



Neuroscience Center of Excellence

Brain Awareness Week

Special Seminar on
Neuroscience and Addiction

The Addicted Brain



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of Advanced Studies,
Cortona, Tuscany, Italy &
The Scripps Research Institute,
La Jolla, California, USA

1:00 to 2:00 p.m.
Tuesday March 12
and
Thursday March 14

8th Floor
Neuroscience Center
of Excellence
Conference Room

For more information
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Drug addiction is a chronically relapsing disorder characterized by different phases, the compulsion to seek and take the drug, the loss of control in limiting intake, and the emergence of a negative emotional state reflecting a motivational withdrawal syndrome when access to the drug is prevented. The lecture will cut across multiple aspects of the addiction field to address important emerging areas of research.

Investigation over the past two decades in preclinical and clinical models has revealed that discrete and partly separate neuronal circuits mediate the different stages of the addiction cycle. During the binge/intoxication stage the key neuronal elements appear to be within the ventral tegmental area and ventral striatum, while the extended amygdala seems to be the focal area responsible for the withdrawal/negative affect stage. Additionally a critical role in the preoccupation/anticipation stage appears to be played by a widely distributed network involving the orbitofrontal cortex–dorsal striatum and other allocortical areas.

One very important aspect of drug addiction is the transition from moderate to excessive drug intake. This is crucial for the development of the addictive cycle and until recently very little experimental attention has been devoted to specifically pinpoint the neuronal ensembles responsible for the escalation of drug intake. Lately, new research has suggested that neural plasticity in specific brain areas previously associated with addiction may occur and within these adaptive changes may perhaps reside the "neural switch" underlying transition from actions to habits to compulsions to addiction. Current research is therefore pointing towards the identification of the neurochemical events that take place during the evolving stages of drug taking that are ultimately responsible for the maintenance of addiction itself.