

OCTOBER 8-10, 2014

## BEYOND THE INTESTINAL MICROBIOME – FROM SIGNATURES TO THERAPY

A HERRENHAUSEN CONFERENCE OF THE VOLKSWAGEN FOUNDATION

Onaka – “honoured middle” – that’s how our intestines are described in Japan. A wise choice: being populated by about  $10^{14}$  microorganisms, the gut and its microbiome are considered to be pivotal players in determining our overall health.

Identification and sequencing of gut microorganisms has been the starting point. Today, researchers are beginning to understand the fascinating linkages between our microbiome and our organism. As the field widens and various sub-disciplines like pharmacology and infection biology address this topic, we are arriving at a deeper understanding of the function as well as of the therapeutic potential of the gut microbiome. Defining, exploring and improving our gut health may hold an enormous preventive and curative potential with regard to severe illnesses (like cardiovascular diseases, rheumatic and autoimmune diseases or diabetes) and obesity – a whole new medical approach may beckon.

Experts from fields as diverse as Inflammation, Microbial Communication, Evolutionary Game Theory, and Diabetes will gather at an inspiring venue to address open questions as well as to discuss the multiple new insights and opportunities for research trying to unriddle the mysteries of the gut microbiome.

### OUR CONFERENCE TOPICS AT A GLANCE

- Molecules of Communication
- Intestinal Ecology and Environmental Influences
- Development and Primary Colonization
- Function of the Meta-organism
- The Microbiome and the Brain – Role of the Gut-Brain Axis
- Inflammation and Autoimmunity
- Diabetes and other Metabolic Diseases
- Therapeutical Approaches

### CONFERENCE WEBSITE

More information about the conference can be found on our conference website:

[www.volkswagenstiftung.de/microbiome](http://www.volkswagenstiftung.de/microbiome)

### PROGRAM ADVISORY COMMITTEE

- Stephan Bischoff - University of Hohenheim; German Society of Mucosal Immunology and the Microbiome
- Julia Frick - Institute of Medical Microbiology and Hygiene, University of Tuebingen
- Dirk Haller - Chair of Nutrition and Immunology, Technical University of Munich
- Philip Rosenstiel - Institute of Clinical Molecular Biology, University of Kiel
- Hartmut Wekerle - Max Planck Institute of Neurobiology

### HERRENHAUSEN CONFERENCES

With its Herrenhausen Conferences the Volkswagen Foundation provides international experts as well as junior researchers with a platform for an intense interdisciplinary dialogue on exciting new areas of research and innovative methodological approaches. The main focus of the conferences lies on the **current challenges** faced by each research area rather than on further in-depth discussion and analysis of well-established individual topics. We are interested in **unanswered questions and unsolved problems** – and in the respective research field’s relevance for society.

## PLANNED PROGRAM

October 8, 2014

- 2 p.m. Welcome address  
**Wilhelm Krull**, Secretary General, Volkswagen Foundation
- 2.15 p.m. Keynote  
The gut microbiota in health and disease  
**Karsten Kristiansen**, University of Copenhagen (confirmed)
- 3 p.m. Coffee break
- 3.30 p.m. From molecules to cells
- Chair: Philip Rosenstiel, University of Kiel  
Statements á 20 minutes, 10 minutes Q&A after each talk
- Linking Pathogen Virulence, the Microbiota and Disease  
**Gabriel Nunez**, University of Michigan (confirmed)
- Coping with stress in the intestinal crypt  
**Arthur Kaser**, University of Cambridge (confirmed)
- Permissive signals from the commensal microbiota poise expression of proinflammatory cytokine genes in mononuclear phagocytes  
**Andreas Diefenbach**, University of Mainz Medical Centre (confirmed)
- 5.15. p.m. Lightning Talks I
- 6 p.m. Aperitif / Poster session
- 7 p.m. Musician's symbiosis  
**Noe Inui** (violin) & **Vassillis Varvaresos** (piano)
- 7.45 p.m. Conference Dinner

October 9, 2014

- 9 a.m. Cells – attack and defense
- Chair: Julia Frick, University of Tuebingen  
Statements á 20 minutes, 10 minutes Q&A after each talk
- Reciprocal interactions between the intestinal microbiota and mucosal antibodies  
**Oliver Pabst**, RWTH Aachen University Medical Clinic (confirmed)
- Microbiota-mediated defense against intestinal infection

**Eric Pamer**, Memorial Sloan-Kettering Cancer Center (confirmed)

10 a.m. Coffee Break / Poster session

10.30 a.m.

Compromised mucosal antimicrobial defense as a driver of chronic intestinal inflammation

**Jan Wehkamp**, University Hospital Tübingen (confirmed)

Genetically modified *Lactococcus lactis* for precision intervention in the GI tract

**Lothar Steidler**, ActoGeniX NV (confirmed)

11.30 a.m. Lightning Talks II

12 p.m. Lunch and Poster session

2 p.m. Keynote

Games between microbes with rules set by the host?

**Arne Traulsen**, Max Planck Institute for Evolutionary Biology (confirmed)

2.30 p.m. From cells to networks / ecosystems

Chair: Dirk Haller, Chair of Nutrition and Immunology, Technical University of Munich  
Statements á 20 minutes, 10 minutes Q&A after each talk

Exploiting nature's toolkit: Model systems of symbioses

**Margaret McFall-Ngai**, University of Wisconsin-Madison (confirmed)

Regulation of gut microbiota by Foxp3 and IgA

**Sidonia Fagarasan**, Laboratory for Mucosal Immunity, Riken Yokohama (confirmed)

3.30 p.m. Coffee Break

4.15 p.m.

Targeting the human small intestine and the impact of probiotics

**Michiel Kleerebezem**, NIZO food research and Wageningen University (confirmed)

Diet, gut microbiota and western lifestyle diseases

**Charles Mackay**, Monash University (confirmed)

5.15 p.m. Lightning Talks III

5.45 p.m. Dinner

7 p.m. Public Event (in German):  
Hundert Billionen Mitbewohner - Wie Mikroorganismen unsere Gesundheit beeinflussen

**Dirk Haller**, Technical University of Munich  
**Harald Renz**, University Marburg  
**Mathias Hornef**, Medical School Hanover  
**Kerstin Berer**, Max Planck Institute of Neurobiology  
**Host** Dr. Daniel Lingenhöhl, spektrum online

October 10, 2014

9 a.m. From Networks to organisms

Chair: Hartmut Wekerle - Max Planck Institute of Neurobiology  
Statements á 20 minutes, 10 minutes Q&A after each talk

Gender bias in autoimmunity: under control of hormones and microbes  
**Alexander Chervonsky**, University of Chicago (confirmed)

Autoimmunity in the brain- The Role of the gut-brain axis  
**Gurumoorthy Krishnamoorthy**, Max Planck Institute of Neurobiology (confirmed)

10 a.m. Coffee break / Poster session

11 a.m. From “bench to bedside”

Chair: Stephan Bischoff, University of Hohenheim  
Statements á 20 minutes, 10 minutes Q&A after each talk

Role of gut microbiota in the pathogenesis of diabetes  
**Frederik Bäckhed**, University of Goeteborg (confirmed)

Environmental microbes in the hygiene hypothesis  
**Harald Renz**, University Marburg (confirmed)

Mining for novel therapeutic bacterial strains against human disease using fecal transplantation  
**Max Nieuwdorp**, AMC Amsterdam (confirmed)

12.30 p.m. Lunch break

1.30 p.m. Closing talk  
Twin microbiomes reveal a human genetic influence on the composition of the gut microbiome with consequences for health  
**Ruth E. Ley**, Cornell University (confirmed)

2.15 p.m. End of Conference