



## Characterization of myostatin gene (*MSTN*) of Pekin duck and the association of its polymorphism with breast muscle traits

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**ABSTRACT.** Myostatin, encoded by the *MSTN* gene, is a negative regulator of muscle growth, and its expression level in muscle tissue is closely correlated with muscle growth and satellite cell proliferation. To identify the characteristics of the Pekin duck *MSTN* gene and the relationship between its polymorphism and breast muscle traits in Pekin duck, cDNA cloning and analysis and the expression pattern in breast muscle development and polymorphism were performed using molecular cloning, quantitative real-time reverse-transcription polymerase chain

reaction, and molecular marker technology. The results showed that a 1320-bp sequence, including a 93-bp 5'-UTR, 1128-bp CDS, and 99-bp 3'-UTR, was obtained, and two alternative splicing isoforms were detected. The alternative splicing isoforms encoded 375- and 251-amino acid residues. The amino acid sequence of Pekin duck MSTN was similar to other vertebrates and exhibited the highest similarity to chicken. The expression pattern of *MSTN* in breast muscle tissue showed a tendency to increase, except for a slight decrease at 6 weeks. Three single nucleotide polymorphisms were found in the Pekin duck *MSTN* gene by cDNA sequencing from different individuals. The T129C had significant association with breast muscle thickness, and the T952C had significant association with the fossilia ossis mastodi length. This study reveals the molecular characteristics of the Pekin duck *MSTN* gene and the relationship of its polymorphism with breast muscle traits in Pekin duck. Therefore, it can provide some useful basic understanding of MSTN functions.

**Key words:** Pekin duck; Breast muscle; *MSTN*; Gene expression