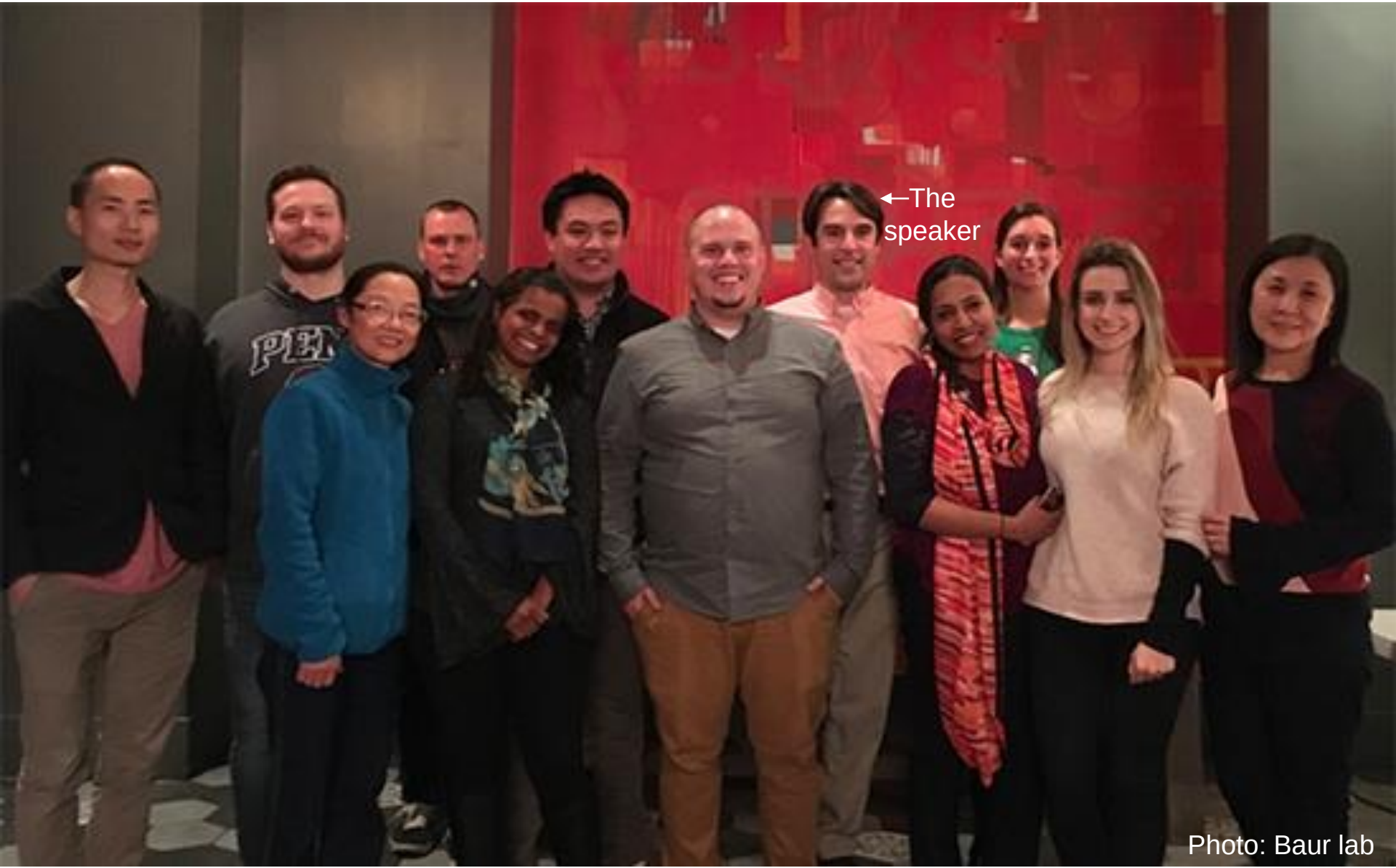
‘Tracing and Manipulating NAD^+ Metabolism in Cells and Mitochondria’

by

Assoc. Prof. Joseph Baur at the University of Pennsylvania (USA) on the 23rd Nov. 2020 (14:00 CET via zoom https://uio.zoom.us/j/8863743687)



University of Oslo

UNIVERSITY OF COPENHAGEN

香港中文大學
The Chinese University of Hong Kong

The NO-Age Network

The NO-Age and NO-AD Seminar Series 009

‘Tracing and Manipulating NAD⁺ Metabolism in Cells and Mitochondria’

by

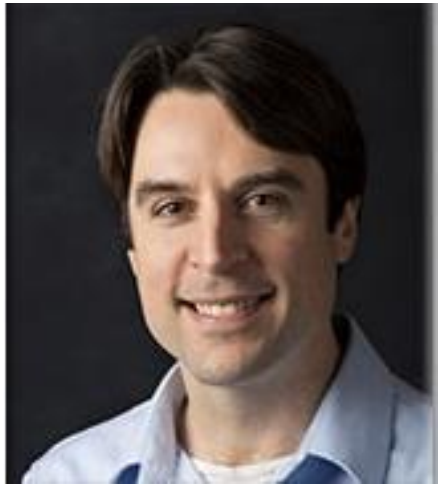
Assoc. Prof. Joseph Baur
The University of Pennsylvania, USA

at

14:00-15:00 (CET), Monday on the 23rd Nov. 2020

Join Zoom Meeting
https://uio.zoom.us/j/8863743687
Meeting ID: 886 374 3687

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: Assoc. Prof. Joseph Baur
Institute: The University of Pennsylvania
Email: baur@pennmedicine.upenn.edu

Speaker: Assoc. Prof. Joseph Baur

Title: Tracing and Manipulating NAD^+ Metabolism in Cells and Mitochondria

Abstract:
Tissue nicotinamide adenine dinucleotide (NAD) levels have been shown to fall with age or disease, and to rise with exercise or caloric restriction. Moreover, the demonstration that supplemental NAD precursors drive beneficial effects in a variety of rodent models has led to a resurgence in interest in the basic biology of this molecule. Although it is widely recognized that NAD is present in the mitochondrial matrix and critical to the function of the organelle, the source of mitochondrial NAD has been debated. We recently used an isotopic labeling approach to demonstrate that direct uptake of intact NAD is one mechanism by which mitochondria are able to obtain this nucleotide. Here, we show that this activity is sufficient to restore respiratory capacity in NAD-deficient isolated mitochondria and identify SLC25A51 as a carrier that can mediate the transport of NAD across mitochondrial membranes. Understanding the compartment-specific regulation of NAD will be crucial to understanding how cells and tissues adapt their metabolism to changes in NAD availability.

Biography:
Joseph Baur is an Associate Professor in the Department of Physiology and the Institute for Diabetes, Obesity, and Metabolism at the Perelman School of Medicine of the University of Pennsylvania. He has made key contributions to the understanding of how metabolism and dietary factors influence longevity. In 2006, Dr. Baur and colleagues showed that a sirtuin activator, resveratrol, is able to improve insulin sensitivity and ameliorate premature mortality in obese mice. He led a team that revealed a mechanism accounting for off-target effects of rapamycin, a drug that extends life in mice, but has side effects that limit its utility in humans. His laboratory at Penn is currently focused on the use of small molecules to understand and mimic the health-promoting effects of caloric restriction in rodents, with a particular focus on nicotinamide adenine dinucleotide metabolism. He has co-authored more than ninety peer-reviewed publications, as well as several book chapters and numerous invited commentaries and reviews.