Job Title:

Postdoctoral Research Fellow

Principal Investigator:

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Description:

A postdoctoral position is available in the Nehrke (https://www.nehrkelab.com/) and Johnson (https://www.urmc.rochester.edu/labs/gail-johnson.aspx) laboratories at the University of Rochester School of Medicine and Dentistry to study how site-specific, Alzheimer's disease (AD)-relevant posttranslational modifications (PTMs) of tau exert toxic effects through their impact on mitochondrial quality control pathways. This position is funded through a multi-PI R01 NIH grant. This collaborative project utilizes both *C. elegans* and mammalian model systems to: (1) determine the impact of AD relevant tau PTMs on mitochondrial stress responses and how this influences healthy aging of neurons, (2) test whether tau with AD relevant PTMs alters mitophagy and whether changes in mitophagy contribute to phenotypic severity, (3) address whether enhancing mitochondrial quality control pathways is a viable therapeutic avenue. This will be accomplished by using optogenetics to reversibly induce mitophagy or to accelerate lysosomal acidification in model systems expressing AD relevant forms of tau followed by neuronal health measures, and (4) address whether age-dependent neurodegeneration or changes in mitochondrial quality control pathways persist after toxic tau clearance, we will tag the transgenic tau proteins with an auxin-inducible degron (AID). These studies have already resulted in a strong publication (PMID: 33168053). It is expected that the successful applicant will primarily be involved in extending results from the *C. elegans* model system into mammalian primary neuron systems. In the future, our studies will also include the use of mouse models to fully understand how tau with AD-relevant PTMs impact mitochondrial function and neuron health in the context of aging.

Requirements:

Candidates must hold a PhD that was awarded less than 3 years ago. A PhD in neuroscience or a relevant field is preferable, and the candidate must be eligible for employment in the U.S. The candidate should have experience with primary mammalian neuron culture model systems, basic molecular biology methodologies and microscopy imaging techniques; experience with *C. elegans* as a model system would be a plus.