SIMGBM
Società Italiana di
Microbiologia Generale
e Biotecnologie Microbiche

Microbiology 2023

XXXIV SIMGBM Congress

Cagliari

September 21-24, 2023



Programme

Programme

Thursday, September 21st

17.30-19.30 Registration

18.30-19.30 | **OPENING LECTURE**

Chairs: **P. Landini, G. Rampioni**

Natalia Tschowri (*Leibniz University, Hannover, Germany*)
Cyclic-di-GMP signalling in bacterial differentiation and metabolism

19.30 Welcome Cocktail at the Botanical Garden

Friday, September 22th

From 8.00 Registration

09.00-11.00 | PLENARY SESSION 1
Biology of nitrogen-fixing bacteria and their applications

Chairs: **M. Bazzicalupo, M. Varcamonti**

09.00 **Alessio Mengoni** (*Università di Firenze*)
Evolutionary genomics of nitrogen fixing bacteria

09.45 **Marco Nuti** (*S.S. Sant'Anna, Pisa*)
Application of nitrogen fixing bacteria in sustainable agriculture

10.10 **Carmen Bianco** (*IBBR-CNR, Napoli*)
Bacterial production of indole-3-acetic acid (IAA) and its effect on nitrogen fixation in different host plants

10.35 **Maurizio Chiurazzi** (*IBBR-CNR, Napoli*)
Genetics of nitrate transport and signaling in N-fixing symbioses

11.00-11.30 Coffee break

11.30-13.30 | PLENARY SESSION 2

Metabolic adaptation to stress conditions

Chairs: **L. Baccigalupi, F. Imperi**

11.30 **Forest Rohwer** (*SDSU, San Diego, CA, USA*)
The holobiont approach in health and disease

12.15 **Pietro Alifano** (*Università del Salento, Lecce*)
Metabolic changes of *Neisseria meningitidis* during host infection

12.40 **Gianni Prosseda** (*Università Sapienza Roma*)
Polyamine metabolism during *Shigella* infection

13.05 **Emanuela Frangipani** (*Università di Urbino*)
Fighting *Staphylococcus aureus* through iron starvation

13.30-15.30 Lunch & Posters viewing (odd numbers)

15.30-16.30 | **PLENARY LECTURE 1**

Chairs: **D. Cavalieri, E. Ricca**

Silvia Bulgheresi (*University of Vienna, Austria*)
Cell biology of bacteria that live on the surface of animals

16.30-16.45 | **SHORT PRESENTATION**

Margherita Sosio (*NAICONS, Milano*)
Presentation of the micro4all Platform, the first “Search-and-Order Molecules Engine”

16.45-17.30 | **PRIZE PRESENTATION**

FRANCO TATÒ Prize 2023

Annapaola Petrosino (*Università di Bologna*)
Nanobiotechnological engineering of the M13 phage into an orthogonal platform for biomedical applications

GENPROBIO Prize 2023

Stefany Castaldi (*Università di Napoli*)
Biology and application of industrial microorganisms

SIMGBM Prize 2023 (Kindly supported by Microorganisms)

Angelica Pellegrini (*Università di Pavia*)
The global transcriptional regulator CodY controls virulence in Group B *Streptococcus*

17.30-19.00 | **ANNUAL ASSEMBLY OF SIMGBM MEMBERS**

20.30 Social dinner

Saturday, September 23rd

09.00-11.00 | PLENARY SESSION 3

Cell envelope remodeling to shape bacterial fitness in response to the host and environment

Chairs: **B. Colonna, A. Polissi**

09.00 **Simonetta Gribaldo** (*Institut Pasteur, Paris, France*)
One or two membranes? Illuminating the evolution of the cell envelope across the Tree of Bacteria

09.45 **Víctor Hernández-Rocamora** (*Newcastle University, UK*)
Peptidoglycan remodeling and bacterial fitness under stressful conditions

10.20 **Alessandra Martorana** (*Università di Milano*)
Peptidoglycan remodeling and amidases activation under lipopolysaccharide biogenesis defects

10.40 **Orietta Massidda** (*Università di Trento*)
Regulation of peptidoglycan synthesis during growth and division

11.00-11.30 Coffee break

11.30-13.30 | PLENARY SESSION 4

Functional microbial diversity in polluted environments

Chairs: **A. Franzetti, M. Petruccioli**

11.30 **Ibrahim M. Banat** (*University of Ulster, Northern Ireland, UK*)
Microbial biosurfactants: current trends and applications in environmental, agricultural and biomedical industries

12.15 **Isabella Gandolfi** (*Università di Milano-Bicocca*)
Microbial ecosystem functions in polluted environments

12.40 **Silvia Crognale** (*Università della Tuscia, Viterbo*)
Mycoremediation in TPH polluted environments: fungal and bacterial interactions

13.05 **Elena Tamburini** (*Università di Cagliari*)
Benthic microbial response to pollutants in anthropized marine sediments

13.30-15.30 Lunch & Posters viewing (even numbers)

15.30-16.30 | PLENARY LECTURE 2

Chairs: **P. Visca**

Ray J. Turner (*University of Calgary, Alberta, Canada*)
Role of metal-based antimicrobials in the Antimicrobial Resistance Era

16.30-19.00 | PARALLEL SESSIONS: short talks from selected abstracts

SESSION A: MICROBIAL GENETICS AND GENOMICS
Chairs: **M. Ventura, E. Rossi**

Carmen Apicella *(Università di Siena)*
Prophage Φ1207.3 is responsible for a temporary activation of a mutator phenotype in *Streptococcus pneumoniae* upon irradiation at different UV-C light wavelengths

Valerio Baldelli *(Università di Milano)*
Functional characterization of the RS04555 gene and its association with persistent cystic fibrosis lung infections of *Pseudomonas aeruginosa*

Claudia Campobasso *(Università di Pisa)*
Antibiofilm activity of a *Staphylococcus aureus* phage: potential key role of its baseplate protein

Giulia Degiacomi *(Università di Pavia)*
A new drug candidate against *Mycobacterium abscessus* and other cystic fibrosis pathogens

Andrea Firrincieli *(Università della Tuscia)*
Structural and functional analysis of the active cow rumen's microbial community provides a catalogue of genes and microbes participating in the deconstruction of cardoon biomass

Gabriele Andrea Lugli *(Università di Parma)*
The infant gut microbiota atlas: detailed insights from composition to functional microbe-based biodiversity

Marta Mellini *(Università Roma Tre)*
RsaL-driven negative regulation promotes heterogeneity in *Pseudomonas aeruginosa* quorum sensing

Valentina Pastore *(Università Sapienza Roma)*
Improved antimicrobial activity of colistin in combination with putative ArnT inhibitors in *Pseudomonas aeruginosa* biofilms

Anella Saggese (*Università di Napoli)*
Charcaterization of carbohydrate active genes carried by an intestinal isolate of *Bacillus subtilis*

Davide Sposato *(Università Roma Tre)*
AsmA-like proteins are essential but redundant for growth and cell envelope integrity in *Pseudomonas aeruginosa*

Ivana Staiano (*Università di* Napoli)
Critical role of CotE in spore coat proteins deposition at different temperatures of growth

Makrina Totsika *(QUT, Brisbane, Australia)*
O antigen production sensitises *Escherichia coli* to bile salts – A plausible explanation for how *E. coli* K-12 lost its O antigen

SESSION B: ENVIRONMENTAL AND INDUSTRIAL MICROBIOLOGY
Chairs: **P. Quatrini, C.E. Parolin**

Angelina Cordone *(Università di Napoli)*
The Southern Ocean microbial community structure: a response to climate change

Lapo Doni *(Università di Genova)*
Long-distance dispersals govern the global biogeography of Vibrio spp. in the ocean

Sara Del Duca *(CREA, Firenze)*
Towards a harmonized system for the monitoring of soil microbial biodiversity

Stefania Di Silvestro *(Università di Bologna)*
Study of a tellurite hyper-resistant mutant to delve into *Rhodococcus* stress response and resistance mechanisms to toxic metalloids

Sara Borin *(Università di Milano)*
Rhizoremediation potential in a historical polychlorinated biphenyl polluted site

Melinda Mandaresu *(Università di Cagliari)*
Bioaugmentation-assisted phytostabilization of Sardinian abandoned mines by plant-growth promoter Serratia sp.

Roberto Mazzoli (*Università di Torino)*
Prebiotics, antibiotics and platform chemicals from enological by-products: a sustainable bio-economy perspective

Immacolata Serra *(Università di Milano-Bicocca)*
Engineered *Saccharomyces cerevisiae* for the upcycling of polyethylene terephthalate (PET) monomers

Ylenia Di Leto *(Università di Palermo)*
Modulation of sewage sludge microbiome for enhancing the transition from wastewater treatment plants into biorefineries in the circular economy era

Letizia Fracchia *(Università Piemonte Orientale)*
Bacillus subtilis AC7 Fermentation on Rice Husk Substrate: A Sustainable Approach for Lipopeptide Biosurfactant Production

Annamaria Bevivino *(ENEA, C.R. CASACCIA, Roma)*
Unlocking the potential of microbiome-based solutions as green biofertilizer for sustainable agricolture

Giulia Alessandri *(Università di Parma)*
Assessment of the species-level infant gut bacterial biodiversity through a meta-analysis and the formulation of an optimized cultivation medium

SESSION C: INTERACTIONS BETWEEN MICROBES/VIRUSES AND THEIR HOSTS

Chairs: **A. Tavanti, N. Grandi**

Elisabetta Affabris *(Università Roma Tre)*
The influence of interferons on extracellular vesicles produced by primary monocyte derived macrophages

Mirko Cortese *(Università Campania, Caserta)*
Organelle remodeling by positive-sense single-stranded RNA viruses

Chiara Tarracchini *(Università di Parma)*
Microbial genetic strategies for sex-specific gut persistence throughout the human life

Maria Vittoria *(Università di Napoli)*
Bacillus spores exert a protective and immunomodulatory activity in mice with DSS-induced colitis

Davide Sorze *(Università di Padova)*
LysX2 is a *Mycobacterium tuberculosis* membrane protein with an extracytoplasmic MprF-like domain

Serena Ammendola *(Università Tor Vergata, Roma)*
The Zn/Cd efflux systems of *Salmonella* Typhimurium are critical for the colonization of plants

Stefano Nenciarini (*Università di Firenze)*
Characterisation and immunomodulatory potential of extracellular vesicles from non-pathogenic yeast strains isolated from a fermented product

Sabrina Tamburini *(Università di Venezia)*
Engraftment of Viable Microbiota after Fecal Transplantation Drives *Clostridiodes difficile* Inhibition

Marco Coluccia *(Università Sapienza, Roma)*
Role of the MDR Efflux Pump AcrAB in Epithelial Cell Invasion by Shigella flexneri

Annalaura Paulis *(Università di Cagliari)*
Identification of new benzofuran derivatives as STING agonists with broad-spectrum antiviral activity

Luca Ulfo *(Università di Bologna)*
Genetically Modified M13 Bacteriophages for Precise Photodynamic Cancer Eradication

Dimitrios Vagenas *(QUT, Kelvin Grove, Australia)*
Fitting the best statistical model: A case study on longitudinal urinalysis data of uropathogenic *Escherichia coli* infection in mice.

Sunday, September 24th

JOINT MEETING

Società Italiana di Microbiologia - **SIM**

Società Italiana di Microbiologia generale e Biotecnologie Microbiche - **SIMGBM**

Sessions held at Palazzo Doglio

09.00 Greetings from the Societies' Presidents

9.30-13.00 | PLENARY SESSION 5

Novel therapeutic approaches against viruses

Chairs: **M. Galdiero, M. Pistello, E. Tramontano**

9.30 **Benjamin Berkhout** (*University Medical Centers, Amsterdam, NL*)
CRISPR-Cas gene editing approaches to attack the HIV provirus in the cellular reservoir

10.10 **Raffaele De Francesco** (*Università di Milano*)
New therapies on the horizon for hepatitis B: are we close to a cure?

10.50-11.20 Session break

11.20 **Angela Corona** (*Università di Cagliari*)
Exploiting Ebola virus suppression of the innate immune activation as target for drug development

12.00 **Rob Lavigne** (*University of Leuven, Belgium*)
Phage genomics and therapy

13.00-14.00 Lunchtime break

14.00-17.00 | PLENARY SESSION 6

Bacterial physiology: back to the future of Microbiology

Chairs: **P. Landini, G. Pozzi, M. Ventura**

14.00 **Frédéric Barras** (*Institut Pasteur, Paris, France*)
Redox condition adaptation, energy metabolism and antibiotic sensitivity in *Escherichia coli*

14.40 **Paolo Visca** (*Università Roma Tre*)
Bacterial iron metabolism; turning basic physiology into drug development

15.20 **Giovanni Delogu** (*Università Cattolica, Roma*)
At the crossroad of metabolism and bacterial pathogenesis: the case of PE and PPE proteins of *M. tuberculosis*

16.00 **Francesco Santoro** (*Università di Siena*)
Analysis of host-pathogen interaction by dual RNA sequencing: methods and applications

16.40-17.00 Round table discussion

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