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Cell-type-specific computations and disease in the visual system

Date and time: Monday 12 December 2016　4:00p.m. – 5:00 p.m.

Place: Large meeting room on the 2nd floor of the IPR Main Building

日時：２０１６年１２月１２日（月）午後４時～５時

場所：大阪大学蛋白質研究所 本館２階 大会議室

The brain is assembled from thousands of cell types, which are organized into distinct neuronal circuits which perform neural computations in order to analyse the sensory environment and drive behaviour. Inferring the direction of image motion is a fundamental component of visual computation, and essential for visually guided behavior. Even at the front of the visual stream, in the retina, a number of parallel circuits extract information about motion direction. The key circuit feature of retinal direction selectivity is the asymmetric inhibitory input from a specific retinal interneuron type, the starburst amacrine cell, to direction-selective retinal ganglion cells.

My talk will have two parts. First I will discuss the computational logic and developmental mechanisms of a retinal direction-selective circuit, and how genetic mutation of a gene called Frmd7 in the starburst amacrine cell could lead to a genetic disease of eye movement control on a horizontal axis. Second I will show our recent attempt to genetically label cell types in the retina and the superior colliculus, which is a major retino-recipient region in the mouse. We will leverage these transgenic mouse lines to understand cell-type-specific mechanisms of vision by linking the activity of the labeled cell types to the connectivity and the behavior mediated.

問い合わせ先：古川貴久（内線 8631）