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Identification of RAPD Markers and Development of SCAR Markers Linked to a Powdery Mildew Resistance Gene, and their Location on Chromosome in Wheat Cultivar Brock

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Abstract: Wheat cultivar Jing 411 which is susceptible to powdery mildew, and wheat cultivar Brock and NILs of Jing 411, which are resistant to powdery mildew were analyzed for polymorphisms using 213 random amplified polymorphic DNA primers. Only one primer (S2092) stably produced a polymorphic band between the resistant and susceptible plants. Linkage analysis of this marker (S2092₉₇₂) revealed that the polymorphism existed in a 131 F₂ segregating population. S2092₉₇₂ was closely linked to a powdery mildew resistance gene in wheat cultivar Brock, at a linkage distance was 4.9 cM. S2092₉₇₂ was converted to sequence characterized amplified region (SCAR) markers SCAR₈₆₀ and SCAR₂₀₀. The two SCAR markers were used for detecting F₂ segregating population. SCAR₈₆₀ and SCAR₂₀₀ existed in resistant plants but were absent in the susceptible plants. We concluded that S2092₉₇₂ was located on the chromosome 3BL. These markers will be useful for marker-assisted selection and gene pyramiding in wheat resistance breeding.

Keywords: [Linkage analysis](#), [Powdery mildew](#), [RAPD](#), [SCAR](#), [Wheat](#)

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