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The Role of Statistical Learning Methods in Genetic Association Studies

Genome-wide association studies (GWAS) often use univariate tests to identify associations between SNPs and traits, although biology suggests that there must be interactions between genes. There exist powerful but rarely-used methods originating from the statistical learning literature that may assist in identifying multi-SNP relationships and gaining understanding of SNP-trait associations. We demonstrate the performance of such methods on sets of SNPs within 100kb of approximately 20 candidate genes associated with bone density measures.