

Appendix G. AMOVA analysis of 196 goat breeds with different geographic groups

	Source of variation	Degrees of freedom	Sum of squares	Variance components	Percentage of variation (%)	Fixation indices
5 continents	Among groups	4	1404.4970	0.4074	5.6511	FCT 0.0565**
	Among populations within groups	191	5364.7850	1.1459	15.8970	FSC 0.1685**
	Within populations	3969	22445.4800	5.6552	78.4519	FST 0.2155**
12 geographic regions	Among groups	11	2707.6860	0.5984	8.3600	FCT 0.0836**
	Among populations within groups	184	4061.5950	0.9074	12.6700	FSC 0.1383**
	Within populations	3969	22445.4800	5.6552	78.9700	FST 0.2103**

Note: Fixation indices  $FCT = \frac{\sigma_a^2}{\sigma_T^2}$ ;  $FSC = \frac{\sigma_b^2}{\sigma_b^2 + \sigma_c^2}$ ;  $FST = \frac{\sigma_a^2 + \sigma_b^2}{\sigma_T^2}$ ;  $\sigma_T^2$  is the total molecular variance;  $\sigma_a^2$  is the covariance component due to differences among the G populations;  $\sigma_b^2$  is the covariance component due to differences among haplotypes in different populations within a group;  $\sigma_c^2$  is the covariance component due to differences among haplotypes within a population; \*\*means significant ( $P < 0.01$ ).