(05-1-8)

Promoters from *Arabidopsis thaliana*: analysis for tissue-specific expression

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Objectives

Our goal is to find new tissue-specific promoters from Arabidopsis.

Materials and Methods

1. Material

Plant - Arabidopsis thaliana, ecotype Columbia-0

Agrobacterium strain - GV3101

2. Methods:

Tissue-specific genes of Arabidopsis were selected based on TIGR database (root, leaf, and seed individually) and their 2kb promoters were cloned into pBGWFS7 binary vector via Gateway system. Each promoter clone was finally introduced into Arabidopsis plants and T2 seedlings of the transformants were analyzed for promoter activity shown as either GFP or GUS expression.

Results and Discussion

Up to now, we have cloned more than 350 promoters and most of them were introduced into Arabidopsis via Agrobacterium transformation. T2 seeds of Arabidopsis transformants were obtained after basta treatment and T2 seedlings were used for promoter analysis. Promoter activity was visible with either GFP or GUS expression. Among ~140 promoters tested, about one-third of them had no activity but the others showed various expression including tissue-specific, whole seedling, or mixed expression at T2 seedling stage. We have selected promoter candidates having certain activity to observe activity change if any along with developmental stages. In addition, some of the candidates were subject to further analysis in which 5'region of each promoter was deleted sequentially to find out core promoter region. Analysis of the rest promoters is in progress.

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