

Mechano-regulation of vascular function

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Abstract

Numerous studies demonstrate that endothelial cell phenotypic change induced by oscillatory shear force play a fundamental role in the initiation and progression of atherosclerosis. Mechano-sensors, adaptor proteins, kinases, and transcriptional factors work closely at different layers to transduce the shear stress force from the plasma membrane to the nucleus in endothelial cells, thereby controlling the expression of genes that determine cell fate and phenotype. An in-depth understanding of these mechano-sensitive signaling cascades shall provide new translational strategies for therapeutic intervention of atherosclerotic vascular disease. We have recently revealed several new mechano-sensitive regulators of vascular inflammation in endothelial cells and investigated their role in the pathogenesis of atherosclerosis, and highlights the perspective of new anti-atherosclerosis therapies through targeting some of these mechano-regulated signaling molecules.