The NO-Age and NO-AD Seminar Series 005

‘Alzheimer's disease - novel tau-based mechanisms and ultrasound-based therapeutic interventions’

by

Prof. Jürgen Gotz

The University of Queensland, Australia

at

12:00-13:00, Tuesday 09th June 2020

Ahus S1: Seminarrom: tbd

Akershus University Hospital, 1478, Norway

Organizers:

Evandro F. Fang, Tormod Fladby, Jon Storm-Mathisen

Queries: e.f.fang@medisin.uio.no

Name: Prof. Jürgen Goetz
Institute: The University of Queensland
Email: j.goetz@uq.edu.au

Speaker: Prof. Jürgen Götz

Title: Alzheimer's disease - novel tau-based mechanisms and ultrasound-based therapeutic interventions

Abstract:
The brain is considered the last frontier, both in terms of understanding how it operates under normal and pathological conditions, and in accessing it for therapeutic intervention. My laboratory works in both spaces: deciphering the role of key molecules and signalling pathways in Alzheimer's disease (AD) and developing novel ultrasound-based techniques to overcome the blood-brain barrier (BBB). One of the key features of the AD brain is the deposition of amyloid as plaques and Tau as tangles, a process that leads to neurodegeneration and dementia.

In the first part of my talk, I will present data on how amyloid and tau impair de novo protein translation, using click chemistry and non-canonical amino acids. I will further discuss mechanisms by which tau impairs mitochondrial functions.

In the second part of my talk, I will present our data on using ultrasound to clear amyloid and Tau in AD mouse models and restore memory and motor functions. A challenge is to develop the technology for the application in humans, due to a highly attenuating human skull. To address this, we have established a protocol that allows for the safe opening of the BBB in sheep, a large animal species with skull characteristics similar to that of humans. Together, our work presents therapeutic ultrasound as a viable modality to treat proteinopathies.

Biography:
Professor Jürgen Götz is the Foundation Chair of Dementia Research and Director of the Centre for Ageing Dementia Research (CADR) at the Queensland Brain Institute (QBI), The University of Queensland. Götz studied biochemistry at the University of Basel, and earned his PhD in immunology in the laboratory of Nobel Laureate Georges Köhler at the Max-Planck-Institute in Freiburg, Germany (1989). After postdoctoral work at UCSF and the Preclinical Research Division at Novartis Ltd in Basel, he established his reputation in the Alzheimer's field as a research group leader at the University of Zürich (1994–2005). From 2005 - 2012, before accepting his new position at the University of Queensland, he has been Chair of Molecular Biology and Director of the Alzheimer's and Parkinson's Laboratory at the Brain and Mind Research Institute of the University of Sydney. Götz uses transgenic animal models to contribute to a better understanding of the role of tau and amyloid-beta in Alzheimer's disease and related dementias.