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## Stem Cells Repair Stroke Damage in Rats

Human stem cells helped repair stroke-related brain damage in rats, Stanford University researchers report.

The use of neural cells derived from human embryonic stem cells led to improvements in the rats' physical abilities, according to the study, which is published in the Feb. 20 issue of Public Library of Science ONE. The stroke damage induced by the researchers left the rats with a weakened forelimb.

This is the first time that scientists have used human embryonic stem cells to generate neural cells that grow well in the lab, repair stroke damage in rats, and don't consistently form tumors after transplantation, according to the researchers.

While the findings show the potential of using stem cell therapies to treat stroke, the researchers noted this is a small study, and more research is needed to determine if this approach could work in humans.

In the laboratory, the researchers grew embryonic stem cells in a combination of growth hormones that prodded the cells to mature into stable neural stem cells. This was an important step, because immature cells tend to grow uncontrollably into tumors.

The neural stem cells were then transplanted into the brains of 10 rats with stroke-related brain damage. After two months, the transplanted neural stem cells had migrated to the damaged area of the brain and incorporated into the surrounding tissue. None of the transplanted cells formed tumors.

The rats that received the transplants were better able to use their forelimbs than rats that had similarly damaged brain regions but weren't given stem cell transplants.

Each year, about 780,000 people in the United States suffer strokes, according to the American Stroke Association.