Marker-set analysis refers to the joint evaluation of a group of markers for genetic association.

Marker-set analysis has drawn great attention in recent genome-wide and sequence-based association studies.

It assesses the joint association of potentially correlated and interacting loci. It amplifies the detectability of the causal signals by aggregating small effects from multiple individual loci.

While most marker-set methods have concentrated on detecting genetic main effects, here we focus on methods for studying gene-gene (GxG) interactions.

The marker-set GxG method we present focuses on quantitative traits and uses pairwise genetic similarity as a tool to aggregate marker information

Develop a framework for incorporating interaction effects in similarity-based methods.

develop a series of tests to suit different purposes, including a test for detecting G\_E interactions, a test for detecting marginal main effects, and a joint test for detecting the overall association induced either by genetic main effects or by G\_E interactions.