



### How do the specific expressions of genes compare between different breeds ?

The domesticated dogs have the most phenotypic diversity of all land mammals. For example, the average weight of Chihuahuas and English Mastiffs differs by 65-fold. Consequently the level of expression of a certain genes may differ across breeds. For example, it is noteworthy the levels of circulating IGF1 are closely linked to the adult body size.

Expression of one gene may also differ between breeds due to gene selection linked to life environment. Whole genome sequencing of six dog breeds from continuous altitudes reveals adaption to high-altitude hypoxia. Comparison of the breeds from different altitudes reveals strong signals of population differentiation at the locus of hypoxia-related genes including endothelial Per-Arnt-Sim (PAS) domain protein 1 (*EPAS1*) and beta hemoglobin cluster.

*Reference: Greer et al. Connecting serum IGF-1, body size, and age in the domestic dog, AGE (2011) 33:475–483.*

*Gou et al. Whole genome sequencing of six dog breeds from continuous altitudes reveals adaption to high-altitude hypoxia. Downloaded from genome.cshlp.org on February 2, 2015*