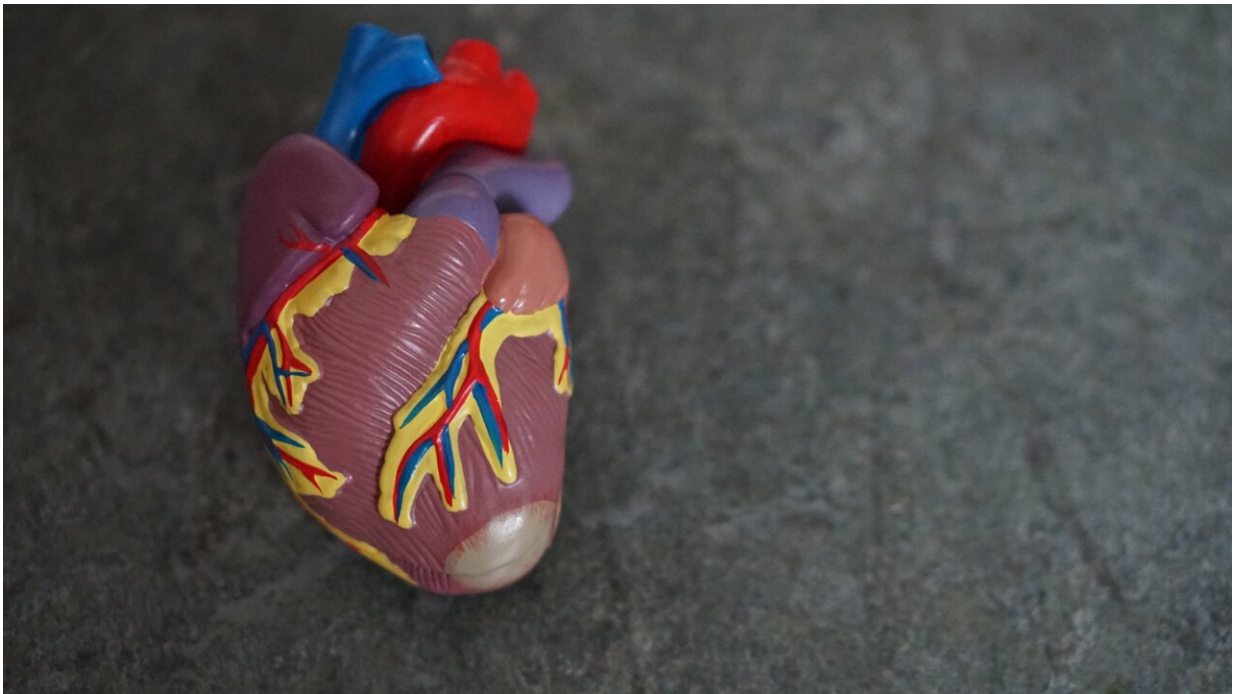


# New research reveals how the heart repairs after a heart attack

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Immune response and the lymphatic system are central to cardiac repair after a heart attack, according to a study from Ann & Robert H. Lurie Children's Hospital of Chicago and Northwestern University Feinberg Cardiovascular Research Institute. These insights into the basic mechanisms of cardiac repair are the first step towards developing novel therapeutic approaches to preserve heart function. Findings were

published in the *Journal of Clinical Investigation*.

"We found that macrophages, or [immune cells](#) that rush to the heart after a [heart attack](#) to 'eat' damaged or dead tissue, also induce vascular endothelial growth factor C (VEGFC) that triggers the formation of new lymphatic vessels and promotes healing," said co-senior author Edward Thorp, Ph.D., from the Heart Center at Lurie Children's and Associate Professor of Pathology and Pediatrics at Northwestern University Feinberg School of Medicine. "Our challenge now is to find a way either to administer VEGFC or to coax these macrophages to induce more VEGFC, in order to speed the heart repair process."

People who suffer a heart attack are at high risk for [heart failure](#), even with the advances in medications to reduce mortality. This occurs in part because some macrophages that arrive at the site of damage are proinflammatory and do not induce VEGFC.

"It is a Dr. Jekyll and Mr. Hyde scenario, with 'good' macrophages that induce VEGFC and the 'bad' ones that don't. We need to prevent the 'bad' macrophages from causing further damage," said co-senior author Guillermo Oliver, Ph.D., Director of Feinberg Cardiovascular and Renal Research Institute—Center for Vascular and Developmental Biology, and Professor of Medicine at Northwestern University Feinberg School of Medicine. "We are working to understand more about the progression to heart failure after a heart attack, in order to intervene early and reset the course to cardiac repair."

**More information:** Kristofor E. Ginton et al, Macrophage-produced VEGFC is induced by efferocytosis to ameliorate cardiac injury and inflammation, *Journal of Clinical Investigation* (2022). [DOI: 10.1172/JCI140685](https://doi.org/10.1172/JCI140685)

Provided by Ann & Robert H. Lurie Children's Hospital of Chicago

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