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ABSTRACT

Localization of a locus responsible for the bovine chondrodysplastic dwarfism (bcd) on chromosome 6

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A hereditary chondrodysplastic dwarfism caused by an autosomal recessive gene has been reported in a population of Japanese Brown cattle. Affected calves show an insufficiency of endochondral ossification at the long bones of the limbs. In the present study, we mapped the locus responsible for the disease (bcd) by linkage analysis, using microsatellite markers and a single paternal half-sib pedigree obtained from commercial herds. Linkage analysis revealed a significant linkage between the bcd locus and marker loci on the distal region of bovine Chromosome (Chr) 6. The bcd locus was mapped in the interval between microsatellite markers BM9257 and BP7 or BMS511 with a recombination fraction of 0.05 and 0.06, and a lod score of 8.6 and 10.1, respectively. A comparison of genetic maps between bovine Chr 6 and human Chr 4 or mouse Chr 5 indicates possible candidate genes including FGFR3 and BMP3 genes, which are responsible for human chondrodysplasias and associated with bone morphogenesis, respectively.

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