

**PB-11**

**Development of SNP Marker for Selecting the *GLR1*(*Glabrous Rice 1*) Gene in Asian Rice (*Oryza sativa* L.)**

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**[Introduction]**

The glabrous trait in rice has the advantage of decreasing dust during threshing and saving the volume for grain storage. *GLR1* gene, which controls glabrous traits in leaf and hull, was cloned on chromosome 5 from American rice variety Rico No. 1. The glabrous trait in the *glr1* plant was caused not by DNA sequence difference but by DNA methylation in the promoter region (Li *et al.* 2012). Thus there is no functional marker for the *GLR1* gene.

**[Materials and Methods]**

To develop a tightly linked SNP marker, SNPs in the 10kb sequence on either side of the *GLR1* gene of American glabrous rice Pecos were extracted from resequencing data. Haplotype analysis for the 10kb flanking region of *GLR1* gene was conducted using SNP information of 4,726 accessions in the RiceVarMap2 database.

**[Results and Discussion]**

A total of 14 SNPs was identified in the 10kb flanking region of *GLR1* gene. Five haplotypes were detected by 14 SNPs in 4,726 accessions, and hap 3 contained glabrous accessions. A unique SNP in the glabrous haplotype was identified on 4.5 kb downstream of the *GLR1* gene. SNP marker, which was designed on the unique SNP to detect glabrous accessions, clearly distinguished non-glabrous and glabrous varieties. In addition, the SNP marker showed a perfect link with the glabrous trait in a segregating population derived from a cross between the non-glabrous and glabrous variety. The SNP marker developed in this study would provide an efficient selection tool during breeding of new glabrous variety.

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