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Fruit flies provide liver hope

A study of the humble fruit fly may hold the key to new treatments for human liver diseases and diabetes.

Scientists have discovered the cells responsible for breaking down fat in the *Drosophila* fly.

The process has striking parallels to that used by humans - raising the prospect that studying it closely could speed up development of new drugs.

The study, by the National Institute for Medical Research, was published in the journal *Nature*.

In humans, dietary fat is stored in fatty tissue but can be retrieved and converted into energy during long periods between meals.

Many of the important steps in metabolising fat molecules and converting them into energy take place within the liver.

However, when the balance of fat build-up and break-down in the liver goes awry - often as a direct result of obesity - it can lead to conditions such as type 2 diabetes and metabolic syndrome.

Fruit flies share many genes with us and have proved useful for understanding several human diseases.

However, until now the way they metabolise fat has been a mystery.

This has limited their use in studying the mechanisms of human liver disease and obesity related conditions.

The new study shows that the task of breaking down fat falls to specialised cells, called oenocytes.



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Striking similarities

Lead researcher Dr Alex Gould said: "These findings reveal that flies have an equivalent to our liver and that they store, process and burn fat in a way that is strikingly similar to us.

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The researchers also discovered that fruit flies share more than 20 'fat burning' genes with humans.

Dr Gould said: "These discoveries may help us understand more about how our own bodies store and burn fat."

Dr Iain Frame, research manager at the charity Diabetes UK, said: "Fruit flies are used in several areas of diabetes research that will enable us improve our understanding of the causes of Type 2 diabetes.

"This research is interesting and may lead to new treatments but it is in its very early stages."

There are more than two million people with diabetes in the UK, and it is estimated that another 750,000 have the condition, but have yet to be diagnosed.

Professor Chris Day, of the University of Newcastle, said fatty liver disease was a growing problem in the UK, affecting up to 30% of the population.

He said a significant proportion of these people would go on to develop cirrhosis, liver failure and liver cancer.

"The pathogenesis of advanced forms of the disease and factors underlying individual susceptibility to advance disease are unclear.

"The publication in *Nature* therefore provides an excellent new model for dissecting the important mechanisms which will undoubtedly lead to better prevention and therapeutic strategies."