

Molecular mechanisms of autophagy in the cardiovascular system

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© 2015 American Heart Association, Inc. Autophagy is a catabolic recycling pathway triggered by various intra-or extracellular stimuli that is conserved from yeast to mammals. During autophagy, diverse cytosolic constituents are enveloped by double-membrane vesicles, autophagosomes, which later fuse with lysosomes or the vacuole to degrade their cargo. Dysregulation in autophagy is associated with a diverse range of pathologies including cardiovascular disease, the leading cause of death in the world. As such, there is great interest in identifying novel mechanisms that govern the cardiovascular response to disease-related stress. First described in failing hearts, autophagy within the cardiovascular system has been characterized widely in cardiomyocytes, cardiac fibroblasts, endothelial cells, and vascular smooth muscle cells. In all cases, a window of optimal autophagic activity seems to be critical to the maintenance of cardiovascular homeostasis and function; excessive or insuffici