

Why is the heart heart-shaped?

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How does the heart attain its characteristic shape? Shape may be sculpted by cell movement, cell division, or changes in cell size and shape, all of which can be influenced by the local environment. The heart appears as a simple tube early in development; later, the tube walls bulge outward to form the cardiac chambers.

In a new study published online in the open access journal *PLoS Biology*, Heidi Auman, Deborah Yelon, and colleagues found, by using transgenic zebrafish in which they can watch individual cardiac cells, that cells change size and shape, enlarging and elongating to form the bulges in the heart tube and eventually the chambers.

Since the heart is beating as it develops, they asked whether cardiac function influences cell shape. Using zebrafish mutants with functional defects, they found that both blood flow and cardiac contractility influence cardiac cell shape.

The researchers propose that a balance of the cell's internal forces (through contractility) with external forces (such as blood flow) is necessary to create the cell shapes that generate chamber curvatures. Disruption of this balance may underlie the aberrations observed in some types of heart disease.

Source: Public Library of Science

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