



# Sheep *YAP1* temporal and spatial expression trend and its relation with *MyHCs* expression

W. Gao<sup>1</sup>, W. Sun<sup>1</sup>, R. Su<sup>1</sup>, X.Y. Lv<sup>1</sup>, Q.Z. Wang<sup>1</sup>, D. Li<sup>1</sup>, H.H. Musa<sup>2</sup>, L. Chen<sup>3</sup>,  
H. Zhou<sup>4</sup>, H.S. Xu<sup>5</sup> and W.H. Hua<sup>6</sup>

<sup>1</sup>Animal Science and Technology College, Yangzhou University, Yangzhou, China

<sup>2</sup>Faculty of Medical Laboratory Sciences, University of Khartoum, Khartoum, Sudan

<sup>3</sup>Animal Science & Veterinary Medicine Bureau of Suzhou City, Suzhou, China

<sup>4</sup>Forestation, Herding, Fishing Bureau of Suining Country of Xuzhou, Suining, China

<sup>5</sup>Xuhou Huayang Sheep Industry Co., Ltd., Suining, China

<sup>6</sup>Zhengjiang Wanshanhongbian Agricultural Park, Jvrong, China

Corresponding author: W. Sun

E-mail: dkxmsunwei@163.com

Genet. Mol. Res. 15 (2): gmr.15027260

Received July 21, 2015

Accepted November 5, 2015

Published April 4, 2016

DOI <http://dx.doi.org/10.4238/gmr.15027260>

**ABSTRACT.** RT-PCR was used to study the temporal and spatial pattern of Yes-associated protein 1 (*YAP1*) and myosin heavy chain (*MyHC*) expression in four different skeletal muscles (i.e., longissimus dorsi muscle, soleus muscle, gastrocnemius muscle, and extensor digitorum longus) and three growth stages (i.e., 2 days old, 2 and 6 months old) of Hu Sheep. The results showed that *YAP1* was differentially expressed in skeletal muscles of sheep, that expression increased gradually with age, and that there were high levels of expression in the gastrocnemius muscle and lower levels in the longissimus dorsi muscle. *MyHCI* was expressed at high levels in the soleus muscle and at lower levels in the longissimus dorsi muscle. In contrast, *MyHCIIA* and *MyHCIX* were expressed at high levels in the extensor digitorum longus and at lower levels in the soleus muscle. The expression of *MyHCI* and *MyHCIIA* decreased with increasing age while that of *MyHCIX* increased. *YAP1* expression was negatively correlated with *MyHCII* ( $P < 0.01$ ) and positively correlated with *MyHCIX* ( $P < 0.01$ )

across all growth stages and skeletal muscle types studied. We speculate that after birth, the thicker muscle fiber diameter is associated with the high expression of *MyHCIIIX*. Therefore, we conclude that *YAP1* expression affects sheep muscle fiber development after birth and provides important genetic information for the selection candidate genes for sheep muscle growth.

**Key words:** Hu sheep; *YAP1*; *MyHCs*; Gene expression; Muscle fiber development