

# THE HUMAN MICROBIOTA & BRAIN DISEASES | 3<sup>rd</sup> Edition

## THERAPEUTIC TARGETS

**2 April 2019**

Geneva University Hospitals

**[www.microbiote2019.org](http://www.microbiote2019.org)**

## CONTEXT

The past two years have seen an exponential increase of lay and scientific publications on the effects of the trillions small guests that each of us more or less willingly hosts even in the most secluded and intimate folds and holes of our body. High time, given that the power house of eukaryotic cells, mitochondria, are but ancient bacteria.

Reports have been published on the association of some bacterial strains in the guts (gut bacteria being by far the most represented microbial community) on human physiology (infant growth....) and somatic diseases (obesity, alcoholism, irritable-bowel syndrome and rheumatoid arthritis) and brain diseases (depression, autism, multiple sclerosis, Parkinson's disease, Alzheimer's disease).

Reports have multiplied of animal experiments showing that some natural features (resistance to infections and carcinogenic exposures) can be transferred from one animal to another by gut bacteria transfer. Not only, but it is increasingly clear that a number of environmental events can affect the bacterial composition of gut flora (diet, physical exercise, exposure to cold), that the animals with the modified version of the gut flora acquire specific physical and behavioral features (weight changes, sociability, motor impairments), and that such features can be transferred to non-exposed animals by gut bacteria transfer.

How much of these results is journalism hype and how much is sound science? How close (or how far for that matter) are we from gut flora manipulations in humans to protect from dreaded brain diseases?

The 3rd edition of this conference, which previously attracted 500 participants from Europe, will try and give an answer thanks to a panel of renowned national and international experts on the microbiota and the brain.

## AIMS

To update physicians and scientists on the latest discoveries on the role of the GMB in neuropsychiatric and neurodegenerative diseases.

To identify leads for microbiota-based interventions for brain diseases.

## PUBLIC

Physicians, neuroscientists, biologists.

## PRESENTATION FORMAT

Hybrid: in person and videoconference (Vconf)

# PROGRAMME

## 13.30 **Welcome Address**

Giovanni B Frisoni, Jacques Schrenzel, Mirko Trajkovski

## MAIN LECTURE | PATHOPHYSIOLOGY

### 13.45 Introduction

Mirko Trajkovski

### 13.50 Interaction between the microbiota and the immune system

Andrew J Macpherson, Bern, Switzerland

### 14.05 Q&A

## ORAL COMMUNICATIONS | PHYSIOLOGY OF THE MICROBIOTA

*Chair: Mirko Trajkovski*

### 14.10 Stability of the human faecal microbiome

Andrew T. Chan, Boston, Massachusetts, USA (Vconf)

### 14.25 Q&A

### 14.30 Host microbiota constantly control maturation and function of microglia in the CNS

Daniel Erny, Freiburg, Germany

### 14.45 Q&A

## MAIN LECTURE | NON - BRAIN DISEASES

### 14.50 Introduction

Giovanni B Frisoni

### 14.55 Microbiota-fat signaling axis

Mirko Trajkovski, Geneva, Switzerland

### 15.10 Microbiota-based treatment of non-brain diseases: leads for neurodegenerative diseases

Jacques Schrenzel, Geneva, Switzerland

### 15.25 Q&A

## ORAL COMMUNICATIONS | ALZHEIMER'S DISEASE

*Chair: Jacques Schrenzel*

### 15.35 Brain amyloidosis, pro-inflammatory gut bacteria, and peripheral inflammation in cognitively impaired elderly

Annamaria Cattaneo, Brescia, Italy

15.50 **Active Invasion of Porphyromonas gingivitis and Infection-Induced Complement Activation in ApoE/Mice Brains**  
Sim K. Singhrao, Preston, United Kingdom

16.05 **Microglia-derived ASC specks cross-seed amyloid- $\beta$  in Alzheimer's disease**  
Michael Heneka, Bonn, Germany

16.20 **Amyloid- $\beta$  peptide protects against microbial infection in mouse and worm models of Alzheimer's disease**  
Robert D Moir, Charlestown, Massachusetts (Vconf)

16.35 **Q&A**

16.55 **Break**

## MAIN LECTURE | FUTURE RESEARCH AVENUES

17.25 **Introduction**  
Giovanni B Frisoni

17.30 **From descriptive taxonomy to functional taxonomy of the microbiota**  
Stilianos Louca, Vancouver, Canada (Vconf)

17.45 **Q&A**

## ORAL COMMUNICATIONS | MICROBIOTA MANIPULATION AND BRAIN HEALTH

*Chair: Giovanni B Frisoni*

17.50 **Microbiota modulation counteracts Alzheimer's disease progression influencing neuronal proteolysis and gut hormones plasma levels**  
Laura Bonfili, Camerino, Italy

18.05 **Gut microbiota as a target to attain longevity**  
Patrizia Brigidi, Bologna, Italy

18.20 **Q&A**

18.30 **Conclusion**  
Mirko Trajkovski, Jacques Schrenzel, Giovanni B. Frisoni

19.00 **Cocktail**

## ORGANIZERS



**GIOVANNI B. FRISONI** (Faculty of Medicine & University Hospitals of Geneva)  
GBF is a clinical neurologist. His recent interests encompass the use of Alzheimer's imaging and CSF diagnostic biomarkers in the clinic and the role of the gut microbiota in the pathogenesis of Alzheimer's disease.  
(<https://www.unige.ch/medecine/psyat/fr/groupes-de-recherche/frisoni/>)



**JACQUES SCHRENZEL** (Faculty of Medicine & University Hospitals of Geneva)  
JS is Head of the Bacteriology and of the Genomic Research Laboratories ([www.genomic.ch](http://www.genomic.ch)). He is recognised for his work to translate molecular technologies to clinical microbiology.



**MIRKO TRAJKOVSKI** (Faculty of Medicine, University of Geneva)  
MT obtained his PhD at the Max Planck in 2005 and did his postdoctoral work at the ETH Zurich. Group leader and Lecturer in Metabolism and Metabolic Diseases at the University College London (UCL) in 2012. Assistant Professor at the Geneva Faculty of Medicine and awarded with the SNSF professorship. In 2014 he was awarded the prestigious ERC starting grant. His recent work focuses on the effect of the gut microbiota in metabolic diseases.

## SCIENTIFIC BOARD

Tristan Bolmont, Annamaria Cattaneo, Jean François Démonet, Stephan Éliez, Taoufiq Harach, Gabriel Gold, Moira Marizzoni, Philippe Millet, Benjamin Tournier.

## POST GRAD CME

CME credits will be requested to: Association des médecins du canton de Genève, FAMH Medical Laboratories of Switzerland, Swiss Neurological Society, Swiss Professional Society of Geriatrics, Swiss Society of Gastroenterology, Swiss Society of General Internal Medicine, Swiss Society of Psychiatry and Psychotherapy.

# INFORMATION

## Registration

[www.microbiote2019.org](http://www.microbiote2019.org)

## Location

Auditoire Marcel-Jenny  
Geneva University Hospitals  
Rue Gabrielle-Perret-Gentil 4  
1211 Geneve 14



A microscopic image showing several amyloid plaques, which are characteristic of Alzheimer's disease. The plaques appear as dark, elongated, cylindrical structures with a porous, sponge-like internal texture. They are scattered across the field of view, with some in sharp focus and others blurred in the background. The overall color palette is a monochromatic purple and grey.

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