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Stem cells were injected in the brains of rats

Stem cells transplanted into the brain seem to change into the type needed by Parkinson's patients.

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However, a UK expert warned that there were many obstacles to be overcome before they could be used as a treatment in humans.

The experiments, carried out at Harvard Medical School in the US, only so far involve rats and mice.

Stem cells are the body's "master cells", capable of altering to form different cells with a wide variety of functions throughout the body.

Scientists want to control their development to produce supplies of cells which are missing or have been destroyed by illness.

The progressive decline of Parkinson's disease is caused by the loss of brain cells which produce a key messenger chemical called dopamine.

**Developing cells**

This leads to involuntary shaking and loss of muscle control.

Once these dopaminergic brain cells are lost, they do not grow back naturally.

There is some evidence that transplantation of dopamine cells taken from the brains of fetuses can provide some symptom relief, but it has been difficult to obtain sufficient

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**Internet links:**

Parkinson's Disease Society  
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quantities of these.

Now the US team has shown that small quantities of stem cells, taken from an early embryo, can develop into functioning dopamine cells.

They took embryonic stem cells from mouse embryos, then transplanted them into a part of the rat brain in which dopaminergic cell loss happens in Parkinson's disease.

These brains were tested only a few weeks later, and the researchers found their transplanted cells had changed into the dopaminergic cells.

### **Tumour growth**

In brain scans, when the rats were given drugs which would normally make these cells produce more dopamine, the new cells responded as expected.

The new cells meant that there was a measurable improvement in motor function in the rats.

However, Dr Roger Barker, from the Cambridge Centre for Brain Repair, said that there remained significant safety concerns over the use of embryonic stem cells which at the moment meant no possibility of their use even as an experimental treatment.

In 20% of the rats in the latest experiment, the cells did not grow as desired - and instead formed a brain tumour called a teratoma.

### **Suicide gene**

In humans, this would have a devastating effect, as many of these tumours are inoperable.

Dr Barker said: "Unless you could find a way of removing the possibility of a teratoma, there is no way this could be used in humans.

"You might have to engineer in a 'suicide gene', which you would be able to switch on if a teratoma developed so that the cells would then die."

He said: "This is an interesting study, but I don't think this will be a treatment in humans for quite some time."

The study was published in the Proceedings of the National Academy of Sciences.

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