

Contribution of Population Stratification to Weight and Height in four US Bison Herds

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Abstract:

Population stratification refers to a recent admixture of subpopulations which may differ in allele frequencies at many loci across the genome. A stratified sample induces dependence between maternal and paternal alleles at a locus causing Hardy-Weinberg disequilibrium or linkage disequilibrium across unlinked loci. Owing to these characteristics, it has become critical that population stratification be accounted for in genetic association studies to minimize the risk of generating type I, or false positive errors and also reducing statistical power. Data from four US bison herds was used to demonstrate the contribution of stratification to height and body weight of 1316 animals. A total of 67 microsatellite marker loci were studied for their association with the traits. Results from structured approach of Pritchard et al. (2000) were compared with results from L-POP computer program by Purcell and Sham (2004).