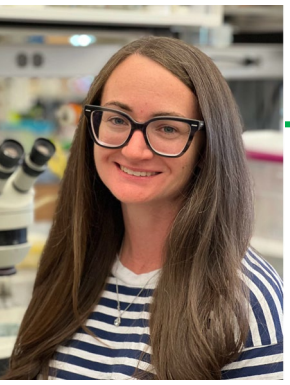
BioFrontiers - Biology Seminar

October 16, 2026; 2:30 PM

Life Sciences Building - A117



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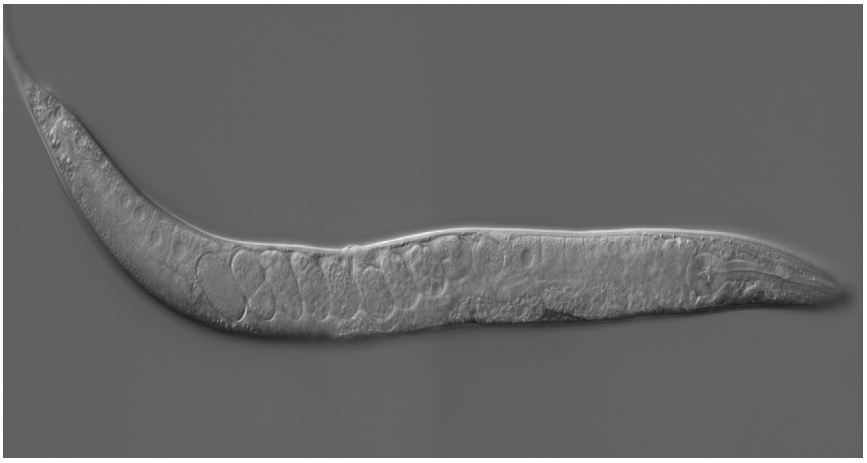
The impact of stress on organ structure and function – genetic and omic approaches in the *Caenorhabditis elegans* model

Human health concerns such as obesity and diabetes affect millions of people globally, resulting in increased morbidity and mortality as well as high economic cost. Stressors such as hyperglycemia and hypoxia contribute to the pathology of these diseases by affecting the structure and function of cells and tissues which impacts individuals and populations across generations. The mechanisms that mediate these consequences are an area of active study. In the Padilla lab, we use the nematode *C. elegans* as a model to investigate the response to such stressors at a cellular, organ and whole organism level using environmental changes and genetic mutants. I will discuss our recent work investigating the impact of hypoxia on the structure and function of the cuticle and the germline. The cuticle serves as a model for the skin, a multilayered organ that serves as a barrier and communication interface. Although the molecular composition of the skin varies across taxa, there are similarities that are conserved such as cuticle protein modifications and the lipid-rich outer layer. The germline serves in part as a model for understanding cell migration and organ expansion. Our studies examine the impact of low oxygen on collagen proteins and lipid composition in different genetic backgrounds using cell biological, lipidomic and transcriptomic analyses. Our findings highlight the importance of collagen protein and lipid maintenance in response to environmental stress.