CDB SEMINAR

Speaker: **Yoshiaki Tagawa** **(M.D./ Ph.D.)**

< Dept. of Biophysics, Kyoto University School of Science >

Title: "Functional Ocular Dominance Plasticity Revealed by the Activity-regulated Gene Arc."

Date: Monday, May 30
Place: 1F Auditorium of Building C, CDB
Time: 16:00 ～17:00

Summary:

Sensory experience shapes structural and functional connectivity in cortex. We used in situ hybridization for Arc mRNA to monitor the functional status of ocular dominance (OD) in cortex during normal development and after visual deprivation. Arc maps functional connections driven by each eye in mouse visual cortex. We find a previously undetected developmental remodeling of the ipsilateral eye representation to form the adult binocular zone. After monocular deprivation during the critical period, Arc induction reports faithfully expected OD shifts in mouse (and cat). Surprisingly, shifts toward the open eye and weakening of the deprived eye are seen after the critical period ends and also before it begins. These shifts include an unexpected spatial expansion of Arc induction into the monocular zone. These observations indicate that the functional representation of the two eyes can be dramatically altered by ocular imbalances significantly earlier and far later than expected.

Reference:
Tagawa Y, Kanold PO, Majdan M and Shatz CJ, (2005) *Nature Neurosci.* **8**:380

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