

研究论文

## 小麦品种贵农21抗条锈病基因的SSR标记

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**摘要** 对贵农21携带的条锈病 (*Puccinia striiformis Westend f. sp. tritici*) 抗性基因进行鉴定和遗传分析, 明确了贵农21携带1个抗条锈病显性单基因, 暂命名为*YrGn21*。采用F<sub>2</sub>代抗病分离群体和集群分离分析法(BSA), 建立了与*YrGn21*连锁的11个微卫星标记Xcau14、Xwmc49、Xgwm403、Xgdm62、Xwmc272、Xgwm459、Xbarc240、Xbarc187、Xgdm28、Xgwm11和Xgwm413, 并将*YrGn21*定位于小麦1BS的临近丝粒区域, 与位于1BS染色体上的*Yr26*基因具有等位性关系, 为贵农21抗条锈病基因在育种中的利用, 进行标记辅助选择和基因累加提供了便利。

**关键词** [小麦](#) [贵农21](#) [抗条锈病基因](#) [微卫星标记](#)

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## Microsatellite Markers for A Yellow Rust Resistant Gene in Wheat Cultivar Guinong 21

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**Abstract** Yellow rust, caused by *Puccinia striiformis Westend f. sp. tritici*, is one of the most important diseases of wheat (*Triticum aestivum* L.) worldwide. Breeding for resistance is considered the most economical and effective mean for controlling the disease. Guinong 21, a common wheat cultivar derived from an open pollinated population between common wheat and the F<sub>1</sub> hybrid of Haynaldia villosa and Triticum durum, provided sound resistance to prevalent Chinese races of *Puccinia striiformis f. sp. tritici* and *Blumeria graminis f. sp. tritici* for decades. Genetic analysis indicated that Guinong 21 is carrying a single dominant yellow rust resistance gene, designated as *YrGn21* temporarily. Segregating F<sub>2</sub> progenies of the cross (Guinong21/704) F<sub>2</sub>/Wenmai8 were used for bulked segregation analysis (BSA). Eleven microsatellite markers, *Xcau14*, *Xwmc49*, *Xgwm403*, *Xgdm62*, *Xwmc272*, *Xgwm459*, *Xbarc240*, *Xbarc187*, *Xgdm28*, *Xgwm11* and *Xgwm413* were found to be linked to *YrGn21* and all of them were assigned to the same side of gene *YrGn21*. The closest marker *Xcau14* was mapped 1.1 cM away from the resistant gene and the furthest marker *Xgwm413* was located 7.1 cM to *YrGn21*. Based on the reported genetic and physical maps of microsatellites in wheat, most of these *YrGn21* linked markers have been mapped in the adjacent region of centromere on chromosome 1BS. It had been reported that *Xgwm11* and *Xgwm413* were linked to yellow rust resistance gene *Yr26*, which was also located on chromosome 1BS. Polymorphisms detected by the 11 *YrGn21* linked markers on an *Yr26* population indicated that same polymorphic fragments could be amplified by 10 out of 11 primers on the resistant plants of *YrGn21* and *Yr26*. It is deduced that *YrGn21* might be an allelic locus of *Yr26* and the 11 close linked markers to the resistant gene (*YrGn21*) established in this research would facilitate the marker-assisted selection (MAS) and the pyramiding of *YrGn21* in wheat breeding programs.

**Key words** [Wheat](#) [Guinong 21](#) [Yellow rust resistant gene](#) [Microsatellite marker](#)

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