

Cognitive and Neural Moderators of Longitudinal Decline in Frontotemporal Degeneration

<https://www.neurodegenerationresearch.eu/survey/cognitive-and-neural-moderators-of-longitudinal-decline-in-frontotemporal-degeneration/>

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USA

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Cognitive and Neural Moderators of Longitudinal Decline in Frontotemporal Degeneration

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1

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Research Abstract

Project Summary This K99/R00 award will support my development as an independent investigator with a research program designing individualized interventions to slow cognitive decline in persons with neurodegenerative disease that are based on underlying neurobiological mechanisms. **Candidate:** My clinical experience as a nurse practitioner and research experience in cognitive neuroscience ideally position me to achieve my career goal of becoming an independent investigator with expertise in the cognitive and biologic basis of neurodegenerative conditions such as Frontotemporal Degeneration (FTD). I had strong neuroscience training at the University of Pennsylvania, where I was supported by an NRSA Predoctoral Award to investigate the neural basis of apathy in behavioral variant Frontotemporal Degeneration (bvFTD). I was subsequently awarded an Individual NRSA Postdoctoral Fellowship to investigate how lifestyle factors contribute to longitudinal worsening in apathy. In this research, I have gained experience with longitudinal design and learned about additional MRI measures such as diffusion tensor imaging of white matter tracts. I have become increasingly interested in longitudinal cognitive decline and how lifestyle and biologic factors contribute to the variable rate of decline in bvFTD. In this proposal, I plan to gain the necessary expertise in the biological basis for symptom progression in neurodegenerative disease in order to design interventions for bvFTD. I will pursue training in intervention design and methods to prepare for a subsequent R01 where I will use the knowledge gained from this K99/R00 to design and test cognitive interventions that boost neural compensation to slow decline in bvFTD. **Environment:** This award will be conducted at The Pennsylvania State University (PSU), College of Nursing and the University of Pennsylvania, Frontotemporal Degeneration Center (UPenn FTDC). PSU and UPenn are leading centers for the study of neurodegenerative disease and I have strong institutional support from both universities. PSU is an exceptional environment that has expert centers for aging research and methodology including, non-pharmacological intervention research for individuals with neurodegenerative disease. My mentor, Dr. Donna Fick, is a nurse researcher with expertise in cognitive decline and she has a productive research program developing tailored interventions for persons with delirium and dementia based on cognitive reserve theory. Given my future goal of developing cognitive interventions, PSU is the ideal environment to pursue training in intervention methods. The UPenn FTDC is a leading center for biologic research in neurodegenerative disease including expert centers for genetic and neuroimaging research and relevant clinical research laboratories. The UPenn FTDC maintains one of the largest neurodegenerative disease datasets that includes a diverse range of modalities such as MRI, diffusion tensor imaging, arterial spin labeling, genetics, cerebrospinal and neuropsychological testing. My co-mentor, Dr. Murray Grossman, is the Director of the UPenn FTDC and thus will facilitate my development as an independent investigator by providing access to this unique dataset as well as laboratory resources and collaborations with other neuroimaging and genetic experts at UPenn. **Training:** I will develop my expertise in the cognitive and neural basis of longitudinal decline in neurodegenerative disease with the support of my mentor, Dr. Donna Fick, and my co-mentor, Dr. Murray Grossman. Specifically, I will

engage in training related to longitudinal statistical methods, genetics, advanced neuroimaging skills and intervention design and methods. Each of these training modalities will be supported by complementary formal coursework, participation in seminars, attendance of conferences, and regularly scheduled meetings with my mentorship team. Research: bvFTD is a common cause of young-onset neurodegenerative disease and life expectancy is approximately 7 years, but this is highly variable. Recent studies have demonstrated the moderating effects of lifestyle and genetic factors on the clinical course of bvFTD. Neuroanatomic factors may also play a role in neural implementation of compensatory function, such as supporting alternate brain networks for optimal performance. The overall research aim of this proposal is to better understand the moderating effects of lifestyle and biologic factors on longitudinal decline in young-onset dementia, and an account of the mechanisms by which this occurs. This knowledge is crucial for the design of cognitive interventions that take advantage of compensatory mechanisms to enhance cognitive function and slow decline in neurodegenerative disease.

Further information available at:

Types:

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United States of America

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N/A

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2016

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