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The NO-Age and NO-AD Seminar Series # 78

C. elegans and the neuronal network

by

Prof. Manuel Zimmer

Department of Neurosciences and Developmental Biology, University of Vienna, Austria

10:00-11:30 (CET), Thursday, 12th June 2025

Location: Seminarrom S102.014, Ahus

On-line:

https://uio.zoom.us/webinar/register/WN_Stiz2Fb_Sie1E7eG2-mYwg

Organizers:

Evandro F. Fang (UiO), Jon Storm-Mathisen (UiO), Asgeir Kobro-Flatmoen (NTNU), 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. Manuel Zimmer

Department of Neurosciences and Developmental Biology, University of Vienna, Austria
Email: manuel.zimmer@univie.ac.at

Speaker: Prof. Manuel Zimmer

Title: *C. elegans* and the neuronal network

Abstract:
To be updated

Biography:
Manuel Zimmer is a Professor at the University of Vienna. In the Zimmer lab, we are interested in how neural network dynamics in the brain represent sensory information and perform computations to generate decisions and subsequent behaviors. Moreover, we aim to explain fundamental properties of neuronal circuits, for example the need to sleep. These are key problems in neuroscience, each of which have alone challenged worldwide communities of experts for decades. We, however, propose that a holistic approach should be undertaken to understand these functions in their full context. To make this goal achievable, we take advantage of the uniquely experimentally tractable model organism C. elegans, a 1mm long nematode worm that can be found dwelling in soil. C. elegans has a small nervous system of only 302 neurons with a completely mapped connectivity map. Nevertheless, it can produce sophisticated behaviors. In recent years, we developed new approaches to quantify C. elegans behavior in unprecedented detail and to record the activity of all neurons simultaneously in real time. These new technologies, together with the rich and efficient genetic toolkit available for the worm, will allow the first complete understanding of any nervous system's operational principles. In the long term our holistic approach will enable us to generate a realistic in silico simulation of the brain's properties and behaviors. We will provide a basic proof of principle working model to guide the study of higher nervous systems and the design of brain inspired computational devices.