



# Identification and characterization of *SREBF2* expression and its association with chicken carcass traits

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Genet. Mol. Res. 15 (3): gmr.15038514

Received February 1, 2016

Accepted April 8, 2016

Published September 2, 2016

DOI <http://dx.doi.org/10.4238/gmr.15038514>

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**ABSTRACT.** The sterol regulatory element-binding transcription factor 2 gene (*SREBF2*) plays an important role in regulating lipid homeostasis. To reveal the genetic factors that underlie carcass fat deposition in chickens, we cloned the coding DNA sequence of chicken *SREBF2*, investigated *SREBF2* mRNA expression levels in various tissues, detected single nucleotide polymorphisms (SNPs) in the exon regions of the gene, and conducted association analyses between single markers/haplotypes and carcass traits. The entire 2859-bp cDNA sequence of chicken *SREBF2* that encoded 952 amino acids was obtained and characterized. *SREBF2* mRNA was highly

expressed in the uropygial gland, followed by the liver, breast muscle, and leg muscle. Ten SNPs were detected, and four (g.49363077T>A, g.49357503C>T, g.49355533G>A, and g.49354641G>A) were novel. When analyzing the associations between the single mutations and carcass traits, significant differences were found in three SNPs and g.49357915G>A was highly significantly associated with most carcass traits, except for abdominal fat weight and sebum thickness. In addition, haplotype combinations that were constructed using the *SREBF2* SNPs were associated with breast muscle weight. Chickens with the combined genotype H21H21 had the highest live weight, carcass weight, eviscerated weight, and semi-eviscerated weight values. To the best of our knowledge, this is the first study conducted on chicken *SREBF2* polymorphisms, which are predictive of the genetics that underlie the economic performance of chickens.

**Key words:** Chicken; *SREBF2* gene; Cloning; Expression; Polymorphism