U. of Oslo | U. of Copenhagen | Chinese U. of Hong Kong | Norwegian U. of Science and Technology | K.G. Jebsen Centre for Alzheimer's Disease | Kavli Institute for Systems Neuroscience | NO-Age | NO-AD | MIT-AD

The NO-Age and NO-AD Seminar Series 053

'NAD+ metabolism and new transporters related to NAD+ precursors' (tentative)

by

Prof. Mathias Ziegler
Department of Biomedicine, University of Bergen, Norway

'The use of isotopes to explore the mechanisms of NAD+ and its precursors' (tentative)

by

Prof. Marie Migaud
Department of Pharmacology, University of South Alabama, USA

14:00-16:45 (CET), Monday, 30th May. 2022

Register in advance:
https://uio.zoom.us/webinar/register/WN_HZbtBEvPT52olHxXI1xKnA

Organizers:
Evandro F. Fang (UiO), Jon Storm-Mathisen (UiO), Lene Juel Rasmussen (KU), W.Y. Chan (CUHK)

Queries: e.f.fang@medisin.uio.no
Previous recorded talks are available here: https://noad100.com/videos-previous-events/

Name: Prof. Mathias Ziegler

Institute: Department of Biomedicine, University of Bergen, Norway

Email: Mathias.Ziegler@uib.no
Lab website:
https://www.uib.no/en/persons/Mathias.Ziegler

Speaker: Prof. Mathias Ziegler

Title: 'NAD+ metabolism and new transporters related to NAD+ precursors' (tentative)

Abstract: To be updated

Biography:

The NAD metabolome - A key determinant of cancer cell biology
Emerging roles of NAD+ and its metabolites in cell signaling

Name: **Prof. Marie Migaud**

Institute: Department of Pharmacology, University of South Alabama, USA

Email:mmigaud@health.southalabama.edu

Lab website: https://els-bib.southalabama.edu/colleges/com/departments/pharmacology/migaud.html

Speaker: Prof. Marie Migaud

Title: 'The use of isotopes to explore the mechanisms of NAD+ and its precursors' (tentative)

Abstract: To be updated

Biography:

My research interest resides in developing modular multidisciplinary strategies that seek to modulate the bioavailability of B-vitamin derived redox cofactors to interrogate biological systems while allowing the traceability of changes. Epigenetics evidence highlights the subtle orchestration of signaling and biosynthetic events controlled by the intracellular bioavailability of nicotinamide adenine dinucleotide (NAD, vitamin B3 derived, figure 1) and its phosphorylated and reduced forms (NAD(P)H), flavin adenine dinucleotide (FAD, vitamin B2 derived) and flavin mononucleotide (FMN), S-adenosyl methionine (SAM) and acyl-Co-enzyme A (Acyl-CoA, vitamin B5 derived). The availability of these coenzymes is in turn regulated by metabolic events that modulate and are modulated by the availability of other cofactors; processes we seek to examine (Figure 1). Over the past 20 years, first in the UK and since 2016 at the University of South Alabama Mitchell Cancer Institute (MCI), my laboratory has developed a robust synthetic program that tackles the chemical limitations currently encountered in accessing B-vitamin derived species designed for "task-specific biological investigations". To address the challenges of bioavailability, biodistribution, catabolism (Figure 2) and intracellularization, we develop strategies that allow for modular delivery. Key to our research efforts is the development of efficacious synthetic methodologies that allow atom-efficient scalable preparation of heteroaromatics, nucleos(t)ides and dinucleotides and give access to probes incorporating stable isotopes, fluorophores, and conjugatable containing moieties, designed to investigate the metabolic and signaling pathways regulated by B-vitamin-derived cofactors. At MCI and to complement our synthetic work, I have worked closely with biologists, nationally and internationally to manipulate and exploit the impact that these coenzymes' metabolism and bioavailability have on aging and disease.