

International Society
of **m**icrobiota

TARGETING MICROBIOTA

Towards Clinical
Revolution

11TH
WORLD
CONGRESS

OCT. 14>15, 2024

MALTA

Program

Agenda of **Targeting Microbiota 2024**

October 14 -15, 2024 – Corinthia Palace, Malta

Day 1 - Monday, October 14, 2024

8h00 **Materials Distribution & Welcome Coffee**

8h50 **Welcome Note of Targeting Microbiota 2024**



Keynote Speech

9h00 – **Phage Therapy: A New Era of “Old” Concept for “Microbiome” Health**

Mzia Kutateladze, *Eliava Institute of Bacteriophage, Georgia*

Session 1: Microbiota in Health & Disease: Advancements & Perspectives



9h30 – **Bacteriophages Redesigned – Tiny Killers and Detectives to Support Infectious Disease Therapy**

Martin Loessner, *ETH Zurich, Switzerland*

- *Synthetic phages as a new and highly specific approach.*
- *Engineering phages to target bacterial pathogens.*
- *Synthetic phages to re-balance the microbiome.*



10h00 – **Mythbusting Our Microbiome**

Alan Walker, *University of Aberdeen, United Kingdom*

10h30 – 11h15 *Coffee Break, Networking, & Poster Session*



11h15 – **Gut Microbiome, Obesity & Diabetes: What’s Next**

Hiroshi Ohno, *RIKEN Center for Integrative Medical Sciences, Japan*

- *The gut microbiome is linked to diseases like obesity and diabetes. Microbial metabolites are implicated in disease development.*
- *It has been identified that gut microbe-derived trans-unsaturated fatty acid “elaidate” in obesity and diabetes. Controlling these metabolites could aid preventive medicine.*



11h45 – **Gut Microbiome Signatures in Irritable Bowel Syndrome**

Simone Domenico Guglielmetti, *Università degli Studi di Milano-Bicocca, Italy*

12h15 **Short Oral Presentations (3 slots)**

12h45 – 14h00 *Lunch Break, Networking, & Poster Session*



14h00 – Gut Bacteria and Heart Healing: The Hidden Players in Post-Infarction Resilience

Patrick C. H. Hsieh, Academia Sinica, Taiwan

- Gut microbiota influence heart recovery post-heart attack.
- Microbes affect immune cells and produce essential fatty acids.
- Butyrate-producers linked to improved cardiac protection.
- Evidence from human and animal studies supports this link.
- Potential for therapeutic interventions to enhance heart healing.
- Interdisciplinary exploration of microbial metabolites and immune dynamics.



14h30 – Microbiota-Derived Extracellular Vesicles: Bridging Mother and Fetus

Justus Reunanen, University of Oulu, Finland



15h00 – Deciphering the role of the Oral-Placental and Vaginal-Placental Microbiome Axes in Preterm Birth

Souhaila Al Khodor, Sidra Medicine, Qatar

- Evaluating the placental microbiome in both term and preterm pregnancies.
- Distinct patterns of microbial sharing among placental, oral cavity, and vaginal samples obtained from women experiencing term or preterm births.

15h30 – 16h10 Coffee Break, Networking, & Poster Session



16h10 – Beneficial Microbes and Bioreactors Modelling the Human Gut: Mechanistic Insights

Koen Venema, Maastricht University, Netherlands

- Sophisticated, predictive, dynamic *in vitro* models of the GI tract are great tools to study the effect of pro- and prebiotics on the gut microbiota.
- They provide detailed mechanistic insight, e.g. regarding probiotic survival, dose-response, cross-feeding, etc., all of which features that are very difficult to study *in vivo*.



16h40 – From Microbiomes and (Meta)genomes to the Lab and Back - Identification, Production and Application of Bacteriocins

Christian Riedel, University of Ulm, Germany

- Discussing the diverse applications of bacteriocins, including food preservation, animal feed, microbiome modulation, and potential therapeutic alternatives for antibiotic-resistant pathogens.
- Identifying production challenges: Currently, bacteriocins are mainly produced by natural producer organisms on complex substrates.
- Proposing solutions: Shift towards recombinant biotechnological production hosts, with focus on *Corynebacterium glutamicum* as an industrial workhorse organism.
- Highlighting efforts to identify novel bacteriocins from environmental microbiomes and genomic data.
- Exploring the intricacies of recombinant production, including challenges and potential solutions.
- Providing examples of potential applications of bacteriocins across different settings.

17h10 Short Oral Presentations : 10 Minutes-Pitch: Dedicated to Start-ups, Academics, Industries & Investors (5 slots)

18h00 End of Congress Day 1

20h00 Meet the Speakers Dinner (Reserved for ticket holders only)

Day 2 - Tuesday, October 15, 2024

8h30 Opening of Day 2



Keynote Speech

9h00 – The Mystery of the Microbiome Genome: The Potential of 2 to 20 Million Microbial Genes to Transform Our Health

Marvin Edeas, Institut Cochin, INSERM U1016, Université de Paris, France

Session 2: Microbiome Medicine: Major Advances Towards Clinical Applications



9h30 – Targeting the Microbiota by Medical Professionals: Where are We Now?

Koen Venema, Maastricht University, Netherlands

- Addressing current state-of-the-art and the tools that made this possible.
- Progress in using the microbiota as a therapeutic target.
- Commercial companies that jump into this space to predict and improve health.



10h00 – Probiotics & Health: How to Select the Right Strain?

Andreas Schwartz, Institute of Microecology, Germany

- Highlight the significant increase in probiotic strains over recent decades and various benefits associated with each strain.
- Common presentation of functional characteristics and benefits, primarily observed in vivo.
- How companies prioritize health or medical claims backed by solid scientific evidence.
- Highlight recent developments in probiotic strain selection.
- Discuss emerging health benefits linked to probiotic use.

10h30 – 11h10 Coffee Break, Networking, & Poster Session



11h10 – Gut Microbiota in Early Life: Impact on Neurodevelopmental Outcomes

Rochellys Diaz Hejtz, Karolinska Institutet, Sweden

- Gut microbiota influences brain development and behavior, notably in neurodevelopmental disorders like autism spectrum disorder (ASD).
- Dr. Hejtz's lab research shows infants with heightened ASD risk display early gut microbiota changes before behavioral signs.
- Targeted microbial treatments, like *Limosilactobacillus reuteri* probiotics, may improve social behavior in ASD children.
- Recent preclinical studies highlight benefits of multispecies probiotics during pregnancy on offspring neurodevelopment.



11h40 – Gut Brain Axis & Depression: Strategic Role of Dietary Proline Exposed

José Manuel Fernández-Real, Institut d'Investigació Biomèdica de Girona, University of Girona, Spain

- High proline intake is a significant dietary factor impacting depression.
- Brain analysis shows disruptions in the rich club network linked to depression and proline levels.
- Proline supplementation in mice worsens depressive symptoms with microbial translocation.
- Transplanting human microbiota in mice induces emotional impairment and gene changes in the prefrontal cortex.
- Interventions like RNAi-mediated proline and GABA transporter knockdown in *Drosophila*, and association with GABA-producing *L. plantarum*, protect against depression-like states.
- These findings suggest microbiome modulation and dietary proline targeting as promising depression treatments.



12h10 – **Microbial Phenotypes in Obesity: Implications for Precision Nutrition**

Ellen Blaak, Maastricht University, Netherlands

- Initial microbial composition or functionality or changes therein may be an important determinant of dietary intervention outcome and determine response and non-response to intervention.
- These insights into microbial metabolism will be deliberated within the framework of devising targeted lifestyle strategies to ameliorate cardiometabolic health in individuals with obesity.

12h40 – 14h00 Lunch Break, Networking, & Poster Session



14h00 – **Targeting Small Intestinal Microbiota: Impact on Metabolism**

Pascale Vonaesch, Department of Fundamental Microbiology, University of Lausanne, Switzerland

- The small intestinal (SI) microbiota differs in its composition from other parts of the GI tract.
- Disease states lead to bacterial overgrowth in the SI, which exists in different flavours.
- Small intestinal oral bacteria overgrowth (SIOBO) is associated with childhood undernutrition.
- Bacteria of oral origin are causally implicated in the underlying pathophysiology.
- Targeting the small intestinal microbiota is a promising strategy to intervene on metabolic diseases.



14h30 – **Prospects for Leveraging the Microbiota as Medicine for Hypertension**

Bina Joe, University of Toledo, USA



15h00 – **Male Fertility and Gut Microbiota: Current Knowledge and Future Directions**

Cristian O'Flaherty, McGill University, Canada

- Human infertility is on the rise, with ~16% of couples being infertile worldwide. In half of these cases, the causes can be traced to men.
- Causes of male infertility remain hidden in ~34% of cases of patients with normal semen analysis.
- A relationship between gut microbiota dysbiosis and male infertility has been suggested. However, there is a need for more research to elucidate the role of gut microbiota in male reproductive health disorders.
- Abundance of Bacteroidetes and reduction of Firmicutes is associated with male infertility.
- Potential for therapeutic interventions or personalized treatment for male infertility based on manipulation of gut microbiota.

15h30 – 16h15 Coffee Break, Networking, & Poster Session

16h15 Short Oral Presentations: 10 Minutes-Pitch: Dedicated to Start-ups, Academics & Industries (5 slots)

17h05 – 17h25

Discussion: Probiotic & Prebiotic Prescribing Practices: How to Empower Medical Actors to Improve Patients' Health?

17h25 Targeting Microbiota 2024 Concluding Remarks & Awards

17h35 End of Targeting Microbiota 2024

For more information, please visit: www.microbiota-site.com .

