

Genetic differences may influence sensitivity to pain, study finds

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The study, published in *PLOS Genetics* on 20 December, adds to growing evidence that particular genes are involved in chronic pain and highlights this pathway as a potential target for more effective pain relief treatments for patients.

The collaborative study between King's, Pfizer Ltd and the Beijing Genomics Institute (BGI), used a new method to study and compare DNA, called 'exome sequencing', to identify genetic variations relating to pain sensitivity.

Lead author Dr Frances Williams, from the Department of Twin Research and [Genetic Epidemiology](#) at King's College London said: 'Chronic pain is a significant personal and socio-economic burden, with nearly one in five people experiencing it at some time in their lives. Current pain treatments often have either limited efficacy or side effects for many, so the possibility of a new approach to pain relief is an exciting development.'

It is known that people who are most sensitive to pain encountered in everyday life are more likely to go on to develop chronic pain. To identify sensitivity levels, researchers tested 2,500 volunteers using a heating probe on the arm. Volunteers were asked to press a button when the heat became painful for them, which allowed the scientists to determine individuals' pain thresholds. Exome sequencing was then used to analyse the DNA of 200 of the most pain sensitive and 200 of the least pain sensitive people.

Xin Jin, project manager from BGI, said: 'More and more evidence supports our theory that rare variants, which were overlooked in genome-wide association study, play a very important role in complex diseases and traits. The next generation of sequencing will make it possible to explore these rare variants and will lead to a wave of [new discoveries](#) in biomedical research.'

The results showed different patterns of genetic variants in each group – the pain sensitive people had less variation in their DNA than those who were pain insensitive. Serena Scollen, [Geneticist](#) from Pfizer and co-author on the work said: 'Further studies are needed to understand fully the genetics that underlie [pain sensitivity](#) in humans, but early studies in this area are promising.'

Ruth McKernan, Chief Scientific Officer of Pfizer's Research Unit in Cambridge that works on new pain drugs said: 'This study demonstrates the value of collaborative efforts between academia and industry. The genetic influence on normal pain processing in human volunteer populations will add to other approaches and help us prioritise potential new mechanisms for treating pain.'

Provided by King's College London

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