

Special Protein in Zebrafish May Lead to Full Spinal Cord Repair

By Rhenn Anthony Taguam

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Researchers have discovered that zebrafish -- the two-buck wonders in pet stores -- may actually hold the key to do full spinal cord repair. (Photo : Photo by Scott Eisen/Getty Images for BCH)

Researchers have discovered that zebrafish -- the two-buck wonders in pet stores -- may actually hold the key to do full spinal cord repair. It seems the zebrafish is capable of healing a completely severed spinal cord with special proteins.

An injury of this kind in humans can be paralyzing and can even lead to fatal conditions.

Researchers from Duke University have discovered that zebrafish possess a special protein that allows them to heal their severed spine. According to [Medical Xpress](#), the study, published in Science, could lead to developments in tissue repair in humans.

Duke University's Kenneth Poss claimed this is one of "nature's most remarkable feats of regeneration." This is because its potential implications and usage in the world of medicine is astounding. There are currently very limited methods of tissue repair, and animals like zebrafish may hold the key.

A zebrafish's severed spinal cord forms a literal "bridge" that connects the gap in the injury. Cells form and extend to distances 10 times their own length to heal themselves. By eight weeks, the animals may have already fully reversed their paralysis.

Poss and his team conducted "molecular fishing" to find out which genes are responsible for such activity. It appears the CTGF or the connective tissue growth factor increases while the supporting cells appear to repair the injury.

"Deleting" the CTGF from zebrafish samples did not allow them to exhibit the same regenerative behavior.

Zebrafish and humans share a lot of protein-coding genes such as CTGF. Our CTGF proteins are nearly 90 percent similar to that of the zebrafish. When human CTGFs were added to zebrafish injuries, they even boosted the regeneration.

It also appears that the second half of the protein does wonders as well. The CTGF is a huge protein made up of four small parts with numerous functions. Its presence may allow the delivery of various "therapies" on a molecular level.

However, Poss also said CTGF alone may not be sufficient in treating spinal cord injuries in humans. Mammals are more complex beings, especially since scar tissues form around the injury. Regardless, Poss

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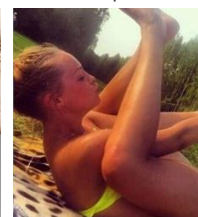
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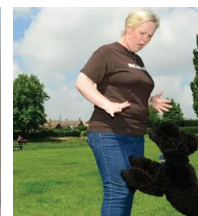
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wants to proceed with CTGF trials in mice.

The research may eventually reveal how zebrafish utilize CTGFs in healing their spines. While Poss believes there's more than meets the eye, knowing that CTGF is part of the picture may shed some light in treating these kinds of injury.

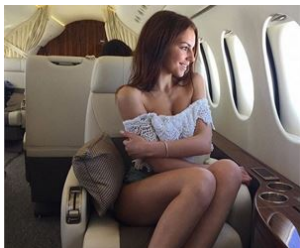
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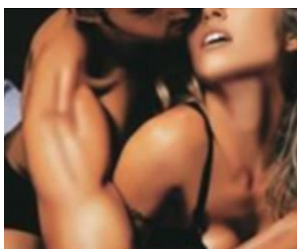
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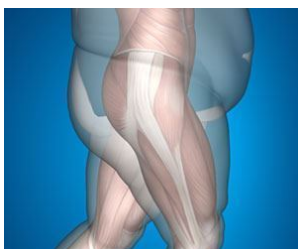
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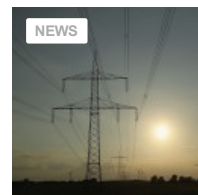
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