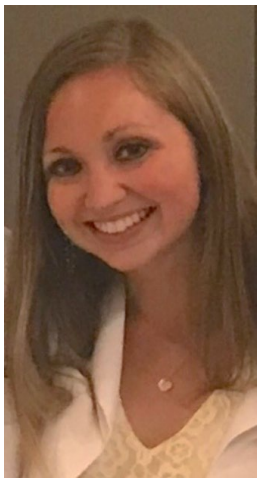
MEDICAL NEUROSCIENCE GRADUATE PROGRAM

announces the final public examination of

Cecily Gwinn Swinford

for the degree of

Doctor of Philosophy



January 14, 2022
1:00 p.m.
Goodman Hall Auditorium
and Zoom

SCHOOL OF MEDICINE
STARK NEUROSCIENCES RESEARCH INSTITUTE

VITA

Education

Candidate for Doctor of Philosophy Medical Neuroscience, Indiana University School of Medicine, 2022

B.S. Neuroscience and Behavior, University of Notre Dame, 2016

Awards and Honors

IU Graduate School Travel Fellowship Award 2019

IUPUI University Fellow 2016-2017

SELECTED PUBLICATIONS

- Swinford CG, Risacher SL, Charil A, Schwarz AJ, and AJ Saykin. Memory concerns in the early Alzheimer's disease prodrome: Regional association with tau deposition. Alzheimers Dement (Amst) 2018; 10: 322-331.
- Swinford CG, et al. 2021. Hypertension and Race Affect Cerebral Blood Flow and Cognition in Older Adults without Dementia. Alzheimer's Association International Conference.
- Swinford CG, et al. 2020. Plasma Tau is Negatively Correlated with Frontal Lobe CBF in Hypertensive Adults on the AD Spectrum. Alzheimer's Association International Conference.
- Swinford CG, et al. 2019. Regional Association of Cerebral Blood Flow with Amyloid and Tau in Alzheimer's Disease. Alzheimer's Association International Conference, Los Angeles, CA.
- Swinford CG, et al. 2019. Regional Associations of Cerebral Blood Flow with Amyloid, Tau and NfL in Alzheimer's Disease. Society for Neuroscience, Indianapolis, IN.
- Alzheimer Disease Tau PET Subtypes in the ADNI Sample. 2018. Alzheimer's Association International Conference, Chicago, IL.

RESEARCH SUMMARY

Over 5 million older adults have Alzheimer's disease (AD) in the US, and this number is projected to double by 2050. Clinical trials of potential pharmacological treatments for AD have largely shown that once cognitive decline has occurred, targeting AD pathology in the brain does not improve cognition. Therefore, it is likely that the most effective treatments for AD will need to be administered before cognitive symptoms occur, necessitating a biomarker for the early, preclinical stages of AD. Cerebral blood flow (CBF) is a promising potential early biomarker for AD. CBF is decreased in individuals with AD compared to normally aging counterparts, and it has been shown that CBF is altered in mild cognitive impairment (MCI) and even earlier stages. Altered CBF may occur even before aggregation of amyloid and tau. In addition, CBF can be measured using arterial spin labeled (ASL) MRI, a noninvasive imaging technique that can be safely repeated over time to track prognosis or treatment efficacy. I characterized CBF measured with ASL MRI in a sample of older adults who are participants at the Indiana Alzheimer's Disease Research Center and in those from the Alzheimer's Disease Neuroimaging Initiative. I found that CBF differs according to participant age, sex, and race/ethnicity. I also found that common AD risk factors hypertension the presence of the *APOEε4* allele are associated with altered CBF. Finally, I assessed the relationship between CBF and AD pathological protein aggregates amyloid beta and tau quantified by PET imaging, as well as the effects of demographic and clinical risk factors on these relationships. The complex temporal and spatial patterns of altered CBF over the course of AD, as well as the relationships between CBF and AD-specific and -nonspecific factors, will be critical to elucidate in order for CBF to be an effective early biomarker of AD.

DISSERTATION COMMITTEE

Shannon L. Risacher, Ph.D., Chair

Andrew J. Saykin, Psy.D., Advisor

Liana G. Apostolova, M.D.

Yu-Chien Wu, M.D., Ph.D.

Sujuan Gao, Ph.D.