

Genetics play a significant role in immunity, new research finds

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Nearly three quarters of immune traits are influenced by genes, new research from King's College London reveals.

The study published today in *Nature Communications*, adds to a growing body of evidence that the genetic influence on our [immune](#) system is significantly higher than previously thought.

Researchers from King's, supported by the NIHR Biomedical Research Centre at Guy's and St Thomas' Foundation Trust and King's College London, analysed 23,000 immune traits in 497 adult female twins from the TwinsUK cohort. They found that adaptive immune traits - the more complex responses that develop after exposure to a specific pathogen, such as chickenpox - are mostly influenced by genetics.

They also highlight the importance of environmental influences such as our diet, on shaping the innate immunity (the simple core immune response found in all animals) in adult life.

The findings could help to improve understanding of the immune system and the interaction of environmental factors. It could also form the basis of further research into treatments for various diseases, including rheumatoid arthritis and psoriasis.

Dr Massimo Mangino, lead researcher from King's College London said: "Our genetic analysis resulted in some unusual findings, where adaptive immune responses, which are far more complex in nature, appear to be more influenced by variations in the genome than we had previously thought. In contrast, variation in innate responses (the simple non [specific immune response](#)) more often arose from environmental differences. This discovery could have a significant impact in treating a number of autoimmune diseases."

Professor Tim Spector, Director of the TwinsUK Registry at King's College London said: "Our results surprisingly showed how most immune responses are genetic, very personalised and finely tuned. What this means is that we are likely to respond in a very individualised way to an infection such as a virus - or an allergen such as a house dust mite causing asthma. This may have big implications for future personalised therapy."

More information: *Nature Communications*, [DOI: 10.1038/NCOMMS13850](https://doi.org/10.1038/NCOMMS13850)

Provided by King's College London

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