Drug Abuse and Plasticity: Focus on Narp

Jay M. Baraban, M.D., Ph.D.
Professor, Neuroscience & Psychiatry & Behavioral Sciences
Johns Hopkins School of Medicine

Research Summary

A major goal of drug abuse research is to identify the synaptic mechanisms mediating long-term behavioral changes induced by drugs of abuse. In light of studies implicating AMPA receptor trafficking and immediate early genes (IEGs) in synaptic plasticity, we have focused on examining the role of Narp, a secreted IEG product that binds to the extracellular domain of AMPA receptors, in behavioral responses to drugs of abuse. These studies have demonstrated that Narp is enriched in the limbic system and that Narp deletion elicits selective defects in re-calibrating the “reward value” of external stimuli, a key function of the limbic system that regulates drug craving. Accordingly, individual alterations in Narp expression or release may impact susceptibility to drug abuse or other behavioral disorders linked to limbic system dysfunction.

Recent Publications

