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Fine Genetic Mapping In Distal Bin Of Wheat Chromosome Arm 7DL To Delimit Greenbug Resistance Locus *Gb3*

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The greenbug, *Schizaphis graminum* (Rondani), is an important aphid pest of small grain crops in many parts of the world. Among the many identified greenbug resistant sources, a single dominant gene, *Gb3* originated from *Aegilops tauschii* has been showing consistent and durable resistance against prevailing greenbug biotypes in wheat fields. Our previous work placed *Gb3* in the distal bin of wheat chromosome arm 7DL with several *Gb3*-linked microsatellite markers. In the present study, we are conducting fine genetic and physical mapping aiming to clone *Gb3* with the map-based cloning strategy. Three complementary populations at diploid and hexaploid levels were used for high-resolution genetic mapping with SSRs, EST-, RFLP- or AFLP-derived STS markers. So far, 31 markers have been placed on the genetic map surrounding the *Gb3* locus and a 2.0 cM interval of *Gb3* is delimited by one AFLP-STS and one EST-STS marker, which are highly predictable to show the presence/absence of *Gb3* in breeding lines with diverse genetic backgrounds. A physical contig is under construction with *Gb3*-linked molecular markers and *Ae. tauschii* BAC libraries. The genetic and physical maps developed are being used to assist marker-assisted selection in wheat breeding and positional cloning of this aphid resistance gene.