

## Blood test may help predict whether a child will become obese

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Scientists have found that a simple blood test, which can read DNA, could be used to predict obesity levels in children.

Researchers at the Universities of Southampton, Exeter and Plymouth used the test to assess the levels of epigenetic switches in the PGC1a gene – a gene that regulates <u>fat storage</u> in the body.

Epigenetic switches take place through a chemical change called DNA methylation which controls how genes work and is set during early life.

The Southampton team found that the test, when carried out on children at five years old, differentiates between children with a high body fat and those with a low body fat when they were older. Results showed that a rise in DNA methylation levels of 10 per cent at five years was associated with up to 12 per cent more <u>body fat</u> at 14 years. Results were independent of the child's gender, their amount of physical activity and their timing of puberty.

Dr Graham Burdge, of the University of Southampton who led the study with colleague Dr Karen Lillycrop, comments: "It can be difficult to predict when children are very young, which children will put on weight or become obese. It is important to know which children are at risk because help, such as suggestions about their diet, can be offered early and before they start to gain weight.

"The results of our study provide further evidence that being overweight



or obese in childhood is not just due to lifestyle, but may also involve important basic processes that control our genes. We hope that this knowledge will help us to develop and test new ways to prevent children developing obesity which can be introduced before a child starts to gain excess weight. However, our findings now need to be tested in larger groups of children."

The study, which also involved Professor Terence Wilkin at the University of Exeter and Dr Joanne Hosking at the University of Plymouth, is published in the journal *Diabetes*. The researchers used DNA samples from 40 children who took part in the EarlyBird project, which studied 300 children in Plymouth from the age of five until they were 14 years old.

Led by Professor Wilkin, the study assessed the children in Plymouth each year for factors related to type 2 diabetes, such as the amount of exercise they undertook and the amount of fat in their body. A blood sample was collected and stored. The Southampton team extracted DNA from these blood samples to <u>test</u> for epigenetic switches.

Professor Wilkin says: "The EarlyBird study has already provided important information about the causes of obesity in <u>children</u>. Now samples stored during the study have provided clues about the role of fundamental processes that affect how genes work, over which a child has no control. This has shown that these mechanisms can affect their health during childhood and as adults."

More information: <u>diabetes.diabetesjournals.org/...</u> 9/db13-0671.abstract

Provided by University of Southampton



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