Medical Xpress

Link between DNA and chronic widespread joint pain

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Credit: Esther Max

Scientists at King's College London, funded by the charity Arthritis Research UK, have found a link between changes in marks on the outside of DNA (epigenetics) and chronic widespread joint pain, one of the main symptoms of fibromyalgia. Fibromyalgia is a common long-term chronic condition that causes fatigue and widespread pain in muscles and bones.

Despite its prevalence, the causes of fibromyalgia are poorly understood and there are limited treatments available. There are no diagnostic tests and it cannot be detected using conventional tests such as scans or x-rays.

The study, published in the journal *PLOS ONE*, will help scientists towards the development of a blood test to diagnose fibromyalgia, which affects as many as one in every 25 people.

Dr Frances Williams, one of the authors of the study from the Department of Twin Research and Genetic Epidemiology said: 'Fibromyalgia is influenced by genetic factors but there are many complicated steps between gene and disease. Identifying measurable epigenetic links is a major step forward. In addition, the results will inform future research in fibromyalgia as well as other chronic pain syndromes, such as irritable bowel syndrome.'

Stephen Simpson, director of research and programmes at Arthritis Research UK also commented on the research: 'There are millions of people in the UK who are living with the pain of fibromyalgia. This really exciting research is an important step forward in our understanding how epigenetic differences between individuals can influence our likelihood of developing fibromyalgia and chronic widespread musculoskeletal pain.'

'For too long people with fibromyalgia have struggled to get a diagnosis for their painful symptoms. This research will help pave the way for better understanding, management and treatment of joint pain.'

The researchers used twins to investigate whether the patterns of marks on DNA (DNA methylation) can affect how active the gene is in producing particular proteins and if there is a difference in people with and without chronic widespread musculoskeletal pain. The scientists identified three genes that had different amounts of DNA methylation in people with and without chronic widespread pain.

Early indications suggest that people may have different patterns of methylation on their DNA, and that this might be altering the activity of some genes and causing their condition in the first place.

Provided by King's College London