

### Isolation of Early-Flowering Mutants by Activation Tagging Mutagenesis

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Floral induction, a phase change from vegetative to reproductive development, is regulated by environmental factor and internal factor. The major environmental factors affecting on flowering are photoperiod and vernalization (cold treatment for flowering). Photoperiod induction pathway is relatively well studied at molecular level but the molecular mechanism of vernalization pathway is largely unknown. To investigate the molecular mechanism of vernalization pathway, we adopted activation tagging mutagenesis strategy. The vector which has four times 35S enhancer with basta resistance marker was introduced randomly into *Arabidopsis* chromosome through *Agrobacterium* mediated transformation. The inserted 35S enhancer would cause the overexpression of nearby gene and give gain-of-function mutant phenotype. To reveal the mutants that activate vernalization pathway, we used *FRI* *Arabidopsis* line for activation tagging mutagenesis because it shows strong dependence on vernalization for flowering. Using this strategy, we isolated two interesting early-flowering mutants. Except early-flowering phenotype, one mutant showed some other phenotype such as serrated leaf morphology and male-sterility and the other mutant showed phenotypes of relatively wider leaf blade and pale green leaves. We also isolated lots of mutants that show aberrant morphology such as short-stature, wrinkled leaf, wider leaf blade and separation of shoot apical meristem.