The Role of NAC068, a NAC Domain Protein, in Wood Development

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NAC domain proteins are transcriptional regulators known to control multiple processes in plants including apical meristem maintenance and function. We predict that NAC family members also function in wood development by regulating vascular cambium maintenance, or wood cell division, growth, or differentiation. To test this idea, we are undertaking a functional analysis of NAC068, a poplar NAC domain protein originally identified in wood and vascular cambium EST collections. We are constructing NAC068 over-expressing and RNAi *Populus trichocarpa x deltoides* transgenic plants. These transgenic plants will be examined using microscopy for phenotypic effects in vascular cambium and xylem cell size, shape, and differentiation. We are also constructing NAC068 promoter-GUS fusion *Populus trichocarpa x deltoides* transgenic plants. These plants will be examined for GUS expression in vascular cambium and xylem tissues. Currently, NAC domain proteins have been studied in all meristematic tissues except for the vascular cambium. Therefore, this work will elucidate the role of NAC domain proteins in this important plant tissue.