

Special Issue

Advances in Calcium Signaling: Physiological Roles and Implications for Disease

Message from the Guest Editors

Calcium ions play a central role as universal second messengers in virtually all cell types, regulating a wide range of physiological processes, including muscle contraction, secretion, metabolism, gene expression, cell proliferation, and apoptosis. The precise spatiotemporal regulation of intracellular calcium signaling is essential for normal cellular function, while its dysregulation is increasingly recognized as a key contributor to numerous pathological conditions, including muscular disorders, cardiovascular diseases, metabolic syndromes, neurodegenerative diseases, and cancer. Recent advances in molecular biology, imaging technologies, and electrophysiological approaches have significantly expanded our understanding of calcium signaling pathways, calcium-handling proteins, and organelle-specific calcium dynamics. However, important questions remain regarding the integration of calcium signaling with cellular metabolism, redox balance, mechanical signaling, and disease progression. We are pleased to invite researchers in this field to contribute original research articles and comprehensive reviews to this Special Issue.

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