

MSc or PhD studentship: The protein phosphatases of *Arabidopsis thaliana*
(University of Calgary, Canada).

A student position is available in the laboratory of Dr GB Moorhead in the Department of Biological Sciences, University of Calgary, Calgary, Alberta, Canada.

Project Description

The project, funded by the Natural Sciences and Engineering Research Council of Canada, is part of an ongoing program to define the role of plant protein phosphatases. Using bioinformatics, several novel protein phosphatases (RLPH2, SLP1, SLP2) were identified in plants that belong to the serine/threonine specific PPP-family. Biochemical characterization and cell biology has revealed that although RLPH2 is a predicted serine/threonine phosphatase, it is in fact a structurally unique tyrosine phosphatase. SLP1 and SLP2 are of bacterial origin and reside in the mitochondria and chloroplast respectively. SLP2 interacts with, and is activated by, the intermembrane space oxidoreductase Mia40 and its substrates are thought to reside in this sub-compartment. Current projects focus on the identification of protein phosphatase substrates using quantitative phospho-proteomics. RLPH2, SLP1, SLP2 and putative substrates will be further characterized biochemically and phenotypes explored using knockout lines. See **Moorhead lab** website for recent publications.

The ideal candidate will have a degree in biochemistry, cell biology or molecular biology. Research experience in any of these areas would be an asset, but is not required. Previous experience in plant biology would also be an asset, but is not necessary.

The position is available September 2017.

Enquiries may be sent by email to Dr Greg B Moorhead (moorhead@ucalgary.ca).

References

1. Uhrig RG, Labandera AM, Tang LY, Sieben NA, Goudreault M, Yeung E, Gingras AC, Samuel MA, Moorhead GB. Activation of Mitochondrial Protein Phosphatase SLP2 by MIA40 Regulates Seed Germination. (2017) *Plant Physiol.* 173(2):956-969.
2. R. Glen Uhrig, Anne-Marie Labandera, Jamshed Muhammad, Marcus Samuel and Greg Moorhead (2016) Rhizobiale-like phosphatase 2 from *Arabidopsis thaliana* is a novel phospho-tyrosine specific PPP-family protein phosphatase. *J. Biol. Chem.* 291: 5926-34.

3. Glen Uhrig, Anne-Marie Labandera and Greg B.G. Moorhead (2013) Arabidopsis PPP family of serine/threonine protein phosphatases: many targets but few engines. *Trends Plant Sci.* 18: 505-513.
4. Glen Uhrig, David Kerk and Greg B.G. Moorhead (2013) Evolution of bacterial-like PPP protein phosphatases in photosynthetic eukaryotes features ancestral mitochondrial or archaeal origin and possible lateral gene transfer. *Plant Physiol.* 163: 1829-1843.