

**SIMONETTA SANTI**  
**CURRICULUM VITAE**

**EDUCATION**

- National academic qualification for Associate professor position in the domain 07/E1 - Chimica Agraria, Genetica Agraria e Pedologia for the period 2014-2023.
- PhD on 'Crop Productivity' (Università degli Studi di Udine, May 1992). Tutor: prof. Angelo Maggioni, co-tutor: Claude Cretin, Institute de Physiologie Vegetale Moleculaire, Centre Scientifique d'Orsay, Université Paris Sud XI.
- Qualification for the profession of Agronomist (1985, Università degli Studi di Padova).
- Laurea on Agricultural Sciences at the Università degli Studi di Padova (A.A.1983-1984).
- High school degree of Maturità Classica at the Liceo-Ginnasio "R. Franchetti" of Venezia Mestre (1977).

**WORK EXPERIENCE**

- ❖ February 2001 to present. Senior scientist at the Department of Agricultural, Food, Environmental and Animal Sciences, University of Udine.
- ❖ May 2011. Guest scientist at the Institute of Plant and Microbial Biology, Academia Sinica, Taipei Taiwan, for the project: 'Dissection of the epidermis specific iron stress response in *Arabidopsis* roots'.
- ❖ May/August 2006 and Jan. 2007 (4 months): Guest scientist at the Institute of Plant and Microbial Biology, Academia Sinica, Taipei Taiwan, with fellowship of the Area di Ricerca Scientifica e Tecnologica of Trieste (FVG region, D4 project).
- ❖ 28.12.1994 - 31.01.02. Research Assistant at the Dipartimento di Produzione Vegetale e Tecnologie Agrarie, University of Udine.
- ❖ Oct. 1994/ Dec. 1994. Guest scientist with POST-DOC position at the Institute of Botany, Darmstadt Technical University, Darmstadt, Germania, (responsibility: dr. Elke Fisher, prof. U. Luttge).
- ❖ June 1993/Oct. 1993 (3 months). Guest scientist with POST-DOC position at the prof. P.Gadal laboratory (Orsay, Université PARIS SUD XI) and INRA of Nancy (Francia) with the EU project: EUROSILVA-EUREKA: Mycorrhiza: structure and function".
- ❖ June 1992. Guest scientist at the Institute de Physiologie Vegetale Moleculaire (Université Paris Sud XI) with the CNR Bilateral project Italia-Francia (resp. Prof. Z. Varanini): "Studio della regolazione dell'enzima PEP-carbossilasi in piante di sorgo in relazione alla fonte azotata".
- ❖ 20.11.1989 / 30.10.1990 and 18.07.1991 / 31.08.1991 (13 months). Visiting Ph.D. student at the Institute de Physiologie Vegetale Moleculaire (presently: Institute de Biotechnologie des Plantes), Centre Scientifique d'Orsay, Université Paris Sud XI, resp. prof. Pierre Gadal .
- ❖ 04.05.1987 / 31.10.1988 (20 months). Fellowship of ENICHEM ANIC for research activity at the Istituto di Produzione Vegetale dell'Università di Udine. Tutor: prof Maria De Nobili.
- ❖ 09.12.1986 / 30.04.1987 (5 months). Fellowship "Cirillo Maliani" of the Amministrazione Provinciale di Vicenza at the Dipartimento di Biotechnologie Agrarie - 'University of Padova. Tutors: prof. Angelo Dal Belin Peruffo and prof. Andrea Curioni.

**TEACHING**

- ❖ Member of the PhD of Agricultural Sciences and Biotechnology at the University of Udine 2010-2018.
- ❖ Courses:
  - AA 2011-2012, 2012-2013, 2014-2015 to present: 'Biochemistry II, Plant Biochemistry' (LT of Biotechnologies, 3 CFU module, 2<sup>nd</sup> year)
  - AA 2009-2010, 2010-2011, 2012-2013: 'Metodologie di analisi chimico-agrarie e Sicurezza nei laboratori' (LM of Scienze e Tecnologie Agrarie, 6 CFU, 3rd year).
  - AA 2004-05, 2007-08, 2008-2009, 2009-2010: 'Sicurezza in Laboratorio II' ( LS of Biotechnologie Agrarie, 2 CFU).
  - AA 2002-03, 2003-04, 2007-08, 2008-2009: 'Laboratorio di Biochimica Agraria' (LT of Scienze e Tecnologie Agrarie, 4 CFU).
  - 1994-2001. Practical courses in Plant Biochemistry and Abiotic stress and Plant Nutrition.
- ❖ Seminars:

- Studio funzionale di singole cellule e tessuti isolati mediante Laser Microdissection. Workshop: Le piante: dalla morfologia alle interazioni con l'ambiente. Società Italiana Scienze microscopiche e Dipartimento di Scienze Agrarie e Ambientali dell'Università di Udine, Udine, 02/07/2013.

-Analisi dell'espressione genica di single cellule e tessuti mediante Laser Capture Microdissection: due casi di studio. IBBR-CNR Perugia, nov.2012.

-Laser Capture Microdissection: a novel single-cell approach to the analysis of nutritional stress responses in plants. Udine, DISA giu.2007.

❖ Tutoring activity for Biotechnologie Agrarie (LM) thesis (AA 2010-2011, dott. Alessandro Pierasco ); Co-tutoring for PhD thesis of Agricultural Sciences and Biotechnology: 2011-2013, dr. Federica de Marco; Tutoring for PhD thesis of Scienze e Biotechnologie Agrarie: 2016-2018, Dr. Sara Buoso; Reviewer of Doctoral Thesis of Humboldt-Universität zu Berlin (Germany): 2019, Dr. Zahra Ghalamkari; Reviewer of Doctoral Thesis of University of Padova (Italy): 2019, Dr. NISHA SHARMA.

#### SCIENTIFIC ACTIVITY

##### ❖ PARTICIPATION TO RESEARCH PROJECTS

-University of Udine Research Unit (RU) Principal Investigator (PI) of the project: 'Giallumi della vite: tecnologie innovative per la diagnosi e lo studio delle interazioni pianta/patogeno', founded by AGER-Agroalimentare e Ricerca' (project No. 2011-2013) (National coordination: dr. Rita Musetti).

-RU PI for the project: 'Gene expression profiling of the iron stress response in Arabidopsis root epidermal cells by high throughput parallel sequencing', belonging to the Pilot Project (AS-99-TP-B03; 2010-2012) of the Thematic Research Program of Academia Sinica of Taipei (Taiwan) with the following title: 'Dissection of the epidermis specific iron stress response in Arabidopsis roots'.

-University of Udine RU PI of the project COFIN 2003: Flussi transmembrana di Na<sup>+</sup> e Cl<sup>-</sup> in linee di pomodoro a diverso metabolismo di maturazione del frutto allevate in 'acqua marina': studio del coinvolgimento di sistemi di trasporto primari e secondari del tonoplasto e del plasmalemma.

-Participation in the University of Udine RU (PI: prof. Giannina Vizzotto) for the MIPAF project: 'Studio di geni coinvolti nel metabolismo/trasporto degli zuccheri in frutti di pesco in accrescimento. Studio di geni coinvolti nel pathway carotenoidi-ABA' of the project DRUPOMICS: 'Sequenziamento del genoma del pesco ed utilizzo della sequenza in programmi di miglioramento della qualità del frutto del pesco e della resistenza alle malattie'.

-1988-2004: involvement in several projects as MURST 40%, CNR, MIRAAF e COFIN under other responsibilities.

##### ❖ RESEARCH ACTIVITY

ORCID ID: 0000-0003-2967-7579.

Metrics (source: Scopus, 14/11/2019): H-index: 17; citations: 1157.

The following papers describe my research activity, which is prevalently focused on plant molecular responses to biotic and abiotic (especially nutritional) stresses:

##### ❖ PUBLICATIONS (BY SCOPUS)

1. Buoso S, Pagliari L, Musetti R, Martini M, Marroni F, Schmidt W, **Santi S**. 2019. 'Candidatus phytoplasma solani' interferes with the distribution and uptake of iron in tomato. BMC Genomics 20:703. Doi:10.1186/s12864-019-6062-x.
2. **Santi S**. 2019. Laser Microdissection of Phytoplasma-Infected Grapevine Leaf Phloem Tissue for Gene Expression Study. In: Musetti R., Pagliari L. (eds) Phytoplasmas. Methods in Molecular Biology, vol 1875. Humana Press, New York, NY. pp.279-290. DOI: 10.1007/978-1-4939-8837-2\_20.
3. Pagliari L, Buoso S, **Santi S**, Van Bel AJE, Musetti R. 2018. What slows down phytoplasma proliferation? Speculations on the involvement of atSEOR2 protein in plant defence signaling. Plant Signalling & Behavior, 13:5. DOI: 10.1080/15592324.2018.1473666.
4. Paolacci AR, Catarcione G, Ederli L, Zadra C, Pasqualini S, Badiani M, Musetti R, **Santi S**, Ciaffi M. 2017. Jasmonate-mediated defence responses, unlike salicylate-mediated responses, are

involved in the recovery of grapevine from bois noir disease. *BMC Plant Biology* 17(1) 118. DOI: 10.1186/s12870-017-1069-4.

5. Pagliari L, Buoso S, **Santi S**, Furch AC, Martini M, Degola F, Loschi A, van Bel AJ, Musetti R. 2017. Filamentous sieve element proteins are able to limit phloem mass flow, but not phytoplasma spread. *Journal of Experimental Botany* 68(13), pp. 3673-3688. doi: 10.1093/jxb/erx199.
6. De Marco F, Pagliari L, Degola F, Buxa SV, Loschi A, Dinant S, Le Hir R, Morin H, **Santi S** and Musetti R. 2016. Combined microscopy and molecular analyses show phloem occlusions and cell wall modifications in tomato leaves in response to '*Candidatus* Phytoplasma solani'. *JOURNAL OF MICROSCOPY* 263(2) pp. 212-225. DOI: 10.1111/jmi.12426
7. Zanon L, Falchi R, **Santi S** and Vizzotto G. 2014. Sucrose transport and phloem unloading in peach fruit: potential role of two transporters localized in different cell types. *PHYSIOLOGIA PLANTARUM* 154 (2), pp. 179-193. doi:10.1111/ppl.12304.
8. Lan Ping, Li Wanfeng, Lin Wen-Dar, **Santi Simonetta**, Schmidt Wolfgang. 2013. Mapping gene activity of Arabidopsis root hairs. *GENOME BIOLOGY* 14:R67. doi: 10.1186/gb-2013-14-6-r67.
9. **Santi S**, De Marco F, Polizzotto R, Grisan S and Musetti R 2013. Recovery from stolbur disease in grapevine involves changes in sugar transport and metabolism. *FRONTIERS IN PLANT SCIENCE* 4 (171) pp.1-12. doi: 10.3389/fpls.2013.00171
10. **Santi S**, Grisan S, Pierasco A, De Marco F, Musetti R. 2013. Laser microdissection of grapevine leaf phloem infected by stolbur reveals site-specific gene responses associated to sucrose transport and metabolism. *PLANT, CELL AND ENVIRONMENT* 36, pp. 343-355 doi: 10.1111/j.1365-3040.2012.02577.x
11. Musetti R, Farhan K, De Marco F, Polizzotto R, Paolacci A, Ciaffi M, Ermacora P, Grisan **Santi S** and Osler R. 2013. Differentially-regulated defence genes in *Malus domestica* during phytoplasma infection and recovery. *EUR J PLANT PATHOL* 136:13–19. DOI 10.1007/s10658-012-0147-6
12. Musetti R, De Marco F, Farhan K, Polizzotto R, **Santi S**, Ermacora P, Osler R. (2011). Phloem-specific protein expression patterns in apple and grapevine during phytoplasma infection and recovery. *Bulletin of Insectology* 64 (Supplement) S211-S212. ISSN 1721-8861
13. **Santi S** and Schmidt W. 2009. Dissecting iron deficiency-induced proton extrusion in Arabidopsis roots. *THE NEW PHYTOLOGIST* 183 (4): 1072-1084. ISSN 0028-646x
14. **Santi S** and Schmidt W. 2008. Laser microdissection-assisted analysis of the functional fate of iron deficiency-induced root hairs in cucumber. *JOURNAL OF EXPERIMENTAL BOTANY* 59(3) pp. 697-704. United Kingdom
15. Schmidt W, **Santi S**, Pinton R, Varanini Z. Water-extractable humic substances alter root development and epidermal cell pattern in Arabidopsis. *PLANT AND SOIL* (2007) 300:259–267. The Netherlands
16. **Santi S**, Cesco S, Varanini Z, Pinton R. Two plasma membrane H<sup>+</sup>-ATPase genes are differentially expressed in iron-deficient cucumber plants. *PLANT PHYSIOLOGY AND BIOCHEMISTRY* (2005) 43: 285-292. The Netherlands.
17. **Santi S.**, Locci G., Monte R., Pinton R, and Varanini Z. Induction of nitrate uptake in maize roots: expression of a putative high-affinity nitrate transporter and plasma membrane H<sup>+</sup>-ATPase isoforms. *JOURNAL OF EXPERIMENTAL BOTANY* (2003). United Kingdom
18. Agnolon F, **Santi S**, Pinton R e Varanini Z. Enzymatic responses of cucumber roots to different levels of Fe supply. *PLANT AND SOIL* (2002) 241: 35-41. The Netherlands.
19. M. Dell'Orto, **S. Santi**, P. De Nisi, S. Cesco, Z. Varanini, G. Zocchi and R. Pinton; Fe-deficiency response in cucumber (*Cucumis sativus* L.) roots: involvement of plasma membrane H<sup>+</sup>-ATPase activity. *JOURNAL OF EXPERIMENTAL BOTANY* (2000) 51: 695-701. United Kingdom.
20. R. Pinton, S. Cesco, **S. Santi**, F. Agnolon and Z. Varanini; Water-extractable humic substances enhance iron deficiency responses by Fe-deficient cucumber plants. *PLANT AND SOIL* (1999) 210: 145-157. The Netherlands.
21. R. Pinton, S. Cesco, M. De Nobili, **S. Santi** e Z. Varanini; Water and pyrophosphate-extractable humic substances fractions as a source of iron for Fe-deficient cucumber plants. *BIOL. FERT. SOILS* (1997) 26:23-27. Germany.

22. R. Pinton, S. Cesco, **S. Santi** e Z. Varanini; Soil humic substances stimulate proton release by intact oat seedling roots. JOURNAL OF PLANT NUTRITION (1997) 20(7 & 8), 857-869.
23. **S. Santi**, G. Locci, R. Pinton, S. Cesco and Z. Varanini; Plasma membrane H<sup>+</sup>-ATPase in maize roots induced for NO<sub>3</sub><sup>-</sup> uptake. PLANT PHYSIOLOGY. (1995) 109: 1277-1283. USA.
24. R. Pinton, S. Cesco, **S. Santi** e Z. Varanini; Effects of soil humic substances on surface redox activity of oat roots. JOURNAL OF PLANT NUTRITION (1995) 18(10), 2111-2120. USA.
25. Pinton R, Poles A, **Santi S**, Cesco S and Varanini Z. 1995. Changes of plasma membrane H<sup>+</sup>-ATPase activity in roots of Fe-deficient cucumber plants. GIORNALE BOTANICO ITALIANO 129(4) 1079-1080. DOI: 10.1080/11263509509440946
26. Pacquit, **S. Santi**, C. Cretin, V.L. Bui, J. Vidal and P. Gadal: Production and Properties of Recombinant C3-Type PEP-carboxylase from *Sorghum Vulgare*. In vitro Phosphorylation by Leaf and Root PyrPC Protein Serine Kinases. BIOCHEMICAL AND BIOPHYSICAL RESEARCH COMMUNICATIONS (1993)197 (3):1415-1423. Orlando, Florida USA
27. Maria De Nobili, **Simonetta Santi** and Claudio Mondini; Fate of nitrogen (<sup>15</sup>N) from oxamide and urea applied to turf grass: a lysimeter study. FERTILIZER RESEARCH (1992) 33:71-79. The Netherlands. DOI10.1007/BF01058011, ISSN 0167-1731, online ISSN 1573-0867V.
28. Loic Lepiniec, **Simonetta Santi**, Eliane Keryer, Valerie Amiet, Jean Vidal, Pierre Gadal and Claude Cretin; Complete nucleotide sequence of one member of the Sorghum PEP-carboxylase gene family. PLANT MOLECULAR BIOLOGY 17: 1077-1079. (1991) Belgium
29. Claude Cretin, Naima Bakrim, Eliane Keryer, **Simonetta Santi**, Loic Lepiniec, Jean Vidal and Pierre Gadal; Production in Escherichia coli of active Sorghum Phosphoenolpyruvate carboxylase which can be phosphorylated. PLANT MOLECULAR BIOLOGY 17: 83-88. (1991) Belgium
30. Claude Cretin, **Simonetta Santi**, Eliane Keryer, Loic Lepiniec, Denis Tagu, Jean Vidal and Pierre Gadal; Phosphoenolpyruvate-carboxylase multigene family: promoter sequences, expression and deduced aminoacid sequences of two leaf isoforms of *Sorghum Vulgare*. GENE 99: 87-94 (1991).The Netherlands.

#### OTHER PUBLICATIONS

1. Locci G, **Santi S**, Monte R, Pinton R, Varanini Z. Involvement of plasma membrane H<sup>+</sup>-ATPase in nitrate uptake by maize genotypes. In: WJ Horst et al. (Eds), Plant nutrition-Food security and sustainability of agro-ecosystems. (2001) 184-185. Kluwer Academic Publishers, The Netherlands.
2. **S. Santi**, M.T. Marrazzo, G. Locci, R. Pinton and Z. Varanini; Heterogeneity of plasma membrane H<sup>+</sup>-ATPase isolated from apical and subapical maize root segments. JOURNAL OF BIOLOGICAL RESEARCH (1997) 73 (suppl.9-10): 121-122.
3. P. Gadal, L. Lepiniec and **S. Santi**; Interactions of nitrogen and carbon metabolism: implications of PEP-carboxylase and isocitrate dehydrogenase. In: Wallsgrave RM ed, Aminoacids and their derivatives in higher plants. Cambridge University Press, Seminar Series - Society for Experimental Biology (1995) 56:19-27. United Kingdom. ISBN 0521050510, 9780521050517.
4. **Simonetta Santi**; Interazioni metaboliche Carbonio/Azoto. Isoforme di Fosfoenolpiruvato-carbossilasi in *Sorghum vulgare*. Ph.D. Thesis. Tutor: Prof. A. Maggioni, Co-tutor: C. Crètin. Dipartimento di Produzione Vegetale e Tecnologie Agrarie, Università di Udine. Roma, maggio 1992.