NATHAN SHOCK CENTERS OF EXCELLENCE IN THE BASIC BIOLOGY OF AGING

PILOT AWARDEE SPOTLIGHT

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2024 UAB NSC Pilot Awardee

Senescence as a link to a chronic bioenergetic dysfunction in the critical illness-induced physical function loss and the effect of age

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How did you become interested in aging?
During my PhD in Rotterdam, The Netherlands, I conducted research in exercise physiology in young healthy adults. After visiting the Institute on Aging at the University of Florida, I realized that aging humans with lower physiological reserves may serve as a research model, where we can make a bigger difference in preserving functional independence. This interest has gone even farther to study diseased older populations where there is more to improve.

Briefly describe your project in non-scientific terms. What questions are you trying to answer?
Very sick older adults lose muscle mass at greater rate than healthy older adults. Cell senescence is a process when cells do not divide properly and become toxic to many tissues in the body. Senescence is an important process that contributes to aging and disease. We planned to collect muscle tissue from very sick older people and explore if senescence makes their muscle mass decline quicker in the hospital and after their discharge.

What previous research or experience informed the development of this proposal?
Studying long-term muscle loss in aging is challenging due to gradual loss over many years. Disease populations like critical illness with bedrest, inflammation and catabolism provide a platform to study age-related muscle loss in a snapshot.

What's exciting about your project's potential impact?
We may find potential transducers and therapeutic targets of muscle wasting in severe disease that may provide new applications to age-related muscle loss.

If your project is successful, what is the next step?
The next step will be exploring these questions in a larger population and testing identified therapeutics such as senolytics to reduce muscle wasting in response to critical illness.

How has support from and collaboration with the Nathan Shock Centers helped further this project and/or your research overall?
Nathan Shock Center's core expertise was very important in designing and conducting this research. Additionally, NSC seminars feature excellent speakers who are inspirational for the current and future research.