Cristina Pagliano

CURRICULUM VITAE ET STUDIORUM

Cristina Pagliano graduated cum laude in Biological Sciences at the University of Piemonte Orientale and obtained a PhD in Environmental Sciences (XVIII cycle) at the same University. After one year Post-Doc, she moved to the Politecnico di Torino (Alessandria headquarters), where she took care of the ex-novo set-up of the BioSolar Lab inaugurated in 2009, therein carrying out Post-Doc activities. Winner as Scientific Coordinator of the national grant FIRB2013_RBFR1334SB in 2014, concomitantly she became RTD-A at the Politecnico di Torino. In 2016 she took care of the transfer of the BioSolar Lab from the Politecnico di Torino (Alessandria headquarters) to the Environmental Park in Turin and in 2017 she became RTD-B at the same Institution. In 2020 she became Associate Professor in Plant Physiology (BIO/04) at the Politecnico di Torino and since June 2022 she holds the same position at the University of Piemonte Orientale. From 2018 to 2022 she was Scientific Responsible of the Research Unit of the Politecnico di Torino in the European project HORIZON 2020-ENGICOIN_760994.

The research carried out by Cristina Pagliano concerns plant biology and in particular the study of biochemical, biophysical and structural aspects of the photosynthetic apparatus in plants and cyanobacteria and their applications. During the years 2008-2016 she carried out prolonged research experiences at Imperial College London (UK).

She obtained the habilitation as Full Professor in the scientific disciplinary sector BIO/04 - Plant physiology.

UNIVERSITY CAREER

2022-today	Associate Professor, Università del Piemonte Orientale
2020-2022	Associate Professor, Politecnico di Torino
2017-2020	Assistant Professor with time contract RTD-B, Politecnico di Torino
2014-2017	Assistant Professor with time contract RTD-A, Politecnico di Torino

UNIVERSITY POSITIONS

2024- today	Member of the Giunta of the DISIT Department, Università del Piemonte Orientale
2023- today	Member of the PhD course in Chemistry and Biology, Università del Piemonte Orientale
2022-today	Member of the Guidance and Communication commission of the DISIT Department, Università del Piemonte Orientale
2019-2022	Member of the PhD course in Chemical Engineering at Politecnico di Torino

SCIENTIFIC POSITIONS

2018- today	Member of the Editorial Board of the Journal Scientific Reports (ISSN 2045-2322)
2016- today	Member of the Società Italiana di Biologia Vegetale (SIBV) and the International Society of Photosynthesis Research (ISPR)

MAIN FIELDS OF INTEREST

1. Photosynthesis and bioenergy in plants
2. Tolerance to abiotic stresses in plants
3. Photosynthetic systems for biosensor applications in the environmental field

CURRENT ISSUES OF RESEARCH

1. Photosynthesis and bioenergy in plants

Plants use photosynthesis to convert light energy into chemical energy in order to produce the substances necessary for their life and growth. Oxygen, which is released as waste during the process, is essential for the life of all living organisms on Earth. The research concerns the study of biochemical, biophysical and structural aspects of the photosynthetic apparatus of plants in relation to variations of incident light, in order to link the plant photosynthetic efficiency to the dynamics of the structure and protein composition of the photosynthetic apparatus and the thylakoid membranes that are site of energy conversion.

2. Tolerance to abiotic stresses in plants

Plants are sessile organisms and therefore continuously exposed to changing environmental factors. Abiotic environmental factors include temperature, light intensity, availability of water, CO_2 and mineral salts, which, when present in suboptimal or harmful quantities or intensities, can be stressors for plant growth. The research concerns the study of the molecular mechanisms underlying plant resistance to abiotic stresses, such as salinity and water stress, which are relevant for the development of new cultivar of crop plants with improved resistance to salt and dryness.

3. Photosynthetic systems for biosensor applications in the environmental field

Biosensors are biochemical-physical systems consisting of biological mediators immobilized according to particular operating schemes and coupled to suitable signal transducers capable of selectively and reversibly recording the concentration of different analytes present in the sample. Embedded in the thylakoid membranes, Photosystem II is a multi-subunit enzyme, which is particularly sensitive to various classes of pollutants, including photosynthetic herbicides and heavy metals. The research concerns the development of biosensors incorporating thylakoid membranes for the detection of these pollutants in environmental matrices.

FIVE TOP PAPERS

1. **Pagliano C.**, Raviolo M., Dalla Vecchia F., Gabbrielli R., Gonnelli C., Rascio N., Barbato R., La Rocca N. (2006) Evidence for PSII donor-side damage and photoinhibition induced by cadmium treatment on rice (*Oryza sativa* L.). Journal of Photochemistry and Photobiology B: Biology 84, 70–78 (doi:10.1016/j.jphotobiol.2006.01.012).
2. **Pagliano C.**, Nield J., Marsano F., Pape T., Barera S., Saracco G., Barber J. (2014) Proteomic characterization and three-dimensional electron microscopy study of PSII-LHCII supercomplexes from higher plants. Biochimica Biophysica Acta (Bioenergetics) 1837, 1454–1462 (doi:10.1016/j.bbabio.2013.11.004).
3. Albanese P., Manfredi M., Re A., Marengo E., Saracco G., **Pagliano C.** (2018) Thylakoids proteome modulation in pea plants grown at different irradiances — A quantitative proteomic profiling in a non-model organism aided by transcriptomic data integration. Plant Journal 96, 786–800 (doi:10.1111/tpj.14068).
4. Albanese P., Tamara S., Saracco G., Scheltema R.A., **Pagliano C**. (2020) How paired PSII-LHCII supercomplexes mediate the stacking of plant thylakoid membranes unveiled by integrative structural mass-spectrometry. Nature Communications 11, 1361 (doi:10.1038/s41467-020-15184-1).
5. Battaglino B., Grinzato A., **Pagliano C.** (2021) Binding properties of photosynthetic herbicides with the Q_B site of the D1 protein in plant Photosystem II: a combined functional and molecular docking study. Plants 10, 1501 (doi: 10.3390/plants10081501).