

Seminar IRH-ICUB

Consciousness and Cognition: An Interdisciplinary Approach

<https://irhunibuc.wordpress.com/2016/04/05/new-seminar-consciousness-in-philosophy-and-neuroscience/>

convenor Dr. Diana Stanciu

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Date: Tuesday, 17 January 2017, 17h

Place: IRH-ICUB (1 D. Brandza Str.), conference room

Prof. Robert C. Froemke

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The goal of my lab (<http://froemkelab.med.nyu.edu/people>) is to understand how neural plasticity relates to auditory perception and social cognition. I have a broad background in systems neuroscience, performing my undergraduate work at Tufts on machine learning and building modeling tools for complex systems analysis; prior to that I was in art school for a couple years in Boston. For my PhD work with Yang Dan at UC Berkeley, I examined synaptic plasticity induced by natural spike trains in cortical networks. My postdoctoral research with Christoph Schreiner and Mike Merzenich at UCSF focused on synaptic plasticity in vivo as related to auditory perception and behavior. Current work examines synaptic mechanisms of calibrating and controlling excitatory-inhibitory balance, cochlear implant function in deafened rats, cholinergic/noradrenergic/oxytocinergic modulation and plasticity in behaving mice, and studies of maternal physiology and child care.

Oxytocin, Social behavior and Neural Plasticity

Oxytocin is important for social interactions and maternal behavior. However, little is known about when, where, and how oxytocin modulates neural circuits to improve social cognition. Here I will discuss new data from our lab on how oxytocin enables maternal behavior in new mother mice. I will focus on experience-dependent plasticity in auditory cortex related to recognizing the significance of pup distress calls, which are important for mother mice retrieving lost pups back to the nest. Surprisingly, this behavior, neural responses, and oxytocin receptor expression were lateralized to the left side of the auditory cortex, similar to the lateralization of language abilities in humans. Our results describe fundamental synaptic mechanisms by which oxytocin increases the salience of acoustic social stimuli. Furthermore, oxytocin-induced plasticity provides a biological basis for lateralization of auditory processing.