Alcohol use disorder is a global health issue with dire social and economic costs, understanding the neuronal pathways and its effect on neurotransmitter-signaling systems, and how they are altered, will help to design new gene targeting drugs to suppress alcohol addiction and alleviate withdrawal symptoms.

Biological question: My aim is to investigate the role of dopamine receptors during different forms of relapses during alcohol recovery period.

Research model

To study the activity across the dopamine system, we will visualize dopamine release using the GPCR indicator dLight on rats which will be trained, and tested.

Testing procedure

Laboratories animals will be Th-Cre rats and will be plugged with dLight fiber optometry using also a vendor synapse acquisition and recording software platform[[1]](#footnote-1).

They will be placed in a chamber with two holes located on the wall of the chambers. Activating one dispenser extinguished and blue light, and triggers a syringe pump which stops the light and delivers alcohol and the other one is deprogrammed. The rats will be trained and tested following a context induced reinstatement procedure:

* Rats are initially trained in the context where the active nose dispenses alcohol
* Then the rats are trained in an extinction context where the same nose doesn’t deliver alcohol
* Lastly, the rats are tested, self-controlling the nose which first will deliver alcohol reward and then in a context in which the same nose stops delivering alcohol

GPCR-Based Dopamine Sensors—A Detailed Guide to Inform Sensor Choice for In Vivo Imaging

**REAL TIME MONITORING  
OF NEUROMODULATORS IN BEHAVING ANIMALS USING GENETICALLY ENCODED INDICATORS**

1. From Tucker-Davis or Thor Lab [↑](#footnote-ref-1)