

Title: The effects of systemic serotonin depletion on sexual preference of male Syrian hamsters (*Mesocricetus auratus*)

Authors: Samantha Bowden, Ashleigh Burns, and Aras Petrusis

Faculty Sponsor: Aras Petrusis, Associate Professor, Neuroscience Institute

Introduction: Depletion of serotonin increases copulatory behavior, and recent studies found that serotonin depletion caused a reversal of male-typical sexual preference in mice (Tsutsui et al., 1993); (Liu et al., 2011). With this information, we depleted serotonin with the drug *p*-Chlorophenylalanine (pCPA) in male Syrian hamsters, a model species to study sexual attraction, and tested their partner preference.

Methods: 24 adult male Syrian hamsters were gonadectomized, given testosterone implants and randomly assigned into 2 injection groups: 500mg/kg pCPA (n=12) or saline (n=12). Four days of injections were followed by three sexual preference tests: odor-cue preference, live stimuli animal preference and a copulatory test. All tests were recorded and scored for behavioral analysis. Following the copulatory test, animals were sacrificed via decapitation, brains were removed and analyzed for serotonin levels using high-performance liquid chromatography.

Expected Results: We predict that the male subject animals injected with pCPA will investigate the male odor or stimuli more than the female odor or stimuli. We expect that pCPA treated males will have a decreased latency and higher frequency of mounting the stimuli male in comparison to the control males.

Conclusion/Discussion: If given these expected results, then serotonin may mediate sexual preference of male Syrian hamsters. Future directions will target site-specific brain areas and test sexual preference.

References:

- Liu, Y., Jiang, Y., Si, Y., Kim, J., Chen, Z., Rao, Y. (2011). Molecular regulation of sexual preference revealed by genetic studies of 5-HT in the brains of male mice. *Nature* 472, 95-99.
- Tsutsui, Y., Shinoda, A., and Kondo, Y. (1993). Facilitation of copulatory behavior by pCPA treatments following stria terminalis transection but not medial amygdala lesion in the male rat. *Physiology and Behavior* 56(3), 603-608.