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Possible solution for obesity - in mice

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Researchers have identified a gene that could improve the balance of chemical energy produced by the body. The gene, when switched on, encourages excess energy to be released as heat, rather than being turned into chemical energy that has the potential to end up as fat.

Researchers at the Washington School of Medicine, USA, generated mice expressing mitochondrial uncoupling protein in normal skeletal muscle (*Nat Med* 2000 **6**:1115-1120). Although they ate the same amount of food as normal animals, these mice weighed less and had lower levels of blood triglycerides and better glucose tolerance. They also avoided becoming obese when fed a high fat diet.

The gene controls uncoupling protein one (UCP1), which is found in mitochondria. Its key role is in the conversion of food energy into chemical energy. When the UCP1 gene is switched on, excess food energy is converted into heat energy, which dissipates quickly, avoiding the risk of being converted into chemical energy and then deposited as fat.

Professor Mark McCarthy, an expert in genomic medicine at Imperial College, London, commented that although the UCP1 gene has a big effect in mice, humans don't have much of the tissue that expresses it. He said: "Humans don't have as much 'brown fat' as these mice, but there is another gene called UCP3, which is found in skeletal muscle - of which we have a great deal." Although the effect of UCP3 might not be as strong as that of UCP1, Professor McCarthy said it could be possible to find a way to switch UCP3 on all the time. But he added that other metabolic systems might counteract any effect.

References

1. *Nature Medicine*, [<http://www.nature.com/nm/>]