



# Transcriptome analysis of skeletal muscle at prenatal stages in Polled Dorset versus Small-tailed Han sheep

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**ABSTRACT.** The objectives of the present study were to identify additional genes that may play important roles in the regulation of skeletal muscle growth and development, and to provide fundamental information for understanding the underlying molecular mechanisms. Eighteen cDNA libraries were constructed from the longissimus muscle of Polled Dorset (PD) and Small-tailed Han (SH) fetuses. To reveal the differences between the two species, we analyzed the differences in gene expression in 60-, 90- and 120-day fetal skeletal muscle by applying Agilent ovine genome-wide microarray. In this study, we obtained 17,704 genes using a chip containing 39,242 probes. There were 88 differentially expressed genes in the 60-day group ( $P < 0.05$ ), 128 genes in the 90-day group ( $P < 0.05$ ), and 340 genes in the 120-day group ( $P < 0.05$ ) between the two breeds. The differentially expressed genes were grouped in different GO categories and signaling pathways. These

results suggested that there are many genetic differences in the muscle growth and development transcriptomes between these two breeds. This study laid the foundation for future genomic research in sheep.

**Key words:** Skeletal muscle; Transcriptome; Gene expression; Sheep