**D2 receptor antagonism affects cocaine-induced behavioral sensitization in Japanese quail**

Izzy Neel, Kathryn Greenleaf, Derrick Tonto, and Dr. Karin Gill

Department of Behavioral Neuroscience, Centre College, Danville, KY, 40422

In mammals, sex differences in cocaine-induced locomotor behaviors are well established (Becker & Hu, 2008). Female rats display increased locomotion to cocaine compared to males (Hu & Becker, 2003). This is regulated by estradiol, which agonizes dopaminergic activity within the female brain (Segarra et al., 2010). In female quail, cocaine does not increase locomotion regardless of increased estradiol (Gill et al., 2015). This may be due to the higher D2:D1 dopamine receptor ratio in quail compared to rats (Kleitz et al., 2009). Further studies with nonhuman primates show that greater D2 receptor availability decreases cocaine-seeking behaviors (Nader et al., 2006). This study investigated how the differential expression of D2 receptors in quail affects cocaine-induced locomotion. The overarching hypothesis was that the D2 antagonist eticlopride would dose-dependently enhance locomotor activity to cocaine in both sexes and cause cocaine-induced sensitization in female quail.

Male and female quail were administered eticlopride or vehicle followed by cocaine or vehicle daily for seven days. Quail were then placed in open field chambers, where distance traveled was recorded for 30 minutes. Cocaine-induced sensitization was observed in females pre-treated with 0.03 or 0.05 mg/kg eticlopride but not in cocaine-only females. As predicted for saline pre-treated males, cocaine-induced locomotor activity and sensitization were observed (Gill et al., 2015). Contrary to our hypotheses, eticlopride did not enhance cocaine-induced locomotor activity or produce cocaine-induced sensitization in male quail. Further research is needed to investigate the neuroprotective properties of D2 receptors and potential therapeutic applications for combatting cocaine use disorder.