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Isolation of soybean (glycine max) root preferential promoter

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Soybean root preferential promoter is of great use to soybean genetic engineering. Such a promoter can be used to drive a tissue specific or preferential expression of integrated genes for either disease resistance or analysis of functions of other genes. However, the real function of the promoter so far reported and its expression patterns has not been studied in soybean. Our ultimate goal is to express genes in soybean in a root preferential manner using this promoter. We used soybean genomic DNA from two varieties of soybean, Maverick and Maple Arrow, as a template and design a primer pair for PCR. This primer pair is specific for the sequence of a known soybean root preferential promoter (Gen Bank accession #AF520576). We amplified the sequence using PCR technique and eluted the products from variety Maverick and then subcloned into the TA PCR cloning vector pGEM-T easy. We then sequenced the above subclone and found no similarity within the first 500 base pairs with the known promoter. We then performed PCR using genomic DNA from the variety of Maple Arrow. The results from amplifying PCR products using this variety have not been consistent and predictable. Further effort is needed to optimize conditions for PCR amplification in Maple Arrow. We hope to obtain the PCR product soon. The amplified fragment will be then inserted into the TA PCR cloning vector, sequenced and compared with the known promoter sequences. The resultant fragment, if confirmed to be soybean root preferential promoter, will be fused with GUS reporter gene, which will be used for tissue specific expression analysis in transgenic Arabidopsis.