FACULTY INTEREST SHEET: A. M. Bailey

A. Neurological Mechanisms of Learning Set Formation

A learning set is a hypothesis that allows an animal to solve two choice discrimination problems. Rendering certain areas of the brain nonfunctional produces impairments in learning set. Which circuits of the brain are used in learning sets? What neurotransmitter systems are critical for the acquisition and retention of learning set? When an animal shows a deficit in learning set, what pharmaceutical agents might alleviate the deficit? The current focus of the lab is the role of Orexin A in aspects of cognition. (See K.Martin SMP; J. Lee SMP; P. Piantadosi SMP)

B. Animal Models of Depression

Synaptic potentiation is greatly enhanced in rats subjected to the chronic unpredictable stressor (CUS) model of depression. Antidepressants are known to alter synaptic activity at the temporoammnic (TA) pathway. My lab is currently working on showing the connections between depressive-like behavior and the TA pathway using a variety of techniques. (see E. Cammarata SMP; L. Hellstern SMP).

C. Animal Models of Parkinson's disease

Parkinson's disease (PD) is a chronic and progressive neurodegenerative disorder characterized by motor impairments, including slowness in movement and lack of movement. Clinical diagnosis of PD follows a greater than 50% loss of dopaminergic concentrations. However, prior to this level of loss, a progression of behavioral changes may occur prior to clinical diagnosis. Earlier indicators of neurodegenerative disease may increase prognosis and quality of life. My lab is currently investigating behavioral changes in an environmentally-induced animal model of PD. A clear time-course of both behavioral and neurological changes in the animal model of PD can lead to future investigations into treatments and neuroprotective mechanisms for humans at a high risk of developing PD or showing early preclinical signs of disease. (see L. Fomum-Mugri SMP; see J. Kallavang SMP; see C. Parr SMP)

D. Animal Learning and Behavior

There are an endless number of animal learning and behavior projects that could be done. Some examples of previous projects include (a) examination of neurological, cognitive, and social behavior in dolphins, (b) mating behavior of captive seahorses, (c) behavioral differences in wild vs. semi-domestic vervet monkeys. (see N. Little SMP; see H. Lobkowitz SMP).