

New method to grow arteries could lead to 'biological bypass' for heart disease

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A new method of growing arteries could lead to a "biological bypass"—or a non-invasive way to treat coronary artery disease, Yale School of Medicine researchers report with their colleagues in the April issue of *Journal of Clinical Investigation*.

Coronary arteries can become blocked with plaque, leading to a decrease in the supply of blood and oxygen to the heart. Over time this blockage can lead to debilitating chest pain or [heart attack](#). Severe blockages in multiple major vessels may require coronary artery bypass graft surgery, a major invasive surgery.

"Successfully growing new arteries could provide a biological option for patients facing [bypass surgery](#)," said lead author of the study Michael Simons, M.D., chief of the Section of Cardiology at Yale School of Medicine.

In the past, researchers used growth factors—proteins that stimulate the growth of cells -- to grow new arteries, but this method was unsuccessful. Simons and his team studied mice and [zebrafish](#) to see if they could simulate arterial formation by switching on and off two signaling pathways -- ERK1/2 and P13K.

"We found that there is a cross-talk between the two signaling pathways. One half of the signaling pathway inhibits the other. When we inhibit this mechanism, we are able to grow arteries," said Simons. "Instead of using growth factors, we stopped the inhibitor mechanism by using a

drug that targets a particular enzyme called P13-kinase inhibitor."

"Because we've located this inhibitory pathway, it opens the possibility of developing a new class of medication to grow new arteries," Simons added. "The next step is to test this finding in a human clinical trial."

More information: The Journal of Clinical Investigation Vol. 120, No. 4 (April 2010)

Provided by Yale University

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