



Contribution ID: 52

Type: not specified

## Single-cell perturbations reveal adaptive, stimulus-dependent recurrence in visual cortex

Cortical circuits are proposed to amplify weak sensory inputs but transition to feature competition during strong drive. However, the evidence for this is scarce in cortices with a functional, modular organization, such as in primates and carnivores, where neighboring excitatory and inhibitory cells share feature selectivity. Here, we demonstrate that networks in ferret primary visual cortex switch between amplification and competition depending on sensory input. Combining cellular perturbations and statistical modeling, we uncovered broad suppressive influence modulated by visual contrast. At low contrast, functionally-coupled cells exhibited mutual amplification, switching to suppression at high contrast. This reversal emerged in recurrent network models in a Cross-Dominant regime, where inhibitory-excitatory coupling exceeds excitatory-excitatory coupling. These models predicted strong suppression from inhibitory cells, confirmed with cell-type-specific perturbations. Our results provide direct evidence that cortical recurrence with functional, modular organization toggles between amplification and suppression, supporting long-standing predictions from theory and models of visual cortex.

**Presenter:** Ms KONG, Deyue (Frankfurt Institute for Advanced Studies)

**Session Classification:** POSTER SESSION