

ECCO XLII Meeting

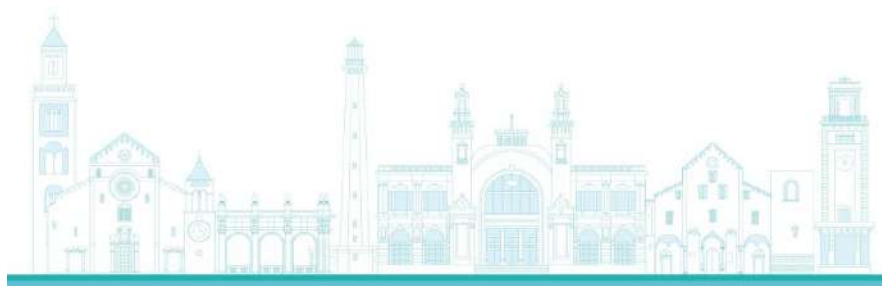
"Microbe & Microbiome Management for a Better Planet"



European Culture
Collections' Organisation

Book of Abstracts

Editors: Antonio Moretti, Giancarlo Perrone



Bari (Italy), 18-20 September 2024



Published by

National Research Council - Institute of Sciences of Food Production (CNR-ISPA)

Editors in Chief

Dr. Antonio Moretti
Dr. Giancarlo Perrone

Editorial and Organizing Board

Pamela Anelli (CNR-ISPA, Italy)
Vittorio Capozzi (CNR-ISPA, Italy)
Giuseppe Cozzi (CNR-ISPA, Italy)
Nicola De Simone (CNR-ISPA, Italy)
Luciana De Vero (CNR-ISPA, Italy)
Massimo Ferrara (CNR-ISPA, Italy)
Katia Gialluisi (CNR-ISPA, Italy)
Donato Magistà (CNR-ISPA, Italy)
Mario Masiello (CNR-ISPA, Italy)
Giuseppe Petruzzino (CNR-ISPA, Italy)
Antonio Pugliese (CNR-ISPA, Italy)
Stefania Somma (CNR-ISPA, Italy)
Antonia Susca (CNR-ISPA, Italy)

Digital Book by

Luciana De Vero (CNR-ISPA, Italy)
Giuseppe Petruzzino (CNR-ISPA, Italy)

National Research Council

Institute of Sciences of Food Production

© CNR Edizioni, 2024

Piazzale Aldo Moro, 7 - 00185 Roma

www.edizioni.cnr.it

ISBN: 978 88 8080 652 3 (Digital Edition)

DOI: 10.5281/zenodo.13752745



Dear Colleagues,

we are very pleased to announce that the XLII European Culture Collections' Organisation (ECCO) meeting will be held in the amazing city of Bari (Apulia region, Southern Italy), from 18 to 20 September 2024.

The ECCO meeting is organised by the Institute of Sciences of Food Production of the National Research Council of Italy (CNR-ISPA), and sponsored by the CNR-ISPA Agri-food Microbial Culture Collection (ITEM), and the International Society on Mycotoxicology.

The meeting will be focused on the study, management and valorisation of Microbe & Microbiome, as biological resources and bio-systems crucial tools for a better understanding of biological systems, to support quality of life and promote the transition towards a better planet. The conference promotes a holistic and integrated approach on the value of microbial resources and Microbial Biological Research Centers (mBRCs): i) to support basic and applied transdisciplinary sciences, ii) as resilience factors to deal with global changes and sustainable development, and iii) to promote human and animal health in the framework of a OneHealth perspective.

ECCO supports cooperation and scientific exchanges concerning all the activities of mBRCs. Annual ECCO meetings represent an opportunity for the scientific community of the field, to discuss current trends and future development in the culture collections activities.

We would like to invite you to be part of the XLII ECCO meeting that will take place at "Sala Aldo Moro" (Dipartimento di Giurisprudenza), University of Bari "Aldo Moro", near the central train station and the wonderful historic city centre.

Director of CNR-ISPA

Antonio Moretti

Curator of ITEM Collection

Giancarlo Perrone

Wednesday 18

- 1.00 p.m. - 2.30 p.m. Registration and Poster placing
- 2.30 p.m. - 3.00 p.m. **Welcome addresses:** Rector of University of Bari - *Prof. Stefano Bronzini*; President of CNR Research Area - *Cinzia Giannini*; Major of Bari - *Vito Leccese*; President of the European Culture Collections' Organisation (ECCO) - *Dr Gerard J. M. Verkley*; Co-Chairs of XLII ECCO Meeting - *Antonio Moretti* and *Giancarlo Perrone*
- 3.00 p.m. - 4.30 p.m. **Session 5 – Microbiomes preservation and exploitation** - Chairs: Ferrara Massimo (Italy), Aznar Rosa (Spain)
- 3.00 p.m. - 3.25 p.m. **Microbiomes for the Industry** - *Porcar Manuel, Spain (Invited Speaker)*
- 3.25 p.m. - 3.40 p.m. Exploring soil microbiome preservation strategies: culturable fraction, metabolic profiling and metagenomics - *Visca Andrea, Italy*
- 3.40 p.m. - 3.55 p.m. Microbiome Biobanking: The missing link - *Kostic Tanja, Austria*
- 3.55 p.m. - 4.10 p.m. Cryopreservation and recovery of a complex hypersaline microbial mat community - *Grego Michele, France*
- 4.10 p.m. - 4.25 p.m. Direct injection Mass Spectrometry for the Real-Time volatilomics in Food System Microbiomes: the potential of providing temporal dimension in multi-omics studies - *Corvino Antonia, Italy*
- Closing remark of session (5 min)
- 4.30 p.m. - 5.00 p.m. **Coffee break + poster session**
- 5.00 p.m. - 6.30 p.m. **Session 2– Microbes from farm to fork** - Chairs: De Vero Luciana (Italy), Oivanen Pekka (Finland)
- 5.00 p.m. - 5.25 p.m. Using microbial diversity or complex communities for valorization of side-streams for food applications - *Bang-Berthelsen Claus Heiner, Denmark (Invited Speaker)*
- 5.25 p.m. - 5.40 p.m. Are isolation, identification and preservation of microbial strains still useful for food applications? - *Baruzzi Federico, Italy*
- 5.40 p.m. - 5.55 p.m. Soil Health and Agri-Food System Sustainability from a microbiology perspective: A Data-Driven Approach for Agricultural Policy and Practices - *Bevivino Annamaria, Italy*
- 5.55 p.m. - 6.10 p.m. Be a QPS or not to be, that is the Quirky Paradox of Safety - *Chessa Luigi, Italy*
- 6.10 p.m. - 6.25 p.m. Investigation on the microbial evolution of cow milk in the passage from stable to mountain pasture, and evaluation of Bitto cheese microbial community - *Zago Miriam, Italy*
- Closing remark of session (5 min)
- 7.00 p.m. **Tour + Welcome Party**

Thursday 19

- 9.00 a.m. - 10.30 a.m. **Session 3 – Pathogenic and beneficial aspects of microbes in human and animal health** - Chairs: Hurtado Ortiz Raquel (France), Susca Antonia (Italy)
- 9.00 a.m. - 9.25 a.m. Studying host-microbe interactions in health and disease using germ-free and gnotobiotic mouse technology - *Vereecke Lars, Belgium (Invited Speaker)*
- 9.25 a.m. - 9.40 a.m. Using DNA Metabarcoding as a non-invasive tool for the conservation of the critically endangering Seychelles bat *Coleura seychellensis* - *Mattarelli Paola, Italy*
- 9.40 a.m. - 9.55 a.m. Riboflavin overproducing food-grade bacteria: genomic basis, biotechnological applications and perspectives - *Capozzi Vittorio, Italy*
- 9.55 a.m. - 10.10 a.m. Defining the *Enterobacter cloacae* species complex, with particular emphasis on *Enterobacter hormaechei* - *Rahi Praveen, France*
- Closing remark of session (5 min)
- 10.15 a.m. - 10.30 a.m. **Sponsor Session**
- 10.30 a.m. - 11.00 a.m. **Coffee break + poster session**
- 11.00 a.m. - 12.30 p.m. **Session 4 – Microbial life in extreme habitats: a 21st century challenge** - Chairs: Varese Giovanna Cristina (Italy), Sedláček Ivo (Czech Republic)
- 11.00 a.m. - 11.25 a.m. Diversity of microalgae in low pH environments: fifty years of the ACUF Collection, from strain to microbiome conservation and exploitation - *Pollio Antonino, Italy (Invited Speaker)*
- 11.25 a.m. - 11.40 a.m. Life at the limits: diversity, adaptation strategies and bioprospecting of microbes living in Arctic deep-sea habitats (INDEPTH) - *Kaczorowska Anna-Karina, Poland*
- 11.40 a.m. - 11.55 a.m. Cold-adapted carboxylic ester hydrolases from two Antarctic *Psychrobacter* strains: genomic analyses and in-vitro studies - *Cattaneo Andrea, Italy*
- 11.55 a.m. - 12.10 p.m. Cold-adapted yeasts: a restricted club of extremophilic organisms - *Buzzini Pietro, Italy*
- 12.10 p.m. - 12.25 p.m. Preliminary investigations of alkali-tolerant fungi in stromatolites from Lake Salda (Burdur province, SW Türkiye) - *Cecchi Grazia, Italy*
- Closing remark of session (5 min)

12.30 p.m. - 2.00 p.m. Lunch

2.00 p.m. - 3.30 p.m. **Session 1 – Microbes for environmental sustainability, under a climate change scenario** - Chairs: Turchetti Benedetta (Italy), Kermode Anthony (United Kingdom)

- 2.00 p.m. - 2.25 p.m. The importance of fungi for food security and One Health under a climate change scenario - *Lange Lene, Denmark* (Invited Speaker)
- 2.25 p.m. - 2.40 p.m. Fungi in marine plastisphere: ecological role and biotechnological potential - *Varese Giovanna Cristina, Italy*
- 2.40 p.m. - 2.55 p.m. Exploiting the agri-food waste and by-products potential for bioplastic production through *Haloferax mediterranei* fermentation - *Montemurro Marco, Italy*
- 2.55 p.m. - 2.10 p.m. Plant growth-promoting bacterial consortia isolated from halophytes to improve crop response to salinisation and climate change - *Racioppo Angela, Italy*
- 2.10 p.m. - 2.25 p.m. Genomic and metabolomic characterization of a new toxic cyanobacteria - *Rita Cordeiro, Portugal*
- Closing remark of session (5 min)

3.30 p.m. - 4.00 p.m. **Coffee break + poster session**

4.00 p.m. - 5.30 p.m. **Session 6 – Microbes and Citizen Sciences: through the lens of public opinion** - Chairs: Moretti Antonio, (Italy) Perrone Giancarlo (Italy)

- 4.00 p.m. - 4.25 p.m. The Isala project: characterizing the female microbiome through citizen science - *Wittouck Stijn, Belgium* (Invited Speaker)
- 4.25 p.m. - 5.25 p.m. Side show for citizen - interactive demonstrations
- 5.25 p.m. - 5.45 p.m. Results of the Survey on microbial biodiversity and taxonomy - *Felis Giovanna, Italy*
- 5.45 p.m. - 7.30 p.m. **ECCO General Assembly**
- 8.30 p.m. **Social Dinner**

Friday 20

9.30 a.m. - 11.45 a.m. **Session 7 – Advanced approaches in taxonomy, phylogeny and functional genomic** - Clermont Dominique (France), Masiello Mario (Italy)

- 9.30 a.m. - 9.55 a.m. Metabarcoding with Nanopore MinION: not only 16S or ITS - *Faino Luigi, Italy* (Invited Speaker)
- 9.55 a.m. - 10.10 a.m. Genomic overview over 100 cyanobacterial strains: taxonomy, microbiome and biosynthetic gene clusters - *Rúben Luz, Portugal*
- 10.10 a.m. - 10.25 a.m. Drivers of aquatic fungal diversity and ecological functions throughout Europe: Biodiversa+ FUNACTION and MoSTFun projects - *Marchese Pietro, Italy*
- 10.25 a.m. - 10.40 a.m. ITSoneDB v1.144 and BioMaS@ITSoneWB: two ELIXIR-IT main resources for amplicon based mycobiome investigation - *Defazio Giuseppe, Italy*
- 10.40 a.m. - 11.10 a.m. **Coffee break + poster session**
- 11.10 a.m. - 11.25 a.m. The new challenge in virus taxonomy: a binomial nomenclature for virus species - *Rubino Luisa, Italy*
- 11.25 a.m. - 11.40 a.m. Genomic insights into Mrakia: expanding horizons in microbial biotechnology - *Di Cesare Francesca, Italy*
- Closing remark of session (5 min)

11.45 a.m. - 1.20 p.m. **Session 8 – Networking, services, quality and data management of Microbial culture collections** - Chairs: Lima Nelson (Portugal), Verkley Gerard (Netherlands)

- 11.45 a.m. - 12.10 p.m. MIRRI-ERIC as a microbial, genetics and data resources hub to advance scientific discovery - *Portugal Melo Ana, Portugal* (Invited Speaker)
- 12.10 p.m. - 12.25 p.m. PLAVIT, the Italian Plant Virus Collection in 2024 - *Accotto Gian Paolo, Italy*
- 12.25 p.m. - 12.40 p.m. How the MIRRI-PT has been developed in its smart specialisation and cutting-edge technologies to offer better services - *Lima Nelson, Portugal*
- 12.40 p.m. - 12.55 p.m. The Italian network of microbial culture collections: an overview on management and sustainability of the future research infrastructure MIRRI-IT – *Moretti Marino, Italy*
- 12.55 p.m. - 1.10 p.m. Managing change within a culture collection: A case study on the challenges within quality, data management and infrastructure within CABI's collection - *Kermode Anthony, United Kingdom*
- Closing remark of session and Ecco meeting (15-20 min)
- 1.30 p.m. - 3.00 p.m. **Closing lunch**

Abstracts Summary

Session 1 – Microbes for environmental sustainability, under a climate change scenario.....	1
Thursday 19th September, 2:00pm.....	1
The importance of fungi for food security under climate change scenario	2
Fungi in marine plastisphere: ecological role and biotechnological potential.....	3
Exploiting the agri-food waste and by-products potential for bioplastic production through <i>Haloferax mediterranei</i> fermentation	4
Plant growth-promoting bacterial consortia isolated from halophytes to improve crop response to salinisation and climate change	5
Genomic and metabolomic characterization of a new toxic cyanobacteria.....	6
Microorganisms for the environment: Technological robustness of Plant Growth Promoting Bacteria for Mediterranean crops.....	7
Microbial characterization of endophytic bacteria from halophytic plants	8
Microbial collection from vegetable compost tea to develop bacterial consortia suitable for plant disease control	9
Dietary microbes and Mediterranean diet	10
Fungi as bioresources for remediation of HCH-contaminated soils: from microbial community-level physiological profile to selective isolation in enrichment	11
From culture collections to biorecovery of strategic elements: exploring fungal interactions with Germanium and Indium	12
Microbial consortia the great bio-based solution for the bioremediation of co-contaminated soils: study of microbial resources isolated from a decommissioned military site.	13
The CABI Biological Resource Collections: evolving to meet the changing needs of users.....	14
Exploring methodological aspects of microbiota transplantation in black elder (<i>Sambucus nigra</i>).....	15
Plant growth promotion endophytes from Sicilian native grapevines as plant biostimulants for climate-ready crops.....	16
Exploring Sicilian olive tree eco-friendly endophytes for sustainable agriculture.....	17
Fungal diversity in the precious Mediterranean red coral <i>Corallium rubrum</i>	18
A network-based approach to elucidate the dynamics of the native microbiota's response to a multi-kingdom microbial inoculant in raw brewer's spent grain	19
Exploring the oenological characteristics of different non- <i>Saccharomyces</i> species in grape must fermentation.	20
Harnessing Microbiomes for Drought-Resilient Agriculture: Insights from the BIOMEnext Project.....	21
Harnessing Fungi for Eco-Friendly Biosurfactant Production: joint efforts from CECT and MUT collections to unveil this potential among the preserved strains	22
Changes in bacterial, archaeal, and fungal communities from saline soils cultivated with tomatoes in Italy	23
A polycyclic aromatic hydrocarbons (PAHs) contaminated soil as source of microorganisms for bioremediation purposes	24
Impact of newly developed biofertilizer “polyazorich” on soil agrochemical properties during crop cultivation	25
Session 2 – Microbes from farm to fork.....	26

Wednesday 18th September, 5:00pm	26
Using microbial diversity or complex communities for valorization of side-streams for food applications.....	28
Are isolation, identification and preservation of microbial strains still useful for food applications?.....	29
Soil Health and Agri-Food System Sustainability from a microbiology perspective: A Data-Driven Approach for Agricultural Policy and Practices.....	30
Be a QPS or not to be, that is the Quirky Paradox of Safety	31
Investigation on the microbial evolution of cow milk in the passage from stable to mountain pasture, and evaluation of Bitto cheese microbial community.....	32
Influence of the cheesemaking process on the bioprotection activity of <i>Lactococcus</i> strains	33
Dietary Microbes and Case Studies from Food Processing	34
Creation of an “Egg-to-Meat” biobank of microbiota collected from broiler chickens raised with or without outdoor access.	35
<i>Lactiplantibacillus plantarum</i> diversity and plant-based sources	36
<i>Lactiplantibacillus plantarum</i> and bio-based solutions in foodbiotechnologies.....	37
Enhancing bioprotection on fresh-cut apples with microwave heating: preliminary tests for inclusion in hurdle technology	38
Biocontrol, edible packaging, and physical technologies: towards the design of integrated solutions for postharvest fruitsand vegetable management.....	39
Application of lactic acid bacteria in the postharvest of fruits and vegetables	40
Microbial Diversity from fermented Apulian ‘ <i>Gentile di Puglia</i> ’sheep milk: polyphasic characterization, dairy valorisation and cross-over cereal based applications.....	41
Characterization of the rib operon riboswitch in riboflavinoverproducing <i>Lactiplantibacillus plantarum</i> strains	42
Bioprospecting and valorization of citrus crops to obtain preharvest and post-harvest biocontrol agents.....	43
Fermentation as a driver of innovation for the development of the agri-food sector in marginal areas.....	44
Innovation in food fermentations and the cross-over fermentation concept in new product development	45
Selection of <i>Bacillus</i> strains as potential candidate against pathogenic <i>Fusarium</i> occurring on cereal.....	46
Effect of plant essential oils on <i>Botrytis cinerea</i>	47
Lactic acid bacteria as microbial starters in malting by-product fermentation to obtain innovative bread formulation.....	48
Unconventional raw plant matrices as source of pro-technologicalmicrobes for application in food fermentation.	49
Real-Time investigation of <i>Lactiplantibacillus plantarum</i> Fermentation in Experimental and Real Food Conditions Using a Metabolomics Approach.....	50
Cell surface proteome of <i>L. plantarum</i> strains isolated from vegetable foods and dairy products	51
Biodiversity in natural fungal community isolated from cheese aged in Apulian cave	52
Dried cell-free supernatant of <i>Bacillus subtilis</i> strain ET-1against <i>Penicillium digitatum</i> on clementine fruits	53
<i>Penicillium nalgiovense</i> : a promising fungal starter to control <i>Aspergillus westerdijkiae</i>	

contamination in salami	54
Biodiversity in fungal community on cheese aged in Dossena mine	55
Proteolysis in soy tempeh obtained with commercial starter	56
Relationship between the chemical content of fruits and endophytic fungal communities in black elder <i>Sambucus nigra</i> L.....	57
Genomic characterization of <i>Companilactobacillus</i> spp.: assessing safety and application potential in the food chain.....	58
Screening of yeast and filamentous fungi from VTT Culture Collection for cacao butter and palm oil production.....	59
Diversity of Non-Conventional Yeasts (NCY) for innovating fermented beverages: investigating microbiomes	60
Principles for selection of strains of microorganism cultures for the creation of biopreparations of agricultural designation.....	61
Tailoring diverse microbial consortia for the improvement of plant nutritional and nutraceutical properties.....	62
Session 3 – Pathogenic and beneficial aspects of microbes in human and animal health	63
Thursday 19th September, 9:00am.....	63
Studying host-microbe interactions in health and disease using germ-free and gnotobiotic mouse technology.....	66
Using DNA Metabarcoding as a Non-Invasive Tool for the Conservation of the Critically Endangering Seychelles Bat <i>Coleura seychellensis</i>	67
Riboflavin overproducing food-grade bacteria: genomic basis, biotechnological applications and perspectives	68
Defining the <i>Enterobacter cloacae</i> species complex, with particular emphasis on <i>Enterobacter hormaechei</i>	69
Functionalization of chickpeas through <i>Saccharomyces cerevisiae</i> var. <i>boulardii</i>	70
Growth inhibition of Human Pathogenic Microorganisms (HPMOs) by endophytic and rhizosphere bacteria.....	71
Supercritical fluid extraction of torularhodin from a new red yeast strain.....	72
Interaction between probiotic lactic acid bacteria and immunosuppressive drugs	73
Factors affecting the production of γ -aminobutyric acid in <i>Levilactobacillus brevis</i> LB12.....	74
Comparison of microbial populations of peritonsillar abscess determined by molecular and bacteriological methods.....	75
Use of potential probiotic autochthonous <i>L. plantarum</i> as co-starter for the production of goat's milk cheeses	76
Session 4 Microbial life in extreme habitats: a 21st century challenge.....	77
Thursday 19th September, 11:00am.....	77
Diversity of microalgae in low pH environments: fifty years of the ACUF Collection, from strain to microbiome conservation and exploitation.....	78
Life at the limits: diversity, adaptation strategies and bioprospecting of microbes living in Arctic deep-sea habitats (INDEPTH)	79
Cold-adapted carboxylic ester hydrolases from two Antarctic <i>Psychrobacter</i> strains: genomic analyses and in-vitro studies	80
Cold-adapted yeasts: a restricted club of extremophilic organisms	81
Preliminary investigations of alkali-tolerant fungi in stromatolites from Lake Salda (Burdur	

province, SW Türkiye).....	82
From microbial diversity of Campania thermal springs of their maintenance and preservation	83
The influence of prokaryote communities on <i>Galdieria sulphuraria</i> strain maintenance and cultivation.....	84
Cryopreservation strategies for extremophilic microalgae at ACUF: growth kinetic and photosynthetic assessment.....	85
Fermentation Technologies for the Optimization of levan Production by <i>Pseudomonas</i> strain 2ASCA.....	86
Extremophiles Collection of Institute of Biomolecular Chemistry National Research Council (CE- ICB CNR): microbial biodiversity preservation of extreme environments within the SUS- MIRRI.IT project	87
Exopolysaccharides from psychrophilic microorganisms as biological device for plant promotion.	88
Genome Prospecting and Wet-Lab Evidence of Plant Growth Promotion Traits in the Psychrophilic Arctic Bacterium <i>Pseudomonas</i> strain 2ASCA.....	89
Biosynthesis of Nanoparticles by Extremophilic Bacteria for Potential Biotechnological Application.....	90
The Haloarchaea Morphological Atlas discloses animal-like tissue structures emergence in single-celled archaea	91
Session 5 – Microbiomes preservation and exploitation.....	92
Wednesday 18th September, 3:00pm	92
Microbiomes for the Industry.....	95
Exploring soil microbiome preservation strategies: culturable fraction, metabolic profiling and metagenomics.....	96
Microbiome Biobanking: The missing link.....	97
Cryopreservation and recovery of a complex hypersaline microbial mat community.....	98
Direct Injection Mass Spectrometry for the Real-Time Volatilomics in Food System Microbiomes: the Potential of Providing Temporal Dimension in Multi-Omics Studies.....	99
Possible “microbial bioremediators” isolated from wasted lands.....	100
Food microbiomes and packaging: past, present and future.....	101
Marine microbial community sample cryopreservation: finding the best preservation strategy	102
Fermenting metacommunities of food interest: an invaluable biodiversity asset to be maintained overtime in its wholeness and functionality Micro4ever	103
Biochemical and biophysical characterization of two recombinant enzymes obtained from termite gut metagenome	104
Exploring Microbiomes in PFAS Contaminated Environments: Preservation for Bioremediation Strategies.	105
UMCC’s investigative approach for the preservation and exploitation of fermented beverage microbiomes	106
A cryopreservation protocol of microbial consortia from Apulian table olives	107
Synthetic microbial communities as a tool to understand microbial interactions and their role in bacterial cellulose production	108
Back-slopping of dried, freeze-dried and frozen Tempeh: the effect of long-term preservation techniques on the microbiome and volatilome.....	109

New frontiers for <i>Saccharomyces cerevisiae</i> flor strains.....	110
Microbiome characterisation of sourdough from the MBDS-UNISSCC microbial collection.....	111
Culturomics and microbiome-based approach for the development of NatComs as biofertilizers and biocontrol agents for sustainable agriculture: the reinforcement of ENEA microbial culture collection.....	112
<i>Trichoderma asperellum</i> and <i>Bacillus</i> spp. antifungal activity evaluation against <i>Fusarium</i> fungi.....	113
The use of microbial inoculants for the control of <i>Fusarium</i> related diseases in durum wheat	114
Session 6 – Microbes and Citizen Sciences: through the lens of public opinion.....	115
Thursday 19th September, 4:00pm.....	115
The Isala project: characterizing the female microbiome through citizen science.....	116
Mediterranean Diet and microbes: an emerging target for educational paths and citizen science.....	117
Didactic Proposals in Education for Sustainable Development in Teaching in Portugal and Brazil: Circular Relationship between Climate Change, Healthy Ecosystems and Soil Microbial Diversity.....	118
Session 7 – Advanced approaches in taxonomy, phylogeny and functional genomics	119
Friday 20th September, 9:30am	119
Metabarcoding with Nanopore MinION: not only 16S or ITS.....	120
Genomic overview over 100 cyanobacterial strains: taxonomy, microbiome and biosynthetic gene clusters	121
Drivers of aquatic fungal diversity and ecological functions throughout Europe: Biodiversa+ FUNACTION and MoSTFun projects	122
ITSoneDB v1.144 and BioMaS@ITSoneWB: two ELIXIR-IT main resources for amplicon based mycobiome investigation	123
The new challenge in virus taxonomy: a binomial nomenclature for virus species.....	124
Genomic insights into <i>Mrakia</i> : expanding horizons in microbial biotechnology.....	125
New Enterobacterales species isolated from dead seals in Antarctica	126
Taxonomic classification of Metagenome-Assembled Genomes with kMetaShot	127
Presumptive identification of two Gram-positive microaerophilic strains isolated from Weddell's seals in Antarctica.	128
New protocol development of bioinformatics analysis for species verification of the genus <i>Pseudomonas</i> from Polish Collection of Microorganisms resources.	129
Novel insights into heterocyte patterning and proheterocyte germination in <i>Kaarinaea lacus</i> PCC 9237T gen. nov. sp. nov.	130
Exploring <i>Fusarium oxysporum</i> biodiversity in Beauvericin gene-cluster	131
Exploring cyanobacteria genomes for antithrombotic secondary metabolites.....	132
GEN-ERA toolbox: reproducible bioinformatics workflows for genomics and taxonomy in culture collection.....	133
Comparison study between molecular fingerprinting and FTIRBIOTYPER.....	134
Advancing research in synthetic biology through DTU Bioengineering's Fermentation and HT-automation facility	135
Identification and characterization by a polyphasic approach of the microbial agent responsible of	

spoilage in Grana Padanocheese	136
The importance of the <i>Legionella surveillance</i> approach implemented in the company's water distribution system to discover a novel <i>Legionella</i> species: <i>Legionella petroniana</i> sp. nov.....	137
Session 8 – Networking, services, quality and data management of Microbial culture collections .	138
Friday 20th September, 11.45:00am.....	138
MIRRI-ERIC as a microbial, genetics and data resources hub to advance scientific discovery	140
How the MIRRI-PT has been developed in its smart specialisation and cutting-edge technologies to offer better services.....	141
PLAVIT, the Italian Plant Virus Collection in 2024	142
The Italian network of microbial culture collections: an overview on management and sustainability of the future research infrastructure MIRRI-IT.....	143
Managing change within a culture collection: A case study on the challenges within quality, data management and infrastructure within CABI's collection.....	144
Establishment of the ITEM Culture Collection backup and development of the related disaster recovery plan	145
A cloud-based, open-access platform for comprehensive metagenomic data analysis	146
Strengthening the CoSMi culture collection: a contribution to preserving the biodiversity of microalgae	147
The SUS-MIRRI.IT project: research, services, and training for sustainable bioscience and bioeconomy by the MIRRI Italian Research Infrastructure.....	148
The Usage and Fate of Patent Deposits.....	149
Performing an upgraded and interoperable data management system for ITEM Microbial Culture Collection	150
Bank of Algae and Cyanobacteria of the Azores – BACA culture collection	151
A ranking tool for microbial biobanks.....	152
A shared quality management system for Italian Culture Collections: The challenge of SUS-MIRRI.IT project.....	153
The ENEA Microbial Culture Collection as valuable resource for developing new sustainable biotechnologies and bioeconomy.....	154
Speaking the same language: Changing the way to share microbial strain data.....	155

Direct Injection Mass Spectrometry for the Real-Time Volatilomics in Food System Microbiomes: the Potential of Providing Temporal Dimension in Multi-Omics Studies

Corvino, Antonia¹; Capozzi, Vittorio²; Khomenko, Iuliia¹; Biasioli, Franco¹

¹ *Research and Innovation Centre, Fondazione Edmund Mach, San Michele all'Adige (TN), Italy;* ² *National Research Council of Italy Institute of Sciences of Food Production (ISPA), Foggia, Italy*

Fermentation exemplifies sustainable innovation in food systems by utilizing microbial diversity to enhance product quality and safety with low environmental impact. Diverse fermentation processes also serve as model ecosystems for microbiology studies and bio-tool design. Understanding and optimizing fermentation through 'omics' technologies, especially metabolomics, is crucial. Metabolomics offers insights into the metabolic state of microorganisms and the dynamics of metabolic pathways. Microbial Volatile Organic Compounds (mVOCs) are key metabolites that influence sensory perception and consumer acceptance. Profiling VOCs during fermentation provides valuable data on microbial ecosystems, identifying markers to monitor fermentation dynamics and optimize product yield, quality, and safety. Proton Transfer Reaction-Time-of-Flight Mass Spectrometer (PTR-ToF-MS), a Direct-Injection Mass Spectrometric (DIMS) technology, enables non-destructive, real-time analysis with high automation and sensitivity. PTR-ToF-MS effectively evaluates microbial volatiles in various agro-industrial fermentation processes. We present case studies demonstrating PTR-ToF-MS's potential for volatilomics in food microbiology and microbiome research, emphasizing the significance of temporal dimension metabolomics. This approach is particularly relevant for integrating the temporal perspective in multi-omics studies of dynamic systems like food-related microbiomes.

Acknowledgements

We developed this overview in the framework of the projects i) "Interconnected Nord-Est Innovation Ecosystem (iNEST) funded by the European Union Next-GenerationEU (PIANO NAZIONALE DI RIPRESA E RESILIENZA (PNRR) – MISSIONE 4 COMPONENTE 2, INVESTIMENTO 1.5 D.D. 1058 23/06/2022, ECS0000043) and ii) "ON Foods-Research and innovation network on food and nutrition Sustainability, Safety and Security – Working ON Foods" funded by NextGeneration EU [PNRR], in the framework of the Component 2 Investment 1.3 Award Number: Project code PE0000003, Vittorio Capozzi is also supported by NUTRAGE CNR project FOE2021 DBA.AD005.225.