

BIOGRAPHICAL SKETCH

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NAME: Elisabetta Onelli

eRA COMMONS USER NAME (credential, e.g., agency login):

POSITION TITLE: Researcher

EDUCATION/TRAINING (*Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable. Add/delete rows as necessary.*)

INSTITUTION AND LOCATION	DEGREE (if applicable)	Completion Date MM/YYYY	FIELD OF STUDY
<i>University of Milan, Biology Department</i>	Master's degree	02/1992	Cytology of C4 plants
<i>University of Milan, Biology Department</i>	Fellowship	1991-1992 1994-1996	Plant cell cycle
<i>University of Milan, Department of biomedical and technological sciences,</i>	CNR fellowship	1992-1994	Application of potentiometric techniques to ecology and pharmacokinetics
<i>University of Milan, Biology Department</i>	Technician position	1996-1997	Plant cell biology
<i>Permanent position Technician</i>	Technician position	1997-2002	Ultramicroscopy
<i>University of Milan, Bioscience Department</i>	Researcher	2002-today	Plant cell biology and ultramicroscopy lab.

A. Personal**Statement**

I am a researcher in plant science and I work in the Plant Cell Biology and Ultramicroscopy laboratory in collaboration with Prof. A. Moscatelli (see CV below).

In the past, my studies were addressed on the taxonomic analyses of C4 plants (1990-1991 and 1997-2002) and on the analyses of factors involved in cell cycle progression in pea (1991-1992 and 1994-1997). In addition, I collaborated at studying factors involved in interspecific incompatibility processes in *Nicotiana* and *Petunia* (1994-1997) and in cell wall modification in fruit softening during ripening (2011-2015).

Currently, my research mainly focuses on the study of membrane trafficking in a model of plant tip growing cells: the pollen tube. In particular, I'm studying the role of microtubules in the apical growth of tobacco pollen tubes. Besides, we have also been investigating the role of lipid rafts in both membrane trafficking and microtubule nucleation in tobacco pollen tubes.

These scientific problems have been approached by light, confocal and transmission electron microscopy including immunogold labelling. Furthermore, methods of transient transformation of pollen grains allowed to study membrane trafficking in pollen tubes *in vivo*. For protein and membrane purification and analysis biochemical protocols also comprised different types of chromatography, SDS-PAGE (1D- and 2D-gels) and western blotting.

My expertise in electron microscopy and plant cell biology has allowed me to collaborate with other researchers in different fields. In particular, I'm collaborating in studying the biology of reproduction of endangered species and of mosses in endangered ecosystems such as glacial habitats (with Prof. Marco Caccianiga).

I also collaborate in the field of heavy metal effects on plants and phytoremediation with other research groups.

I have produced several peer-reviewed publications from my research project (see below).

B. Positions, Scientific Appointments, and Honors

2002-present: Researcher at the University of Milan in the Plant cell biology and ultramicroscopy laboratory

2017 – present: manager of Uranyl acetate (UA) laboratory.

2012 - present: Botanical garden Città Studi board

2016 – 2020: electron microscopes management.

2010 – 2015: member of the CIMA (Inter-departmental center of advances microscopy) board

2013 – 2016: member of the Biological library board

Management activity in some commissions of Scienze e tecnologie per la conservazione e la diagnostica dei beni culturali course.

Teacher in some courses of: Scienze naturali, Scienze e tecnologie per la conservazione e la diagnostica dei beni culturali; Scienze biologiche, Farmacia.

C. Contributions to Science

I produced several peer-reviewed publications from my research project and collaborations.

The complete list of published works is reported in Scopus.

Here more recent publications:

- role of cytoskeleton and lipid rafts in membrane trafficking and in apical cell growth (pollen tubes)

- Moscatelli A, Ciampolini F, Rodighiero S, **Onelli E**, Cresti M, Santo N, Idilli A. Distinct endocytic pathways identified in tobacco pollen tubes using charged nanogold. *Journal of Cell Science* 120: 3804-3819 (2007)
- **Onelli E**, Prescianotto-Baschong C, Caccianiga M, Moscatelli A. Clathrin-dependent and independent endocytic pathways in tobacco protoplasts revealed by labelling with charged nanogold. *Journal of Experimental Botany* 59: 3051 – 3068 (2008)
- Idilli AI, **Onelli E**, Moscatelli A. Low concentration of LatB dramatically changes the microtubule organization and the timing of vegetative nucleus/generative cell entrance in tobacco pollen tubes *Plant Signalling and Behaviour* 7(8):947-950 (2012)
- **Onelli E**, Moscatelli A. Endocytic pathways and recycling in growing pollen tubes. *Plants* (Review) doi:10.3390/plants2020211 (2013)
- Idilli AI, Morandini P, **Onelli E**, Rodighiero S, Caccianiga M, Moscatelli A. Microtubule depolymerization affects endocytosis and exocytosis in the tip and influences endosome movement in tobacco pollen tubes. *Molecular Plant* 6(4):1109-30. doi: 10.1093/mp/sst099 (2013)
- **Onelli E**, Idilli AI, Moscatelli A. Emerging roles for microtubules in angiosperm pollen tube growth highlight new research cues. *Frontiers in Plant Science* (Review), doi: 10.3389/fpls.2015.00051 (2015)
- Moscatelli A, Gagliardi A, Maneta-Peyret L, Bini L, Stroppa n, **Onelli E**, Landi C, Scali M, Idilli AI, Moreau P. Characterization of detergent-insoluble membranes in pollen tubes of *Nicotiana tabacum* (L.). *Biology open*, doi:10.1242/bio.201410249 (2015)
- **Onelli E**, Scali M, Caccianiga M, Stroppa N, Morandini P, Pavesi G, Moscatelli A. Microtubules play a role in trafficking prevacuolar compartment to vacuoles in tobacco pollen tubes. *Open Biology* 8:180078 doi:10.1098/rsob.180078 (2018)

- Scali, M., Moscatelli, A., Bini, L. **Onelli E**, Rita Vignani, Wei Wang. Protein analysis of pollen tubes after the treatments of membrane trafficking inhibitors gains insights on molecular mechanism underlying pollen tube polar growth. *Protein Journal* 40: 205–222 (2021). doi: 10.1007/s10930-021-09972-x
- Stroppa N*, **Onelli E***, Moreau P, Maneta-Peyret L, Berno V, Cammarota E, Ambrosini R, Caccianiga M, Scali M, Moscatelli A. Sterols and sphingolipids as new players in cell wall building and apical growth of *Nicotiana tabacum* L. pollen tubes. *Plants* (2023) 12:8. <https://doi.org/10.3390/plants12010008>

- reproduction in endangered species.

- **Onelli E**, Beretta M, Moscatelli A, Caccianiga M, Pozzi M, Stroppa N, Adamec L. The aquatic carnivorous plant *Aldrovanda vesiculosa* (Droseraceae) exhibits altered developmental stages in male gametophyte. *Protoplasma* 258:71-85 (2021). doi: 10.1007/s00709-020-01553-6
- Valle B, Ligi O, Moscatelli A, **Onelli E**, Caccianiga M. Bryophyte colonization on an Alpine recently deglaciated glacier foreland (European Alps). *Journal of Bryology* (in press).

- heavy metal effect on plants and phytoremediation.

- Vannini C, Domingo G, Marsoni M, Fumagalli A, Terzaghi R, Labra M, De Mattia F, **Onelli E**, Bracale M. Physiological and molecular effects associated with palladium treatment in *Pseudokirchneriella subcapitata*. *Aquatic Toxicology* 102(1-2):104-13 (2011)
- Vannini C, Domingo G, **Onelli E**, Prinsi B, Marsoni M, Espen L, Bracale M. Morphological and proteomic responses of *Eruca sativa* exposed to silver nanoparticles or silver nitrate. *PLoS ONE* 8(7): e68752. doi: 10.1371/journal.pone.0068752 (2013)
- Vannini C, Domingo G, **Onelli E**, De Mattia F, Bruni I, Marsoni M, Bracale M. Phytotoxic and genotoxic effects of silver nanoparticles exposure on germinating wheat seedlings. *J. Plant Physiol.* 17;171(13):1142-1148 (2014)
- Hejna M, **Onelli E**, Moscatelli A, Bellotto M, Cristiani C, Stroppa N, Rossi L. Heavy-Metal phytoremediation from livestock wastewater and exploitation of exhausted biomass. *Int J Environ Res Public Health*. 18(5): 2239 (2021). doi: 10.3390/ijerph18052239
- Cappitelli F, Domingo G, Villa F, Vannini C, Garuglieri E, **Onelli E**, Bracale M. Label-free proteomic approach to study the non-lethal effects of silver nanoparticles on a gut bacterium. *Frontiers in Microbiology* doi: 10.3389/fmicb.2019.02709 (2019)
- Stroppa N, **Onelli E**, Hejna M, Rossi L, Gagliardi A, Bini L, Baldi A, Moscatelli A. *Typha latifolia* and *Thelypteris palustris* behavior in a pilot system for the refinement of livestock wastewaters: a case of study. *Chemosphere*. 240:124915. doi: 10.1016/j.chemosphere.2019.124915 (2020)
- Hejna M, Moscatelli A, Stroppa N, **Onelli E**, Pilu S, Baldi A, Rossi L. Bioaccumulation of heavy metals from wastewater through a *Typha latifolia* and *Thelypteris palustris* phytoremediation system. *Chemosphere* doi: 10.1016/j.chemosphere.2019.125018 (2020)