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Education

2002: PhD in Plant Biology, University of Milan, Italy.

Research activity: the photoinhibition phenomenon in *A. thaliana* and the proposed photoprotective role of two particular proteins, the ELIPs.

1999: Master's degree in Biology, University of Milan, Italy. Visiting student at Max Planck Institute of Molecular Plant Physiology in Golm/Berlin – Germany (10/1997 – 01/1999).

Research activity: regulation of the biosynthesis of the aspartate-derived amino acids in transgenic potato plants (metabolic engineering).

Professional experience

2011-today: Researcher, CNR-IBBA, Milan, Italy.

Research activity: Green Chemistry (exploitation of microalgae, and in particular cyanobacteria, as raw materials for the sustainable supply of commodities and valuable products); Plant Physiology, Biochemistry and Biophysics (functional characterization of oxygenic photosynthetic organisms in terms of both cell physiological performance and responses as well as the analysis of their pigment-binding complexes); Cell biology (study of a class of proteins predicted to belong to the PDI family and thus to be involved in the oxidative folding of several proteins).

2009–2011: Researcher (temporary position), CNR-IBBA, Milan, Italy.

Research activity: feed/food quality certification.

2007– 2008: CNR term-contract worker and INGENIO fellow, CNR-IBF (Institute of Biophysics), Milan, Italy / Max Planck Institute for Bioinorganic Chemistry (renamed to Max Planck Institute for Chemical Energy Conversion in 2012), Mülheim an der Ruhr, Germany.

Research activity: biochemical and biophysical characterization of the light harvesting process in native and in vitro reconstituted antenna complexes of Photosystem II.

2003–2006: Post-Doc research fellow, University of Milan, Plant Physiology and Photosynthesis Section and Plant Physiology and Biochemistry Section, Milan, Italy.

Research activity: excitation energy transfer dynamics in higher plant photosystems.

Research interests

Study of the functional characterization of oxygenic photosynthetic organisms in terms of both cell physiological performance and responses as well as the analysis of their pigment-binding complexes. Study of the biochemical and biophysical properties of the photosynthetic apparatus. Metabolic engineering of the pigments (chlorophyll(s) and carotenoids) biosynthetic pathways in cyanobacteria, which represent some of the most attractive organisms for sustainable green chemistry processes

Publications (last five years)

- Petrova A.A., Casazza A.P., Shelaev I.V., Gostev, F.E., Aybush A.V., Nadtochenko V.A., Semenov A.Y., Santabarbara S. and Cherepanov D.A. (2023) "Role of pheophytin a in the primary charge separation of photosystem I from *Acaryochloris marina*: Femtosecond optical studies of excitation energy and electron

transfer reactions" *Biochimica et Biophysica Acta (BBA) – Bioenergetics* 1864(3): 148984. DOI: 10.1016/j.bbabo.2023.148984

- Santabarbara S., Agostini A., Petrova A.A., Bortolus M, Casazza A.P. and Carbonera D. (2023) "Chlorophyll triplet states in thylakoid membranes of *Acaryochloris marina*. Evidence for a triplet state sitting on the photosystem I primary donor populated by intersystem crossing" *Photosynthesis Research*. DOI: 10.1007/s11120-023-01023-z
- Casazza A.P., Lombardi A., Menin B and Santabarbara S. (2023) "Temperature-induced zeaxanthin overproduction in *Synechococcus elongatus* PCC 7942" *Photochemical and Photobiological Sciences* 22: 783-794. DOI: 10.1007/s43630-022-00352-7
- Russo M., Casazza A.P., Cerullo G., Santabarbara S. and Maiuri M. (2022) "Ultrafast excited state dynamics in the monomeric and trimeric photosystem I core complex of *Spirulina platensis* probed by two-dimensional electronic spectroscopy" *Journal of Chemical Physics* 156(16): 164202. DOI: 10.1063/5.0078911
- Russo M., Casazza A.P., Cerullo G., Santabarbara S. and Maiuri M. (2021) "Direct Evidence for Excitation Energy Transfer Limitations Imposed by Low-Energy Chlorophylls in Photosystem I-Light Harvesting Complex I of Land Plants" *Journal of Physical Chemistry B* 125(14): 3566-3573. DOI: 10.1021/acs.jpcc.1c01498
- Reinot T., Jassas M., Kell A., Casazza A.P., Santabarbara S. and Jankowiak R. (2021) "On wavelength-dependent exciton lifetime distributions in reconstituted CP29 antenna of the photosystem II and its site-directed mutants" *Journal of Chemical Physics* 154(8): 085101. DOI: 10.1063/5.0038217
- Russo M., Petropoulos V. Molotokaite E., Cerullo G., Casazza A.P., Maiuri M. and Santabarbara S. (2020) "Ultrafast excited-state dynamics in land plants Photosystem I core and whole supercomplex under oxidised electron donor conditions" *Photosynthesis Research* 144: 221-233. DOI: 10.1007/s11120-020-00717-y
- Menin B., Lami A., Musazzi S., Petrova A.A., Santabarbara S. and Casazza A.P. (2019) "A Comparison of Constitutive and Inducible Non-Endogenous Keto-Carotenoids Biosynthesis in *Synechocystis* sp. PCC 6803" *Microorganisms* 7(11): E501. DOI: 10.3390/microorganisms7110501
- Santabarbara S. and Casazza A.P. (2019) "Kinetics and Energetics of Phylloquinone Reduction in Photosystem I: Insight From Modeling of the Site Directed Mutants" *Frontiers in Plant Science* 10: 852. DOI: 10.3389/fpls.2019.00852
- Menin B., Santabarbara S., Lami A., Musazzi S., Villafiorita Monteleone F. and Casazza A.P. (2019) "Non-endogenous ketocarotenoid accumulation in engineered *Synechocystis* sp. PCC 6803" *Physiologia Plantarum* 166: 403-412. DOI: 10.1111/ppl.12900
- Santabarbara S., Villafiorita Monteleone F., Remelli W., Rizzo F., Menin B. and Casazza A.P. (2019) "Comparative excitation-emission dependence of the FV /FM ratio in model green algae and cyanobacterial strains" *Physiologia Plantarum* 166: 351-364. DOI: 10.1111/ppl.12931
- Santabarbara S., Casazza A.P. and Hastings G. (2019) "Modelling electron transfer in photosystem I: limits and perspectives" *Physiologia Plantarum* 166: 73-87. DOI: 10.1111/ppl.12959