

Saison 2018-2019



NEURODISCUSSIONS

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Département de neurosciences

Titre: *Mechanisms controlling GABAergic circuit refinement*

Résumé: *Within the forebrain, GABAergic (γ -aminobutyric acid producing) interneurons possess the largest diversity in morphology, connectivity, and physiological properties. A fascinating hypothesis is that different interneurons play partially distinct roles in neural circuit function and behavior. The large majority of cortical parvalbumin (PV)-positive interneurons specifically target the soma and proximal dendrites of pyramidal cells, and have been implicated in synchronizing the firing of neuronal populations and generating gamma oscillations, which are important for perception, selective attention, working memory and cognitive control in humans and rodents. Importantly, PV cells are also involved in experience-dependent refinement of cortical circuits during postnatal development, or critical period plasticity. Indeed, many studies on the visual cortex have demonstrated that the timing of critical period plasticity is set by PV cell maturation. Furthermore, reducing GABAergic inhibition has been shown to partly restore juvenile-like plasticity in adult visual cortex. More recent studies suggest that PV cell circuit maturation also affects the efficiency of fear memories extinction. In our lab, we are trying to address the following questions: what are the mechanisms that control the formation and refinements of PV cell connectivity? What are the mechanisms that limit PV cell plasticity in the adult brain? Can we improve plasticity (for example, efficiency of fear memory extinction) in the adult brain by specifically targeting PV cells? To address these questions, we use a combination of approaches, including single cell genetic modification in organotypic cultures, mouse transgenics, confocal imaging, behavioral analysis, in vivo physiology and single cell transcriptomics analysis.*

Heure: 16 h

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Lieu: Salle 1120, Pavillon Paul-G.-Desmarais