The Molecular and Functional Characterization of the MtGAI Transcription Factor in *Medicago truncatula* Root Development

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The GRAS family of transcription factors (TFs) regulates gene expression in response to plant hormones, such as the stress hormone, Abscisic Acid (ABA), and plays a pivotal role in plant development. Our lab previously identified a GRAS TF, *MtGAI* that is regulated in growing *Medicago truncatula* roots in response to ABA. To elucidate the function of MtGAI in root development we initiated functional characterization of the gene. Using Gateway technology, MtGAI was cloned into expression vectors to overexpress and silence gene transcription in the growing root. Cloning the promoter sequence of MtGAI upstream of a GUS/GFP fusion to create a reporter gene construct to localize expression created a third vector. The overexpression vector was transformed into *Agrobacterium rhizogenes* to transfer the vector into the roots of *M. truncatula* in a transient transformation assay. A comparison of plant dry weight and gene expression to controls to detect phenotypic and molecular response to overexpression of the TF will be presented. In this way, we hope to learn more about the role of MtGAI in *M. truncatula* root development.