Special Issue

Mitochondrial Dysfunction in Health and Disease: Implications for Cellular Metabolism and Therapeutic Approaches

Message from the Guest Editor

Mitochondria are integral to cellular function. Mitochondrial dysfunction, characterized by impaired ATP synthesis, elevated reactive oxygen species (ROS) production, mitochondrial DNA (mtDNA) mutations, and defective mitophagy, has emerged as a hallmark of numerous diseases. Recent advances in high-resolution imaging, single-cell multi-omics, and CRISPR-based gene editing have deepened our mechanistic understanding of how mitochondrial dysfunction perturbs cellular metabolism, yet translation into effective therapies remains challenging. This Special Issue aims to compile cutting-edge research on the mechanisms and consequences of mitochondrial dysfunction across diverse disease contexts, including (but are not limited to) the following:

- Molecular mechanisms of mitochondrial quality control in metabolic disorders.
- Crosstalk between mitochondrial dysfunction, redox signaling, and inflammatory pathways.
- Mitochondrial-targeted antioxidants, metabolic modulators, and gene therapy strategies.
- Novel biomarkers for early detection of mitochondrial disease.
- Comparative studies of mitochondrial metabolism across disease models.

I look forward to receiving your contributions.

Guest Editor

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Message from the Editor-in-Chief

Biomedicines (ISSN 2227-9059) is an open access journal devoted to all aspects of research on human health and disease, the discovery and characterization of new therapeutic targets, therapeutic strategies, and research of naturally driven biomedicines, pharmaceuticals, and biopharmaceutical products. Topics include pathogenesis mechanisms of diseases, translational medical research, biomaterial in biomedical research, natural bioactive molecules, biologics, vaccines, gene therapies, cell-based therapies, targeted specific antibodies, recombinant therapeutic proteins, nanobiotechnology driven products, targeted therapy, bioimaging, biosensors, biomarkers, and biosimilars. The journal is open for publication of studies conducted at the basic science and preclinical research levels. We invite you to consider submitting your work to Biomedicines, be it original research, review articles, or developing Special Issues of current key topics.

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