DANDRITE

Topical Seminar

Autophagy-mediated regulation of the endoplasmic reticulum and its impact on neuronal excitability

The endoplasmic reticulum (ER) is a continuous membrane system critical for cellular processes such as protein and lipid biogenesis, as well as calcium homeostasis. In neurons, the ER surface is huge and assembles in different structures depending on the neuronal compartment. Our recent work demonstrates that autophagy, a cellular degradation process, plays an essential role in maintaining the axonal ER. Specifically, we found that loss of autophagy in neurons, as seen in ATG5 knockout (KO) models, results in the selective build-up of axonal ER and disrupts calcium homeostasis due to increased calcium release through ryanodine receptors (RYR). We propose a model in which neuronal autophagy controls axonal ER calcium stores to regulate release probability and neuronal excitability. We show that impairment of autophagy leads to neuronal hyperexcitability, which contributes to aberrant network activity, as observed in animal models of epilepsy and in patients.

Host: Poul Henning Jensen

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Assistant Professor

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Date: **Monday 28th of October 2024**
Time: **14:00 – 15:00**
Venue: **AIAS auditorium**
Address: **Building 1630,**
Høegh-Guldbergs Gade 6B
8000 Aarhus C

OPEN TO ALL INTERESTED.

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