Thursday, April 25 - 5:30 p.m.
RESEARCH TALK
The Bluffs Room, The Union
If you only have time to attend one talk on autophagy today, this is the one

Macroautophagy/autophagy is a process of cellular self-digestion that plays a critical role in cytoprotective responses to stress. Defects in autophagy in humans are associated with a wide range of pathologies including cancer, neurodegeneration, diabetes, and heart disease. Designing effective therapies for these pathophysiological conditions will require a greater understanding of the mechanism and regulation of autophagy. The overall pathway and the protein components of autophagy are highly conserved from yeast to human; over 40 autophagy-related (ATG) genes have been identified in yeast, and homologs exist for many of them in more complex eukaryotes. Many questions concerning the molecular basis of the autophagy pathway remain unanswered. For example, how is the initial sequestering compartment, the phagophore, nucleated? What is the origin of the membrane used for expansion of the phagophore to form the autophagosome? What are the roles of the various Atg proteins in the process of autophagosome biogenesis?

We have been analyzing the regulation of autophagy in Saccharomyces cerevisiae. Two of the central autophagy-related proteins are Atg8 and Atg9: The amount of Atg8 determines the size of autophagosomes, whereas the Atg9 level controls the rate of autophagosome formation; therefore, we are interested in the transcriptional and post-transcriptional processes that regulate their function. The ATG8 gene in particular is controlled through a complex network that involves negative regulation through several distinct mechanisms; this ensures an appropriate level of homeostatic autophagy, while preparing cells to rapidly induce autophagy when they encounter stress.

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Life Sciences
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