



Division of Biotechnology  
and Agro-industry

ENEA

ITALIAN NATIONAL AGENCY FOR NEW TECHNOLOGIES, ENERGY AND SUSTAINABLE ECONOMIC DEVELOPMENT



Bioproducts and bioprocesses  
Laboratory

LABORATORY

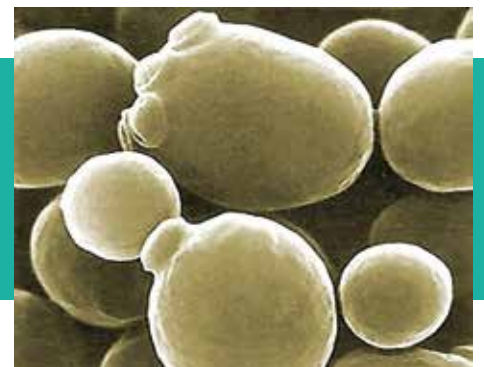
## BIOPRODUCTS AND BIOPROCESSES

The "Bioproducts and Bioprocesses" Laboratory (PROBIO) carries out the RD&T activities in Biotechnology and Agroindustry Division area.

The Biotechnology and Agroindustry Division (BIOAG), part of Territorial and Production Systems Sustainability Department (SSPT), focuses on innovation in the agro-industrial system for the development and competitiveness of food production in terms of quality, safety and sustainability, encouraging chain approaches, through agro-industrial and/or territory clusters. BIOAG promotes the development of products (food and no-food) with high-added value and high technological value derived from biological resources, promotes agrifood supply chain by districts and public-private clusters integrated on the territories, develops methods and technologies for innovation and traceability of the production, supply, processing and marketing chains of agricultural and food products in a perspective of enhancing consumer confidence in the foodchain.

### Division thematic fields are:

1. Innovative biotechnology products, processes and systems for the Bioeconomy;
2. Precision and resilient agriculture for sustainability and for phytosanitary measures on crop production;
3. Food traceability, quality and safety;
4. Innovative processes and products related to human health and well-being.



In this programmatic framework, the "Bioproducts and Bioprocesses" Laboratory pursues the aim of developing innovative products and processes in food and no-food areas through the use of Key Enabling Technologies (KETs). Special attention is devoted to developing industrial biotechnologies (White Biotechnologies) and Process Technologies, mostly Mild Technologies, in agroindustry and bioindustry areas. The activities are finalised to detection and experimentation, at different levels of scale, of innovative and sustainable productive solutions, able to obtain a wide range of products/processes bio-based, with high added value of interest for new markets. The approaches pursuit allows the valorisation of biological resources use, vegetables matrices, by-products and waste. The Laboratory combines expertise on valorisation of vegetables, animal and microbial resources (agronomy, microbiology, entomology, chemistry, veterinary, environmental sciences), industrial biotechnology, chemical engineering, Nuclear Magnetic Resonance (NMR), biochemistry. All activities are performed through multifunctional innovative infrastructures, equipment, facilities and technology/service platforms, from lab-scale to pilot-scale (Technological Hall "Agrobiopolis" and "Agroindustrial Processes").



The Laboratory is located in Italy on three ENEA Centers  
(Research Center Trisaia - Matera, R.C. Casaccia - Anguillara S. Roma and R.C. Portici - Napoli)  
and carries out R&D activities, Demonstration and Technological Transfer  
on principal thematic fields below:

- valorisation of biological resources (crops, animals, microorganisms, yeasts, microalgae, etc.) or parts of them, finalised to detection and characterization of fractions, natural substances, metabolites for use in agroindustry, food, pharmaceutical, cosmetic, textile and cultural heritages sectors;
- preparation and use of matrices and suitable substrates, with special reference to matrices of vegetable and microbial origin, by-products, waste to develop bioproducts (ingredients and metabolites for food and feed, microbial and bio-based products, natural colors, etc.);
- downstream processing through use, from lab-scale to pilot-scale, of Mild Technologies as conventional extraction or by supercritical fluids (CO<sub>2</sub> - SFE), bioreaction and fermentation, membrane separation, lyophilization, dehydration, evaporation and concentration;
- mass-rearing technologies (bio-facilities) of useful organisms and microbial products for use in bioindustry sector;
- keeping and biometric and biochemical analysis of vegetable genetic resources, through setup of experimental fields too;
- chemical characterization of vegetable matrices, products and derivatives from food and non-food sectors, materials (gel, biopolymers, etc.) through use of Nuclear Magnetic Resonance (NMR).

The Laboratory carries out activities through public-private partnership in the context of  
UE RD&T Projects (H2020, BBI, INTERREG, etc.),  
national projects (PON, National Technological Clusters, Foundation, etc.)  
and regional projects (POR, PSR, etc.).

The Laboratory gives furthermore, in the context of CSAgri (Advanced Services center for Agroindustry), technical advice, technological and analytical services from lab-scale to pilot-scale, demonstration and technological transfer to innovative Start Up, SME and BE and public sector.