

2024

Microbes

Connecting
Environment and Health



Program

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Cluster of Excellence Balance of the Microverse

Friedrich-Schiller-Universität Jena

Cluster of Excellence “Controlling Microbes to Fight Infections” (CMFI)

Universität Tübingen

Cluster of Excellence RESIST – Resolving Infection Susceptibility

Medizinische Hochschule Hannover

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“Exemplary representation of the skin microbiome”

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Welcome

Dear colleagues and friends!

We are delighted to welcome you to “Microbes 2024 – Connecting Environment and Health”, a two-day conference that gathers leading scientists from around the globe to exchange ideas and present cutting-edge research.

This unique endeavor between the three Clusters of Excellence: “Balance of the Microverse” (Jena), “Controlling Microbes to Fight Infections” CMFI (Tübingen), and “RESIST – Resolving Infection Susceptibility” (Hannover) provides an extensive view of current developments in the field of infection research. We have curated an exciting program that spans a broad range of topics, starting with the challenges of antimicrobial resistance and how microbial communities withstand defense mechanisms. On the second day, we will explore the causes resulting in varying infection susceptibilities, as well as the role of the microbiome in human health.

Each Cluster brings its distinct expertise to this event: The “Balance of the Microverse” Cluster investigates the dynamic equilibrium of microbial communities, from molecular interactions to ecosystem-level dynamics. With a cross-system approach – from aquatic ecosystems to human microbiomes – these scientists aim to uncover common and unique principles that regulate microbial balance. The “Controlling Microbes to Fight Infections” (CMFI) Cluster focuses on understanding the interactions between beneficial and harmful bacteria and their hosts, with the goal of developing innovative therapeutic and anti-infective strategies. The RESIST Cluster is dedicated to uncovering the key factors determining infection susceptibility and understanding pathogens commonly affecting vulnerable individuals. This knowledge is then translated into more precise, personalized therapies, diagnostics, and prevention strategies.

By showcasing the expertise of our three Clusters, we aim to generate synergies that will strengthen research in infection biology. We look forward to lively discussions and the possibility of meeting existing cooperation partners and establishing new ones.

We hope you enjoy the science, the venue, and Berlin!

We wish you all a successful conference full of new insights into infection research!

Your

Clusters of Excellence

Balance of the Microverse, CMFI and RESIST

Scientific Symposium | Program

Tuesday, 1 October 2024

08:30 | **Arrival and Registration**

09:00 – 09:30

Welcome & Short presentation of the three Clusters of Excellence

Resolving Infection Susceptibility

Reinhold Förster, Hannover Medical School, Germany

Balance of the Microverse

Kirsten Küsel, University of Jena, Germany

Controlling Microbes to Fight Infections

Andreas Peschel, University of Tübingen, Germany

09:30 – 12:00

Antimicrobial Resistance and New Solutions

Chair: Heike Brötz-Oesterhelt & Samuel Wagner (CMFI)

09:30

Fighting Microbes with Microbes – Decolonization Strategies for MDR Bacteria

Maria Vehreschild, Frankfurt University Hospital, Germany

09:55

Mining Bacterial Genomes for Novel Antibiotics

Nadine Ziemert, CMFI, University of Tübingen, Germany

10:20 – 11:10 | **Coffee break**

11:10

Assault, Siege, Trojan Horses or Gentle Disarmament: Four Molecular Strategies to Fight Bacterial Infections

Mark Brönstrup, Leibniz University Hannover, Germany

11:35

Novel avenues in target-based anti-infective drug discovery

Anna Hirsch, Helmholtz Institute for Pharmaceutical Research Saarland, Germany

12:00 – 13:30 | **Lunch**

13:30 – 15:35

Microbial Community Resilience

Chair: Hannes Link (CMFI) & Rosalind Allen (Microverse)

13:30

Title TBD

Ulrike Löber, Max Delbrück Center for Molecular Medicine, Berlin, Germany

13:55

Gut microbiome assembly in extremely premature infants and implications for gut-brain-axis development

David Berry, University of Vienna, Austria

14:20

Natural Products from Interacting Microorganisms and Ancient Microbiomes

Pierre Stallforth, Microverse, University of Jena and Leibniz-HKI, Jena, Germany

14:45

Microbiome resistance and resilience in response to compound disturbances

Laurent Philippot, INRAE Dijon, France

15:10

Strain tracking in complex microbiomes using synteny analysis reveals per-species modes of evolution

Hagay Enav, CMFI, Max Planck Institute for Biology, Tübingen, Germany

15:35 | **End of Scientific Part Day 1, Stay-Together-Coffee**

15:45 | **Group photo of all participants in front of the Futurium**

18:30 – 20:00

Public evening with Fishbowl discussion (in German language)

Infektionsforschung im Dienste der Gesundheit:

Ein Dialog zwischen Wissenschaft, Gesellschaft & Politik

Wednesday, 2 October 2024

09:00 – 12:40

Infection Susceptibility

Chair: Thomas Schulz & Gesine Hansen (RESIST)

09:00

Broad-spectrum RNA antiviral inspired by ISG15 deficiency

Dusan Bogunovic, Columbia University Medical Center, New York City, NY, USA

09:25

Regulation of the Varicella Zoster Virus latent-to-lytic switch

Dan Depledge, RESIST, Hannover Medical School, Germany

09:50

Antimicrobial resistance crisis: the microbial growth conjecture

Wolf-Dietrich Hardt, ETH Zurich, Switzerland

10:15 – 11:00 | **Coffee break**

Chair: Lars Dölken & Dorothee Viemann (RESIST)

11:00

Integrated longitudinal multiomic immune profiling of sepsis

Manu Shankar-Hari, Centre for Inflammation Research, University of Edinburgh, Scotland

11:25

The dysbiotic gut microbiome as reservoir for infection and inflammation in immunocompromised hosts

Christoph Stein-Thoeringer, CMFI, University Hospital Tübingen, Germany

11:50

Integrative Deep Immune Phenotyping of the Elderly Immune System

Lennart Riemann, RESIST, Hannover Medical School, Germany

12:15

Metabolic adaptation as a defence strategy against infection

Miguel Soares, Instituto Gulbenkian de Ciência, Oeiras, Portugal

12:40 – 14:00 | **Lunch**

14:00 – 15:15

Microbiome & Health

Chair: Ilse Jacobsen & Diana Dudziak (Microverse)

14:00

An ecological perspective on infectious disease: The “Hormesis” principle revisited

Michael Bauer, Microverse, Jena University Hospital, Germany

14:25

Drug-Microbiome Dynamics: Implications for Host Health

Lisa Maier, CMFI, University Hospital Tübingen, Germany

14:50

Insights into the mutual relationship between host and microbiota in early life and its impact on the development of health and disease

Dorothee Viemann, RESIST, Hannover Medical School, Germany

15:15

Final Discussion / Concluding Remarks

15:30 | **Departure**

Organizer



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