



**University of  
Zurich** <sup>UZH</sup>

## Department of Economics – Neuroeconomics Seminar

**May 25, 2023 - 17:00 - 18:00**

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### **Prefrontal and amygdalar mechanisms of primate social interaction**

Social interaction is essential to our daily lives, shaping interpersonal communication and the decisions we make. This talk will describe our recent findings from studying the primate prefrontal-amygdala circuits during social decision-making and social gaze interaction involving pairs of rhesus macaques. First, as monkeys expressed context-dependent prosocial and antisocial decisions concerning the reward received by a conspecific monkey, we investigated neuronal interactions between the basolateral amygdala and the rostral anterior cingulate gyrus. We found that the coordination between the two neural populations was enhanced for expressing a prosocial preference but suppressed for expressing an antisocial preference. This coordination occurred in selective frequency channels depending on the area contributing the spikes and showed a specific directionality of information flow for expressing the prosocial preference. During reward delivery, distinct coherence patterns were observed for vicarious reward and experienced reward. These findings support that specialized coordination in the medial prefrontal–amygdala circuits underlies prosocial decision-making. Second, we studied large numbers of neurons spanning four regions in the prefrontal-amygdala circuits during spontaneously occurring face-to-face social gaze exchanges. We found robust single-neuron foundations of interactive social gaze in the orbitofrontal, dorsomedial prefrontal, and anterior cingulate cortices, as well as the amygdala. Many neurons exhibited social gaze target discriminability and mutual eye contact selectivity, and parametrically tracked the gaze positions of self or other, providing substrates for social gaze monitoring or dynamic social attention. These results support widespread neuronal implementations for social gaze interaction in the primate brain. Collectively, these findings provide evidence for the importance of the prefrontal-amygdala circuits in guiding complex social behaviors.