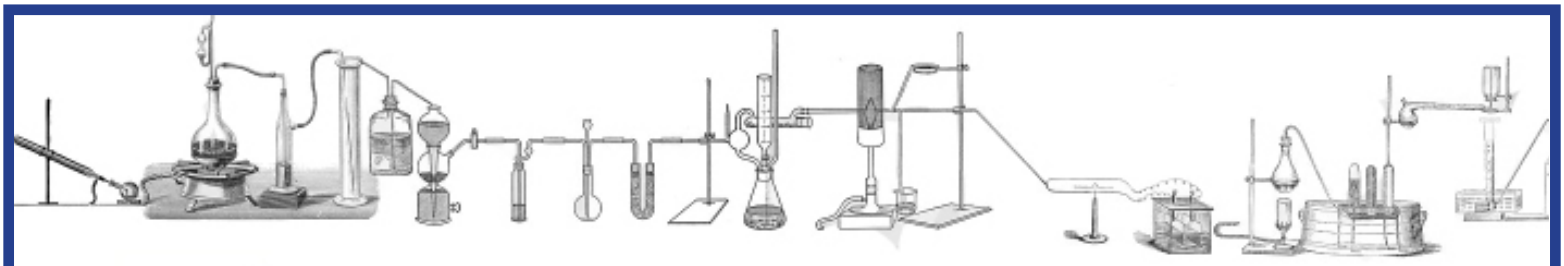

Seattle Institute for Biomedical and Clinical Research

October - December 2024

Spotlight Feature

SARAH BENBOW, PHD

Sarah Benbow, PhD, is a Research Scientist at the VA Puget Sound Health Care System (VA Puget Sound) and Research Assistant Professor in the Department of Medicine, Division of Gerontology and Geriatric Medicine at the University of Washington. She received her PhD in Molecular, Cellular and Developmental Biology from the University of California Santa Barbara where she studied the cytoskeletal contributions to the neurodegenerative conditions of chemotherapy induced peripheral neuropathy and tau proteinopathies such as Alzheimer's disease (AD). Seeking to expand her knowledge into the genetics of neurodegenerative disease and learn to leverage *C. elegans*, she completed postdoctoral training at the VA Puget Sound under the mentorship of Dr. Brian Kraemer where she received T32 funding to create and characterize a *C. elegans* model for AD. During her postdoc she received K99/R00 Career Development award from the National Institute on Aging (NIA) to investigate genetic mutations in alpha-tubulin genes that suppress toxic tau-phenotypes in *C. elegans* and mouse models of tauopathy.

Dr. Benbow's research program centers on understanding the molecular mechanisms that underly age-related neurodegenerative diseases, *with particular focus on the role the microtubule cytoskeleton plays* in neurodysfunction, neurodegeneration and disease progression. Through her K99 research, she characterized multiple mutations in alpha-tubulin genes that rescue neurotoxicity resulting from the accumulation of tau protein. Tau is a potent regulator of microtubule function in neurons and tau-microtubule are critically altered during neuronal injury and disease. Now in the R00 phase, her lab employs techniques using whole animal models, tissue, primary cell culture, and biochemical strategies to elucidate how the mutations in alpha-tubulins can confer resistance to the effects of toxic tau accumulation and improve neuron function and survival. A molecular mechanistic understanding of process breakdown leading to disease progression as well as understanding the mechanisms of disease resilience will be critical in developing multipronged therapeutic approaches that will likely be necessary to combat these complex conditions.

Additionally, the Benbow lab studies the genetic contribution to the risk of developing AD. Specifically, the lab identifies *C. elegans* genes homologous to genome-wide association studies (GWAS) identified human genes linked to increased risk for the development of AD. By testing these genes for their ability to modify toxic tau phenotypes in a *C. elegans* model for tauopathy they aim to identify novel disease modifying alleles. Overall, the research goals of the Benbow lab aim to further the understanding of the molecular events and processes that contribute to AD progression and help develop new therapeutic strategies to treat age-related neurodegenerative proteinopathies.

HR INFORMATION

FLU SHOTS: Flu vaccination forms are due to VA Employee Occupational Health (EOH) by **November 30th** to be in compliance with VHA's seasonal influenza vaccination program. SIBCR HR will be sending an email to all SIBCR staff this week with instructions for how and where to submit proof of vaccination.

HOLIDAY AND VACATION HOURS INFO: Reminder that Indigenous Peoples' Day/Columbus Day is not a holiday for SIBCR employees however, the day after Thanksgiving is a holiday. Please note that only 160 vacation hours are allowed to carry over to the next calendar year. The personal leave holiday does not carry over so please use it by the end of the year. Thank you!