



# Molecular characterization, expression, polymorphism of NR5A2 and its relationship with litter size in Hu sheep

Y.X. Li<sup>1,3</sup>, J. Zhang<sup>1,3</sup>, Y. Qian<sup>1,3</sup>, C.H. Meng<sup>1,3</sup>, H.L. Wang<sup>1,3</sup>, X.J. Tao<sup>4</sup>, S. Zhong<sup>1,3</sup>, S.X. Cao<sup>1,3</sup> and Q.F. Li<sup>2</sup>

<sup>1</sup>Institute of Animal Science, Jiangsu Academy of Agricultural Sciences, Nanjing, China

<sup>2</sup>College of Animal Science and Technology, Nanjing Agricultural University, Nanjing, China

<sup>3</sup>Key Laboratory of Animal Breeding and Reproduction, Jiangsu Academy of Agricultural Sciences, Nanjing, China

<sup>4</sup>Hailun Sheep Industry Limited Company, Jiangyan, China

Corresponding authors: Y.X. Li / S.X. Cao

E-mail: liyxmh@126.com / caoshaoxian@163.com

Genet. Mol. Res. 14 (4): 12765-12775 (2015)

Received April 23, 2015

Accepted July 23, 2015

Published October 19, 2015

DOI <http://dx.doi.org/10.4238/2015.October.19.20>

**ABSTRACT.** *NR5A2* has been implicated in processes as diverse as steroidogenesis, cellular proliferation, ovarian follicular development, ovulation, and fertility in mammals. However, data about the relationship between *NR5A2* and prolificacy in mammals are lacking. In the present study, we identified and characterized *NR5A2* of Hu sheep, and investigated the correlation between *NR5A2* and reproductive performance. The full-length coding region was 1488 bp, and the gene was conserved in mammals. We found a positive correlation between *NR5A2* mRNA levels in the ovary and the ovulation rate and litter size of Hu sheep. We detected two single nucleotide polymorphisms (T40C and T1419C) in the coding sequence of *NR5A2*. At the third and average parity, litter size of Hu ewes with CC genotype at T40C locus was larger than those of ewes with TT

or TC genotypes; at the T1419C locus, Hu ewes with TT genotype was greater than those of ewes with CC genotype at the third parity. Our findings demonstrated that NR5A2 was associated with reproductive performance in Hu sheep, a high prolificacy breed.

**Key words:** Hu sheep; *NR5A2*; mRNA expression; Single nucleotide polymorphism; Reproductive performance