

# microbion

**Contract Research Organization (CRO)**  
specialized in  
**Agri-Food Industrial  
Microbiology**

**Open Innovation framework:**

- ✓ Full outsourced projects
- ✓ Integration with your R&D
- ✓ Ad-hoc custom services

**One stop shop for your  
microbial innovation:**

- R&D Services
- Lab Testing
- Microbial Bio Bank

## Strain Discovery and Isolation

- Microbial biodiversity analysis of soil, plant, crop & post-harvest
- Assessment of microbial niches for new strains isolation
- Bio-Banks of candidate strains, development and maintenance



## Strain Selection and Characterization

- Phenotypic and genotypic screening with standard/custom assays
- Genome analysis and safety assessment for regulatory compliance
- Intellectual property rights protection and IDA strain deposit



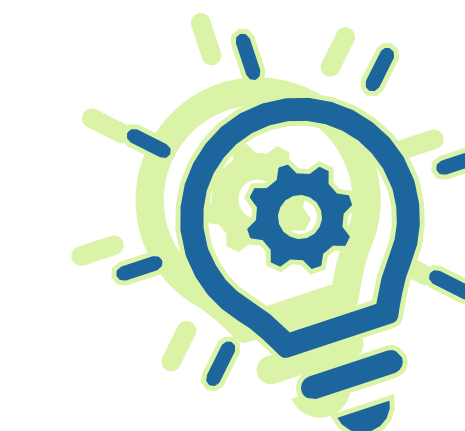
## In Vitro Studies

- Antagonisms and synergies: interaction between microbial strains
- Plant-microorganisms in vitro models for biocontrol & biostimulants
- Biochemistry assays, mechanism of action and gene expression studies



## Solution Prototype

- Fermentation optimization and lab scale manufacturing
- Formulation ingredients compatibility studies
- Experimental batch production and feasibility studies



## Field Trials Support

- Microbiome analysis of soil, roots, leaves, flower, fruits and tissues-specific
- Strain-specific diagnostics for traceability in the field & in the supply chain
- Efficacy quantification and biological standards for challenge-tests



## Production Optimization

- Freeze/spray drying, lyophilization and downstream processes
- Manufacturing environmental monitoring for quality assurance
- Master Cell Bank and Working Cell Banks, development and validation



## Quality Control

- Enumeration of viable cells of bacteria, yeast, molds and spores
- Purity check at species/strain level and development of custom QC protocols
- Batch release COA and stability studies over shelf-life

### OUR ENABLING TECHNOLOGIES

#### MICROBIOLOGY

- Custom plate counts
- Antagonism assays
- Phenotypic assays
- Antimicrobial resistances (MIC)
- Antimicrobials production assays
- Fermentation kinetics
- Spray/freeze drying & lyophilization
- Cryopreservation
- Microscopy

#### MOLECULAR BIOLOGY

- Custom end-point PCRs
- DNA Fingerprinting PCRs
- Real-Time quantitative PCRs
- Viability PCRs
- LAMP-PCRs
- Multi-Locus Seq. Typing (MLST)
- Flow Cytometry & Flow-FISH
- Infrared spectroscopy
- MALDI-TOF identification

#### OMICs TECHNOLOGIES

- Next-Generation Sequencing
  - Long reads (PacBio, MinION)
  - Short reads (Illumina, AVITI)
- Bioinformatics
- Custom databases
- Genomics
- Transcriptomics
- Metabarcoding (Amplicons)
- Metagenomics (Shotgun)
- Whole Genome Optical Mapping

### "BIO PROTECT" PROJECT

**AIM:** To discover endophytic bacteria able to protect from *Botrytis cinerea* infection in grapes  
**RESULTS:** Biobank of candidate strains, development of a product prototype tested in real winery conditions  
**PARTNERS:** CREA Viticulture & Enology Dept., Perdomini-IOC SPA **PROJECT GRANT:** Fondazione CARIVERONA

### "FUTURAME" PROJECT

**AIM:** To discover beneficial fungi tolerant to copper-based fungicides applied in vineyards  
**RESULTS:** Development of in vitro assays to evaluate copper tolerance, DNA-based fingerprinting methods  
**PARTNERS:** CREA - Viticulture & Enology Dept., Manica SPA **PROJECT GRANT:** Fondazione CARITRO

### "GAIA" PROJECT

**AIM:** To study the impact of regenerative agriculture techniques including microbes  
**RESULTS:** Metabarcoding analysis with genetic markers other than universal 16S rRNA & specific PCRs  
**PARTNERS:** Messina University, Kalos SRI, Mugavero SAS **PROJECT GRANT:** Fondazione AGTITECH

### "INTEGRA" PROJECT

**AIM:** To develop a portable diagnostic device to assess *Botrytis cinerea* infection in plant and fruit  
**RESULTS:** Development of DNA-based kit to early detect plant pathogens, evaluation of antagonistic effect  
**PARTNERS:** Verona University, Rete Innovativa Alimentare Veneto (RIAV) **PROJECT GRANT:** Regione Veneto

**GET IN CONTACT FOR  
YOUR TAILORED PROJECT!**

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