HYPOCOTYL EXPRESSION AND LIGHT DOWNREGULATION OF THE SOYBEAN TUBULIN GENE, *tubB1*.

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The *tubB1* β-tubulin gene of *Glycine max* is highly expressed only in rapidly elongating regions of etiolated seedlings hypocotyls and this expression is strongly downregulated when the seedlings are exposed to light. To determine the mechanism regulating *tubB1* expression, chimeric reporter gene was constructed by fusing 5' upstream regions of *tubB1* to a promoterless GUS gene and these constructs were introduced into protoplasts by electroporation. Strong trnasient expression of the reporter gene was obtained after eletroporation of chimeric constructs containing 1 kb of *tubB1* 5' upstream sequence into tobacco protoplasts. Deletions of the distal most 300 bp from the 5' sequence of *tubB1* enhanced expression, suggesting the possibility of a negative transcriptional regulator in this region. Constructs containing a *tubB1* 3' terminus were expressed at much lower levels than those containing a nopaline synthase(NOS) 3' terminus. The *tubB1* -GUS chimeric gene also was introduced into tobacco by *Agrobacterium*-mediated Ti plasmid transformation and organ-specific expression pattern of the chimeric gene was determined in seedlings of the transgenic plants. Hypocotyls exhibited strong GUS activity when the seedlings were germinated in darkness, but lacked the GUS enzyme when the seedlings were germinated in the light. This result demonstrates that the *cis*-acting elements within the first 2 kb of the translational start site of the *tubB1* gene are sufficient for correct expression of the gene in etiolated, elongating hypocotyl tissues, and for the downregulation of this expression by light.