NATHAN SHOCK CENTERS OF EXCELLENCE IN THE BASIC BIOLOGY OF AGING

PILOT AWARDEE SPOTLIGHT

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A bioinformatics pilot study to use transcriptional and epigenetic variation to align ages across the lifespan of model systems

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How did you become interested in aging?
Our work is focused on developing translational tools for the biomedical community. My collaborators and I developed "Translating Time", which is an online resource (www.translatingtime.org) that enables users to easily find corresponding ages across humans and 19 model systems. The resource mostly extends up to 2 years of age in humans and their equivalent in other model systems. We aimed to extend the translating time model to span the lifespan, but equating corresponding ages during aging is a challenge. I grew increasingly interested in the comparative biology of aging in the process of translating ages at late stages of life in different species.

Briefly describe your project in non-scientific terms. What questions are you trying to answer?
We are focused on equating corresponding ages across species. For examples, we are working on how old a cat is in human days or how old a chimpanzee is in human days. We have proved the effectiveness of our approach to translate ages in recent peer-reviewed articles. Moving forward, we are working to identifying best suited model systems of aging.

What previous research or experience informed the development of this proposal?
I have a long-term commitment towards the progress of this project, and I have accrued many experiences that have informed my current work. As a postdoctoral fellow, I worked with Drs. Barbara Finlay and Clancy at Cornell University where we developed the Translating Time tool. I then trained across disciplines in statistical genetics at Cornell and neuroimaging at Boston Children's Hospital with the goal of integrating across scales of organization to translate ages across species. I was excited to start my own laboratory (originally at Delaware State University) to cut across scales to translate ages across species.

What's exciting about your project's potential impact?
Our Translating Time (www.translatingtime.org) is a web resource that enables researchers to easily find corresponding ages across species. It is a useful tool because we need to integrate information across multiple species to tackle complicated problems in biomedical sciences. Our tool enables researchers to integrate complicated information to address long-standing problems in biomedical sciences.

If your project is successful, what is the next step?
Our project is already a success!

How has support from and collaboration with the Nathan Shock Centers helped further this project and/or your research overall?
The project was supported by the bioinformatics core. The core aligned reads to the genome of multiple species. We were then able to use these RNA sequencing and ATAC sequencing data to perform downstream analyses, and we are generating cross-species age alignments for Translating Time. This work is still ongoing.