

Center for Research and Training in the Sciences (UTSA) ,
Institute for Integration of Medicine & Science (UTHSA) ,
Translational Science Graduate Program , &
UTSA-UTHSA Joint Graduate Program in Biomedical Engineering
invite you to attend

STRECH

Seminars in Translational Research

Presents

Transposable Element Activation in Alzheimer's Disease and Related Tauopathies: From Bench to Bedside

Deposition of tau protein aggregates in the brain of affected individuals is a defining feature of neurodegenerative "tauopathies," including Alzheimer's disease. Studies of human brain tissue and various model systems of tauopathy report that toxic forms of tau protein negatively affect nuclear and genomic architecture. We have identified pathogenic tau-induced heterochromatin decondensation, piwi-interacting RNA (piRNA) depletion and consequent retrotransposon activation as a causal mediator of neurodegeneration. While retrotransposons are most well-known for their mutagenic potential, retrotransposon-induced toxicity can also arise from 1) retrotransposon RNA, 2) retrotransposon-encoded protein, 3) retrotransposon-derived double stranded RNA, and 4) episomal retrotransposon cDNA. Using tau transgenic *Drosophila*, tau transgenic mice, and brain tissue from patients with Alzheimer's disease and progressive supranuclear palsy, a "primary" tauopathy, we find evidence of tau-induced retrotransposon activation at multiple points in the retrotransposon lifecycle. A current focus of the lab is on retrotransposon-mediated neuroinflammation in the context of tauopathy, as well as Nanopore-based identification of novel somatic and germline transposable element insertions associated with human Alzheimer's disease. In addition, we have recently initiated a phase IIa clinical trial, Antiretroviral Therapy for Patients with Alzheimer's Disease (ART-AD) that is based on our studies.



Bess Frost, PhD

Associate Professor

Bartell Zachry Professor for Research in Neurodegenerative Diseases
Sam & Ann Barshop Institute for Longevity & Aging Studies
Glenn Biggs Institute for Alzheimer's & Neurodegenerative Disorders
Department of Cell Systems and Anatomy
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**Friday, September 16, 2022
9:00AM - 10:00AM**

For information on participating in the
current monthly seminar, please head to
<https://www.utsa.edu/crts/strech/>
or scan the QR code below.

