



VirginiaTech®

School of Neuroscience

Faculty Candidate

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**“Losing Your Inhibition: GABAergic
Plasticity in Emotional Learning”**

February 21, 2017
3:30pm – 4:30pm
Kelly Hall 310



Fear and anxiety disorders, such as posttraumatic stress disorder, are the most common form of mental illness in the United States. By investigating the mechanisms by which fear memories are stored, we may uncover novel therapeutic avenues to prevent preservative fear and anxiety. Plasticity of discrete neural networks onto excitatory principal neurons in the basolateral amygdala underlies the acquisition and maintenance of fear memory, but the contribution of specific inhibitory microcircuits to stimulus gating and experience-dependent plasticity in this system remains poorly understood. I discovered a sparse, yet potent, subset of parvalbumin interneurons (PV-INs) that are morphologically and physiologically primed to gate afferent pathways conveying sensory stimuli during fear learning through feedforward inhibition onto amygdala principal cells. This PV-IN network was the target of extensive and persistent plasticity that disinhibited the amygdala after aversive learning, and enhancing PV-IN function attenuated expression of fear. Future work will explore novel inhibitory circuits for sex differences in fear and anxiety disorder-related behavior, as women are disproportionately affected by these illnesses.

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