungal-plant dialogue; to investigate the genetic determinants which characterize some mycorrhizal fungi; to define the fungal biodiversity in soil; to evaluate the fungal impact in natural

and agricultural ecosystems in the frame of sustainable agriculture; to investigate the fungal interactions with other microorganisms. In this context, in the early eighties Paola Bonfante built up an atlas of the cellular plant- fungal interactions occurring in mycorrhizal symbioses by developing/using affinity/ immunocytochemical methods. Thanks to these approaches she characterized a new apoplastic compartment, which is originated during mycorrhizal interactions. This interface compartment is still at the centre of omics and functional studies since it is the cell compartment where nutritional exchanges occur. Later, she discovered two groups of endobacteria, which live inside mycorrhizal fungi, and - thanks to the fungal and bacterial genome sequencing- she described how these microbes may modulate some of the functional traits of their fungal hosts. These findings have pioneered a new field of research (Fungal-bacterial interactions) which is currently considered relevant in the context of the environmental microbiota as well as of the so-called tri-kingdom interactions (plants, mycorrhizal fungi, bacteria). With her research group, she has discovered fungal bioactive molecules (chitoooligosaccharides) which are perceived by the host plant in order to establish the arbuscular mycorrhizal symbiosis. Such molecules are currently used to improve plant growth under in field conditions. On the other hand, in collaboration with a group from the KAUST University, she has participated to the discovery of a new plant molecule (zaxinone), which together with the strigolactones, modulate the success of plant-fungal interactions in the arbuscular mycorrhizal symbiosis. The expertise on cellular and molecular biology of plant/fungal interactions as well as on dynamics of fungal populations is witnessed by a large number of original, review and technical papers and multiple international collaborations.

Major scientific projects

In the more recent times, PB has devoted her attention to the beneficial impact of plant microbiota on crop plants by using omics approaches. On these issues, she has coordinated projects on: Bacterial and fungal microbiomes in rice, tomato, wheat, olive; Dissecting the role of the fungal intracellular microbiota; Rice, tomato and wheat responses to arbuscular mycorrhizal fungi; Genomics and Functional genomics in mycorrhizal fungi; Systemic effects of mycorrhizal fungi on plant traits.

Collaboration in current projects: Biodiversity of plant microbiota in urban environments; The impact of endobacteria on tomato and agave growth (Italo-Mexican project).

Positions

Professor Emerita

Full Professor of Plant Biology at the University of Torino (1984-2017)
Head of the Department of Plant Biology (October 2006-December 2011)
Responsible of the Centro di Studio sulla Micologia del Terreno del CNR-Torino, currently named Sezione di Torino dell'Istituto di Protezione per le Piante (1995-2009), Coordinator of the PhD school in Biological and Biotechnological Sciences; (2006-2013), Coordinator the PhD Course in Biology and Biotechnology of Fungi (2000-2005)

Teaching positions

Till November 2017- Natural Sciences (Botany, Plant-Microbe interactions), Biology (Plant-Microbe interactions), Plant Biotechnology

Supervisors of hundreds of undergraduate students, and of more than 60 PhD students and postdoctoral fellows. Many of them are currently enrolled in Italian and European Universities, as well as in CNR and INRA laboratories.

Scientific responsibilities and general activities	<p>Member of the Scientific Committee for Research Activities-Provincia di Trento (2014-2019).</p> <p>Member of the Scientific Committee of CNR (2012-2016)</p> <p>Member of the General Committee Compagnia di San Paolo 2020- 2024 (https://www.compagniadisanpaolo.it/it/fondazione/organi/consiglio-generale/) of the Fondazione Compagnia San Paolo Torino</p> <p>https://www.compagniadisanpaolo.it/it/</p> <p>Member of the International Mycological Society (IMA) 2018-2024</p> <p>Organizer of many symposia, workshops and meetings on mycorrhizas and symbiotic fungi;</p> <p>Visiting scientist in Japan (1989), Brazil (2012), Mexico (2016)</p> <p>Invited speakers in many international congresses of Mycology, Microbiology, Botany, Biotechnology, Plant Pathology, Cell Biology, Fungal genetics, Genetics, Memorial Symposium for Biology of Symbiosis, ICOM, iMMM, Microbiota, ISME meetings</p> <p>Invited seminars in many universities, worldwide</p> <p>Invited to be External examiner (Opponent) for more than 20 PhD Dissertations in Europe</p> <p>Invited to be External Examiner for Habilitation a Diriger de recherche- France</p> <p>Past Member of the Scientific Committee of the Dijon Campus (France)</p> <p>Past Member of the Scientific Committee of Plant for Future (Italy)</p> <p>Organizing committee of many meetings, among which MPMI Meeting in Sorrento (2007), 8th International Congress of Plant Pathology (Torino, 2008), Indian-Italian Workshop (November, 2010), IMMM (Cambridge 2015, Toulouse, 2017, Torino 2019), ISME 2016; XLVI SEMINARIO Evoluzione biologica e i grandi problemi della biologia: Il microbiota, il secondo genoma degli eucarioti, Meetings Academy of Lincei on Plant-microbes; pesticides, Environment...</p>
Editorial and evaluation activities	<p>IMA Executive Committee (International Mycological Association) 2018--2024</p> <p>Editorial and evaluation activities</p> <p>Editor of Environmental Microbiology (2013-2022)</p> <p>Senior Editor IMA FUNGUS (2019-)</p> <p>Editor of Microroganisms (2019-2020)</p> <p>Associated Editor of Fungal Biology (Till 2015); Board member of New Phytologist, Board member of IS-MPMI <i>Interactions</i>, The ISME Journal</p> <p>Referee for papers concerning mycorrhizas for different journals (ie. Science, Nature, nature communications, Plant Cell, Plant Journal, Plant Physiology, Planta, Fungal Biology & Genetics, PNAS and many others)</p> <p>Evaluator for scientific European and American (NSF) Agencies. Evaluator for: ERC (Senior grants, 2011, 2019; 2021-2022; 2023; Consolidated grants 2016), Finnish Academy, Helsinki (2018-2019); The European Science Foundation (2019-2020-2021); MIUR (2018, 2022, 2023); CSIC Labs (Madrid, 2018), ANR (2020-2021-2022-2023-2024)</p> <p>Jury Panel: Premio Lombardia è Ricerca - 2020-2021</p>
Awards	<p>Fellow of Academy of Sciences of Torino (2000)</p> <p>Fellow of Academy of Agriculture of Torino (2000);</p> <p>Fellow of Accademia dei Lincei Roma (November 2011, November 2021),</p> <p>Fellow of Académie d'Agriculture de France, Paris (2018),</p> <p>Fellow of Academia Europea, MAE (2019)</p> <p>Award for Plant Biology 2010, Accademia dei Lincei - Roma, June 2010</p>

Award for the Award for the French Food Spirit- Science – Paris, Consolato Italiano - December 16, 2010

2017: Taylor-White Endowed Lecture. Berkeley University

2019: Appointed Commander (“Commendatore”) of the “Order of Merit of the Italian Republic” by the President of the Italian Republic (“motu proprio”).

2021: The Adam Kondorosi -Accademia Europaea Award for Advanced research

2023: Recipient of the Templeton Lecture Corvallis University, May 2023

2023: Medail for European Mycology - Perugia September 7, 2023

2024: Medail Emilia Chiancone - Accademia dei XL, Rome, May 23 2024

She is in the list of:

1. Top Italian Scientists- Ranking 3 for the typology **Natural sciences**
https://www.topitalianscientists.org/TIS_HTML/Top_Italian_Scientists_Natural_Environmental_Sciences.htm (February 25, 2024, Top woman) on the basis of Google scholar
<https://scholar.google.it/citations?user=WiJOKEQAAAAJ&hl=it>

2. Highly Quoted Researchers, (ISI) Philadelphia.<http://hcr.stateofinnovation.com>;
In the list of Clarivate Analytics: highly quoted researcher 2017, 2018, 2020

3. She is listed as First among the Best Plant Science and agronomy Scientists in Italy - Second Edition
<https://research.com/scientists-rankings/plant-science-and-agronomy/it>

4. One hundred Italian Experts: <http://100esperte.it/search?id=bonfante-paola-70>; <https://100esperte.it/search?id=70>

5, Member of Group 2003 <https://www.gruppo2003.org>

6. Wired italia listed PB among the 20 top Italian scientists
<https://www.wired.it/donne-scientiate-italiane-ricerca-8-marzo/>

Scientific production

Papers in refereed journals: more than 300 (listed in the official site of the University Ministry
and in the web site of the Torino University
http://www.dbios.unito.it/do/docenti.pl/Show?_id=pbonfant#pubblicazioni

Google scholar: H index 106, citations more than 35000
<https://scholar.google.it/citations?user=WiJOKEQAAAAJ&hl=it>

Broader Science Communication

Lectures on Plant biology, Microbes, Agriculture, Food and Environments (2019-2023) for
Higher Schools in Torino, University "Terza Età"; Science Festival (Mantova 2019; Bergamo 2019, 2023, Genova 2021, Mantova 2022, Schio 2022, Como 2023, Lucca 2023 etc); Giovedì Scienza (Torino 2020); Prepararsi al futuro (Torino, 2020), Maratona : I love Scienza 10 November 2020, Plant day -

Torino (2022) Lettura Corsiniana, Roma maggio 2022, and many other activities
TV interview on Agriculture <https://www.raiplay.it/video/2020/12/Prepararsi-al-futuro-La-natura-e-ancora-naturale-1c509588-56fb-4907-8a28-3e4a1f06243a.html>

Video: Yellow sofa

<https://www.youtube.com/watch?v=p75QZoDjPVU>

TV iinterview for Geo and Geo; Interview for Ramo d'oro (2023); Podcasts for Artribune

https://drive.google.com/file/d/1Azvsd854-mczyAtRzhVAd_uZCG09Ecp_/view

[TV Interviews at Il Ramo d'oro.Rai 3](#)

Books: 1. Una pianta non è un'isola. Mulino 2021
2. Piante, Ambiente, Società, Bard Edizioni, 2024

Interview for New Phytologist 2018

<https://nph.onlinelibrary.wiley.com/doi/10.1111/nph.15169>

Interview for Trends in Plant science