Joint Department of

BIOMEDICAL ENGINEERING

UNC CHAPEL HILL | NC STATE UNIVERSITY

Coulter Seminar Series Presents

"Deep phenotyping reveals regulators and outcomes of aging and stress in C. elegans"

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Adriana San Miguel is an Assistant Professor in the Department of Chemical & Biomolecular Engineering at NC State University. She is part of the Synthetic and Systems Biology Chancellor´s Faculty Excellence Program. Her work combines engineering and biology and focuses on developing tools to perform high-throughput automated experiments with the model organism C. elegans to better understand aging, stress, and neurodegeneration. Adriana is originally from Mexico. She received BS in Chemical Engineering at the Monterrey Institute of Technology in 2007 and worked in the water treatment and cement industries. She obtained a PhD in Chemical Engineering Georgia Tech in 2011. She trained as a Postdoctoral Fellow with Hang Lu at Georgia Tech and with Marc Vidal at the Dana-Farber Cancer Institute.

ABSTRACT

The model organism C. elegans has been fundamental for our current understanding of aging, neurogenesis, behavior, and the function of neural circuits. Being transparent and amenable to genetic manipulation, it enables analysis of biological processes at the tissue, cell, or subcellular compartment level in live individuals through fluorescence imaging. Current approaches for imaging and analysis, however, suffer from low specificity and throughput. To tackle this challenge, we take advantage of computer vision for high-content analysis of fluorescence based readouts and CRISPR/Cas9 genetic engineering to label endogenous proteins. In this talk, I will discuss how deep learning has revealed that aging and stress induce distinct neurodegenerative patterns, and the predictive power of the key aging transcription factor DAF-16/FOXO as a determinant of lifespan through lifelong analysis of endogenous protein levels and localization.

Friday, January 22nd
12:00 Noon

Seminar will be presented virtually via Zoom:
https://go.unc.edu/j5W3E