

Multivariate Genome-Wide Association Studies for Identifying Additional Loci for Myopia

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Abstract : A systematic, simultaneous analysis of multiple phenotypes in genome-wide association studies (GWASs) draws a great attention to integrate the signals from single phenotypes with increased power. However, lacking an interpretable and efficient multivariate GWAS analysis impede the application of such approach. In this study, we propose to decompose the multivariate model into a series of simple univariate models. This transformation illuminates what exactly the individual trait contributes to the significant signals from the multivariate analyses. By employing our approach in the analysis of three myopia-related endophenotypes from the Singapore Malay Eye Study (SIMES), we identify novel candidate loci which were successfully validated in an independent Guangzhou Twin Eye Study (GTES).

Keywords : GWAS multivariate, multiple traits, myopia, association

Conference Title : ICHG 2017 : International Conference on Human Genetics

Conference Location : Bangkok, Thailand

Conference Dates : December 18-19, 2017