

Fish Heart Cell Study

A study of regenerative zebra danio heart tissue may help human heart health.

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Zebra danios have heart cells that regenerate if damaged.

Bony fish can repair their own heart tissue, and researchers at the Salk Institute for Biological Studies and the Center of Regenerative Medicine in Barcelona, Spain, studied this regenerative capability in zebra danios. They wanted to learn how their hearts regenerate and how this information can be used in human medicine.

The researchers found that cardiomyocytes (cardiac muscle cells that help contract the heart) are the cells responsible for the fish heart's regeneration process.

The team made the cardiomyocyte cells glow green under a microscope. Then they surgically removed 20 percent of the tissue from each fish's ventricle. The fish's hearts completely healed within a couple of weeks. The regenerated tissue glowed green, proving that the cardiomyocyte cells multiplied to heal the hearts.

Human hearts do not regenerate. Scar tissue (which is not capable of contracting) replaces damaged muscles after a heart attack. The researchers would like to learn why this regeneration does not occur in mammals.