Chiara Forti - Curriculum Vitae

Born in Codogno (Italy), 30 December 1986
2012. Master Degree in Experimental and Applied Biology, University of Pavia. *Final grade*: 110/110 with honors. *Thesis*: "Molecular, biochemical and bioinformatics approaches for the identification of new markers of seed quality in *Medicago sativa* L." 2010. Bachelor Degree in Biotecnology at the University of Pavia *Final grade*: 105/110. *Thesis*: "Analysis of the number of copies of transgenic lines in genetically modified *Medicago truncatula* by QRT-PCR approach"

Scientific and professional activity

Current position:
Research Fellowship. Project: "*Seed wake-up with aptamers: a new technology for dormancy release and improved seed priming strategy (WAKE-APT)*" (2017-2019), sponsored by CARIPLO FOUNDATION (www.fondazionecariplo.it). Research focused on *Solanum melongena* (eggplant) and wild relatives as economic important species and model system to manipulate seed germination efficiency. A multidisciplinary approach will integrate molecular and cellular tools with 'omics' technology.
Ph.D Student. PhD Course in Genetics, Molecular and Cellular Biology, XXXII Cycle, University of Pavia (Italy). Research activity for PhD Thesis carried at the Plant Biotechnology Laboratory - Department of Biology and Biotechnology "L. Spallanzani" - University of Pavia (PhD Supervisor: Prof. Alma Balestrazzi). Title of Research project: "New breeding techniques to improve local variety of rice (*Oryza sativa* L.)". Focus on genome editing tools to target relevant traits related to abiotic stress response.

2014-2017. *CREA-GB - Consiglio per la Ricerca in Agricoltura e l'Analisi dell'Economia Agraria - Centro di Ricerca per la Genomica e Bioinformatica Centro C.R.E.A.-O.R.L. (*former *Consiglio per la Ricerca in Agricoltura e l'analisi dell'economia agraria Unità di Ricerca per l'Orticoltura)* - Montanaso Lombardo (MI). (Head: Dr. Giuseppe Leonardo Rotino).

- *Research activity:* Genetic improvement of horticultural crops (*Solanum melongena*) with strategies combining conventional breeding and biotechnological tools (*in vitro* plant cell, tissue and organ cultures; micropropagation and *Agrobacterium*-mediated genetic transformation).
- *Awarded a position of Technical Assistant* (CTER VI level) in the frame of project titled: "Misure di Accompagnamento - Frutta e Verdura nelle Scuole" (http://www.fruttanellescuole.gov.it/). The project, sponsored by the European Community, support scientific dissemination activities aimed at *i)* promoting education of children in primary or elementary schools in relation to knowledge of horticultural crops and fruit trees, *ii)* bringing children closer to the rural environment and agriculture.

2012-2013. *Parco Tecnologico Padano (PTP) - ACADEMY- CESVIP.* Course of Specialization *"Technical Specialist for the development of agro-food products"*.

- Analysis of agro-food production and supply chain; recognition of risks and hazards in food: chemical, physical, microbiological and prevention techniques; methods of self-control and the HACCP principles.
- CREA-ZA - *Consiglio per la Ricerca in Agricoltura e l'Analisi dell'Economia Agraria - Centro di Zootecnia e Acquacoltura (*former *Consiglio per la Ricerca e la Sperimentazione in Agricoltura - Centro di Ricerca per le Produzioni Foraggere e Lattiero-Casearie*) - Lodi. Laboratory of Plant Cell Biotechnology (Head: Dr. Massimo Confalonieri).

- *Research stage* (associated with the Course of Specialization "Technical Specialist for the development of agro-food products"): The research focuses on the warm season turfgrasses as target species for the development of protocols that seek to improve the germination using alternative strategies (e.g. use of coating obtained from low cost products). This project involves collaboration with the company Continental Semences spa (Traversetolo, Parma) that provided the seeds of the species under study. The working strategy aims at dormancy release in the seeds of warm season turfgrasses, as a starting point to design similar systems in other recalcitrant species relevant for seed companies. Furthermore, the search for novel molecular and biochemical markers associated with dormancy is currently in progress, as well as the investigation of the genetic variability of warm season turfgrasses in relation to dormancy.

2011-2012. CREA-ZA - *Consiglio per la Ricerca in Agricoltura e l'Analisi dell'Economia Agraria - Centro di Zootecnia e Acquacoltura (*former *Consiglio per la Ricerca e la Sperimentazione in Agricoltura - Centro di Ricerca per le Produzioni Foraggere e Lattiero-Casearie*) - Lodi. Laboratory of Plant Cell Biotechnology (Head: Dr. Massimo Confalonieri).

- Experimental thesis (Master Degree in Experimental and Applied Biology. Research focused on study the molecular mechanisms underlying seed vigor in the forage legume *Medicago sativa* through expression analysis of DNA repair genes and *in silico* characterization of related regulatory networks.

2010. Plant Biotechnology Laboratory - Department of Biology and Biotechnology "L. Spallanzani "- University of Pavia (Head: Prof. Daniela Carbonera)

- Experimental thesis (Bachelor Degree in Biotechnology). Research focused on methodologies for the traceability of recombinant DNA in genetically modified lines of the legume model *Medicago truncatula*.

Technical skills

***in vitro* cultures of plant cells, tissues and organs.** Start and maintenance of plant cell lines (micro and macrocallies, suspended cultures) of horticultural species (*Solanum melongena* L.), legumes (*Medicago truncatula* L.), forestry (*Populus spp.)* and monocotyledonous plants (*Oryza sativa* L.). Cultivation of anthers of *S. melongena*. In vitro regeneration from callus and explants (leaf leaves, embryos) for *S. melongena* and *O. sativa* species.

Micropropagation. In vitro micropropagation techniques from *S. melongena*'s apex and internodes.

Traditional breeding techniques. Self-pollination and crossings made in greenhouse and field on *S. melongena* lines. Determination of ploidy level by fluorescein staining and count of chloroplasts in *S. melongena* leaf tissue.

Germination tests. Performed in *M. truncatula*, *M. sativa*, *S. Melongena*, in accordance with international rules (I.S.T.A.). Evaluation of germination parameters.

Genetic transformation techniques. *Agrobacterium tumefaciens* mediated genetic transformation (choose of explants, co-cultivation, selection and maintenance of the transformed plants). Specific protocols for *S. melongena* and *O. sativa*.

Molecular biology. Extraction and purification of genomic DNA from plant material (seeds, cellular suspension and calli, leaf tissue). Extraction of plasmidic DNA. Qualitative and quantitative analysis of nucleic acids (spectrophotometer, nanodrop, electrophoresis on agarose gel). Digestion with Restriction Enzymes. Cloning and transformation of *E. coli*, *A. tumefaciens*. Extraction and purification of plant RNA, qualitative and quantitative analysis,

retrotranscription and cDNA synthesis. PCR standard, qRT-PCR (quantitative real-time PCR). QRT-PCR data processing software.