

## MUGNAI SERGIO

**Home address:** Uiterstegracht 51, 2312TB Leiden (NL)

**Mobile phone:** +31630299792

**Email:** mugnai@euc.eur.nl

**Nationality:** Italian

**Date of birth:** 15.11.1969

### Work experience

February 2015 -  
present

**SENIOR LECTURER** in the Life Science Department – Erasmus University College (EUC), Rotterdam, The Netherlands

- a) **Coordinator of the EUC Minor “Think Green: Ecological and Economic Perspectives for a Sustainable Environment”**
- b) **Coordinator of the LSC Major “Life Sciences” and the INT Major “Sustainability”**
- c) **Course Coordinator, Lecturer and PBL Tutor** in the following EUC courses (academic year 2015/2016):
  - *Plant Biology and Diversity* (200-level course);
  - *Food and Nutrition* (200-level course);
  - *Plants for People, Plants for Life (aka Plant Physiology)*, 300-level course);
  - *Biobased Economy* (300-level course).
- d) **Lecturer** in the following courses:
  - *General Biology* (100-level course);
  - *Biochemistry* (200-level course);
  - *Principles of Ecology* (200-level course);
  - *Molecular and Cellular Genetics* (300-level course).
- e) **PBL Tutor** in the following courses
  - *Micro- and Immunobiology* (200-level course);
  - *Evolutionary Biology* (300-level course);
- f) **Capstone** (400-level course) **supervisor** for 3<sup>rd</sup>-year students;
- g) **Staff member** of the EUC Library Committee.

August 2011 –  
January 2015

**SCIENCE PROJECT MANAGER & COORDINATOR - European Space Agency, Noordwijk, The Netherlands**

- a) Science Project Manager for biology projects on the ISS under ELIPS program;
- b) Liaison with the Science Teams and coordinator with ESA divisions for the definition and consolidation of the scientific requirements;
- c) Scientific support for hardware development, implementation and operations activities;
- d) Interface with USOC (User Support Operation Centres) for scientific test planning and execution;
- e) Detailed review of project technical documentation;
- f) Inter-agency coordination (with JAXA, NASA, National agencies);
- g) Feedback and reporting of outcome of studies and experiments;
- h) Support for the organisation, coordination and prioritization of the selection process for scientific research proposals on ISS;
- i) Coordinator of expert reviews and working groups;
- j) Promotion of ESA scientific programme at conferences and congresses.

November 2002  
– July 2011

**SENIOR RESEARCHER & LECTURER - Department of Agri-Food and Environmental Sciences, University of Florence, Italy**

- a) **Lecturer** at the Faculty of Agricultural Sciences, University of Florence (Italy) in the following BSc and MSc courses/programs:  
**From 2006/2007 to 2009/2010 (4 academic years) – *Tree physiology and production* (6 ECTS credits), Master program “Tropical agriculture”, University of Florence, Italy**

2005/2006 – *Ornamental plants* (5 ECTS credits), Bachelor program “Nursery, parks and gardens”, University of Florence, Italy  
 2004/2005 – *Parks and gardens* (5 ECTS credits), Master program “Agricultural Sciences and Technology”, University of Florence, Italy  
 2003/2004 - *Ornamental plants* (5 ECTS credits), Bachelor program “Nursery, parks and gardens”, University of Florence, Italy  
 2002/2003 – Lab assistant for *Tree physiology and production* (6 ECTS credits), Master program “Tropical agriculture”, University of Florence, Italy

- b) **Supervisor** of BSc and MSc thesis, as well as PhD students, at the Faculty of Agricultural Sciences, University of Florence, Italy;
- c) Strong expertise in **scientific project management, experiment planning and execution**, statistical analysis and dissemination of the results, as well as fund raising and projects’ writing and editing in horticulture and plant physiology;
- d) Consolidated experience in the following **research topics**:
  - Ecophysiology of plants under stress (drought, salinity, hypoxia, heavy metals, root restriction, gravity);
  - Systematic botany: identification of plant genotypes by image analysis, morphometry and Artificial Neural network (AAN);
  - Environmental-friendly techniques in horticulture: use of green compost in substrates, application of biostimulants, onset of mild stress for growth control;
  - Ambient intelligence and use of wireless sensors for crops monitoring.
- e) Proven competence in the use of various analytical and electrophysiological techniques;
- f) **Coordinator and WP-responsible in international and national research projects** related to horticulture and plant physiology, with consolidated ability in scientific project management;
- g) **Responsible of the Space Biology Unit** at the International Lab for Plant Neurobiology (LINV, www.linv.org);
- h) **Author** of 60+ publications in peer-reviewed international scientific journals, conference proceedings and international book chapters;
- i) **Referee** for high-ranking scientific journals such as Agriculture Ecosystems and Environment, Annals of Botany, Journal of Plant Research, Plant Biology, Plant Methods, PlosOne;
- j) **Invited speaker** to scientific conferences and congresses across the world;
- k) Wide and consolidated network inside the scientific community

2001-2002

**JUNIOR RESEARCHER- Department of Plant Biology, University of Pisa, Italy**

**Scientific responsible** of the WP4 of the EE.UU. Project Grant ICA4-CT2000-300252003: “*Characterization of South American genotypes of bean under abiotic stresses*”

### Education and training

February 2015- May 2018	UTQ training programme – EUC, Rotterdam
October 2015	CIRRUS E-assessment platform training – EUC, Rotterdam
March-April 2015	‘Education on Stage’ – Artesc ( <i>Artists for Education Science and Communication</i> ) course to discover and practice theatre skills relevant for presenting in science and education – EUC, Rotterdam
June 2014	Project Management Basics – FINSTRAL, Glasgow, UK
1999-2001	POST-DOC: “ <i>Water relations and water-use efficiency in nursery-cultivated ornamentals</i> ” – University of Pisa, Italy
1995-1999	PhD IN HORTICULTURE ( <i>curriculum</i> Plant propagation): “ <i>Study and evaluation of root restriction effects on growth and physiology of tomato and marigold</i> ” - University of Pisa, Italy
1988-1994	MASTER’S DEGREE IN AGRICULTURAL SCIENCES: “ <i>Leaf water relations and physiology under stress in Nerium oleander</i> ” – University of Pisa, Italy

## Foreign Languages

Mother tongue: **Italian**

Fluent knowledge of written/oral **English**

Basic knowledge of written/oral **Dutch** and **German**

### **Social-organisational skills and competences**

Excellent interpersonal and communication skills, with intercultural background. Confident public speaker, also in large audiences. Capable of taking initiatives and assuming high levels of responsibility, with strong aptitude for problem solving. Reliable and accurate, with attention to details. Pragmatic and organized, yet creative and flexible. Source of original solutions for managing problems and for developing innovative projects.

### **Computer skills and competences**

Advanced knowledge of Microsoft Office software package (Word, Excel, Powerpoint), Internet browsers, Lotus Notes, FTP clients, GraphPad statistical software, Datatrax System. Basic knowledge of Adobe Photoshop.

### **Artistic skills and competences**

Played bassoon at the Scuola Comunale di Musica 'Mabellini' of Pistoia (Italy). Diploma in music theory and solfeggio in 1986 at the Conservatorio 'Cherubini' of Florence (Italy). Currently playing guitar.

### **Other skills and competences**

Member of an Italian scout group from 1975 to 1990. Scout group leader from 1994 to 2000. Current hobbies include hiking, football, skiing, yoga, cooking and photography.

**Relevant  
publications in  
the last 10 years**

- 1) Masi E., Ciszak M., Comparini D., Monetti E., Pandolfi C., Azzarello E., **Mugnai S.**, Baluska F., Mancuso S. (2015) The Electrical Network of Maize Root Apex is Gravity Dependent. *Nature Sci Rep*, 5:7730 | DOI: 10.1038/srep07730
- 2) **Mugnai S.**, Pandolfi C., Masi E., Azzarello E., Monetti E., Comparini D., Voigt B., Volkmann D., Mancuso S. (2014) Oxidative Stress and NO Signalling in the Root Apex as an Early Response to Changes in Gravity Conditions. *BioMed Res Int*, vol. 2014, Article ID 834134
- 3) Pandolfi C., Masi E., Voigt B., **Mugnai S.**, Volkmann D., Mancuso S. (2014) Gravity Affects the Closure of the Traps in *Dionaea muscipula*. *BioMed Res Int*, vol. 2014, Article ID 964203
- 4) **Mugnai S.**, Azzarello E., Baluska F., Mancuso S. (2012) Local root apex hypoxia induces NO-mediated hypoxic acclimation of the entire root. *Plant Cell Physiol*, 53: 912-920
- 5) Azzarello E., Pandolfi C., Rossi M., Giordano C., **Mugnai S.**, Mancuso S. (2012) Ultramorphological and physiological modifications induced by high zinc levels in *Paulownia tomentosa*. *Env Exp Bot*, 81: 11-17
- 6) **Mugnai S.**, Azzarello E., Masi E., Mancuso S. (2012) Influence of long-term application of green waste compost on soil characteristics and growth, yield and quality of grape (*Vitis vinifera* L.): a case study in a Tuscan vineyard. *Compost Sci Util*, 20: 29-33
- 7) Masi E., Azzarello E., Pandolfi C., Pollastri S., **Mugnai S.**, Mancuso S. (2012) Multi Electrode Arrays (MEAs) and the electrical network of the roots. In: Mancuso S. (Ed.) *Measuring roots*, Springer, Germany, 51-65
- 8) Pandolfi C., **Mugnai S.**, Azzarello E., Masi E., Pollastri S., Mancuso S. (2012) The vibrating probe technique in the study of root physiology under stress. In: Mancuso S. (Ed.) *Measuring roots*, Springer, Germany, 67-81
- 9) Pollastri S., Azzarello E., Masi E., Pandolfi C., **Mugnai S.**, Mancuso S. (2012) Applications of confocal microscopy in the study of root apparatus. In: Mancuso S. (Ed.) *Measuring roots*, Springer, Germany, 93-108
- 10) **Mugnai S.**, Marras A.M., Mancuso S. (2011) Effect of hypoxic acclimation on anoxia tolerance in *Vitis* roots: response of metabolic activity and K<sup>+</sup> fluxes. *Plant Cell Physiol*, 52: 1107-1116
- 11) Doumett S., Azzarello E., Checchini L., Fibbi D., Mancuso S., **Mugnai S.**, Petruzzelli G., Del Bubba M. (2011) Influence of the application renewal of a high concentration of natural ligands on Cd, Cu, Pb and Zn distribution between contaminated soil and *Paulownia tomentosa* in a pilot-scale assisted phytoremediation study. *International Journal of Phytoremediation*, 13:1-17
- 12) **Mugnai S.**, Mancuso S. (2010) Oxygen Transport in the Sapwood of Trees - In: Mancuso S., Shabala S. (Eds.) *Waterlogging Signalling and Tolerance in Plants*, Springer-Verlag Berlin, pp. 61-78.
- 13) Masi E., Ciszak M., Stefano G., Renna L., Azzarello E., Pandolfi C., **Mugnai S.**, Baluška F., Arecchi F.T., Mancuso S. (2009) Spatio-temporal dynamics of the electrical network activity in the root apex: A multi-electrode array (MEA) study. *PNAS*, 106: 4048-4053.
- 14) Mazzolai B., Laschi C., Dario P., **Mugnai S.**, Mancuso S. (2009) The plant as a biomechatronic system. *Plant Signal Behav*, 5: 90-93.
- 15) Azzarello E., **Mugnai S.**, Pandolfi C., Masi E., Marone E., Mancuso S. (2009) Comparing image (fractal analysis) and electrochemical (impedance spectroscopy and electrolyte leakage) techniques for the assessment of the freezing tolerance in olive. *Trees*, 23: 159-167.
- 16) Messina G., Pandolfi C., **Mugnai S.**, Azzarello E., Dixon K., Mancuso S. (2009) Identification of eighty-four accessions belonging to *Banksia* genus by phyllometric parameters and Artificial Neural Networks. *Austr Syst Bot*, 22: 31-38.
- 17) Pandolfi C., Messina G., **Mugnai S.**, Azzarello E., Dixon K., Mancuso S. (2009) *Banksia integrifolia* (Proteaceae): discrimination and identification of morphotypes by an ANN based on morphological and fractal characterization of leaves and flowers. *Taxon*, 58: 925-933.
- 18) **Mugnai S.**, Pandolfi C., Azzarello E., Masi E., Mancuso S. (2008) *Camellia japonica* L. genotypes identified by an artificial neural network based on phyllometric and fractal parameters. *Plant Syst Evol*, 270: 95-108
- 19) **Mugnai S.**, Azzarello E., Pandolfi C., Salamagne S., Briand X., Mancuso S. (2008) Enhancement of ammonium and potassium root influxes by the application of marine bioactive substances positively affect *Vitis vinifera* plant growth. *J Appl Phycol*, 20:177-182
- 20) Pandolfi C., **Mugnai S.**, Bergamasco S., Azzarello E., Masi E., Mancuso S. (2008) Artificial neural networks as a tool for the assessment of genetic diversity: a case study on vietnamese tea accessions. *Euphytica*, 166: 411-42
- 21) Doumett S., Lamperi L., Checchini L., Azzarello E., **Mugnai S.**, Mancuso S., Petruzzelli G., Del Bubba M. (2008) Heavy metal distribution between contaminated soil and plant (*Paulownia tomentosa*) in a pilot-scale assisted phytoremediation study: influence of different complexing agents. *Chemosphere*, 72: 1481-1490