In Person Seminar: Adolescent Alcohol, Behavioral Flexibility, and Excitatory:Inhibitory Balance in Control Circuitry

Impaired behavioral flexibility is frequently observed in both animal models of adolescent alcohol exposure and in adults with a history of alcohol and other substance use disorders. Here Dr. Boettiger will show evidence that in adult humans, self-reported binge alcohol exposure during adolescence is associated with two markers of a shift in excitatory:inhibitory (E:I) balance in a key node of executive control, the dorsolateral prefrontal cortex. The first measure is derived from resting-state EEG recording – the slope of the EEG power spectral slope, with a shallower slope linked to adolescent binge alcohol exposure. The second measure is derived from single voxel magnetic resonance spectroscopy measures of GABA and glutamate/glutamine (Glx). These E:I balance measures are in turn associated with laboratory based task measurements of behavioral flexibility, such that shifts towards excitation in the dorsolateral prefrontal cortex are associated with reduced behavioral flexibility.