AddictionTherapy-2013

OMICS Group Conferences
Accelerating Scientific Discovery

2nd International Conference and Exhibition on
Addiction Research & Therapy

July 22-24, 2013 Las Vegas, USA

Mechanisms of Dopamine signaling contributing to the Nicotine addiction process

John A. Dani
Baylor College of Medicine, USA

Abstract

Nicotine is the principle addictive component that drives continued tobacco use despite the harmful consequences. Nicotine initiates addiction by acting upon neural circuitry that normally reinforces behaviors that lead to rewarding goals. An important circuit is the mesocorticolimbic dopamine system that contributes to the processing of rewarding sensory stimuli during the overall shaping of successful behaviors. Both local nicotinic influences within the hippocampus and long range influence over dopamine centers regulate synaptic plasticity and learning during the addiction process. In the hilar region of the dentate, local nicotinic cholinergic activity regulates hippocampal inhibitory circuits. Simultaneously, nicotinic activity increases the dopamine signal broadcast to the hilus, thereby, lowering the threshold for synaptic plasticity and enabling learning. The results suggest that dopaminergic signaling serves as a functional label of salient events by enabling synaptic plasticity that underlies associative memory (for an introduction see Neuron 2009, 63:673; J Neurosci. 2010, 30:6443). Supported mainly by NIH NIDA (DA09411) and NINDS (NS21229).

Biography

Dr. Dani received his Ph.D. in Physiology from the University of Minnesota. After postdoctoral training, he joined Baylor College of Medicine where he is now a Professor and Director of the Center on Addiction, Learning, Memory. Dr. Dani serves on the editorial boards of a number of journals and has received awards, including the Jacob Javits Neuroscience Award from the NIH. This summer he will become Chair of the Department of Neuroscience and Director of the Mahoney Institute of Neuroscience at the University of Pennsylvania School of Medicine, Philadelphia, PA 19104 USA.