

## Mitochondrial DNA Variation in Indigenous Sheep (*Ovis aries*) Breeds of Nepal

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**ABSTRACT:** Nepal borders India in the south and China in the north. Four distinct indigenous domestic sheep breed, i.e. Bhyanglung in the alpine region, Baruwal in the high hills, Kage in the mid hills and Lampuchhre in the low lands are distributed in the country. In this study, the mitochondrial DNA control region of 111 sheep from these four breeds was directly sequenced to determine their genetic variations and phylogenetic relationships. High mitochondrial DNA diversity among these breeds was observed and all haplotypes were classified into three haplogroups (A to C). Among the four breeds, three residing in middle to high hills had all three haplogroups while Lampuchhre sheep in low land only carried haplogroups A and B. This study revealed that a southwestern route of gene flow in sheep might have come from China to India via Nepal. It can be concluded that these indigenous sheep breeds have isolated breeding paths. Lack of crossbreeding among Nepalese sheep breeds is unique, and it is important for the decision making on utilization and conservation of Nepalese sheep genetic resources.

**Keywords:** Sheep (*Ovis aries*), mitochondrial DNA, control region, Nepalese indigenous breed.

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