

Research identifies genetic causes of poor sleep

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The largest genetic study of its kind ever to use accelerometer data to examine how we slumber has uncovered a number of parts of our genetic code that could be responsible for causing poor sleep quality and duration.

The [international collaboration](#), led by the University of Exeter and published in *Nature Communications*, has found 47 links between our [genetic code](#) and the quality, quantity and timing of how we sleep. They include ten new genetic links with [sleep duration](#) and 26 with sleep quality.

The Medical Research Council-funded study looked at data from 85,670 participants of UK Biobank and 5,819 individuals from three other studies, who wore accelerometers—wrist-worn devices (similar to a Fitbit) which record activity levels continuously. They wore the accelerometers continuously for seven days, giving more detailed sleep data than previous studies, which have relied on people accurately reporting their own sleep habits.

Among the genomic regions uncovered is a gene

called PDE11A. The research team discovered that an uncommon variant of this gene affects not only how long you sleep but your quality of sleep too. The gene has previously been identified as a possible drug target for treatment of people with [neuropsychiatric disorders](#) associated with mood stability and social behaviours.

The study also found that among people with the same hip circumference, a higher waist circumference resulted in less time sleeping, although the effect was very small—around 4 seconds less sleep per 1 cm waist increase in someone with the average hip circumference of around 100cm.

The team involved colleagues from the Center for Sleep and Circadian Neurobiology in Pennsylvania, Massachusetts General Hospital as well as the Netherlands, France and Switzerland. They found that collectively, the genetic regions linked to sleep quality are also linked to the production of serotonin—a neurotransmitter associated with feelings of happiness and wellbeing. Serotonin is known to play a key role in sleep cycles and is theorised to help promote deeper and more restful sleep.

Senior author Dr. Andrew Wood, of the University of Exeter Medical School, said: "We know that getting enough sleep improves our health and wellbeing, yet we still know relatively little about the mechanisms in our bodies that influence how we sleep. Changes in [sleep quality](#), quantity and timing are strongly associated with several human diseases such as diabetes and obesity, and psychiatric disorders.

Lead author Dr. Samuel Jones, of the University of Exeter Medical School, said: "This study identifies genetic variants influencing sleep traits, and will provide new insights into the molecular role of sleep in humans. It is part of an emerging body of work which could one day inform the development

of new treatments to improve our sleep and our overall health."

The group also found further evidence that Restless Leg Syndrome is linked to poorer sleep from the genetic variants they found to be associated with sleep measures derived from the accelerometer data.

The full paper is entitled 'Genetic studies of accelerometer-based sleep measures yield new insights into human sleep behaviour'.

Provided by University of Exeter

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