NeuroConferences organized by the Master 2 FCN and CNS of UCB Lyon 1 – with the support of Labex Cortex
2025

Cortical and subcortical networks for learning and decision-making across species	Organizers: **Dr Romain Ligneul & Dr Christiane Schreiweis** Centre de Recherche en Neurosciences de Lyon christiane.schreiweis@univ-lyon1.fr romain.ligneul@inserm.fr

"Knowing is not enough; we must apply.
Willing is not enough; we must do."
— Johann Wolfgang von Goethe. Maxims and Reflections, Aphorism 324.

Learning and decision-making are among the most remarkable capacities of the brain. They emerge, among others, from the dynamic interplay of cortico-cortical and cortico-basal ganglia circuits. In line with the definition of an animal as a moving creature and historically limited to motor aspects, today's research on cortico-basal ganglia circuits focuses on the fine dynamic interplay and established or disrupted equilibrium of motivational, cognitive and motor functions in healthy or pathological states, respectively.
In a first session, we will explore how the neuroanatomy of these networks, i.e. the structure, defines and enables function. In a second session, we will shine light on how learning usually starts with conscious effort, guided by explicit motivation and goals; and how, with practice, actions become automatized into efficient habits and routines. Pathological deviations in these circuits disrupt the behavioral control and loss of specific neuronal populations can impair both learning and the execution of learnt actions and sequences. Such dysfunctions, covered in our third session, contribute to disorders such as, for example, obsessive–compulsive disorder and Parkinson's disease. Finally, in a fourth session, we will consider learning beyond the individual and as a cornerstone of social interaction and collective behavior.

	Tue Oct 7	**Session 1 - Neuroanatomy and behavior**		
		14.00-15.00	**Dr Léon Tremblay (Institut des Sciences Cognitives - Marc Jeannerod, Bron)** Title: Pathophysiology of Basal Ganglia: From movement to behavioral disorders: Translational and Multimodal investigations in human and non-human primate.	Amphi Neurocampus CRNL (CH Le Vinatier, Bat. 462, 95 bd Pinel, Bron)
		15.00-16.00	**Dr Jill Crittenden (Massachusetts Institute of Technology, McGovern Institute for Brain Research, USA)** Title: Parallel architecture of striatal compartments and pathway ONLINE speaker	
		16.00-17.00	**Dr Christiane Schreiweis (Centre de Recherche en Neurosciences de Lyon & Institut du Cerveau, Paris)** Title: Modeling the neurobiological architecture and function of human language capacities in the humanized Foxp2 mouse model	
	Wed Oct 8	**Session 2 - From goal-directed to habitual behaviors**		
		10.00-11.00	**Dr Shauna Parkes (Institut de Neurosciences Cognitives et Intégratives d'Aquitaine, Bordeaux)** Title: Updating goal-directed behaviour: Cortical and subcortical bases	Amphi Neurocampus CRNL (CH Le Vinatier, Bat. 462, 95 bd Pinel, Bron)
		11.15-12.15	**Dr Jérémie Naudé (Institut de Génomique Fonctionnelle, Montpellier)** Title: Using reinforcement learning models to study the neurobiology of decision making	
		14.00-15.00	**Dr Medhi Khamassi (Institut des Systèmes Intelligents et de Robotique, Paris)** Title: Behavioral learning: From associative learning to reinforcement learning	
		15.00-16.00	**Dr Romain Ligneul (Centre de Recherche en Neurosciences de Lyon)** Title: Competing codes and algorithms for predicting and deciding	

	Thur Oct 9	**Session 3 – Maladaptive behaviors**		
		9.00-10.00	**Dr Eric Burguière (Centre de Recherche en Neurosciences de Lyon & Institut du Cerveau, Paris)** Title: Translational approach to investigate the neurofunctional bases of compulsive behaviours.	Amphi Neurocampus CRNL (CH Le Vinatier, Bat. 462, 95 bd Pinel, Bron)
		10.00-11.00	**Dr Ledia Hernandez (Universidad Camilo Jose Cela, Madrid)** Title: From goal-directed to habitual behaviour: striatal neuronal activity in a dopamine depleted animal model ONLINE speaker	
		11.00-12.00	**Dr Anna Beyeler (Neurocentre Magendie, Bordeaux)** Title: Contributions of the insular cortex to anxiety-related behaviors in mice: from dopamine modulation to psychedelics anxiolysis	
		Session 4 - Beyond individuals: social decisions & communication		
		14.00-15.00	**Dr Christelle Baunez (Institut de Neurosciences de la Timone, Marseille)** Title: Involvement of the subthalamic nucleus in various processes of decision-making in rats, non-human primates and human subjects	Amphi Neurocampus CRNL (CH Le Vinatier, Bat. 462, 95 bd Pinel, Bron)
		15.00-16.00	**Dr Rhagav Rajan (Indian Institute of Science Education and Research, Pune)** Title: Using songbirds to understand the initiation of complex movement sequences. ONLINE speaker	