Walter Lab

The Walter lab studies how cells maintain the quality of their proteins and organelles during homeostasis and stress. We investigate the machinery governing protein synthesis, folding, and targeting, as well as the mechanisms by which organelles enforce quality control over their proteomes, communicate with one another, and regulate their abundance. Because the decline of these quality control systems is a hallmark of aging and many age-related diseases, including neurodegenerative disorders, a central goal is to understand how rewiring of these processes drives, or protects against disease progression. Combining structural, biochemical, genetic, and in vivo approaches, our lab pursues fundamental discoveries in cell biology with direct relevance to the biology of aging. The two available SPARC projects will focus on understanding how cellular stress response pathways and quality control systems become dysfunctional and contribute to the pathology of Alzheimer's Disease. Basic research on the fundamental principles underlying the loss of cellular homeostasis can provide a mechanistic basis for the development of therapeutics to restore cell resilience preemptively and in pathological conditions, such as Alzheimer's.