Down-regulation of *KORRIGAN*-like cell wall genes impacts carbon partitioning and mycorrhizal colonization in *Populus*

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Background

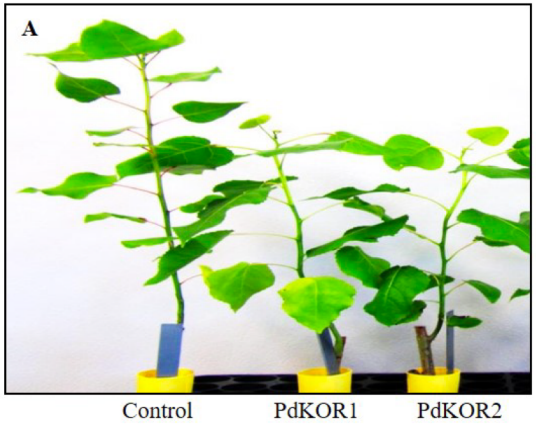
- Plant cell walls play an integral role in determining plant form and function. The biosynthesis pathways of the major cell wall components are integral to the plant's response to pathogen attack.
- We studied the impact of down-regulating *KORRIGAN*-like (*PdKOR*) cell wall biosynthesis genes, belonging to the endo-β-1,4-glucanase gene family, on *Populus* growth, metabolism and the ability to interact with the fungal symbiont, *Laccaria bicolor*.

Science

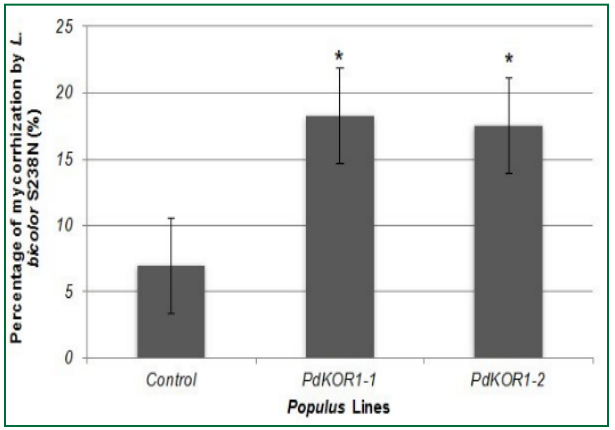
- Modified *PdKOR* lines, were characterized by slower growth and lower biomass, reductions in cellulose content and lignin, S/G ratios in cell walls, and a secondary metabolic phenotype of elevated phenolic and salicylic acid content.
- *L. bicolor* had significantly higher mycorrhization rates on the *PdKOR* plants and a resultant higher gain in biomass.

Significance

- New evidence for functional interconnectedness of plant cellulose biosynthesis pathway, metabolism and mycorrhizal association.



Reduced growth of transgenic *PdKOR* lines (above) and enhanced mycorrhization rate in *PdKOR* lines relative to control (below).



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