

Summary of Research Program:

Addiction is a very complex condition with few currently available treatments. While addiction to drugs of abuse receives significant interest from the scientific community, addiction to non-drug reinforcers, an important cause of the current obesity epidemic is relatively less studied. A critical problem in the treatment of both drug and food addiction is the high rate of relapse to drugs of abuse, or to non-drug reinforcers. The neurochemical events that underlie relapse are quite distinct than aberrations that disrupt ongoing drug/food intake. The precise mechanisms that contribute to relapse to drugs of abuse and non-drug reinforcers are largely not understood. Relapse in humans generally occurs after exposure to the reinforcer after a period of abstinence, exposure to environmental cues associated with use of the reinforcer, or by exposure to stressful situations. In my research program, we use complex rat behavioral models to mimic the phenomenon of relapse in rodents and study the neurocircuitry and neurochemical mechanisms that underlie this condition.

As stated above, we use a range of complex behavioral models to mimic drug/food taking or seeking behavior in conjunction with neuropharmacological or virus-mediated gene transfer techniques to target specific brain regions/receptors etc. We also use engineered pharmacosynthetic tools (DREADD's) to modulate G-protein coupled signaling in various brain regions and study the effect of these manipulations on behavior. We have recently implemented intersectional viral vector technologies to study the role of defined neural circuits during complex behavioral tasks.



Sunila Nair, PhD

[Faculty Profile](#)