



Seminar

C. PETER CONSTABEL

cpc@unvic.ca

Centre for Forest Biology & Department of Biology
University of Victoria, Canada

Can't see the forest for the mybs: transcriptional regulation of tannin and flavonoid synthesis in *Populus*

Condensed tannins are major phenolic secondary metabolites of plants and are synthesized via the well-known flavonoid pathway. They can be a major carbon sink of trees, with concentrations as high as 25% leaf dry weight or more. In human health, when consumed in a diet rich in fruit and whole grains, tannins play important roles in reducing risk of cardiovascular disease. In nature, condensed tannins have been associated with defense against pests and pathogens, but may have other ecological functions including modulating nutrient cycling in soils and providing tolerance to heavy metals. In poplars, condensed tannins accumulation is induced by environmental stresses, in particular herbivores, pathogens, UV light, and nitrogen deficiency. Tannin levels in natural populations are highly variable, and dependant both on genotype and environment. A major focus of my laboratory is to understand the molecular basis for the observed patterns of condensed tannin regulation, as well as to probe their ecological functions. Poplar provides many technical approaches to these questions, but in particular the ability to create transgenic poplar plants has been very informative. We originally identified the transcriptional activator, MYB134 as a regulator for poplar condensed tannin synthesis; transgenic overexpression leads to the upregulation of many flavonoid biosynthetic genes and a dramatic overaccumulation of condensed tannins. These plants have facilitated the identification of many other regulatory genes involved in condensed tannin and phenylpropanoid regulation. In particular, a suite of new activator and repressor MYB transcription factors regulators has recently been identified. Current research aims to define how these transcriptional regulators interact, and how they cooperate to give rise to the observed patterns of inducible condensed tannin accumulation. Furthermore, transgenic trees with altered condensed tannin levels will be powerful tools for testing hypotheses on ecological functions of these multi-faceted compounds.

Room 6202 – Palazzo della ricerca e della conoscenza
25th February, 11 am

Post seminar meeting and discussion will be held in Pizzeria Capriccio at 1pm. All interested people are invited to join us. Please send confirmation to stefan.martens@fmach.it by February 24th to make the table reservation.



FONDAZIONE
EDMUND
MACH

