

Neuroscience Seminar

Tuesday 20 April 2021

15:00 – 16:00

Online via Zoom

Please find Zoom link via the Outlook calendar invitation. If you have not received this, please write an e-mail to Katrine: karasmus@dandrite.au.dk



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Mapping and re-engineering neural circuits mediating biological motivations

Animal behavior is governed by innate and hardwired biological drives. How the latter are represented in the brain and the mechanisms linking the underlying circuits to internal physiological needs remain under intense investigation. Here, I will describe a single cell RNA-seq based stimulus-to-cell-type mapping approach that enables scalable and rapid mapping of stimuli and behaviors to the underlying molecular cell types in the mammalian brain. I will describe the application of this technology to identifying cell types that drive thirst and pain behaviors with follow up functional dissection with opto- and chemogenetic circuit manipulation and behavioral analysis. This led us to uncover neural mechanisms mediating two distinct types of thirst motivation and candidate mechanisms for pain relief. Finally, I will discuss how the molecular identity of uncovered neuron types can be used to functionally reprogram these circuits via in vivo genome editing that provides a pathway to precision brain engineering independent of animal transgenesis.

Host: Poul Henning Jensen, Professor and Group Leader at Dept. of Biomedicine, Aarhus University.