



## **PhD: The genomics of local adaptation in a spruce hybrid zone**

Yeaman Lab

Department of Biological Sciences, University of Calgary

I am seeking to recruit a PhD student to study the genomic basis of local adaptation in the hybrid zone of white and Engelmann spruce in Alberta's Rocky Mountains (Banff, Kananaskis). Preliminary sequencing of samples along elevational transects shows strong patterns of differentiation and local adaptation, with remarkable similarity to patterns found across broader latitudinal clines in central British Columbia

(<https://www.biorxiv.org/content/10.1101/2025.08.08.669264v1>). Much remains to be discovered, including broadening the scale of sampling & sequencing, studying phenological barriers to gene flow, GWAS of phenotypic variation in common gardens, and conducting experiments to assess the genomic basis of survival beyond the species alpine range limit. Depending on a candidate's experience and interest, this project can include field work in the Rocky Mountains or be focused only on bioinformatics/genomic analysis or the application of theoretical approaches to making spatially explicit predictions for the hybrid zone. It would be interesting to use some combination of traditional statistical approaches and image analysis/convolution neural networks to study patterning both in space and along the genome. Finally, it is also possible to expand this project to include the study of patterns of repeated adaptation across other conifer species or plant species more broadly, depending on the student's area of interest.

This position will have a tax-free stipend of at least CAD \$35k/year.

**TO APPLY:** Please send a CV and a short description of your interest in the position and any relevant research experience to [samuel.yeaman@ucalgary.ca](mailto:samuel.yeaman@ucalgary.ca), along with the names and emails of three people I could contact for reference letters. I will begin reviewing applications on October 15<sup>th</sup> 2025, but please contact me to check in if you need to make a quick decision.