Zebrafish study offers insights into nerve cell repair mechanisms

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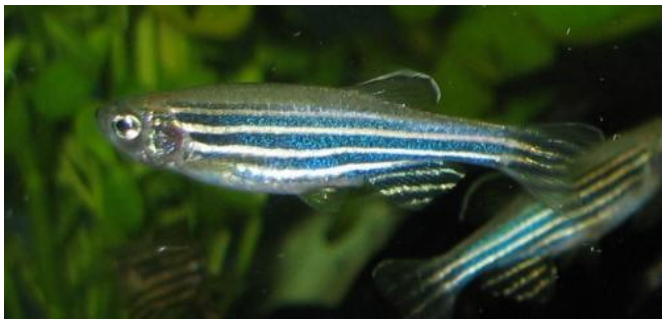

Tropical fish may hold clues that could aid research into motor neuron disease and paralysis caused by spinal cord injury.

Scientists have discovered that a hormone called serotonin—better known for its role as a mood booster—can help zebrafish to recover from a spinal cord injury.

They have found that serotonin sends signals to stem cells found in the spinal cord to boost the growth of new motor neurons—nerve cells that are vital for controlling muscle activity and movement.

The findings could help scientists to grow motor neurons in the laboratory that can be used in studies aimed at better understanding neurodegenerative conditions.

Damage to motor neurons in people—either as a result of neurodegeneration or spinal cord injury—is irreversible.

Remarkably, however, zebrafish can heal themselves from spinal cord injury by growing new motor neurons from stem cells present in the spinal cord.

Researchers hope that better understanding the repair mechanisms in zebrafish could eventually lead to new therapies for people with neurodegenerative conditions.

Motor neuron disease is an untreatable condition caused by the progressive loss of motor neurons that control movement, speech and breathing.

The study is published in the journal *Cell Reports*. It was funded by the Biotechnology and Biological Sciences Research Council.

Dr Thomas Becker, of the University of Edinburgh's Centre for Neuroregeneration and the Euan MacDonald Centre for Motor Neuron Disease Research, said: "Understanding how zebrafish are able to repair damaged nerves could one day help us to trigger similar mechanisms in human stem cells. Our hope is that this may eventually lead to new treatments for conditions such as motor neuron disease, for which there is no cure."

Provided by University of Edinburgh