

# GDCB SEMINAR

4:10 p.m. • Tuesday, Nov. 16, 2021 • 1414 Molecular Biology Building

## “No country for old flies: The role of p38 MAPK in aging”

**Abstract:** The aging of an organism is associated with progressive diseases, which are often characterized by the formation of protein aggregates in the cells. In addition, both aging and protein aggregation are associated with an increase in oxidative stress. In order to study the relationship between protein aggregation, aging, and oxidative stress, we use the fruit fly, *Drosophila melanogaster*. We have found that the p38 MAPK (p38Kb) regulates both aging and oxidative stress in the fly muscle. Therefore, we are testing if p38Kb also regulates age-dependent and oxidative-stress induced protein aggregation. We find that p38Kb regulates protein homeostasis in both these contexts. Furthermore, we find that p38Kb acts through a quality control mechanism called BAG-3 mediated autophagy also known as Chaperone Assisted Selective Autophagy (CASA) in flies to regulate age-dependent protein homeostasis but not in response to oxidative stress. We also find that during aging, p38Kb regulates the aggregation of one of the fly homologues of LMNA, which is mutated in several aging disorders including Hutchinson-Guilford Progeria, a disease related to rapid aging. These results suggest that p38Kb is regulating aging and oxidative stress through different mechanisms. Furthermore, we find that the p38Kb and LMNA aging pathways unexpectedly converge leading to new lines of inquiry.

**Host:** Hua Bai, genetics, development and cell biology assistant professor



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