Genetics

Identification of the Maize *Viviparous1* Transcription Start Site and Potential Maize *Viviparous1* Promoter Driven Expression of GUS in *Arabidopsis thaliana*

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Abstract

The first objective of this study was to obtain the transcription start site for the *Viviparous1* (*Vp1*) gene. *Vp1* is one of the genes that regulate the expression of the C1 gene in maize (Zea mays). The C1 gene is one of the components involved in anthocyanin production. The *Vp1* promoter is unusual because it does not contain a TATA box. A technique called RACE (i.e. rapid amplification of cDNA ends) PCR was used to try and determine the start site. The transcription start site will help to more clearly define the promoter region. The second goal of this study was to determine whether the promoter region of the maize *Vp1* gene could induce expression of a reporter gene, GUS (i.e. beta-glucuronidase), in *Arabidopsis thaliana* ecotype Columbia. The CVP1 construct, which contained the *Vp1* promoter and the GUS coding region, was transformed into *Agrobacterium tumeficiens* strain C58C1, and used to transform *Arabidopsis*. The results of this experiment will determine whether or not the *Vp1* promoter regulates gene expression similarly in maize and *Arabidopsis*. The optimal RACE PCR conditions could not be acquired, resulting in no amplification of the desired 5' end of the *Vp1* gene. The transformed *Arabidopsis* plants were not large enough, by the time the summer internship was completed, to screen for GUS expression.