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

DANDRITE Topical Seminar

by visitor Szilard Sajgo

Tuesday 3 February 2015
From 11:00 – 12:00

Aud. 6, 3. Floor, building 1170
Aarhus University, Ole Worms Allé 3, 8000 Aarhus C

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Transcriptional codes that drive neuronal diversity

The mammalian nervous system consists of a large variety of morphologically and physiologically different neurons. We are interested in the transcription factor combinatorial codes driving neuronal diversity. Such combinatorial codes have been previously described in the projection sensory neurons of the visual, auditory and somatosensory pathways of the mouse, using conditional knock-in AP reporter alleles targeted at the three members of the Pou4f family of transcription factors, Brn3a, Brn3b and Brn3c.

By using intersectional genetics and a modified Tet-ON system with dual pharmacological control of Cre I have found that Brn3b is also expressed in several of the sensory cranial nerve ganglia and some of their hindbrain relay neurons, as well as in viscero-motor and some branchio-motor output neurons of the facial, glossopharyngeal and vagus nerves.

Our group is interested in finding genes that drive neural diversity in the context of Brn3's. I participated in an effort to immuno-magnetically purify Brn3aAP/WT, Brn3aAP/KO, Brn3bAP/WT and Brn3bAP/KO positive retinal ganglion cells and analyze their expression profiles using next generation RNA sequencing. We report combinatorial expression of multiple gene families of transcription factors, adhesion molecules and cytoskeletal adaptors which have the potential to participate in a complex combinatorial code of neuronal cell type specification. To assess the in-vivo function of several newly identified RGC specific genes I am combining viral strategies with newly developed Brn3a and Brn3b conditional Cre knock in mice.

Host: Group Leader Keisuke Yonehara, DANDRITE