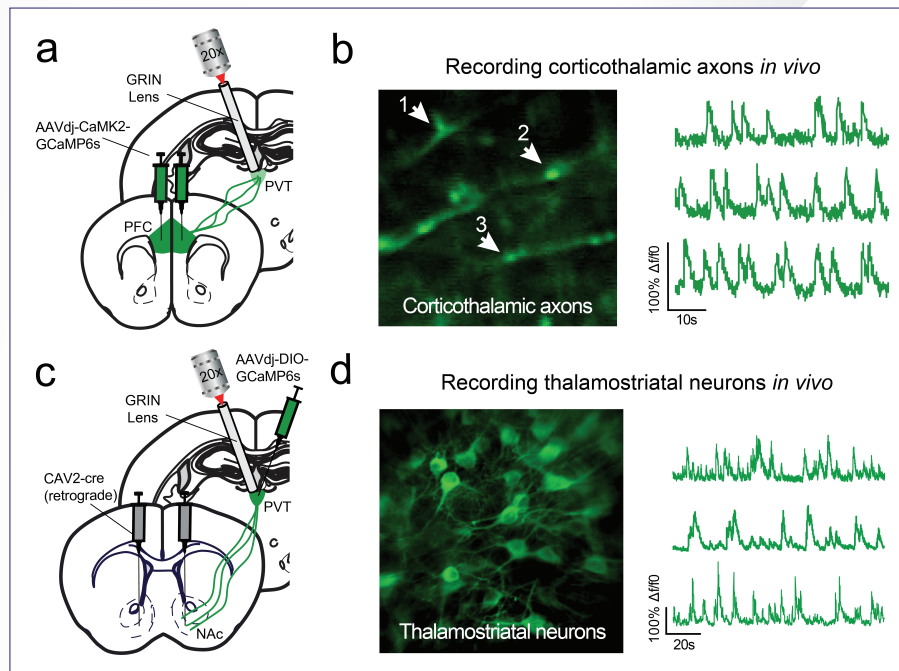# Two-photon calcium imaging of neural circuits in the paraventricular thalamus during appetitive learning.

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The paraventricular nucleus of the midline dorsal thalamus (PVT) is innervated by cortical and subcortical structures that underlie appetitive learning and reward seeking, such as prelimbic cortex (PLc) and lateral hypothalamus (LH). Activation of PVT neurons that project to the nucleus accumbens (PVT-NAc) can modify consummatory behaviors, although how PVT-NAc neurons integrate signals from multiple inputs is unknown. Using patch-clamp electrophysiology and optogenetics, we show that mouse PVT-NAc neurons receive glutamatergic input from PLc neurons, and GABAergic input from LH neurons. Next, using two-photon calcium imaging to monitor the activity of afferent axons and PVT-NAc neurons, we show that PLc, but not LH, inputs to PVT acquire inhibitory responses to reward-predictive stimuli across the course of appetitive learning, consistent with downstream inhibitory cue encoding in PVT-NAc neurons.

Friday, December 1st, 4pm

Hess Seminar - Room B

WINE and CHEESE reception
5-7pm, Hess, 9th Flr.

Icahn School of Medicine at Mount Sinai

#MSNseminars