META ORIGIN AND FUNCTION OF ORGANISMS
COLLABORATIVE RESEARCH CENTRE 1182

Symposium on Microbiome Metabolomics

SymbNET

Kiel University

14-15th of November 2022

Maritim Hotel, Kiel

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Programme

Monday, November 14th

12:00 – 13:00	Lunch Buffet at Hotel Maritim, Kiel.
13:00 – 13:10	Welcome address - Philip Rosenstiel and Hinrich Schulenburg.
13:10 – 13:55	“Community-scale metabolic modelling enables precision engineering of gut microbiome functional outputs" - Sean Gibbons.
13:55 – 14:40	"Quantifying metabolic microbiota-host interactions" – Maria Zimmermann.
14:40 – 15:25	“Within-host and between-population dynamics of host-microbiome systems” - Mathieu Groussin.
15:25 – 16:00	Coffee break
16:00 – 16:45	“Host Synthesized Organic Acids Enable Symbiont colonization in the Honey bees Gut” - Philipp Engel.
16:45 – 17:30	“Host serine metabolism orchestrates cytomegalovirus immune defense in the intestinal epithelium” – Konrad Aden.
17:30 – 18:15	“Using genome-scale metabolic model to compare organisms and to reconstruct metabolic interactions in microbial communities” - Hatzimanikatis Vassily.
18:15	End

Tuesday, November 15th

08:30 – 09:00	Coffee
09:00 – 09:45	“Microbial and metabolic succession of the preterm infant gut” – Silvio Waschina.
09:45 – 10:30	“High throughput LC-MS analysis to identify gut microbiome contributions to drug metabolism” – Michael Zimmermann.
10:30 – 11:00	Coffee Break
11:00 – 11:45	Elucidating the role of metabolic microbiome-host-interactions in the pathology and treatment of human diseases" - Christoph Kaleta.
11:45 – 12:30	"Connecting structure and function from organs to molecules in host-microbe systems" - Manuel Liebeke.
12:30 – 12:40	Closing address – Philip Rosenstiel.
12:40 – 13:30	Lunch

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List of Speakers:

Konrad Aden, Kiel University (CAU)

https://www.ikmb.uni-kiel.de/people/scientists/konrad-aden

Konrad Aden is a senior physician at the Clinic for Internal Medicine I of the University Hospital Schleswig-Holstein (UKSH), Kiel Campus, a working group leader at the Institute for Clinical Molecular Biology of the UKSH and the Christian-Albrechts-Universität zu Kiel (CAU) and a member of the Cluster of Excellence PMI - Precision Medicine for Chronic Inflammatory Diseases. He is a specialist in internal medicine and gastroenterology and head of the junior research group "Intestinal Immunometabolism" at the Institute of Clinical Molecular Biology. In 2020, he was awarded the Martin-Gülzow Prize of the Deutschen Gesellschaft für Verdauungs- und Stoffwechselerkrankungen (DGVS).

Philipp Engel, University of Lausanne (UNIL)

https://www.engelbeelab.com/

Philipp Engel is a Principal Investigator at the Department of Fundamental Microbiology in UNIL. Philipp is interested in broad questions about ecology, evolution, and function of host-associated microbial communities. To address these questions, his lab combines bioinformatics with experimental approaches to study the gut microbiota of bees.

Sean Gibbons, Institute for Systems Biology, Seattle

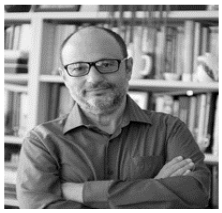
https://gibbons.isbscience.org/

Sean Gibbons investigates how the structure and composition of evolving ecological networks of microorganisms change across environmental gradients. In particular, he is interested in how ecological communities in the gut change and adapt to individual people over their lifespans (i.e. host genotype, host development and host behavior) and how these changes impact human health. His lab develops computational and experimental tools for investigating host-associated microbial communities to explore the interactions between ecology, evolution and ecosystem function, applying these insights to develop personalized interventions for improving human health and well-being.

Mathieu Groussin, Kiel University (CAU)

https://www.ikmb.uni-kiel.de/research/junior-research-groups/genomics-and-functions-host-microbiome-systems

Using in silico, in vitro and in vivo approaches, I am investigating how bacterial genomes, bacterial functions and host-microbe interactions change in health vs disease and during human evolution. I am particularly dedicated to identifying actionable features in host-associated microbiomes that can be used to improve human health. I focus on building and characterizing of a large collection of human gut microbiomes and bacterial strains in pure culture from worldwide human populations.



Vassily Hatzimanikatis, École Polytechnique Fédérale de Lausanne (EPFL)

https://www.epfl.ch/labs/lcsb/

At the LCSB, we work at the interface of synthetic and systems biology to identify the design principles of biological processes for medical and biotechnological applications. Our research areas of interest include: Cellular Networks, Kinetic Modelling and Novel Biotransformations.

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Christoph Kaleta, Kiel University (CAU)

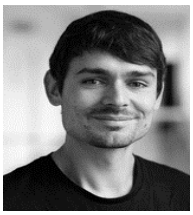
https://www.iem.uni-kiel.de/de/medizinische-systembiologie

The aim of our research is the development of systems biological approaches for the integrative analysis of large-scale data sets in order to elucidate pathomechanisms underlying human diseases and to understand microbial strategies of adaptation to environmental challenges. As a guiding principle we are closely interacting with clinical and experimental collaborators to analyse large-scale data sets and derive experimentally testable hypotheses from these data sets in an iterative cycle of data analysis, modelling and wet-lab experiments.

Manuel Liebeke, MPI for Marine Microbiology, Bremen

https://www.mpi-bremen.de/en/Manuel-Liebeke.html

The research in my group focuses on the chemical interactions between bacterial symbionts and their eukaryotic hosts. I am convinced Mass Spectrometry based Metabolomics can provide us with a detailed view into the metabolic interactions. My group develops high-resolution Spatial Imaging Methods for in situ measurements of metabolites in host-microbe systems named spatial metabolomics.



Silvio Waschina, Kiel University (CAU)

https://www.nutrinf.uni-kiel.de/en

The Nutriinformatics Research Group uses metabolic modelling approaches to gain a deeper understanding of how microbial metabolism contributes to the human metabolome in health and disease. Research areas are; Metabolic modelling, Constraint-based analysis of metabolic networks and cell communities, Reconstruction of genome-scale metabolic models from metagenomes, Computational metabolomics, Theoretical microbial ecology.

Michael Zimmermann, EMBL Heidelberg

https://www.embl.org/groups/zimmermann/

Michael Zimmermann is a Principal investigator at the EMBL. Michael focuses on understanding how microbes recognize and transform their chemical environment. His group combines high-throughput mass spectrometry, bacterial genetics and computational models to investigate how members of microbial communities alter their chemical environment and how this shapes metabolic interactions within the microbiome and between the microbiome and its host.

Maria Zimmermann-Kogadeeva, EMBL Heidelberg

https://www.embl.org/groups/zimmermann-kogadeeva/

The Zimmermann-Kogadeeva group combines computational modelling and multi-omics data integration to investigate how microbes adapt to their surroundings, and how metabolic adaptations of individual bacteria shape the functional outcome of microbial communities and their interactions with the environment.

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Venue

Maritim Hotel Bellevue Kiel
Bismarckallee 2
24105 Kiel
https://www.maritim.de

Organising Institutions

SymbNET – Genomics and Metabolomics in a Host-Microbe Symbiosis Network

Origin and Function of Metaorganisms Collaborative Research Centre 1182

Scientific organising committee

Philip Rosenstiel | Kiel University, Kiel, Germany

Hinrich Schulenburg | Kiel University, Kiel, Germany

CRC 1182 Manager

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Contacts and social media

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Suggestions for Dinner and Drinks in Kiel

Forstbaumschule, https://forstbaumschule.de/

Brunswik Café, https://cafe-kiel.de/brunswik/

Cafe Blattgold (vegan), https://cafe-kiel.de/blattgold/

Lanna Thai, https://www.lanna-thai-kiel.de/

Burgerbank, https://www.burgerbank.de/ (Holtenauer str. 113)

Seebar, https://seebad-duesternbrook.com/