

AVT and Bromodeoxyuridine cells and aggressive behavior in *Anolis carolinensis*

Anandhi Martin, Leslie Dunham, Walter Wilczynski

Previous work in the Wilczynski lab (Dunham et al., 2014) by Leslie Dunham showed that arginine vasotocin (AVT) played a significant role in aggressive behavior in male anoles lizards. A mirror-pairing test was used to simulate the presence of an aggressor and promote aggressive behavior in the male anoles lizard. Male anoles produce aggressive displays when seeing a mirror. Thirty-two male anoles lizards were separated into two groups: sixteen males paired with a mirror and the remaining sixteen males not paired with a mirror. The behavior of the male anoles lizards were recorded for 20 minutes. Analysis of the recordings confirmed that males exposed to the mirror produced aggressive displays, whereas control animals did not. Brains were removed and sectioned. AVT immunoreactive cells were found in the preoptic area, periventricular preoptic nucleus, paraventricular nucleus/anterior hypothalamus, and the superoptic nucleus. The AVT cell count in male anole lizards paired with a mirror compared to those paired alone was significantly different in the preoptic area. Additional alternate brain slices of the same 32 male anoles lizards were stained with Bromodeoxyuridine (BrdU). BrdU is a well known synthetic nucleoside used in pinpointing proliferated cells in living tissues by functioning as an analog of DNA based thymidine. The BrdU cells of the male anoles lizards paired with a mirror were then compared to the control male anoles lizards. The BrdU cells next to the right and left ventricle of the anoles lizard's brain did not show a significant difference between male anoles paired with a mirror versus control male anoles. Our research showed that there were changes in the AVT cell number but there was no significant difference in BrdU cells when comparing the two groups with two different levels of aggressive experience.