Faculty mentors: Anthony Wagner

Research supervisor(s):
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Project topic(s): Examining locus coeruleus integrity in healthy older adults

Brief description of scientific issues:
The locus coeruleus (LC), a region of dopaminergic modulation, is highly vulnerable in aging, and has been recently implicated in age-related memory decline. One outstanding question is how the integrity of the locus coeruleus may be related to early Alzheimer's disease pathology. Cognitively healthy older adults with sub-threshold levels of Alzheimer's disease pathology have been demonstrated to show early memory decline, suggesting that Alzheimer's disease pathology may be affecting cognitive function decades before clinical symptoms manifest. The current proposal will examine the integrity of the locus coeruleus in relationship to Alzheimer's disease biomarkers in a healthy older adult sample. The proposed project will utilize previously collected high-resolution structural MRI data to analyze the LC, identify variability in older adults’ LC integrity, and examine the relationship between LC integrity, cognitive decline and Alzheimer's disease pathology.

Skills required:
Basic to intermediate Python proficiency.

Skills to be learned:
MRI structural segmentation and basic statistical analyses.

Hours: Full time