PHAGOCYTE IMMUNOMETABOISM IN HEART

Edward Thorp PhD*

Northwestern University, Chicago USA

ebthorp@northwestern.edu

Abstract

A timely question pertains to how metabolic phagocytic signaling regulates the signature anti-inflammatory macrophage response. Our studies newly reveal the metabolome of activated macrophages during cardiac tissue injury to reveal an interleukin-10 (IL-10) cytokine escalation that is independent of glycolysis yet bolstered by apoptotic cell fatty acids and mitochondrial β-oxidation, the electron transport chain, and heightened coenzyme NAD+. Loss of IL-10 due to mitochondrial complex III defects was remarkably rescued by adding NAD+ precursors. Il-10 activation by the respiratory chain was also important in vivo, as phagocyte mitochondrial dysfunction led to cardiac rupture after myocardial injury. These findings highlight a new paradigm whereby macrophages leverage injury metabolites and electron transport for anti-inflammatory reprogramming that culminates in organ repair.