

## DANDRITE Topical Seminar

**Tuesday 14 March 2017**  
**at 11.00 – 12.00**

Aarhus University, building 1170, room 347 (aud. 6)

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### Seminar on “Processing of global motion image by local clusters of retinal ganglion cells”

Our visual perception is unified and continuous, though our eyes repeatedly shift position and alter fixation. The whole image projected on the retina (the retinal image) not only moves rapidly during saccade but also jitters even during steady gaze due to fixational eye movements. However, it is not yet fully understood how the retina processes the global motion images. Here, we show the novel processing of eye movement-like global motion images by coordinated retinal ganglion cells (RGCs).

We recorded the firing of RGCs in the goldfish isolated retina using a multi-electrode array, and classified each RGC into several groups based on the profile of receptive field (RF). We found that the global jitter motion (simulated fixational eye movements) modulated the spatiotemporal RF properties in a group-specific manner. Fast-transient (Ft) RGC showed significant spatial expansion of the RF and sensitization of the integration kinetics. Whole-cell recordings revealed that during the global jitter motion Ft RGC received “sharp excitatory postsynaptic currents (sharp EPSCs)” with large amplitude and fast rise time. The sharp EPSC was evoked by global stimulation outside the RF estimated by the static background. Subsequent global rapid motion with spatiotemporal correlation drove the nonlinear and temporally coordinated response of Ft RGC. This transient and coordinated firing can transmit afferent retinal information to the brain during saccades and might help the brain respond to the visual scene during eye movements

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