



Mitochondrial Biology and Human Diseases

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Message from the Guest Editors

The impact of mitochondrial function in the context of cellular physiology is getting increasingly significant. Besides the most recognized role in the generation of cellular ATP by oxidative phosphorylation, mitochondria perform a wide variety of tasks ranging from the biosynthesis of essential molecules (amino acids, lipids, heme, etc.) to calcium homeostasis, cellular signalling, quality control, and programmed cell death. Moreover, these organelles own a genome functionally synchronized with the nuclear DNA. Replication, transcription, translation, and respiratory chain complex assembly are among the molecular processes occurring within mitochondria and mediating their functions in the cellular framework.

Elucidating the molecular mechanisms that underlie mitochondrial activity has therapeutic significance. Mitochondria crucially contribute to the development of various pathologies, including primary and secondary mitochondrial diseases that are clinically heterogeneous. Additionally, mitochondria are implicated in the progression of numerous other health conditions such as cancer, respiratory illnesses, cardiac and vascular diseases, metabolic disorders, and many more.





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