Département de psychiatrie
Centre de neurosciences psychiatriques
Site de Cery
CH-1008 Prilly - Lausanne

Centre de Neurosciences Psychiatriques

CNP SEMINAR

ANNOUNCEMENT

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"Prevention and treatment of drug addiction by environmental enrichment"

Marcello Solinas, PhD.
Institut de Physiologie et Biologie Cellulaires UMR 6187
Université de Poitiers, CNRS, Poitiers, France.

Invited by Benjamin Boutrel
(Benjamin.Boutrel@chuv.ch)

Salle Hirondelle, Hôpital Psychiatrique de Cery
Site de Cery, CH-1008 Prilly-Lausanne

Environmental enrichment (EE) has been shown to have powerful effects on the brain and to produce beneficial effects on a variety of physiological and pathological processes. Accumulating evidence indicates that EE can mimic positive life experiences and prevent the development of drug addiction. More recently EE has also been shown to eliminate already developed addiction-like behaviours and to reduce the risks of relapse. These preventive and curative effects of EE are associated with dramatic plastic changes in several brain areas such as the hippocampus, the frontal cortex and the striatum. EE alters all neurotransmitter systems, produces changes in gene expression and transcription factors, induces chromatin rearrangement, and stimulates hippocampal neurogenesis. In this talk, we will present recent results that help understanding how EE-induced neuroadaptations result in decreased vulnerability to addiction and relapse. Based on our results and the existent literature, we propose that EE can be seen as a functional opposite of stress. Through its antistress effects, EE would produce brain neuroadaptations that would reduce the reinforcing effects of drugs and their ability to induce long-lasting neuroplastic changes and, thus, it would prevent the development of drug addiction. On the other hand, permanent or transient restoration of the normal, pre-drug functioning of the stress system would facilitate resisting prepotent desire to take drug and it would decrease the risks of relapse.

Recent publications

Solinas M, Thiriet N, Chauvet C, Jaber M.(2010) Prevention and treatment of drug addiction by environmental enrichment. Prog Neurobiol. 92(4):572-92.

Chauvet C, Lardeux V, Goldberg SR, Jaber M, Solinas M. (2009) Environmental enrichment reduces cocaine seeking and reinstatement induced by cues and stress but not by cocaine. Neuropsychopharmacology 34(13):2767-78.

Solinas M, Thiriet N, El Rawas R, Lardeux V, Jaber M. (2009) Environmental enrichment during early stages of life reduces the behavioral, neurochemical, and molecular effects of cocaine. Neuropsychopharmacology 34(5):1102-11.

Solinas M, Chauvet C, Thiriet N, El Rawas R, Jaber M. (2008) Reversal of cocaine addiction by environmental enrichment. PNAS 105(44):17145-50.