

# Biology Seminar



Western  
UNIVERSITY · CANADA

12:30 - 1:30 pm

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BGS 0165



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## Modern Tree Biology - Epigenomics and Physiology in stress and development

Trees are sessile, complex organisms with long generation times. Despite of their importance for terrestrial ecosystem, as climate buffers, or in forestry, relatively little is known about the molecular mechanisms shaping environmental responses or developmental decisions in these organisms. Exposed to an ever-changing environment, they need to carefully coordinate their growth with prevailing conditions. This involves an exquisite level of genome regulation. A fascinating, yet underexplored layer of genome regulation involves epigenetic factors such as chemical modifications to DNA and its associated proteins that are tightly interlinked with gene expression, metastable molecular states, and the control of developmental trajectories.

Working with non-standard model organisms further provides its own challenges. Thus, we develop methods for high-resolution molecular maps and single cell analyses for large-scale cell type identification and characterization. Utilizing high-resolution DNA methylation profiles allowed us to recently identify the central regulator for sexual reproduction; and ongoing work studies responses in physiology and development from single cells to whole organs with potential implications ranging from molecular pathways to breeding in silviculture.

