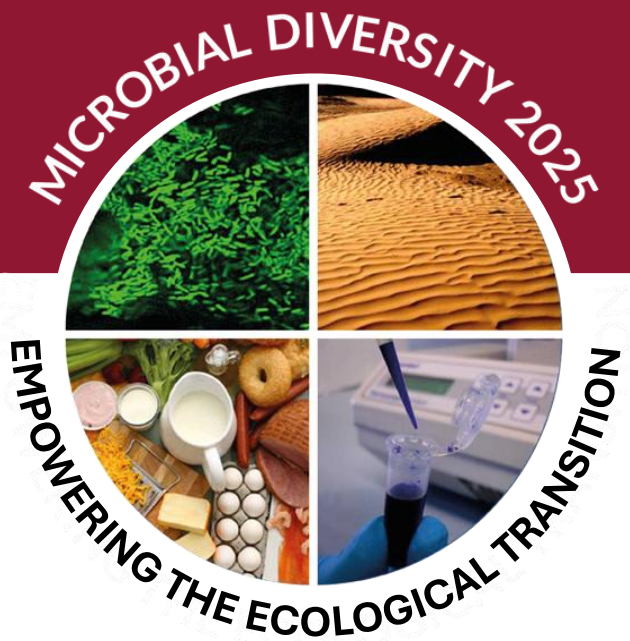




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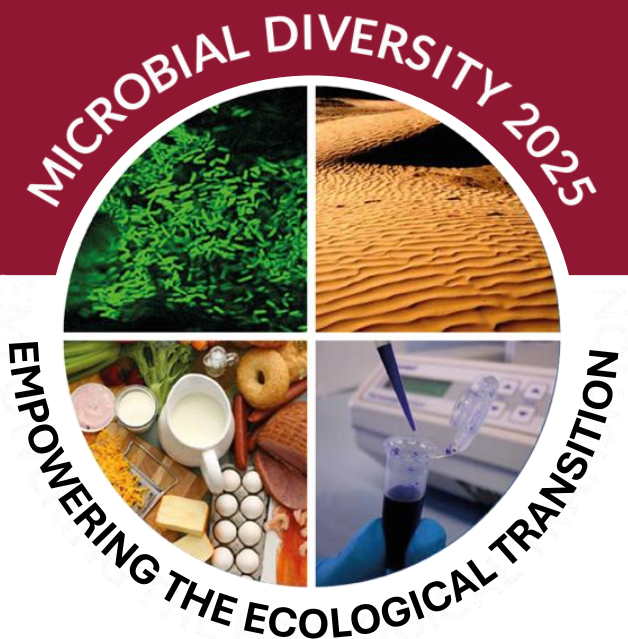
SAPIENZA
UNIVERSITÀ DI ROMA

**8TH INTERNATIONAL CONFERENCE
ON MICROBIAL DIVERSITY**
**MICROBIAL DIVERSITY FOR EMPOWERING THE
ECOLOGICAL TRANSITION:**
RESEARCH, INNOVATION, AND TECHNOLOGICAL TRANSFER

23-26 September 2025
Rome, Italy

**Book of
Abstract**





SIMTRE3A



SAPIENZA
UNIVERSITÀ DI ROMA

SCIENTIFIC PROGRAMME

TUESDAY 23 September 2025

16:00 Registration

16:45 **Institutional Greetings**

Chair: **Carlo G. Rizzello**

Rosalba Lanciotti - President of SIMTREA

Antonella Polimeni - Rector of the Sapienza University of Rome

Maria Sabrina Sarto - Deputy Rector for Research, Sapienza University of Rome

Cristina Di Domizio - Agrifood National Cluster CL.A.N.

Daniele Rossi - Copa-Cogeca, FoodDrinkEurope

17:15 **Opening Lecture**

From single bacterial cells to microbial communities: a round trip to unlock the secrets and technological significance of microbial ecosystems characteristic of dairy niches – The Natural Whey Starter

Erasmus Neviani, University of Parma, Italy

18:00 WELCOME CEREMONY

featuring a selection of traditional baked goods from the Consorzio per la Tutela del Lievito Madre da Rinfresco



08:30 Registration

SESSION 1

SYSTEMS MICROBIOLOGY, FUNCTIONAL GENOMICS, GUT MICROBIOTA

Chairpersons: **Marco Gobetti, Luca Cocolin, Alan Walker**

09:00 Plenary lecture

The human gut microbiota: Hopes, hypes and prospects for therapeutic interventions

Alan Walker, University of Aberdeen, United Kingdom

Genome-wide association analysis and metabolic profiling reveal the high complexity of salt tolerance polymorphism in the nitrogen-fixing *Sinorhizobium meliloti* - **Agnese Bellabarba**

Beneficial effects of selected food-associated *Lactiplantibacillus plantarum* on social behaviors, intestinal permeability and gut microbiota in a genetic mouse model of autism spectrum disorders - **Roberta Prete**

A novel plant-based food to make the benefits of the Mediterranean diet accessible to non-adherent people - **Andrea Polo**

Evaluation of a BSH-positive probiotic strain using the SHIME® model: insights into bile acid metabolism and microbiota modulation of mild hypercholesterolemic donor - **Amanda Vaccalluzzo**

11:00 COFFEE BREAK & POSTER SESSION

Enduring the cold: molecular strategies of *Mrakia gelida* under temperature stress - **Daniele Andreani**

Impact of chitosan-TPP nanoparticles loaded with olive pomace extract on gut microbiota: an *in vitro* SHIME® study - **Martina Ben**

Development of a comprehensive cheese metagenome catalogue reveals potential markers of origin and quality – **Raffaele Magliulo**

Application of new genomic techniques in *Bifidobacterium animalis*: removing tetracycline resistance while preserving probiotic properties - **Marianna Bozzetti**

Seasonal variation as the main driver of gut microbiota composition in *Apis mellifera* from the Natural Park of Mount Conero (central Italy) - **Andrea Marcelli**

New functional food effects on gut microbiota-related wellness: The multi-unit *in vitro* colon model to evaluate gut health - **Pamela Vernocchi**

12:45 LUNCH

featuring a selection of traditional Italian cured meats
from CLAI Cooperative



SESSION 2

MICROBIAL INTERACTIONS, FOOD PROCESSING AND FUTURE FOODS

Chairpersons: **Pier Sandro Cocconcelli, Rosalba Lanciotti, Eugenio Parente**

14:00 Plenary lecture

Advances in the methods for the inference of microbial associations in microbiomes

Eugenio Parente, University of Basilicata, Italy

A multi-omics approach to unravel microbial and metabolic drivers of biogenic amine formation in traditional cheeses - **Leonardo Mancini**

Functional traits of *Propionibacterium freudenreichii* and its lactic acid bacteria consortia as starters for faba bean fermentation - **Rossana Coda**

Promoting Innovation of ferMENTed fOODs (PIMENTO): the COST action CA20128 outcomes - **Vittorio Capozzi**

Exploiting the potential of *Weissella* and *Periweissella* strains: new insights and novel applications in functional food design - **Marco Montemurro**

16:00 COFFEE BREAK & POSTER SESSION

From North to South: microbial profiles and ecological characteristics of Italian fermented sausages - **Irene Franciosa**

Synergistic application of microbial fermentation and High-Pressure Homogenization for the valorisation of brewer's spent grains into functional food ingredients - **Margherita D'Alessandro**

Another brick to understand the fructophilic behaviour of *Hanseniaspora valbyensis* - **Rosangela Limongelli**

Advancing "Ewiss" cheese production and strengthening its geographical identity through the use of selected autochthonous lactic and propionic acid bacteria - **Giuliana Garofalo**

Phage-Host coevolution: a strategy for improving lytic bacteriophage efficacy against STEC in food systems - **Nicola Mangieri**

Exploring yeasts as novel natural biopreservatives: antibacterial potential against foodborne pathogens - **Laura Moretti**

Variability of insect associate microbiome as function of rearing substrate and production scale: a case study on black soldier fly larvae reared on food-related side-streams - **Giacomo Rossi**

Antimicrobial and antibiofilm effects of nanoemulsions essential oils to control pathogen in cheese - **Fabrizio Cappa**

Microbiome mapping in the meat food chain: from farm to fork - **Asim Ur Rahman**

Whole-genome sequencing of a vineyard-related *S. kudriavzevii* strain reveals links to the hybrid population with *S. cerevisiae* - **Jacopo Sica**

20:30 GALA DINNER

Sapienza Botanical Garden



SESSION 3

SOIL AND PLANT MICROBIOTA: ROOTING FOR SUSTAINABLE AGRICULTURE

Chairpersons: **Diana Di Gioia, Olimpia Pepe, Angela Sessitsch**

09:00 Plenary lecture

The plant microbiome for sustainability

Angela Sessitsch, AIT Austrian Institute of Technology, Austria

Pyrroloquinoline quinone (PQQ)-producing *Arthrobacter* sp. D4 benefits peanut growth, induces antioxidant response and favourably modulates the rhizobacterial community: A prospective strategy towards antioxidant agriculture - **Aditi Buch**

Effects of municipal solid waste (MSW)-derived compost on the vineyard soil microbiota - **Massimiliano Cardinale**

Selection and evaluation of salt-tolerant Plant Growth Promoting Bacteria from halophyte plants for sustainable agriculture - **Angela Racioppo**

A simplified holobiont system revealed *Rhizobium* sp. GR12 as a possible versatile biofertilizer in grapevine under different abiotic stresses - **Francesca Mapelli**

11.00 COFFEE BREAK & POSTER SESSION

Enhancing agricultural sustainability: selection of *Rhizobium sulae* strains for optimized nitrogen fixation from populations of *Sulla coronaria* in Sicily - **Monica Auteri**

Monitoring of mobile genetic elements associated with AMR and VF in microbial biostimulants: a safety assessment based on in silico data and scientific literature - **Gabriele Bellotti**

Unravelling the endophytic bacterial microbiota of tomato roots: a step towards sustainable agriculture - **Francesco Maria Fagnano**

Genetic and functional diversity of arbuscular mycorrhizal fungal spore associated bacteria occurring in Mediterranean sand dunes - **Arianna Grassi**

Exploring the potential of lactic acid fermentation to produce innovative biostimulants - **Jasmine Hadj Saadoun**

Characterization of stable poultry manure: microbial composition and effects on crop growth and yield - **Elia Pagliarini**

Harnessing native *Bacillus* sp. for sustainable enhancement of saffron and other vegetatively propagated crops: A microbial strategy for ecological transition - **Nitika Sharma**

12:45 LUNCH



SESSION 4

MICROBIAL ECOSYSTEMS, ENVIRONMENTAL SUSTAINABILITY

Chairpersons: **Daniele Daffonchio**, **Monica Agnolucci**, **Per Halkjær Nielsen**

14:00 Plenary lecture

Novel insights into the microbial diversity and ecology of global wastewater treatment and resource recovery systems

Per Halkjær Nielsen, Aalborg University, Denmark

Isolation and molecular characterization of metabolites produced by an Antarctic fungal strain - **Benedetta Fongaro**

Impact of mowing frequency on soil microbial diversity of urban roadside lawns - **Anna Markowicz**

Fungi and plastisphere: can this biodiversity hide biotechnological powerful biocatalysts? - **Federica Spina**

Rebuilding belowground biodiversity: AMF and cover plants drive VOC regulation in urban soil restoration - **Maria Alexandra Cucu**

16.00 COFFEE BREAK & POSTER SESSION

Spontaneous bio-recycling: recovering bioactive molecules through endogenous microbial maceration of hemp residues - **Angela Conti**

Development of a biotechnological method for enhanced oil recovery from exhausted oilfields on the Absheron Peninsula - **Saida Aliyeva**

Study of mycobiota in honeybee ecosystem through fermentation monitoring - **Silvia Gattucci**

Harnessing novel indigenous bacterial potential for biodegradation of end-of-life tires using immobilized bioreactor - **Shobha Mule**

Fungal diversity, a nature-based solution for rare elements recovery: investigation on interactions between fungal strains from culture collections and elements of strategic interest - **Veronica Spinelli**

Biological disinfection of domestic wastewater using moving bed biofilm reactor with saturated sand filter and its metagenomic analysis - **Sanam Prabhudesai**

18:00 Guided tour of SAPIENZA MUSEUMS



SESSION 5

SCALING UP MICROBIAL SOLUTIONS FOR THE INDUSTRY

Chairpersons: **Danilo Ercolini, Carlo G. Rizzello, Stefan Cappelle**

9:00 Plenary lecture

Food fermentation for good: scaling tradition

Stefan Cappelle, Puratos, Belgium

A molecular method for rapid detection of a *Metschnikowia pulcherrima* strain during grapevine biocontrol in industrial withering conditions - **Tiziana Nardi**

From waste to bioplastics: integrated approaches for polyhydroxyalkanoates (PHAs) production using wild type and engineered microorganisms - **Marina Basaglia**

Microbial biodiversity of traditional cheeses and natural dairy environments as drivers of food innovation - **Federico Baruzzi**

Sequential anaerobic–aerobic bioremediation of chlorinated ethenes in a complex contaminated site - **Sarah Zecchin**

11:00 COFFEE BREAK & POSTER SESSION

with a selection of Barilla specialities

From lab to industry: scalable production of alkaline proteases from *Bacillus licheniformis* for sustainable biostimulant development - **Beatrice Farda**

Partial grains germination and targeted lactic acid bacteria fermentation: a powerful duo to enhance nutritional and functional quality in the baking industry - **Giuseppe Perri**

Characterization of bacterial cellulose produced by *Komagataeibacter* sp. using agri-food byproducts as cost-effective substrates - **Joel Armando Njieukam**

Paper-based packaging and microbial ecosystems: a circular approach to food safety and environmental sustainability - **Gianluca Castellini**

Engineered yeasts for sustainable dsRNA production: molecular tool development and fermentation optimization - **Alessandra Di Canito**

Microbial diversity and dynamics of fruit-flavored traditional yoghurt ‘Ergo’ in Southern Ethiopia - **Habtamu Hawaz Taffese**

12:45 CLOSING CEREMONY AND AWARDS

13:15 LIGHT LUNCH

14:00 SIMTREA MEETING



MICROBIAL DIVERSITY 2025
8th International Conference
www.md25.simtrea.org



Session 3

Soil and Plant microbiota: rooting for sustainable agriculture

Enhancing agricultural sustainability: selection of *Rhizobium sullae* strains for optimized nitrogen fixation from populations of *Sulla coronaria* in Sicily

Auteri Monica, Di Miceli Giuseppe, Settanni Luca

University of Palermo, Italy

Corresponding author: monica.auteri@unipa.it

Agricultural systems are essential for fulfilling human needs; however, they account for approximately one- third of anthropogenic greenhouse gas emissions and contribute to environmental challenges such as biodiversity loss, soil fertility depletion, and the release of toxic substances into ecosystems. The use of legumes, such as *Sulla coronaria*, offers a promising avenue for enhancing sustainability due to its ability to fix atmospheric nitrogen in symbiosis with specific microorganisms. *Sulla coronaria* is a forage legume with broad distribution in the Mediterranean regions, renowned for its adaptability and capacity to produce high- quality forage. Its moderate content of condensed tannins can positively affect ruminant health and mitigate enteric methane emissions. Furthermore, its root system improves soil chemical and physical properties.

Sulla coronaria can be used in crop rotations with cereals (especially in organic systems), for soil protection and restoration, honey production, and landscaping. However, the spread of *S. coronaria* is heavily reliant on its specific microsymbiont, *Rhizobium sullae*, which is essential for efficient nitrogen fixation through effective nodulation. This study aims to select various *R. sullae* strains with optimal nitrogen fixation and nodulation performance to develop a commercial inoculum. To achieve this goal, root nodule samples of *S. coronaria* were collected from 20 sites across six provinces in Sicily. A total of 151 bacteria were isolated and tested using species-specific PCR; 34 were identified as *R. sullae*, with their identity confirmed by 16S rRNA sequencing. RAPD-PCR was then applied to differentiate among strains, resulting in the identification of distinct genetic clusters. The study is currently in progress: strains selected from each genetic cluster are being inoculated into pots containing *S. coronaria* plants and cultivated in a controlled climatic chamber to assess their efficiency in nodulation and nitrogen fixation.