Shared genetic variants suggest common pathways in allergy and autoimmune diseases - DTU Orbit (23/12/2018)

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Background: The relationship between allergy and autoimmune disorders is complex and poorly understood.

Objective: To investigate commonalities in genetic loci and pathways between allergy and autoimmune diseases to elucidate shared disease mechanisms.

Methods: We meta-analyzed two GWAS on self-reported allergy and sensitization comprising a total of 62,330 individuals. These results were used to calculate enrichment for SNPs previously associated with autoimmune diseases. Furthermore, we probed for enrichment within genetic pathways and of transcription factor binding sites, and characterized commonalities in the variant burden on tissue-specific regulatory sites by calculating the enrichment of allergy SNPs falling in gene regulatory regions in various cells using Encode Roadmap DHS data, and compared the allergy data with all known diseases.

Conclusion: Among 290 loci previously associated with 16 autoimmune diseases, we found a significant enrichment of loci also associated with allergy (p=1.4e-17) encompassing 29 loci at a false discovery rate.