

High fat diet triggers dangerous activity in common gene

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A surprise discovery in fat mice will lead to novel treatments for obesity and Type 2 Diabetes in humans according to new research.

Studies lead by Professor Chris Proud at the South Australian Health and Medical Research Institute (SAHMRI) show that a high fat diet triggers

activity in a gene known as MNK.

"By working with [mice](#) that do not have the MNK gene and comparing them with those that do, we discovered that MNK plays a role in [obesity](#)," said Professor Proud.

"With a high fat diet, the mice without the MNK are protected from accumulating high levels of body fat, developing diabetes and displaying inflammation in their [fat tissue](#)," he said.

All three of these features were seen in the normal mice enjoying a high fat diet, and are also characteristic of the changes seen in morbidly overweight humans.

Professor Proud and his colleagues are now looking at the mechanism through which MNK has activity.

"We're interested in whether MNK plays a role in creating new fat cells, or expanding fat cells that already exist," he said.

"We're conducting more experiments with mice and fat cells in culture for quicker progress."

Professor Proud is also exploring whether a drug that blocks the activity of MNK could provide therapeutic options in humans.

"We're working with local colleagues at University of South Australia, and others in the United Kingdom, Singapore and perhaps China for drug development," he said.

MNK is a common gene found in animals and humans, and appears to have a detrimental effect only with a [high fat diet](#). Professor Proud and his colleagues discovered its role in obesity through serendipity.

"We've known about the MNK gene and the protein it produces for a long time," said Professor Proud.

"We noticed that there were high levels of MNKs in [fat cells](#) and in liver and muscle – which are important tissues for obesity and type 2 diabetes – and so we took a punt on it. It turned out to be very interesting!"

Professor Proud has applied for an Australian patent to protect the therapeutic applications of MNK, and ultimately will also look towards North America and Europe.

Provided by The Lead South Australia

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