

Centre de Neurosciences Psychiatriques

CNP SEMINAR

ANNOUNCEMENT

Monday, March 29th, 2010, 17h15

“Rhythms in the Amygdala : From Neurons to deep Brain Stimulation for Depression”

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*Invited by Ron Stoop
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**Salle Hironnelle, Hôpital Psychiatrique de Cery
Site de Cery, CH-1008 Prilly-Lausanne**
(in "Reception" building: go up one floor, then follow yellow panels)

The basolateral amygdala (BLA) plays an essential role in the cellular processes that underlie the normal, adaptive, behavioral response to fearful, as well as rewarding, stimuli. Evidence suggests that region-specific release of dopamine into the BLA is an absolute requirement for the formation of fearful memories. Here, we present *in vitro* and *in vivo* data that dopamine acts within the BLA to promote rhythmic oscillations and synchronization of neural activity via D₁ receptor activation and subsequent activation of the protein kinase A cascade. Furthermore, we show that activation of this pathway enables rhythmic activity to induced long-term synaptic plasticity in BLA neurons, which is thought to underlie fear memory formation. Formation and recall of fear memories rely on synchronization of rhythmic activity between the BLA and target structures such as the hippocampus and medial prefrontal cortex, and we present additional evidence that synchrony between the BLA and the mPFC is sensitive to dopaminergic modulation. Finally, human studies suggest that aberrant connectivity between the BLA and mPFC may be a hallmark of major depressive disorder, and we present evidence that a promising new treatment for intractable depression, deep brain stimulation, may serve to redress this imbalance.