



## Quantitative trait loci associated with body weight and abdominal fat traits on chicken chromosomes 3, 5 and 7

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**ABSTRACT.** Body weight and abdominal fat traits in meat-type chickens are complex and economically important factors. Our objective was to identify quantitative trait loci (QTL) responsible for body weight and abdominal fat traits in broiler chickens. The Northeast Agricultural University Resource Population (NEAURP) is a cross between broiler sires and Baier layer dams. We measured body weight and abdominal fat traits in the F<sub>2</sub> population. A total of 362 F<sub>2</sub> individuals derived from four F<sub>1</sub> families and their parents and F<sub>0</sub> birds were genotyped using 29 fluorescent microsatellite markers located on chromosomes 3, 5 and 7. Linkage maps for the three chromosomes were constructed and interval mapping was performed to identify putative QTLs. Nine QTL for body weight were identified at the 5% genome-wide level, while 15 QTL were identified at the 5% chromosome-wide level. Phenotypic variance explained by these QTL varied from 2.95 to 6.03%. In particular, a QTL region spanning 31 cM, associated with body weight at 1 to 12 weeks of age and carcass weight at 12 weeks of age, was first identified on

chromosome 5. Three QTLs for the abdominal fat traits were identified at the 5% chromosome-wide level. These QTLs explained 3.42 to 3.59% of the phenotypic variance. This information will help direct prospective fine mapping studies and can facilitate the identification of underlying genes and causal mutations for body weight and abdominal fat traits.

**Key words:** Chicken; Body weight; Abdominal fat traits; NEAURP; Quantitative trait loci; Microsatellite marker