

Special Issue

Mitochondrial Dysfunction and Oxidative Stress in Human Diseases: Molecular Targets and Therapeutic Strategies

Message from the Guest Editor

Recent advances in molecular biology, bioenergetics, and redox medicine have shed light on the pathophysiological relevance of mitochondrial dynamics, ROS-mediated signaling, and mitophagy. Moreover, emerging therapeutic strategies targeting mitochondrial pathways—such as mitochondria-specific antioxidants, metabolic modulators, and redox-active compounds—are gaining ground in translational research and early-phase clinical trials. This Special Issue aims to gather original research articles, comprehensive reviews, and translational studies that explore the molecular underpinnings of mitochondrial dysfunction and oxidative stress across human diseases. Topics of interest include but are not limited to mitochondrial bioenergetics and metabolic reprogramming, redox signaling, mitophagy and apoptosis, immunometabolic interactions, and therapeutic interventions aimed at restoring mitochondrial function and redox balance. Submissions combining basic science with biomolecular investigation in human samples are especially welcome.

Guest Editor

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Deadline for manuscript submissions

closed (30 September 2025)



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