New research heralds a blood test for drowsy driving

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During this unique study from the Sleep Research Centre at the University of Surrey, led by Professor Derk-Jan Dijk, 36 participants skipped one night of sleep. During this 40-hour period of sleep

deprivation, blood samples were taken and changes in the expression levels of thousands of genes were measured.

A machine learning algorithm identified a subset of 68 genes and with 92% accuracy could detect whether a sample was from a sleep-deprived or well-rested individual.

This breakthrough discovery paves the way for a future test which will be able to assess if a driver was sleep deprived. Previous research in this area from the AAA Foundation for Traffic Safety has shown that drivers who get just one to two hours less than the recommended daily allowance in a 24-hour period nearly double their risk for a car crash.

Dr. Emma Laing, Senior Lecturer in Bioinformatics at the University of Surrey, said: "We all know that insufficient sleep poses a significant risk to our physical and mental health, particularly over a period of time. However, it is difficult to independently assess how much sleep a person has had, making it difficult for the police to know if drivers were fit to drive, or for employers to know if staff are fit for work."

Simon Archer, Professor of Molecular Biology of Sleep at the University of Surrey, said: "Identifying these biomarkers is the first step to developing a test which can accurately calculate how much sleep an individual has had. The very existence of such biomarkers in the blood after only a period of 24-hour wakefulness shows the physiological impact a lack of sleep can have on our body."

Professor Derk-Jan Dijk, Director Surrey Sleep Research Centre at the University of Surrey, said: "This is a test for acute total sleep loss; the next step is to identify biomarkers for chronic insufficient sleep, which we know to be associated with adverse health outcomes."

More information: Emma E Laing et al, Identifying and validating

blood mRNA biomarkers for acute and chronic insufficient sleep in humans: a machine learning approach, *Sleep* (2018). DOI: 10.1093/sleep/zsy186

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