

DBMR Research Conference

Langhans Hörsaal Pathologie
Murtenstrasse 31, 3008 Bern

Date October 1, 2018, 5 pm – 6 pm

Title **What twin studies can tell us about the beginnings of MS**

Speaker Prof. Dr. med. Reinhard Hohlfeld
Institute of Clinical Neuroimmunology, LMU Munich, Germany

Reinhard Hohlfeld is Professor of Neurology and Director of the Institute of Clinical Neuroimmunology, Ludwig Maximilians University, Munich. His research focuses on autoimmune mechanisms and pathogenesis of neuroimmunological diseases, particularly multiple sclerosis, myasthenia gravis, and inflammatory myopathies. He also works on a better understanding of the mechanisms (and risks) of immunomodulatory treatments. Reinhard Hohlfeld is a member of the advisory boards of the German MS Society, International Federation of MS Societies (MSIF), international Progressive MS Alliance (PMSA), as well as elected member of the German Academy of Science (Leopoldina) and external scientific member of the Max Planck Society (MPG).

Abstract

Multiple sclerosis (MS) is an inflammatory, presumably autoimmune disorder of the central nervous system. Research into the triggering mechanisms of the autoimmune process has been hindered by the genetic heterogeneity of the human population. To address this obstacle we assembled a cohort of more than 60 monozygotic twin pairs who were discordant for MS at study entry. Among members of this cohort, the healthy co-twins represent a group who has a maximum genetic risk for developing MS. Detailed characterization of this subgroup revealed that about 20% of the healthy co-twins show MRI and/or CSF evidence of subclinical neuroinflammation. Thus, the twins offer new opportunities for studying very early immunological changes which precede the clinical onset of MS. Furthermore, the twin cohort is ideally suited for investigating potential environmental triggering factors of MS. Here we are focusing on the gut microbiota. By comparing the gut microbial composition of monozygotic twin pairs discordant for MS, we observed no major differences in the overall microbial profiles, however, a significant increase in some taxa such as Akkermansia was seen in untreated MS twins. When transplanted to a transgenic mouse model of spontaneous brain autoimmunity, MS twin-derived microbiota induced a significantly higher incidence of autoimmunity than the healthy twin-derived microbiota. The microbial profiles of the colonized mice showed a high inter-individual and remarkable temporal stability with several differences, including an autoimmune-protective genus Sutterella. Immune cells from mouse recipients of MS-twin samples produced less IL-10 compared to immune cells from mice colonized with healthy twin samples. Further, neutralization of IL-10 in mice colonized healthy twin fecal samples increased disease incidence. These findings provide evidence that MS-derived microbiota contain factors that precipitate a MS-like autoimmune disease in a transgenic mouse model, which hence, lends itself to identify protective and pathogenic microbial components in human MS.

Prof. Dr. med. Reinhard Hohlfeld has been invited by Kirsten Guse, Neurology Research Group, DBMR, University of Bern.

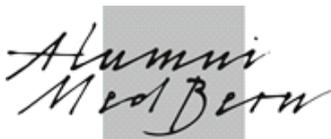
December 3, 2018

"Fibrinolysis: Beyond Clot Removal"

Next DBMR Research Conference

Prof. Robert Medcalf, Australian Centre for Blood Diseases, National Trauma Research Institute, Molecular Neurotrauma and Haemostasis, Melbourne, VIC, Australia

The DBMR Research Conference takes place from 5 pm – 6 pm and will be followed by an apéro.



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