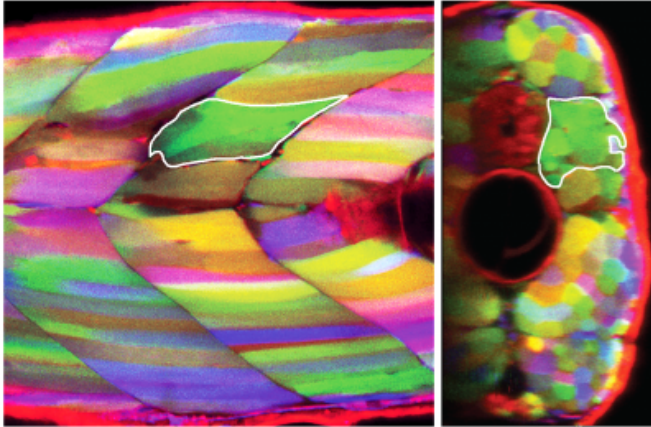


Scientist identify first steps in muscle regeneration

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Scientists from Monash University's Australian Regenerative Medicine Institute ARMI have found the first real evidence of how muscles may be triggered to regenerate or heal when damaged. The research could open the way to improving the lives of the elderly, those with the progressive muscle wasting disease muscular dystrophy, and even enhance muscle recovery in athletes.

In research published in the prestigious journal *Science*, Professor Peter Currie, Director of ARMI, and his team used the zebra fish to model [muscle](#) regeneration.

The small tropical fish are known as "king regenerators" because they have the capacity to regenerate any nerve or muscle that is injured. Zebrafish are also transparent so that scientists are able to observe the regeneration taking place within the living fish.

In the zebra fish model the scientists focused on adult [muscle stem cells](#), which exist in close proximity to mature muscle fibres. When the [muscle fibres](#) are injured they send out projections

which capture these stem cells, hauling them back in and regenerating the damaged muscle.

While the role of these stem cells in [muscle regeneration](#) has long been hypothesized, how they are activated and controlled has only been fully studied in cell samples, and not in a whole animal model. Now this can be studied thanks to the zebrafish.

Using specialist microscopy, Professor Currie and his researchers have been able to view and image the regeneration of living muscle tissue in real time, thereby allowing the first glimpse into how these stem cells move, behave and repair the muscle.

Professor Currie has hailed the study as opening the way to learning how to trigger muscle cells in humans to regenerate. "This process has never been caught in action before. It could reveal how we might better stimulate these cells in our own muscles," he said.

More information: D. B. Gurevich et al. Asymmetric division of clonal muscle stem cells coordinates muscle regeneration in vivo, *Science* (2016). [DOI: 10.1126/science.aad9969](https://doi.org/10.1126/science.aad9969)

Provided by Monash University

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