

Breakthrough in battle against type 2 diabetes

23 July 2018



Dr. Iain J Gallagher. Credit: University of Stirling

"Importantly, because we could also examine how the activation status of each 'insulin resistance' gene responded to treatment, we have also discovered a potential explanation for why not all people eliminate their Type 2 diabetes risk by following a lifestyle and exercise training programme."

The team—which included a number of international partners—analysed more than 1,000 [human muscle](#) samples and five distinct treatment regimes. In doing so, they demonstrated that 16 genes are consistently "switched" on or off in muscle tissue—but only in those people whose Type 2 diabetes risk factors improved. In such cases, the gene changes increased the individuals' insulin sensitivity—a measure of how effectively the [hormone insulin](#) is working.

Experts from the University of Stirling have made a breakthrough in understanding how people respond to lifestyle treatment for preventing Type 2 diabetes.

Activation of the signature is impaired in people with poor [insulin sensitivity](#), and is dysregulated to a greater extent following various types of standard lifestyle treatment.

The team, including academics from the Faculty of Health Sciences and Sport, discovered a new genomic signature in people whose Type 2 [diabetes](#) status improves following a treatment intervention. Significantly, it is the first reliable signature for [insulin](#) sensitivity in human muscle.

The signature includes more than 300 measures of gene activity, representing both protein coding and long non-coding [genes](#). It was extensively modelled to take into account body weight and age, as well as exercise capacity.

Scientists believe that the findings—published in leading journal *Nucleic Acids Research* - will inform future research by helping understand why not all people are able to eliminate the risk of the condition by changing their lifestyle.

More information: James A Timmons et al, A coding and non-coding transcriptomic perspective on the genomics of human metabolic disease, *Nucleic Acids Research* (2018). [DOI: 10.1093/nar/gky570](#)

Dr. Iain J Gallagher, of the University of Stirling, one of the research team, said: "Our hypothesis was that, with sufficient numbers of well characterised subjects and our new analysis methods, we could reveal a robust signature for what is known as 'insulin resistance' - an important precursor for developing Type 2 diabetes.

Provided by University of Stirling

APA citation: Breakthrough in battle against type 2 diabetes (2018, July 23) retrieved 16 September 2019 from <https://medicalxpress.com/news/2018-07-breakthrough-diabetes.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.