A GENOME SCAN TO DETECT QTL AFFECTING GROWTH AND COMPOSITION TRAITS IN A DUROC BY PIETRAIN RESOURCE POPULATION

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Pigs from the F_2 generation of a Duroc by Pietrain resource population were evaluated for quantitative trait loci (QTL) affecting growth and composition traits. Body weight and ultrasound estimates of backfat at the tenth and last rib, and loin muscle area at the tenth rib were measured at 22 weeks of age. From these measures estimates of fat-free total lean, total body fat, empty body protein, empty body lipid, and average daily gain from 10 to 22 weeks of age were calculated. A total of 510 F_2 animals were genotyped for 116 microsatellite markers evenly spaced across autosomal chromosomes. Data were analyzed with least squares regression interval mapping using a model of gender and farrowing group as fixed effects and age at measurement as a covariate. Significance thresholds of the F statistic for additive QTL were determined on the chromosome-wise level on a single-trait basis by permutation tests. The following traits had QTL detected at the 5% chromosome-wise significance level: body weight at 22 weeks of age on Chrs 8 and 16, tenth rib backfat on Chrs 6 and 16, last rib backfat on Chrs 6, 10, and 16, loin muscle area on Chrs 4, 13, and 15, fat-free total lean on Chrs 4 and 15, total body fat on Chrs 6, 8, and 16, empty body protein on Chr 16, empty body lipid on Chrs 6, 8, and 16, average daily gain from 10 to 22 weeks of age on Chrs 8 and 16. Results of this study will facilitate fine mapping efforts to identify genes controlling growth and body composition of pigs.

Key Words: Pig, Growth Quantitative Trait Loci

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