

Fine mapping of QTLs of meat quality in three French beef breeds using the Bovine SNP50® chip

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Meeting Information

When:
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Fine Mapping of QTLs of Meat Quality in Three French Beef Breeds using the Bovine SNP50® Chip

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To study the beef meat quality traits at the molecular level and find genetic markers associated to these traits, the project “Qualvigène” was set in. A total of 1,059 Charolais, 1,219 Limousin and 947 Blond d’Aquitaine purebred young bulls from respectively 48, 36 and 30 sire families were genotyped with the Illumina Bovine SNP50® Beadchip. We measured ten traits related to quality of the longissimus thoracis muscle: shear force, tenderness, juiciness and flavour scores, intramuscular fat content, insoluble collagen content, collagen solubility, number and size of fibres, and lightness. QTLs were detected with a methodology combining linkage disequilibrium and linkage analysis on haplotypes. After quality control and with a minor allele frequency of 5%, about 37K SNP were used in each of the three breeds. If we consider the significant positions at the 1‰ threshold on the chromosome (without Bonferroni correction) and separated by a minimum distance of 4 cM, we found about 170 QTLs in each of the three breeds, more precisely between 7 and 35 QTLs per trait. Compared to a previous QTL detection with microsatellites, we detected many more QTL per trait. Some QTL were common of two or three breeds as a QTL of shear force in the three breeds on the chromosome 3 between 16 and 21cM. Most of the other QTLs were breed-specific. The results were generally consistent with previous studies of candidate genes (Myostatin, Calpastatin and Calpain genes).

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