From decision making to addiction: implications of new neurophysiological observations in hippocampus and striatum

The understanding of decision-making has come together in recent years to suggest that decisions in the mammalian brain can be seen as arising from multiple, interacting systems (a planning system, a habit system, and a situation-recognition system). The first part of the talk will discuss neurophysiological results from our studies of hippocampus and striatum in the context of decision making. We will present data suggesting a role of the hippocampus in deliberation and of the striatum in action-selection. In the second part of the talk, I will present the implications of these data and this multiple-interacting-system theory of decision-making system for addiction. The decision-making model has multiple potential access points through which it can be driven to make maladaptive choices, particularly choices which entail seeking of certain drugs or behaviors. We will suggest that these "failure points" provides a new view on addiction as a spectrum disorder.