



TO MAGNIFICO RETTORE OF UNIVERSITA' DEGLI STUDI DI MILANO

ID CODE 4476

I the undersigned asks to participate in the public selection, for qualifications and examinations, for the awarding of a type B fellowship at **Dipartimento di Scienze per gli Alimenti, la Nutrizione e l'Ambiente**

Scientist- in - charge: **Francesca Mapelli**

Lorenzo Vergani

CURRICULUM VITAE

PERSONAL INFORMATION

Surname	Vergani
Name	Lorenzo
Date of birth	27/09/1989

PRESENT OCCUPATION

Appointment	Structure
Post doc fellow	Unimi Defens

PROFESSIONAL EXPERIENCE

Year	Activity
2019	Post-Doc fellowship at University of Milan, DeFENS, (Department of Food, Environmental and Nutritional Sciences).
2018-2019	Post-Doc fellowship at University of Milan, DeFENS, (Department of Food, Environmental and Nutritional Sciences) on the project MAD4WATER (DevelopMent AnD application of integrated technological and management solutions FOR wasteWATER treatment and efficient reuse in agriculture tailored to the needs of Mediterranean African Countries) funded by the European Union.

EDUCATION AND TRAINING

Degree	Course of studies	University	year of achievement of the degree
PhD	Food Systems	University of Milan	2017
Master degree	Plant, food and agri-environmental biotechnology	University of Milan	2014
Bachelor degree	Natural Sciences	University of Milan	2012



FOREIGN LANGUAGES

Languages	level of knowledge
English	Very good

TRAINING OR RESEARCH ACTIVITY

<p>1. Study of the microbiome of contaminated soils, aiming to define bacterial distribution across gradients of pollution in soil matrices and to exploit plant-bacteria interactions in the rhizosphere for the development of phyto- and rhizo-remediation strategies targeting polychlorinated biphenyls (PCB). With this purpose the plant biostimulation effect on the soil microbiome is studied together with the plant growth promoting (PGP) and PCB-degrading abilities of rhizosphere bacteria. Plant-bacteria interactions are investigated both in semi-field conditions and through laboratory experiments with model plants like <i>Arabidopsis thaliana</i> and <i>Medicago truncatula</i>.</p> <p>2. Characterization of the plant-associated microbiome and of PGP bacteria isolates to identify beneficial interactions for improved water and fertilization management in agriculture.</p>

PROJECT ACTIVITY

Year	Project
2019	Participation to project SRI-PROM (Sviluppo Rurale Integrato in Sri Lanka: riso e spezie dalla Produzione al Mercato) led by the Italian NGO ICEI. Research activity is carried out as a collaboration with Rajarata University of Sri Lanka with the aim to develop a microbial biofertilizer to increase local agriculture safety and sustainability.
2018-2019	Participation to the EU project MAD4WATER (Development And application of integrated technological and management solutions FOR wasteWATER treatment and efficient reuse in agriculture tailored to the needs of Mediterranean African Countries). Research activity focused on the study of plant-associated microbiota in arid soils.
2014-2019	Collaboration, as PhD student and post doc fellow of Prof. Sara Borin Lab, with the "Caffaro working group" and the related scientific advisory board of ERSAF (Ente Regionale per i Servizi all'Agricoltura e alle Foreste). Research activity was carried out with the aim to define potential strategies for a soil bioremediation plan targeting the site of national priority SIN Brescia-Caffaro.

INTERNATIONAL EXPERIENCE

March 2019: Research activity as Post-Doc fellow at the Department of Biochemistry and Microbiology, University of Chemistry and Technology, Prague, in collaboration with the laboratory of Dr. Ondrej Uhlík.
April-October 2017: Research activity as PhD student at the Department of Biochemistry and Microbiology, University of Chemistry and Technology, Prague, in collaboration with the laboratory of Dr. Ondrej Uhlík
January-June 2011: Erasmus student at Stockholm University (SE), attendance of two master courses in environmental sciences.

TEACHING AND OUTREACH ACTIVITY



June 2019: Visiting researcher at Rajarata University (Mihintale, Sri Lanka) within the project SRI-PROM. Training of undergraduate students for molecular microbiology techniques; Presentation of two seminars on plant-microbe beneficial interactions for improved water management in agriculture and for bioremediation.
May 26, 2018: collaboration to the Open Day of the faculty of Agriculture, University of Milan.
2015-2019: Supervision of bachelor and master students during their laboratory internship and thesis elaboration. Collaboration to the laboratory courses of microbiology for students attending the bachelor and master programmes in "Biotechnology" and "Science of crop production and protection" at University of Milan.

CONGRESSES AND SEMINARS

Date	Title	Place
25-27 November 2019	Corso R base	University of Milan-Bicocca, Milan, Italy
7-11 July 2019	8 th Congress of European Microbiologists-FEMS2019	Glasgow, Scotland
12-14 February 2019	SiCon2019	Brescia, Italy
3-7 September 2018	Computational analysis: From genomic diversity to ecosystem structure. SIMTREA Summer School	Florence University, Florence, Italy
10-13 July 2018	Contaminated soil: management and remediation. LIFE BioRest Summer School	Turin, Italy
24-26 October 2017	Microbial Diversity Conference	Bari, Italy
25-29 June 2017	6 th International Symposium on Biosorption and Biodegradation/Bioremediation	Prague, Czech Republic
14-16 September 2016	Italian PhD Research on Food Science Technology and Biotechnology	Portici, Italy
31 August- 2 September 2016	Mothur Workshop 2016. Analysis of output data from high-throughput DNA sequencing technologies	Detroit, USA
1 May 2016	Cortona Procarioti 2016	Cortona, Italy
21-25 June 2015	Rhizosphere 4 Conference	Maastricht, Netherlands



PUBLICATIONS

Articles in reviews
Mapelli F, Riva V, Vergani L , Choukrallah R, Borin S. Unveiling the microbiota diversity of the xerophyte <i>Argania spinosa</i> L. Skeels root system and residuesphere. Submitted to <i>Microbial Ecology</i> , under review
Riva V, Riva F, Vergani L , Crotti E, Borin S, Mapelli F. 2019. Microbial assisted phytodepuration for water reclamation: environmental benefits and threats. <i>Chemosphere</i> 241, doi:10.1016/j.chemosphere.2019.124843
Vergani L , Mapelli F, Suman J, Cajthaml T, Uhlik O, Borin S. 2019. Novel PCB-degrading <i>Rhodococcus</i> strains able to promote plant growth for assisted rhizoremediation of historically polluted soils. <i>PLoS ONE</i> 14(8): e0221253
Terzaghi E, Vergani L , Mapelli F, Borin S, Raspa G, Zanardini E, Morosini C, Anelli S, Nastasio P, Sale V M, Armiraglio S, Di Guardo A. 2019. Rhizoremediation of weathered PCBs in a heavily contaminated agricultural soil: results of a biostimulation trial in semi field conditions. <i>Science of the Total Environment</i> 686,484-496
Terzaghi E, Zanardini E, Morosini C, Raspa G, Borin S, Mapelli F, Vergani L , Di Guardo A. 2018. Rhizoremediation half-lives of PCBs: Role of congener composition, organic carbon forms, bioavailability, microbial activity, plant species and soil conditions, on the prediction of fate and persistence in soil. <i>Science of the Total Environment</i> 612,544-560
Vergani L , Mapelli F, Marasco R, Crotti E, Fusi M, Di Guardo A, Armiraglio S, Daffonchio D, Borin S. 2017. Bacteria associated to plants naturally selected in a historical PCB polluted soil show potential to sustain natural attenuation. <i>Frontiers in Microbiology</i> doi:10.3389/fmicb.2017.01385
Vergani L , Mapelli F, Zanardini E, Terzaghi E, Di Guardo A, Morosini C, Raspa G, Borin S. 2016. Phyt-rhizoremediation of polychlorinated biphenyl contaminated soils: an outlook on plant-microbe beneficial interactions. <i>Science of the Total Environment</i> 10.1016/j.scitotenv.2016.09.218
Books
Riva V, Terzaghi E, Vergani L , Mapelli F, Zanardini E, Morosini C, Raspa G, Di Guardo A, Borin S. 2018. Exploitation of rhizosphere microbiome services. In D. Reinhardt & A. K. Sharma (Eds.), <i>Methods in Rhizosphere Biology Research</i> , Springer Press, Fribourg
Congress proceedings
Vergani L , Mapelli F, Terzaghi E, Raspa G, Uhlik O, Zanardini E, Morosini C, Di Guardo A, Borin S. "Rhizoremediation of a historical pcb polluted soil: plant-driven biostimulation of the soil microbiome". e-Book of Abstracts of the Joint Conference EBC-VII & ISEB-2018 Chania, Crete, Greece, June 25-28, 2018, ISBN 978-618-81537-6-9, pp 250-251
Vergani L , Mapelli F, Marasco R, Crotti E, Fusi M, Daffonchio D, Borin S. "Bacteria associated to spontaneous plants in a historical PCB polluted soil show potential to sustain natural attenuation". Microbial Diversity Conference, Bari 24-26 October 2017, pp 60-63
Vergani L , Mapelli F, Marasco R, Chouaia B, Di Guardo A, Zanardini E, Armiraglio S, Daffonchio D, Borin S. "Microbial facilitators for phytoremediation in PCB polluted soil". XXI Workshop on the Developments in the Italian PhD Research on Food Science Technology and Biotechnology, Portici (NA) 14-16 September 2016, pp 186-187.
Marasco R, Rolli E, Vergani L , Fusi M, Booth J M, Soussi A, Fodelianakis S, Blilou I, Cardinale M, Cherif A, Borin S, Daffonchio D. "Bacterial diversity and functional services within the rhizosphere of a desert plant" Microbial Diversity Conference, Perugia 27-29 October 2015, pp 186-189.
Mapelli F, Vergani L , Marasco R, Fusi M, Daffonchio D, Borin S. "Spatial pattern of soil bacterial diversity in a mixed and uneven polluted site and assessment of rhizoremediation potential" Microbial Diversity



Conference, Perugia 27-29 October 2015, pp 41-44.

Oral presentation in national and international congresses

Vergani L, Mapelli F, Marasco R, Crotti E, Fusi M, Daffonchio D, Borin S. "Bacteria associated to spontaneous plants in a historical PCB polluted soil show potential to sustain natural attenuation". Microbial Diversity Conference, Bari 24-26 October 2017

Vergani L, Mapelli F, Marasco R, Crotti E, Fusi M, Daffonchio D, Borin S. "Rhizosphere microbiota harboring PCB degrading potential is associated to spontaneous plants in a highly polluted site". 6th International Symposium on Biosorption and Biodegradation/Bioremediation, Prague 25-29 June 2017

Vergani L. "Pollutant profiles drive spatial pattern of soil bacterial communities" Cortona Procaroti 2016. Cortona, Italy 1 May 2016.

Poster presentation in national and international congresses

Mapelli F, **Vergani L**, Terzaghi E, Raspa A, Zanardini E, Morosini C, Di Guardo A, Borin S. "The contamination fingerprint shapes bacterial community structure and activity in a historically PCB- polluted site: an indication of soil self-depuration potential?". 8th Congress of European Microbiologists-FEMS2019, Glasgow, Scotland, 7-11 July 2019

Vergani L, Mapelli F, Terzaghi E, Raspa G, Zanardini E, Morosini C, Armiraglio S, Iavazzo P, Sale VM, Anelli S, Nastasio P, Di Guardo A, Borin S. L'importanza del monitoraggio microbiologico nei processi di *bioremediation*: il caso studio della sperimentazione di tecniche di *rhizoremediation* nel SIN Brescia Caffaro. SiCon2019, Brescia, Italy, 12-14 February 2019.

Vergani L, Mapelli F, Marasco R, Chouaia B, Di Guardo A, Zanardini E, Armiraglio S, Daffonchio D, Borin S. "Microbial facilitators for phytoremediation in PCB polluted soil". XXI Workshop on the Developments in the Italian PhD Research on Food Science Technology and Biotechnology, Portici (NA) 14-16 September 2016

Mapelli F, **Vergani L**, Marasco R, Chouaia B, Fusi M, Di Guardo A, Raspa G, Zanardini E, Morosini C, Armiraglio S, Anelli S, Nastasio P, Sale V M, Daffonchio D, Borin S. "Spatial pattern of bacterial diversity in a site with mixed and uneven contamination, and assessment of rhizoremediation potential". Rhizosphere 4 Conference, Maastricht 21-25 June 2015

Coauthor of oral and poster presentation in national and international congresses

Vergani L, Mapelli F, Terzaghi E, Raspa G, Uhlik O, Zanardini E, Morosini C, Di Guardo A, Borin S. "Rhizoremediation of a historical pcb polluted soil: plant-driven biostimulation of the soil microbiome". 7th EBC and 11th ISEB Conference, Chania, Greece, 25-28 June 2018

Vergani L, Mapelli F, Terzaghi E, Raspa G, Uhlik O, Zanardini E, Morosini C, Di Guardo A, Borin S. "Evaluation of plant-driven biostimulation of soil microbiota for the setup of a site-tailored rhizoremediation process in a historical PCB-polluted soil". SETAC Europe 28th annual meeting, 13-17 May 2018, Rome, Italy

Mapelli F, **Vergani L**, Terzaghi E, Raspa A, Zanardini E, Morosini C, Di Guardo A, Borin S. Soil pollution and physico-chemical properties steer the bacterial community structure in the uneven highly polluted SIN-Caffaro site. SETAC Europe 28th annual meeting, 13-17 May 2018, Rome, Italy

Vergani L, Mapelli F, Marasco R, Daffonchio D, Borin S. "The rhizosphere of naturally selected plants shows the potential to sustain natural attenuation processes in an historical PCB polluted soil". BAGECO 14 Conference, Aberdeen 6-8 June 2017

Mapelli F, **Vergani L**, Marasco R, Borin S. "Spatial pattern of soil microbiome in a mixed, uneven and highly polluted site, and assessment of rhizoremediation potential". 3rd Thünen Symposium on Soil



Metagenomics, Braunschweig, 14-16 December 2016
Mapelli F, Vergani L, Marasco R, Fusi M, Daffonchio D, Borin S. "Spatial pattern of soil bacterial diversity in a mixed and uneven polluted site and assessment of rhizoremediation potential" Microbial Diversity Conference, Perugia 27-29 October 2015
Marasco R, Rolli E, Vergani L, Fusi M, Booth J M, Soussi A, Fodelianakis S, Blilou I, Cardinale M, Cherif A, Borin S, Daffonchio D. "Bacterial diversity and functional services within the rhizosphere of a desert plant." Microbial Diversity Conference, Perugia 27-29 October 2015
Marasco R, Rolli E, Vergani L, Soussi A, Fusi M, Fodelianakis S, Booth J M, Blilou I, Cardinale M, Cherif A, Borin S, Daffonchio D. "Bacterial diversity and functional services within the rhizosphere of a desert plant". 3 rd Florence Conference on Phenotype MicroArray Analysis of Cells, Florence 10-12 September 2015
Mapelli F, Vergani L, Marasco R, Chouaia B, Fusi M, Di Guardo A, Raspa G, Zanardini E, Morosini C, Armiraglio S, Anelli S, Nastasio P, Sale V M, Daffonchio D, Borin S. "Spatial pattern of bacterial diversity in a site with mixed and uneven contamination, and assessment of rhizoremediation potential". BAGECO13 Conference, Milan 14-18 June 2015
Marasco R, Rolli E, Vergani L, Soussi A, Fusi M, Fodelianakis S, Booth J M, Cardinale M, Borin S, Daffonchio D. "Bacterial assemblages associated with unique root morphology of a desert plant". BAGECO13 Conference, Milan 14-18 June 2015.

SKILLS AND COMPETENCES

Scientific skills and competences
<ul style="list-style-type: none">- Good knowledge of the main molecular ecology and microbiology techniques- Microbial isolation and cultivation techniques from environmental samples- Light and fluorescence microscopy- DNA extraction and purification from environmental samples and cultures- DNA Stable Isotope Probing (SIP)- Agarose gel electrophoresis- DNA Purification from gel and quantification- PCR-based techniques- Establishment and screening of clone libraries- Gfp-tagging of environmental bacterial strains by transformation (electroporation, conjugation)- Microbial recolonization of model plants (<i>Arabidopsis thaliana</i>) using gfp-tagged bacteria- In vitro and in vivo test for the characterization of different Plant Growth Promotion activities.
IT skills
<ul style="list-style-type: none">- R Software for statistical analysis- Office (Microsoft Word, Excel, Power Point) and Adobe reader- Diversity Database and Image J: gel electrophoresis acquisition and analyses- Chromas Lite, BioEdit, MEGA for nucleotidic sequence analysis- Good knowledge of the main bioinformatic public database (NCBI, ENA, RDP)

Declarations given in the present curriculum must be considered released according to art. 46 and 47 of DPR n. 445/2000.

The present curriculum does not contain confidential and legal information according to art. 4, paragraph



1, points d) and e) of D.Lgs. 30.06.2003 n. 196.

Place and date: Milano, 08/01/2020

SIGNATURE

Lucreto Vignani