



---

**ONLINE SEMINAR BY PROF. ANDREA BENUCCI**  
(RIKEN Center for Brain Science - Saitama - Japan)  
**April 28th, 2022 - 10:00 a.m.**

Zoom link: <https://bit.ly/3tNZBpC>

**Title of the seminar:** Plasticity of visual representations in the mouse cortex

**Abstract:** In this presentation, I will first introduce the main areas of interest of my laboratory at RIKEN Center for Brain Science. Then, I will focus on a recent work where we examined the plasticity of visual representations in the mouse cortex.

The starting observation for this study is that brain circuits acquire and update computations through the dynamics of recurrently connected neurons. Neuronal connections are plastic but the principles that coordinate cell-to-cell connectivity changes for network-level computations remain largely elusive. We found that optogenetic stimulation centered on a cortical cell (target cell) could coordinate activity changes across hundreds of surrounding cells, enhancing the population encoding for the preferred feature of the target cell. These effects were more prominent in cells with weaker sensory responses and impacted the spontaneous dynamics, with cells co-tuned with the target being more likely to participate in spontaneous activity assemblies. Our results reveal a form of plasticity in adult cortical networks that is sensitive to the activation of even a single neuron, and highlight mechanisms that balance plasticity and stability of feature representations.