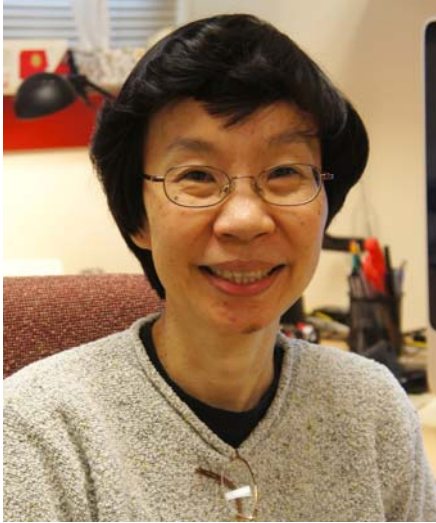


# CDB Student Organized SEMINAR



## RACHEL OI LUN WONG Ph.D.

Department of Biological Structure  
University of Washington

Wednesday, July 29, 2015  
16:30~17:30 C1F Auditorium

### Degeneration and regeneration of circuits in the vertebrate retina

#### Abstract

As in other parts of the nervous system, damage or disease in the vertebrate retina leads to a loss of synaptic connections and often, rewiring of the surviving neurons. To better understand the progression of circuit disassembly, we have examined the sequence of changes in retinal ganglion cell morphology, connectivity and function prior to cell death in a mouse model of glaucoma. We find that synaptic connectivity is reduced prior to loss of dendrites, and that the rate of synapse disassembly varies with ganglion cell type. To gain insight into how precise circuits can be re-established during repair, we took advantage of the intrinsic regenerative capacity of zebrafish and determined the rewiring specificity of surviving neurons with the new population of presynaptic cells. We show that surviving neurons maintain specificity in their choice of synaptic partners but only for a given period of time, after which they connect with non-preferred partners. Thus, rapid intervention may be necessary not only to prevent further cell loss, but also to facilitate the ability of damaged circuits to regenerate their original patterns of connectivity.

#### Host Students:

Satoshi Iraha (Retinal Regeneration)  
Yuko Iwasaki (Retinal Regeneration)



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