

TITLE: The contribution of declines in functional connectivity to cognitive aging

FACULTY MENTOR NAME, EMAIL PHONE NUMBER

Sara N. Burke, Ph.D.

burkes@ufl.edu

294-4979

FACULTY MENTOR DEPARTMENT

Neuroscience

RESEARCH PROJECT DESCRIPTION

By the year 2020 the number of Americans over the age of 65 is projected to reach 55 million. It is therefore imperative that the ability of these individuals to live independently is preserved for reasons of personal dignity as well as the financial and public-health consequences that result from the necessity of long-term care. Unfortunately, a large proportion of elderly people experience memory decline that interferes with their quality of life. Understanding the neurobiology of memory impairments in advanced age, however, presents a significant problem, as memory processes are distributed throughout the brain and a fundamental gap exists in our understanding of how these structures interact. The primary objective of this NIH-funded project is to identify age-associated changes in medial temporal lobe-prefrontal functional connectivity that contribute to memory deficits. Students involved in this research program will use state-of-the-art methodologies in neurophysiology, anatomy and behavioral analysis to test the central hypothesis that age-related memory impairments manifest from dysfunction in cross-regional interactions among prefrontal and medial temporal lobe circuits. Our rationale is that by elucidating how aging influences systems-level dynamics, we will be better positioned to develop interventions that broadly improve cognition. The significance of successful completion of these experiments will be to provide an unprecedented understanding of the association between functional connectivity and cognition that will enable future interventional studies aimed at restoring memory network interactions in the context of aging and neurodegeneration.