**Title:** Manipulating Cellular Stress Responses to Improve Healthspan
**Presenter:** Matthew Soldano, MiraCosta College
**Mentor:** Nicholas Geskakis

Simple lifestyle changes have the potential to increase healthspan. For example, caloric restriction increases longevity in many experimental animals in part by reducing cellular stresses. The endoplasmic reticulum (ER) is an important cellular structure that is responsible for maintaining essential functions and responds to excessive cellular stress via the ER stress response. Reducing ER stress is associated with alleviating metabolic disorders and diseases such as heart disease and diabetes. Also, the ER stress response has been directly related to healthspan in animals studied. In roundworms, which are an important model organism, there is evidence that genetic manipulations have the ability to resist ER stress and increase healthspan. I propose to do similar genetic manipulations in the mouse to determine if a similar result would appear in mammals. The mouse is not only amenable to genetic manipulation but is also remarkably similar to humans in its genetics and physiology. The two goals of the experiments I am proposing are: to show that improving the resistance to ER stress in mammals also improves healthspan, and to understand the mechanism by which ER stress affects healthspan. Successful completion of these experiments will not only lead to a greater understanding of the factors affecting longevity in mammals but will also provide new avenues in developing pharmaceutical and lifestyle interventions that could improve healthspan in humans.

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