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F Gambino is a CNRS team leader that acquired strong expertise with in vivo patch-clamp recordings and two-photon imaging in behaving animals. His work revealed circuit-specific metaplastic rules for synaptic plasticity upon changes in sensory experience as well as new synapses-specific non-linear rules that might be recruited during learning. He's leading the team "computational and systems neuroscience" at IINS that explores the causal effect of learning during a complex decision task.

S3-L3 ‘Decoding the activity of the amygdala-frontal circuit during decision-making.’

Our daily life is a complex chain of decisions and actions that shapes our behaviors. Individuals tend to choose the best action possible ("action-selection") among different representations through "goal-directed" decision-making. However, to achieve flexible behaviors in a dynamic environment, individuals must rapidly update these representations according to the difference between the predicted and the obtained outcome. Many cortical and subcortical structures act in coordination to encode and process changes in the outcome value, but the synaptic and circuit underpinnings remain unknown. Here, by using two-photon imaging, optogenetic and electrophysiology over long-time frames in behaving mice, we are studying how alternative choices are encoded by specific neuronal representations in the frontal cortex, and how they are modulated by long-range axonal projection from the basolateral amygdala to continuously select to best action possible.
