

Project Id	122
Project Title	Seasonal differences in neurogenesis and apoptosis in the song control regions of adult House Finches
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Additional Faculty	
Faculty Department	Biological Sciences
Project Description	<p>Steroid hormones associated with breeding, such as testosterone and estrogen, have profound effects on reproductive behaviors and the parts of the brain that control these behaviors, such as the brain regions controlling singing behavior in songbirds. It is hypothesized that these hormones affect the seasonal growth of these brain regions by decreasing cell death and/or by increasing neurogenesis, however no one has quantified cell death systematically in a free-living songbird species. Furthermore, no one has compared rates of neurogenesis and cell death between male and female songbirds. The goal of this project is to investigate neurogenesis and cell death before breeding, during breeding, and after breeding and between the sexes. At each sampling point, we will collect blood samples to measure circulating hormone levels and will collect brain tissue to measure the sizes of the song control regions and count the number of dying cells and new neurons in these brain regions. Students involved in the project will be involved with all steps of the experimental procedure from capturing the birds and taking blood samples to measuring plasma hormone levels and staining brain tissue to collect data from microscopic images of the stained tissue. One specific goal of the project is to test the use of an in-vivo cell death marker as a means of measuring cell death in the song control regions. This novel technique will be useful in future experiments to investigate effects of steroids on cell death in the brain.</p>
Interdisciplinary Nature Description	<p>This project will involve students from many departments due to the interdisciplinary nature of experiments in Neuroscience. This work promotes collaboration between students and faculty in many departments, including Biology, Biomedical Engineering, Psychology and Animal Science. Within biology, the work encompasses multiple levels of inquiry, from cellular pathways involved with neuroprotection to behavioral ecology.</p>
Links	
Number of Honors Students Requested	2
Applicable Majors	BIO, BMED, PSY, ASCI
desired_res	Attention to detail. Good pipetting skills.
Date Added	2008-10-20 13:14:09
Active	1