

Dr Davide Bulgarelli
Principal Investigator

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Synopsis

I am a scientist interested in deciphering the molecular interactions between plants and their associated microbial communities (collectively referred to as the plant microbiome). Similar to the microbiome inhabiting the digestive tract of humans, the plant microbiome modulates the growth, development and health of its host organisms. Therefore, plant-microbiome interactions define a research field with great potential for discovery both in basic and applied science. To study the plant microbiome, my research group uses a broad range of experimental and computational approaches at the cross-roads of different disciplines such as molecular microbiology, plant genetics and bioinformatics. My long-term ambition is to tap into the knowledge we generate to contribute to global food security.

Education

- 2004-2008 **Ph.D.**, Plant Biology and Crop Production, University of Milan (Italy);
2002-2004 **Master degree**, *summa cum laude*, Crop Production; Faculty of Agriculture,
University of Modena and Reggio Emilia (Italy);
1999-2002 **Bachelor degree**, *summa cum laude*, Agricultural Sciences and Technologies;
Faculty of Agriculture, University of Modena and Reggio Emilia (Italy).

Awards

Selected as a member of the Young Academy of Scotland (since August 2016).

Posts

- 2015-*present* **Principal Investigator**, University of Dundee (UK)
2013-2015 **Independent Investigator**, University of Dundee (UK)
2008-2013 **Post-doc** with Prof Paul Schulze-Lefert, Max Planck Institute, Cologne (Germany).

Current group composition

3 Post-Doctoral Researchers, 1 Technical Assistant, 1 MSc student.

Active Research Grants

- 2018-2023 Horizon 2020, Grant Agreement: 818290, DB is a WP leader, **€754,000**;
Website: <https://circlesproject.eu/>
2018-2022 BBSRC responsive mode BB/S002871/1, DB is PI of the grant, **£809,531**.
Website: <https://qtr.ukri.org/projects?ref=BB%2FS002871%2F1>

Standout scientific publications (past five years)

1) Alegria Terrazas, R., Balbirnie, K., Morris, J., Hedley, P.E., Paterson E., Baggs E., Fridman E., and **Bulgarelli, D.** (2020). A footprint of plant eco-geographic adaptation on the composition of the barley rhizosphere bacterial microbiota. *Scientific Reports* 10, 12916.

2) Caradonia F., Ronga D., Catellani M., Giarretta Azevedo C. V., Alegria Terrazas R., Robertson Albertyn S., Francia E. and **Bulgarelli D.** (2019). Nitrogen Fertilisers Shape the Composition and Predicted Functions of the Microbiota of Field-Grown Tomato Plants. *Phytobiomes Journal*. 2019 Nov 18;3(4):315-25;

The above manuscript was featured in this press release:
<https://www.lifesci.dundee.ac.uk/news/2020/jan/30/nitrogen-fertilizers-finetune-composition-individual-members-tomato-microbiota> written by the American Phytopathological Society

3) Robertson-Albertyn S., Alegria Terrazas, R., Balbirnie, K., Blank, M., Janiak, A., Szarejko, I., Chmielewska, B., Karcz, J., Morris, J., Hedley, P.E., George, T.S., and **Bulgarelli, D.** (2017). Root Hair Mutations Displace the Barley Rhizosphere Microbiota. *Frontiers in plant science*. 8, 1094.

4) **Bulgarelli D.**, Garrido Oter R., Muench P., Weiman A., Droege J., Pan Y., McHardy A. and Schulze-Lefert P. (2015) Structure and Functions of the bacterial root microbiota in wild and domesticated barley. *Cell Host and Microbe*. 17:392-403.

5) Schlaeppi K. and **Bulgarelli D.** (2015) The plant microbiome at work. *Molecular Plant Microbe Interactions Journal*. 28:212-217.

Manuscripts number 4, and 5 received enough citations to place them in the top 1% of their academic fields based on a highly cited threshold for the field and publication year (source: Web of Science, information retrieved on October 2020)

The complete list of my publications is available at <https://orcid.org/0000-0002-2020-6642>

Keynote lectures (past five years)

2020 Swedish Agricultural Board annual meeting, Lund (Sweden)-*remote presentation*;
 2019 Biostimulants World Congress, Barcelona (Spain);
 2018 KEYS Symposium Keygene, Wageningen (The Netherlands);
 2017 Brazilian Society of Genetics Annual Meeting, Ouro Preto (Brazil);
 2017 Adam Kondrosi Symposium, Gif-sur-Yvette (France);
 2016 Plant Biotech Denmark, Copenhagen (Denmark).

Invited seminar at Highers Education Institutions (past five years)

2020 Scuola Superiore Sant'Anna, Pisa (Italy)-*remote presentation*;
 2020 King Abdullah University of Science and Technology, Thuwal (Saudi Arabia)-*remote presentation*;
 2019 Leiden University, Leiden (The Netherlands);
 2019 University of Warwick, Coventry (UK);
 2018 University of East Anglia, Norwich (UK).

Commissions of Trust

2020 Evaluator for the Departement d' evaluation de la recherche (France); I was part of the international panel of experts evaluating and advising on the formation of the Plant Health Institute of Montpellier;

2019 –*present* Member of the Review Panel CES20 for the Agence Nationale de la Recherche (France);

2018 –*present* Member of the Review Panel for the Priority Programme SPP 2125/1 (DFG, Germany);

2014 –*present* Reviewer for the following funding bodies: BBSRC, The Royal Society (UK); BMBF (Germany); SNF, Gebert R f Stiftung (CH); AgreenSkills (France); Fonds de recherche du Qu bec (Canada); Israeli Science Foundation (Israel)

2014 –*present* PhD examiner at following Universities: Dundee (UK); Molise (Italy), Sao Paolo (Brazil), Leiden (The Netherlands) and Wageningen (The Netherlands).

Organisation of Scientific Conferences

2019- SEB Annual meeting, Seville (Spain): session organiser and chair;

2019- IS-MPMI, Glasgow (UK): member of the local organising committee;

2018- 2nd Plant Microbiome Symposium, Amsterdam (The Netherlands): session chair;

2016- IS-MPMI, Portland (USA): session organiser and chair.

Memberships

2018 –*present* Member of the Italian Society for Plant Pathology;

2017 –*present* Member of the International Society of Root Research;

2014 –*present* Member of the British Society for Plant Pathology;

2009 –*present* Member of the International Society of Molecular Plant Microbe Interactions.

Editor and referee for the following scientific journals

mSystem (Editor)	Environmental Microbiology	Plant and Soil
Frontiers in Plant Sciences (Editor)	(Editor)	New Phytologist
Frontiers in Microbiology (Editor)	Science	Plos ONE
	Trends in Microbiology	The ISME Journal
	BMC Biology	Nature Plants
	PNAS	Plos Genetics

Public engagement

Since 2014 I have conceived and been performing, with the students in the lab activities at the main outreach events of the School of Life Sciences (e.g., https://www.youtube.com/watch?v=JdbDRyfiad4&feature=emb_logo) to increase the awareness of the general public on the plant microbiome and its contribution to global food security. Likewise, I contributed to educational publications aimed at secondary school students <https://futurumcareers.com/how-can-understanding-plants-and-microorganisms-help-feed-the-world> and political bodies <https://post.parliament.uk/research-briefings/post-pn-0601/> alike.