

DANDRITE Topical Seminar

Tuesday 17 September 2019
11.00 – 12.00

Merete Barker Auditorium, Lake Auditoriums
Building 1253, room 211
Bartholins Allé 3, 8000 Aarhus C



Prof. Hajime (“Haj”) Hirase

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Heterogeneity of astrocytes in glycogen distribution and GPCR-driven dynamics

Glycogen metabolism has been implied in synaptic plasticity and learning, yet the distribution of this molecule has not been fully described. We investigated the distribution of glycogen in the mouse brain by immunohistochemistry (IHC) using two monoclonal antibodies that have different affinities depending on the glycogen size. The use of focused microwave irradiation yielded well-defined glycogen immunoreactive signals compared with the conventional periodic acid-Schiff method. Glycogen immunoactivity was high in the hippocampus, striatum, superficial layers of the cortex, and cerebellum. The IHC signals displayed a punctate distribution localized predominantly in astrocytic processes. Additionally, glycogen distribution in the hippocampal CA3-CA1 and striatum had a “patchy” appearance with glycogen-rich and glycogen-poor astrocytes appearing in alternation. Our results reveal brain region-dependent glycogen accumulation and a possible metabolic heterogeneity of astrocytes. Glycogen metabolism is known to be activated by G protein-coupled receptor (GPCR) activation. Currently, we are investigating the organization of GPCR-driven activities in cortical astrocytes by optical imaging in behaving mice.

Host: Group Leader Keisuke Yonehara, DANDRITE, Dept. Biomedicine, Aarhus University