

Liver tells all and reveals truth about fat

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Dr Barbara Fam from the University's Molecular Obesity Laboratory group at Austin Health with Associate Professor Sof Andrikopoulos have discovered that the liver can directly talk to the brain to control the amount of food we eat.

The results have demonstrated that the [liver](#), which has never been classed as an important organ in controlling body weight before, is in fact a major player and should be considered a target for treatment of [weight gain](#).

Test on mice showed that over-expression of a specific enzyme in the liver resulted in 50% less fat and the subjects ate less food than mice without the extra enzyme. Needed in the production of glucose, the enzyme called FBPase previously led to speculation that too much FBPase was bad for you.

'We actually thought that the mouse with the over-expressed enzyme would show signs of becoming diabetic since the enzyme is important in producing more glucose from the liver. However when we studied our mice in more depth, we were very surprised to see that this enzyme triggered a number of hormones that influence the control of appetite,' said Dr Fam.

"The really striking result was that the genes in the brain, important in making us increase our [food intake](#) were actually reduced.

"The results suggest that consumption of a [diet](#) high in fat, causes an

increase in liver FBPase that was likely put in place as a negative feedback mechanism to limit further weight gain. Importantly, FBPase does not function to control body weight under normal physiological circumstances but acts only when the system is exposed to [excess nutrients](#) such as fat.

"When people eat diets loaded with fat and sugars particularly over the long term, it can have a number of different effects on the body but it appears that we actually have in place an innate system that protects us from any further weight gain that could happen while eating these type of diets."

More needs to be investigated to verify this in further trials, however this study has demonstrated that liver FBPase should be viewed not only as a mediator of [glucose](#) metabolism but also as an important regulator of appetite and fat. It also gives us great insight into why the liver is a very important organ.

The study will be published in the Journal *Diabetes* in April.

Provided by University of Melbourne

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