CLAIRE MELVIN & MORGAN BRIDI, Dept of Neuroscience, West Virginia University, Morgantown, WV, 26506, Effects of Stress on Cortical and Subcortical Circuitry in Two Mouse Models of Autism Spectrum Disorder (ASD).

Autism spectrum disorder (ASD) is a neurodevelopmental condition that includes symptoms of social communication deficits, increased repetitive behaviors, and abnormal reactivity to sensory stimuli. An understudied phenotype in ASD is dysfunction of the HPA axis, and in the activity of stress-related peptide and hormonal signals. Increased stress reactivity has been linked to hyperactivity of the hypothalamus-pituitary-adrenal axis (HPA axis), which is regulated by the paraventricular nucleus (PVN) of the hypothalamus and the medial prefrontal cortex (mPFC). Therefore, I hypothesized that stress-evoked neuronal activity is elevated in the hypothalamic PVN and mPFC in ASD, contributing to stress-related phenotypes. In two established mouse models of ASD, Cntnap2 and BTBR, we sought to quantify the response of PVN and mPFC to acute stressors. One way we have measured activity of the HPA axis is by utilizing *in vivo* fiber photometry in the PVN and mPFC. After injection of a fluorescent calcium indicator and the placement of a fiber-optic cannula, we were able to measure real-time changes in neural activity during exposure to several aversive stimuli. Another way we have measured activity in neural populations *ex vivo* in the PVN and mPFC is by immunohistochemical assay of cFos activation post-stress. We have seen that stressed mouse models of autism have greater cFos activation in the PVN compared to their wildtype controls. Understanding the neural basis of abnormal stress response in mouse models of autism could help explain the observed increased stress reactivity in people with ASD.