**Ackert Hall, Room 120**
**Wednesday, December 4, 2024**
**4:00 P.M.**

Coffee and Cookies
Chalmers Hall, Room 168
3:45 P.M.

# Biochemistry & Molecular Biophysics Seminar

## Aging and Rejuvenation in extremely long-lived planarians


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The possibility of reversing the adverse impacts of aging could significantly reduce age-related diseases and improve quality of life in older populations. Here, we report that the sexual lineage of the "immortal" planarian, *Schmidtea mediterranea*, exhibits physiological decline within 18 months of birth, including altered tissue composition, impaired fertility and motility, and increased oxidative stress. Single cell profiling of young and older planarian heads uncovered changes in tissue architecture in older age (e.g., loss of neurons and muscle, increase of glia) and revealed slower aging rate in somatic stem cells, along with molecular signatures of aging. Remarkably, amputation followed by regeneration of lost tissues in older planarians led to reversal of these age-associated changes in tissues proximal and distal to the injury at physiological, cellular and molecular levels. Our work suggests mechanisms of rejuvenation in both new and old tissues concurring with planarian regeneration, which may provide valuable insights for anti-aging interventions.