

Genetic Science Spotlight

The Largest Asthma Genetics Study by Imperial College London



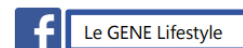
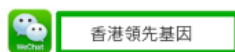
The NEW ENGLAND
 JOURNAL of MEDICINE
**Imperial College
 London**



Asthma is triggered by an exaggerated immune response to allergens such as dust mites, pollen or pet furs, currently over 300 million individuals are suffering from asthma worldwide. Asthma is a polygenic and multifactorial disorder caused by a multitude of genetic and environmental factors. Some genes are expressed only in certain environmental contexts and the major problem in many genetic studies of asthma is the lack of consistency and replicable results. Scientists from Imperial College London and more than a hundred centres across the globe conducted the largest and most comprehensive study of asthma genetics in 2010. They carried out a Genome Wide Association (GWA) study by genotyping 10,365 individuals with asthma and 16,110 unaffected persons to test for association between 582,892 SNPs and asthma. The study identified 8 novel genes associated with asthma (including *IL1RL1*, *IL18R1*, *HLA-DQ*, *IL33*, *SMAD3*, *ORMDL3*, *GSDMB* and *IL2RB*). The *ORMDL3* gene, in particular, was associated with childhood-onset asthma, whereas the *HLA-DQ* gene was associated to later-onset asthma. Furthermore, the results demonstrated that over 38% of all cases of childhood-onset asthma were attributable to a combination of these identified genes. The publication of this landmark GWA study marked the start of a new era in the genetic studies of asthma, making prediction of asthma status for a given genotype more reliable.

<http://www.nejm.org/doi/full/10.1056/NEJMoa0906312>

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