Progress toward new therapies for coronary artery disease

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Coronary artery disease is a leading cause of mortality in Western countries. It cannot be cured. Recent research, led by Pilar Ruiz-Lozano, Ph.D., at the Burnham Institute for Medical Research, may lead to new therapies for coronary artery disease. The research demonstrated that stimulation of the Wnt signaling pathway is essential for the formation of the coronary vasculature.

The Wnt pathways of secreted factors has been known previously to play a role in embryogenesis and development, and it also functions as a regulator of some stem cell populations.

Previous research by the team demonstrated that vitamin A signaling is necessary to the coronary progenitors and suggested that the action of vitamin A may be mediated, at least in part, by means of the activation of Wnt in the coronary progenitor cells.

The recent study provides hope for the millions of people affected by coronary disease. The group demonstrated that the mutation of the gene b-catenin (effector of the Wnt –signaling pathway), in a subset of cells destined to form the coronary vasculature, disrupts the formation of the vasculature of the heart in mammalian embryos. The mutation impairs differentiation of the vascular media, composed of smooth muscle cells.

In turn, activation of these cells with Wnt ligands results in increased vasculature and formation of smooth muscle cells. The work was published in PNAS and provides the groundwork for alternative

approaches to the cure of coronary artery disease.

Source: Burnham Institute for Medical Research