DANDRITE
Danish Research Institute of Translational Neuroscience
Nordic EMBL Partnership for Molecular Medicine

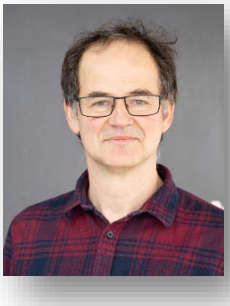
AARHUS UNIVERSITY

DANDRITE Topical Seminar

Wednesday 8 January 2020

From 10:15 – 11:00

The conference room, building 3130, 3rd floor, room 303
Dept. Molecular Biology & Genetics, Aarhus University
Gustav Wieds Vej 10c, 8000 Aarhus C



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Max Planck Institute of Biochemistry
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Nanoscale organization of neuronal synapses by cryo-electron tomography

Most cellular processes are carried out by molecular assemblies that form functional modules, and many biochemical pathways require a distinctly non-random spatial organization of their components. Thanks to the faithful sample preservation and the direct imaging of proteins and lipids, cryo-electron tomography (cryo-ET) provides an accurate representation of cellular constituents. To determine the function of synaptic vesicle-bound complexes visualized in cryo-ET, we established a structural model of neurotransmitter release. Our recent procedure that combines template-free detection and unsupervised classification of highly heterogeneous membrane-bound complexes resulted in de novo structural determination and a precise elucidation organization of trans-synaptic assemblies in situ. Ultimately, these methods are expected to yield a molecular map of the synapse, provide constraints for realistic simulations of biochemical pathways and set a stage for similar investigations of other signaling cascades.

Host: Group Leader Poul Nissen, DANDRITE, Dept. Molecular Biology & Genetics, Aarhus University