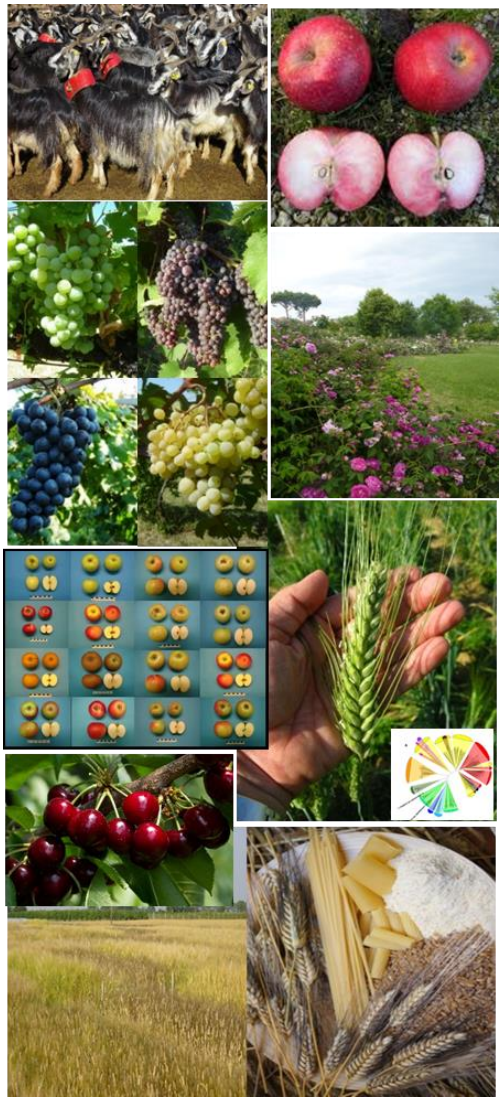
GENETIC RESOURCES IN AGRICULTURE

Several research groups are working on different agricultural genetic resources (plants, animals and microorganisms) for their CHARACTERIZATION, CONSERVATION, MANAGEMENT and SUSTAINABLE USE

Our resources

DISTAL is responsible for the conservation and management of plant and microbial genetic resources and collections and for the maintenance of DNA and animal tissue biobanks:

* **Fruit tree species**: apple, pear, grape vine, kiwi fruit and quince
* **Rose germplasm**: commercial and novel cultivars
* **Cereals and biomass crops**: barley mutants, tetraploid wheats, *Arundo donax* mutants
* **Livestock**: animal tissues and DNA of cosmopolitan and local animal breeds of different species (pig, cattle, sheep, goat, horse, donkey, rabbit, honey bee)
* **Reggiana cattle biobank**
* **Microorganisms**: bacteria and yeast collections of agronomic, food and industrial interest (cultures for biocontrol, starter and co-starter cultures, probiotics, biotransformation agents)



Our aims

- Conservation, characterization, management and sustainable use of plant varieties and livestock breeds and populations
- Development of new fruit tree cultivars
- Identification of genetic variants associated to agronomic relevant traits in plants and livestock
- Use of genetic resources for the characterization of genetic components of robustness and resilience in plants and livestock
- Use of accessions and populations with new/improved traits for quality and productivity in breeding programs
- Exploitation of microbial diversity for the selection of biocontrols, starters, prostarters, probiotics and biotrasformation agents

Our expertise

- Genetics, genomics, transcriptomics, phenomics and bioinformatics
- Plant and livestock breeding and selection programs, including the use of molecular information (marker assisted selection and genomic selection)
- GXE analyses in plants and livestock
- Analysis of plant physiological responses to climate changes to improve resource use efficiency
- Cultivation trials of landscape roses in the absence of irrigation, pesticides, pruning and fertilization.
- Seed authentication, genetic traceability and authentication of animal products
- Selection and use of microorganisms for the improvement of food safety, shelf life and functionality, for fermented and non-fermented products
- Development of biotechnological processes for agro-industrial waste and byproducts utilization in the production of high-added-value compounds
- Economic evaluation of biodiversity

Our main projects

INTERNATIONAL

- TREASURE - Diversity of local pig breeds and production systems for high quality traditional products and sustainable pork chains – H2020 (2015-2019)
- Use of lactic acid bacteria and yeasts as biocontrol cultures in short-ripening cheeses - ITALY-CANADA EXCHANGE PROJECT (2017-2019)
- INGREEN - Production of functional innovative ingredients from paper & agrofood side-streams through sustainable and efficient tailor-made biotechnological processes for food, feed, pharma & cosmetics – H2020 (2019-2022)
- INNOVAR - Next generation variety testing for improved cropping on European farmland (2019-2025)

- IWYP – ROOTY - International Wheat Yield Partnership (2018-2021)

NATIONAL

- PigPhenomics - Applied phenomics and genomics in pigs for the identification & use of new phenotypes in breeding plans PRIN 2017 (2019-22)
- ProSuIT- Application of innovative tools for the production of PDO seasoned hams – AGER (2018-2019)
- From Seed to Pasta: Multidisciplinary approaches for a more sustainable and high quality durum wheat production – AGER
- ISIDE - Interaction of Self- Incompatibility Determinants in pear - PRIN 2015 (2017-2020)
- Genetic and genomic approaches to improve quality of fatty acid composition in pig meat - PRIN 2015 (2017-2020)
- DUAL BREEDING - Dual-purpose cattle breeds for sustainable livestock production - PSRN 2014-2020 (2017-2019)
- SUIS: Sustainable Italian pig production chain - PSRN 2014-2020 (2017-19)
- CUN-FU - The future of rabbit farming towards a sustainable farming system - PSRN 2014-2020 (2017-2019)

REGIONAL

- Sal.Va.Re.Bio.Vit.E.R. Recovery, preservation and valorization of grapevine biodiversity in Emilia-Romagna - PSR 2014-2020 (2017-2020)
- Biodiversamente Castagno - Analysis of genetic diversity in the Emilia-Romagna collections of chestnut - PSR 2014-2020 (2017-2020)
- Agreement with Emilia-Romagna Region for preservation of local apple and pear germplasm (2018-2021)
- VITEAMBIENTE - Development of an innovative model with high environmental sustainability for the valorisation of old grapevine cultivars in Colli Bolognesi (2018-2019)

COLLABORATIONS & OTHER PROJECTS

- New breeding programs for cherry and plum trees (New Plant, 2017-2022)
- Development & experimental evaluation of new rootstocks & new varieties of cherry & Chinese-Japanese & European plum trees with integrated & biological production techniques (Consorzio Ciliegia tipica di Vignola, 2018-2020)
- Trialing of Sweet cherry cultivars (Jo Sims Ltd, 2013-2020)
- Since 2019, the Rose collection of University of Bologna is the venue of the New Rose International Trials, the international award for new rose cultivars
- International Durum Wheat Sequencing Consortium: leader in the production of a "gold-standard" sequence of "Svevo" durum wheat
- Wheat Initiative – Durum Wheat Expert Working Group: leader in the assembly of an "open germplasm collection" for durum wheat (Global Durum Panel – ICARDA and Global Tetraploid Collection – UNIBO)

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