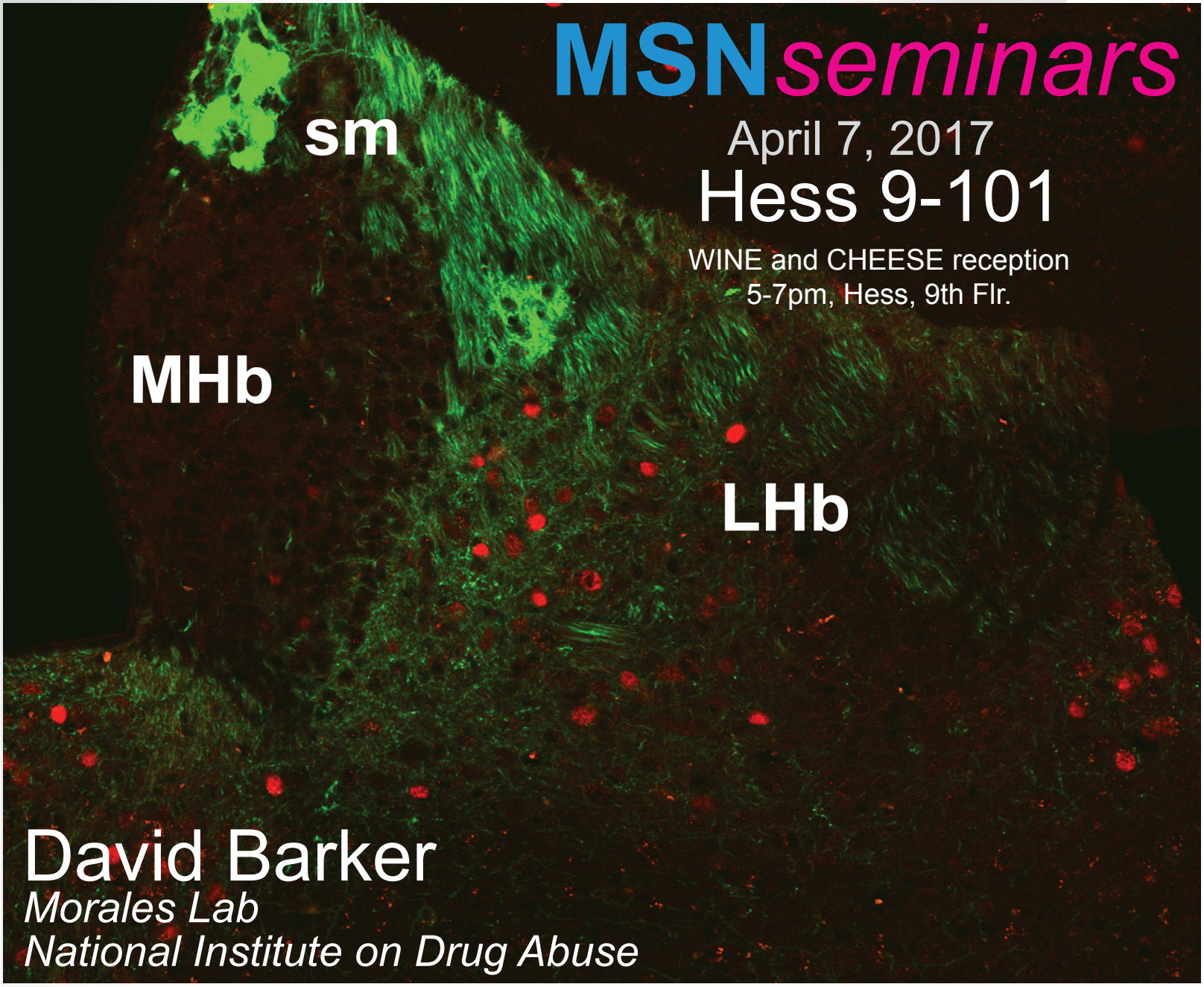

MSNseminars

April 7, 2017

Hess 9-101

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

David Barker

Morales Lab
National Institute on Drug Abuse

The lateral habenula (LHb) serves as a hub for cognitive and limbic processing and plays critical roles in addiction and depression. A major, yet previously uncharacterized input to the LHb is derived from the basal forebrain. Here, by retrograde tracing and phenotypic characterization, we show that basal forebrain inputs to the LHb originate in the lateral preoptic area (LPO) and that this preoptohabenular pathway is comprised of a major glutamatergic projection and a minor GABAergic projection. By confocal and electron microscopy, we demonstrate that preoptohabenular glutamate and GABA neurons each have a distinct synaptic innervation to the LHb that supports divergent functional roles: optogenetic activation of preoptohabenular glutamate input drives aversion while activation of preoptohabenular GABA input drives reward. We propose the preoptohabenular pathway as a bivalent integrator of limbic information and a novel region of interest for studies of addiction, depression, or other LHb-related psychopathologies.

Icahn School of Medicine at Mount Sinai

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