

Special Issue

Macrophage Metabolic Reprogramming in Inflammation

Message from the Guest Editors

Macrophages stand at the frontline of tissue defense and repair, orchestrating immune responses while preserving homeostasis. As tissue-resident immune cells or recruited cells, they eliminate pathogens, apoptotic cells, and debris, while also supporting tissue regeneration after injury. Their hallmark plasticity enables them to swiftly adapt to diverse microenvironmental cues through polarization, acquiring specialized functional phenotypes. Metabolic reprogramming is a crucial driver of this plasticity, allowing macrophages to flip between oxidative phosphorylation and glycolysis based on the stimulus type. With growing evidence linking macrophage metabolism to conditions ranging from infection and cancer to obesity, diabetes, and cardiovascular disease, understanding these mechanisms has become a priority for both basic and translational research. This Special Issue brings together cutting-edge insights into macrophage metabolic reprogramming across diverse inflammatory contexts to advance novel therapeutic strategies that harness or modulate macrophage metabolism for improved clinical outcomes.

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