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A Candidate Gene For Aphid Resistance In Wheat

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The greenbug, *Schizaphis graminum* (Rondani), is an important aphid pest of small grain crops in many parts of the world. A single dominant gene, *Gb3* originated from *Aegilops tauschii* has shown consistent and durable resistance against prevailing greenbug biotypes in wheat fields. Previously, we mapped *Gb3* in a recombination-rich, telomeric bin of wheat chromosome arm 7DL. High-resolution, sub-genome mapping was carried out using an F_{2:3} segregating population of *Ae. tauschii* and two hexaploid wheat populations. Molecular markers were developed by exploring Triticeae ESTs and the syntenic relationships among wheat, rice and *Brachypodium* in the *Gb3* region. The *Brachypodium* sequences of chromosome Bd1 aligned with Triticeae ESTs were thoroughly examined. High-degree colinearity between wheat 7DL distal bin and Bd1 was observed. Over 100 7DL-specific molecular markers were fine mapped in the region harboring *Gb3*. Markers closely linked with *Gb3* were used to screen *Ae. tauschii* and wheat 7DL-specific BAC libraries. BAC contigs were constructed with markers flanking *Gb3*. Two 7DL BAC clones were fully sequenced; the sequence annotation of BACs (~350 kb) identified a tentative candidate gene for *Gb3* which encodes a NB-ARC-LRR domain. Though the functional verification of this candidate gene has been initiated, further screenings of the BAC libraries are underway to complete the contig construction.