

Asthma in the Post-GWAS Era

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Asthma is a heterogeneous disease that results from complex interactions between genes and environmental exposures. Although many asthma susceptibility variants have been discovered in genome-wide association studies (GWAS), the known risk alleles explain only a small proportion of the heritability. Some of this “missing heritability” of asthma may be due to the fact that large GWAS do not account for the extraordinary clinical heterogeneity of asthma or for gene-environment interactions (GEIs) that influence risk. Thus, in this post-GWAS era, studies focusing on genetic and epigenetic variation that influence gene expression in cell types relevant to asthma will allow us to better interpret results of GWAS and identify potential sites of GEIs. Such studies will provide a more comprehensive understanding of the genetic architecture of asthma and, ultimately, for improved prevention and treatment of disease.