Positional cloning of a cleistogamous gene in rapeseed

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A cleistogamous mutant was obtained at INRA Rennes by chemical mutagenesis on seeds of the 'Primor' cultivar. Genetic analysis of this character revealed that it is under control of a major gene (*Clg1*) with an additive effect. This trait would be interesting in rapeseed breeding in order to decrease the risk of genetic contamination through outcrossing when diversifying seed quality of rapeseed production. However, the expression of this trait is influenced by environmental conditions and genetic background. Cloning of the *Clg1* gene would allow us to understand its function and expression, introduce it back into rapeseed through genetic transformation and improve the stability of its expression. For positional cloning of this gene, we have realized (i) fine mapping around *Clg1* with anonymous markers (AFLP), (ii) identification of the homologous *Arabidopsis* region and (iii) subsequent development of gene-specific PCR-based markers from this region. Tightly *Clg1*-linked AFLP markers were first identified through Bulked Segregant Analysis. These markers were sequenced and blasted to *Arabidopsis* sequence. Degenerated oligonucleotides were designed from *Arabidopsis* gene sequences in the corresponding region and PCR-based markers (ACGM or CAPS) were developed in rapeseed. Progress in fine genetic mapping around *Clg1*, identification of *Clg1* BAC contig, and isolation of *Clg1* will be discussed.