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Czech J. Genet. Plant Breed.

**J., Řepková J.,
Dreiseitl A.:**

**Newly discovered
genes for resistance to
powdery mildew in the
subtelomeric region of
the short arm of barley
chromosome 7H**

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Two dominant genes for resistance to powdery mildew (caused by *Blumeria graminis* f.sp. *hordei*) from the PI296825 and PI466461 accessions of wild barley (*Hordeum vulgare* subsp. *spontaneum*) were identified close to the subtelomeric region of the short arm of chromosome 7H. Genetic analyses predicted two resistance loci in F_2 populations

established from crosses between each of the two accessions and the winter barley (*H. vulgare*) variety Tiffany. Genetic

mapping revealed a highly effective (52% of phenotypic variation) resistance gene from PI296825 located between the markers *GBMS192* and *GBM1060*. In F_2 plants exhibiting resistance reaction types (RT) 0 to RT1– 2, specific DNA fragments for co-segregating markers were amplified. In plants with RT2 and RT2– 3, the resistance was conferred by another unidentified resistance gene. In PI466461, the resistance gene found on the short arm of chromosome 7H was flanked by the markers *GBM1126* and *GBM1060*. Another resistance gene coincided with the *Mla* locus. Resistance in RT0 plants was conferred by both resistance genes, which accounted for 58% of the total phenotypic variation. The two resistance genes with the same location on chromosome 7H have different phenotypic effects on the resistance in RT0 plants; therefore, the resistance alleles could be at different loci.

Keywords:

DNA marker; genetic mapping; *Hordeum vulgare*; simple sequence repeats

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