CURRICULUM VITAE

Post doctoral fellorship

- CREA - centro di ricerca cerealicoltura e colture industriali di Foggia (Italy)

- From 01/09/2020 to 28/02/2022

  Dissertation subject: The project deals with developing of high-throughput digital phenotyping systems for the genetic improvement of cereals. The aim is to find new solutions for improving agroecosystem and crop efficiency for water and nutrient use, by identifying innovations to ensure optimal crop productivity under limiting conditions combined of water and nutrients (N or P). A panel of 250 accessions of durum wheat, have been assembled, with the aim of expanding genetic and phenotypic diversity. Variety field trials have been conducted at different sites across Europe, to collect agronomic parameters both above and below the ground. Indeed, one key tasks of the project was to identify the characteristics of plants under the ground that improve the efficiency of water and nutrient use (N and P) and to evaluate genetic improvement strategies that can help addressing the combined deficiencies of water and nutrients (N and P). For this reason the project took advantage of the expertise in root phenotyping of two partners (INRAE-Agroécologie Dijon and UCLouvain) to analyse the root development of the wheat panels under different aspects (angles, branching, density, length…), through three high-throughput phenotyping platforms. The combined use of phenotyping platforms and genomic improvement tools, such as Genome-wide association studies (GWAS), paved the way for a better knowledge of the plant's water and nutrients efficiency.

- Tutor: prof. Nicola Pecchioni

Ph.D course in Plant and Animal Sciences

- XXXII cycle

- Universita' degli Studi della Tuscia (Viterbo, Italy), Dipartimento di Scienze Agrarie e Forestali (DAFNE)

- First academic year of enrolment: 01/10/2016| Official time limit for the degree course (years): 3

- Date of achievement: 22 May 2020

  Dissertation title: **"Characterization of a collection of tomato mutant lines in the San Marzano background"**

  Dissertation subject: San Marzano (SM) is a worldwide famous tomato Italian traditional landrace characterized by elongated fruits with a dual-purpose use in the fresh and processing market. A repertoire of mutations affecting the fruit and of interest for commercial breeding were introduced into the SM genetic background following backcross schemes. The lines generated included 13 genotypes each carrying a single mutation in genes controlling the content of all pigments (*hp-1*, *hp-*

2, *pd*), of carotenoids (*r*, *t*, *at*, *B*, *B_moB*), of chlorophyll (*gf*), of flavonoids (*y*) or the ripening process (*Nr*, *rin*, *Gr*). Five lines carrying a combination of two mutations were also included. The collection has undergone a thorough characterization. Analysis of SNP polymorphisms showed that the genetic distance of the lines from the recurrent parent was very variable and not well predicted by the number of backcrosses. This helped us to give more explanation about the differences detected by the phenotypic characterization, attributing them to the mutated introgressed gene or to the SM background not yet fully recovered. An in-depth metabolic characterization, which included not only polar and non polar metabolites, but also volatile compounds, has allowed to know better the qualitative value of each line, as regards the nutritional interest and flavor. Finally two mutations were chosen to be reproduce in SM with the Crispr-Cas9 system; the comparison with the corresponding introgressed lines and the parental line allowed to bring the effects observed back to the mutation itself, excluding the introgressions still not recoved by the backcrossed scheme. In conclusion, the study of this originale repertoire of fruit variations in an elongated tomato genotype represents a contribution to expand the study of fruit physiology to unusual fruit types and to breed innovative tomato lines with valuable nutritional and technological properties.

- Tutor: prof. Andrea Mazzucato
- Co-tutors: Dr. Josè Luis Rambla Nebot, Dr. Gianfranco Diretto

RESEARCH ACTIVITIES

Research topics (technical and informatical skills)

- Analysis of volatile compounds and primary metabolites carried out at the Polytechnic University of Valencia, IBMCP Institute "Instituto De Biología Molecular Y Celular De Plantas", in the laboratory of professor Antonio Granell, under the supervision of the researcher Josè Luis Rambla Nebot. 2019-09-01 – 2019-11-30 October 2019, Valencia, Spain. Project funded by Eurocaroten (CA15136) (COST-European Cooperation in Science & Technology).
- Processing of biochemical analysis (polar and non polar components of both secondary and primary metabolism) carried out at the Casaccia Enea Research Center, under the supervision of the researcher Gianfranco Diretto. September 2019, Rome, Italy.
- Learning of Genome Editing techniques to obtain a CRISPR/Cas9 construct at the Polytechnic University of Valencia, IBMCP Institute "Instituto De Biología Molecular Y Celular De Plantas", at the laboratory of Professor Antonio Granell. 1st April – 1st May 2018, 1-5 July 2018, Valencia, Spain.
- Biochemical analyses (polar and non polar components of both secondary and primary metabolism) carried out at the Casaccia Research Center of Enea, under the supervision of the researcher Gianfranco Diretto. August 2018, October 2018, Rome, Italy.
- Use of informatical software: Excel, SAS® University Edition (statistical analysis), Past (statistical analysis), SIMCA® (Multivariate Data Analysis), Xcalibur™ (data

acquisition from related instruments), Benchling (Design CRISPR Knockout gRNAs), Primer3Plus, TACG Restriction Mapping (restriction enzyme mapping and analysis).

- GWAS in a 250 accessions of durum wheat analyzed for the root development of different aspects (angles, branching, density, length) through three high-throughput phenotyping platforms, carried out at CREA Research Center in Foggia (Italy), under the supervision of prof. Nicola Pecchioni.

  Use of RStudio:

  1. StatgenHTP package, developed as an easy-to-use package for analyzing data coming from high throughput phenotyping (HTP) platform experiments. https://biometris.github.io/statgenHTP/articles/vignettesSite/Intro_HTP.html.
  2. BreedR, a package that provides frequentist and Bayesian statistical tools to build predictive models useful for the breeders, quantitative genetists and forest genetic resources analysts communities. It aims to assess the genetic value of individuals under a number of situations, including spatial autocorrelation, genetic/environment interaction and competition. http://famuvie.github.io/breedR/src/setup_repo.R.
  3. GAPIT, a package that performs a Genome-Wide Association Study (GWAS).

Oral presentations

- Dono G. (2019) Genome editing, a tool to study useful tomato fruit variants. Workshop: Genome editing for a sustainable agriculture, March 7th, 2019, Viterbo, Italy.
- Dono G., Picarella M.E., Diretto G., Mazzucato A. (2019). Biochemical characterization of a collection of tomato mutant lines in the San Marzano background. LXIII Annual Conference of S.I.G.A., Naples, 10-13th September 2019
- Dono G. (2018) Characterization of a repertoire of tomato fruit genetic variants in the San Marzano genetic background. Ph.D Summer School "Climate Change and Crop Productivity: the Role of Plant Physiology, Breeding and Biotechnology" organized by S.I.B.V. Italian Society of Plant Biology. 12-15th June 2018, Polvese Island, Italy.

Poster presentation

- Dono G., Picarella M.E., Santangelo E., Pons C., Granell A., Mazzucato A. Characterization of a collection of tomato lines introgressing fruit mutations in San Marzano. S.I.G.A. Italian Society of Agricultural Genetics, 25-28th September 2018, Verona, Italy.
- E. Santangelo, M. Carnevale, C.A. Migliori, A. Mazzucato, M.E. Picarella, G. Dono, F. Gallucci. Tomato genetic variants for peel color, a source of biocompounds and

biomass for energy recovery. EUBCE – 27th European Biomass Conference and Exhibition, 27-30 May 2019, Lisbon, Portugal.

- Dono G., Picarella M. E., Diretto G., Riccini A., Pons C., Monforte A. J., Granell A., Mazzucato A. Characterization of a collection of tomato lines introgressing fruit mutations in San Marzano. XVI Solanaceae Conference, Yield And Nutrition, 15-19th September 2019, Jerusalem, Israel.
- Riccini A., Picarella M. E., Dono G., Mazzucato A. Dynamic of fertility-related traits in tomato landraces under mild heat stress Characterization of a collection of tomato lines introgressing fruit mutations in san marzano. XVI Solanaceae Conference, Yield And Nutrition, 15-19th September 2019, Jerusalem, Israel.
- Dono G., Picarella M.E., Rambla J.L., Granell A., Mazzucato A. Characterization of volatile compounds in a collection of tomato lines introgressing fruit mutations in San Marzano. Symposium on Small Molecules in Plant Research: Chemistry and Biology Come Together, 10-11th December 2019, Valencia, Spain.
- Vitale P., Laidò G., Dono G., Ramasubramanian V., Collet C., Lamboeuf M., Salon C., Draye X., Lorenz A.J., De Vita P., Pecchioni N. Genomic Selection for Grain Yield in Durum Wheat Using Root-Related Traits in a Multi-Trait Approach. The Plant and Animal Genome Conference (PAG), 8-12 January 2022 – San Diego, California.

Scientific publications

- Dono G., Picarella M.E., Pons C., Santangelo E., Monforte A. J., Granell A., Mazzucato A. (2020). Characterization of a repertoire of tomato fruit genetic variants in the San Marzano genetic background. *Scientia Horticulturae* 261 (2020) 108927
- Santangelo E., Carnevale M., Best CA., Mazzucato A., Picarella ME., Dono G., Gallucci F. (2019). Tomato genetic variants for peel color, a source of biocompounds and biomass for energy recovery. Proceed. 27th European Biomass Conference and Exhibition, 27-30 May 2019, Lisbon, Portugal, pp 1818-1823
- Santangelo E., Carnevale M., Migliori C. A., Picarella M. E., Dono G., Mazzucato A., Gallucci F. (2020). Evaluation of tomato introgression lines diversified for peel color as a source of functional biocompounds and biomass for energy recovery. *Biomass and Bioenergy*, 141, 105735.
- Dono G., Rambla J.L., Frusciante S., Granell A., Diretto G., Mazzucato A. (2020) Color mutations alter the biochemical composition in the San Marzano tomato fruit. *Metabolites*, *10*(3), 110.
- Dono G., Rambla J.L, Frusciante S., Fabene E., Gómez-Cadenas A., Granell A., Diretto G., and Mazzucato A. (2022) Pigment-related mutations greatly affect berry metabolome in San Marzano tomatoes. *Horticulturae, 8,* 120.

Training activities (participation in seminars and training courses)

- Post-graduate course in “Accelerate climate resilient plant breeding by applying –omics and artificial intelligence”. 20-24 April, 2020 at the Swedish University of Agricultural Sciences (SLU) in Alnarp.
- "Principles of Scientific Writing" course, held by Professor Daniele Porretta of the "Sapienza" University of Rome, 1-4th July 2019
- Seminar "Exascale Biology: From Genome to Climate With a Few Stops Along the Way" organized by Professor Antoine Harfouche, 10th June 2019.
- Seminar “Un Ritratto Genomico della Popolazione Italiana: Migrazioni Antiche e Flussi Genici Storici””, held by Prof. Cristian Capelli, Associate Professor in Human Evolution, Department of Zoology, University of Oxford, 18.04.2019.
- Course of "Statistical Methodology for Agricultural Sciences. General linear models and insights on Partial Least Squares Regression”organized by the Italian Society of Agronomy. 12-16th June 2017, Viterbo, Italy. 40 hours of lessons.
- Quarterly English course, level B1 +. Organized by the University of Tuscia, Dept. DISTU March-June 2017, Viterbo, Italy.
- Competences and skills of a PhD student - an overview "18th May 2017 Dept. DAFNE-DEIM, Viterbo, Italy.
- Next Generation Bioinformatics: unleashing genomics potential- Walter Sanseverino (Sequentia Biotech, Barcelona) 8th June 2017 Aula Magna Dept. DAFNE, Viterbo, Italy.
- Conference: 'New perspectives of plant genetics: protection of intellectual property and public research ", organized by the National Research Council and the Italian Society of Agricultural Genetics. 2nd December 2016, Milan.

Conducting teaching activities in Bachelor's Degree Courses and Master's Degree Courses: Collaborations in didactic exercises

- Bachelor degree: “Plant production biotechnologies” - (a.y. 2017/2018 2018/19 2019/2020, CdlL L25 and L2
- Master degree: “Plant breeding and seed biotechnologies”Genetic improvement and biotechnology of the seed (a.y. 2017/2018 2018/19 2019/2020, CdLM LM7 and LM69)

Thesis supervisor

Master of Science in "Biotechnology for Agriculture, the Environment and Health" Class LM 7

- Title: "Phenotypic and genetic characterization of the Intense pigmentation variant in tomato (*Solanum lycopersicum* L.)"

- Graduating: Dr. Carlotta Pianozza
- Tutor: Prof. Andrea Mazzucato
- Co-tutor: Dr. Gabriella Dono

Bachelor of Science in “Biotechnologies” CLASS L-2

- Title: “Studio dell’effetto delle mutazioni hp-1, hp-2, pd e aft_atv sull’accumulo di metaboliti secondari polari nella bacca di pomodoro san marzano”
- Graduating: Dr. Eleonora Fabene
- Tutor: Prof. Andrea Mazzucato
- Co-Tutor: Dr. Gabriella Dono

EDUCATION

Master degree in Agricultural Biotechnologies

- (class LM-7) obtained on 27/09/2016
- Universita' degli Studi della Tuscia (Viterbo, Italy), Dipartimento di Scienze Agrarie e Forestali (DAFNE)
- Name of the Master: Biotecnologie Per La Sicurezza E La Qualità Delle Produzioni Agrarie
- Final degree mark: 110/110 cum laude
- First academic year of enrolment: 01/09/2014 | Official time limit for the degree course (years): 2
- Dissertation title: “**Profiling of volatile compounds in fruits of the tomato (*Solanum lycopersicum* L.) Spanish landrace Muchamiel after introgression of resistance genes against ToMV, TYLCV and TSWV viruses”**
- Dissertation subject: This master’s degree thesis is part of a larger research project aimed at the re-evaluation of many typical products throught the improvement of local varieties of some plant species, including tomato. The traditional Spanish variety Muchamiel, with the introgression of different combinations of genes for resistance to viruses, was the genetic background involved to address the effect of the introgressions on fruit quality traits, by analyzing the volatile compound profiles.| Effort 6 months
- Tutor: Prof. Andrea Mazzucato
- Co-tutor: Prof. Antonio Granell

- **Internship during Master**
  2015 European Union program (Erasmus)
  Place: Valencia (Spain) - Universitat Politècnica de Valencia (UPV)
  Language: Spanish, English
  Duration: 6 months, from the 1st of September 2015 until the 28th of February 2016

- **Training/practical activity**
  The training project involved the use of CRISPR / CAS9 system in tomato plants, in order to obtain resistance against five strains of the virus TYLCV (tomato yellow leaf curl virus)
  Place: Valencia - IBMCP (Instituto de Biologìa Molecular y Cellular de Plantas) - Universitat Politècnica de Valencia
  Responsible for training: Dr. Diego Orzaez Catalayud

Bachelor degree in Biotechnologies

- (class L-2) obtained on 15/04/2014

- Universita' degli Studi della Tuscia (Viterbo, Italy), Dipartimento per l'Innovazione dei Sistemi Biologici, Agroalimentari e Forestali (DIBAF)

- Name of the Bachelor: Biotecnologie

- Final degree mark: 110/110 cum laude

- First academic year of enrollment: 2010 | Official time limit for the degree course (years): 3

- Dissertation title: **Purificazione e caratterizzazione di una xilanasi del fungo patogeno *Fusarium graminearum*.**
  (Purification and characterization of a pathogen fungus *Fusarium graminearum* xylanase)

- Dissertation subject: The work was part of a larger research project that studies the role of glycosidase inhibitors in wheat defense against the fungal pathogen *Fusarium graminearum*, with the final aim of improving host resistance. The experimental work reported concerned the purification and characterization of a xylanase of *F. graminearum* heterologously expressed in yeast *Pichia pastoris*. The purification took place at the University of Padova at the laboratory of professor Francesco Favaron and the characterization at the laboratory of Physiology E Vegetable Biotechnology of professor Renato D'Ovidio | Effort 3 months

- Tutor: Prof. Renato D'Ovidio

- **Internship during Bachelor**
  Università di Padova, Laboratory of Prof. Francesco Favaron.
  Period funded by the C.I.B. (Consorzio Interuniversitario Biotecnologie) : from the 1st of October until 31 of October, 2013.

Certificate of classical maturity

- Mariano Buratti High School obtained in **2010**, (Viterbo, Italy)
- School-leaving examination mark: 88/100

Languages

- B2 English
- B2 Spanish

HOBBIES

I started classical dance when I was seven years old and I continued to practice it until today.

I am used to performing in theatre, gathering precious memories, but also learning to manage the tension of the stage and to cooperate together with the dance troup, just like in a research group, in which everybody has both his own role and shared roles.

In the last two years I have also been practicing classical pilates, yoga and gyrotonic.

I am convinced that the discipline of these activities helped me to perceive my academic goals.

Data

14-01-2022

"Autorizzo la pubblicazione del mio curriculum vitae e il trattamento dei dati personali in esso contenuti in base all'art. 13 del D. Lgs. 196/2003 e all'art. 13 GDPR 679/16".