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## Parkinson's 'targets cell boiler'

**Parkinson's disease may trigger symptoms by crippling the key energy-producing "boiler room" of brain cells, research suggests.**

Two studies by US and Korean scientists focused on a mutant protein implicated in inherited Parkinson's.

In tests on fruit flies, they found it disabled energy-producing cell structures called mitochondria, damaging cells controlling movement.

The research is published online by the journal Nature.

Previous research has established that an inherited form of early-onset Parkinson's - autosomal recessive juvenile parkinsonism (AR-JP) - is caused by mutations in a gene called PINK1.

The researchers, from the University of California in Los Angeles and the Korea Advanced Institute of Science and Technology, explored the effect on the equivalent gene in the fruit fly, *Drosophila*. Flies with a mutant form of the gene suffered defects in the mitochondria.

### Cell damage

This appeared to cause serious damage to muscle cells, which led to movement problems.

It also appeared to lead to trigger degeneration of cells that transport a key chemical, dopamine, around the brain.

Parkinson's has been linked to a shortage of dopamine, which is known to play a key role in the co-ordination of movement.



People with Parkinson's lack a key chemical

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Both muscle cells and dopamine-transporting brain cells consume large amounts of energy, and thus are more reliant than most on healthy mitochondria.

The researchers also produced evidence suggesting that the PINK1 protein has a knock-on effect on another molecule - Parkin - which has also been implicated in Parkinson's.

They suspect that the two proteins both play an important role in keeping the mitochondria healthy.

### **New treatments**

The researchers say their work could ultimately lead to new treatments.

Writing in the journal, they say: "Our findings will lead to the development of better and effective treatment strategies for AR-JP and possibly other forms of Parkinson's disease."

Kieran Breen, director of research at the Parkinson's Disease Society, said cases of inherited Parkinson's were relatively rare compared to the non-inherited form of the disease.

But he added: "The identification and study of such Parkinson's disease-causing genes can be of great value in understanding the disease processes, which may be relevant to all patients."

Mr Breen said uncovering how nerve cells that produce dopamine die would be crucial to gaining a better understanding of Parkinson's, and developing new treatments.

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