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Nota di contenuto	Preface -- Calcium signaling: from basics to bedside -- Measuring Ca2+ in living cells -- High-throughput fluorescence assays for Ion Channels and GPCRs -- Imaging Native Calcium Currents in Brain Slices -- Molecular diversity of plasma membrane Ca2+ transporting ATPases: their function under normal and pathological conditions -- A role for SERCA pumps in the neurobiology of neuropsychiatric and neurodegenerative disorders -- Cytoplasmic Calcium Buffering: An Integrative Crosstalk -- An update on calcium binding proteins -- Manuel CamposToimil -- New insights in the IP3 receptor and its regulation -- Expression of the inositol 1,4,5-trisphosphate receptor and the ryanodine receptor Ca2+-release channels in the beta-cells and alpha- cells of the human islets of Langerhans -- Evolution of Excitation-Contraction Coupling -- Molecular Insights into Calcium Dependent Regulation of Ryanodine Receptor Calcium Release Channels -- Sarco-endoplasmic reticulum calcium release model based on changes in the luminal calcium content visualized from the luminal side -- Pyridine Nucleotide Metabolites and Calcium Release from Intracellular Stores -- Calcium Signaling in the Heart -- Molecular basis

and regulation of store-operated calcium entry -- Structure and activation mechanisms of CRAC channels -- Canonical Transient Potential Receptor-3 Channels in Normal and Diseased Airway Smooth Muscle Cells -- Pathophysiological significance of store-operated calcium entry in cardiovascular and skeletal muscle disorders and angiogenesis -- Calcium signalling and the regulation of chemosensitivity in cancer cells: role of the Transient Receptor Potential channels -- Targeting Transient Receptor Potential Channels by microRNAs drives tumor development and progression -- Calcium channels and Calcium-regulated channels in human red blood cells -- Regulation of multifunctional calcium/calmodulin stimulated protein kinases by molecular targeting -- Widespread roles of CaMK-II in Developmental Pathways -- Readily releasable stores of calcium in neuronal endolysosomes: Physiological and pathophysiological relevance -- At the crossing of ER stress and MAMs: A key role of Sigma-1 receptor?- ER-mitochondria calcium transfer, organelle contacts and neurodegenerative diseases -- The Role of Mitochondrial Calcium Signaling in the Pathophysiology of Cancer Cells -- Calcium Signaling and Gene Expression -- Simulation Strategies for Calcium Microdomains and Calcium Noise -- A statistical view on calcium oscillations -- Calcium Regulation of Bacterial Virulence -- Ca2+ Signaling in Drosophila Photoreceptor Cells -- Calcium imaging in Drosophila melanogaster -- Calcium imaging in the zebrafish -- Stimulation-secretion coupling in the beta cells: from basic to bedside -- Calcium dynamics and synaptic plasticity -- Calcium signaling during brain aging and its influence on the hippocampal synaptic plasticity -- Calcium Signaling in Endothelial Colony Forming Cells in Health and Disease -- Sensing Extracellular Calcium - An Insight into the Structure and Function of the Calcium-Sensing Receptor (CaSR) -- Extracellular Ca2+ in bone marrow -- Calcium in Cell-Extracellular Matrix Interactions -- Index.

Sommario/riassunto

This volume contains a unique selection of chapters covering a wealth of contemporary topics in this ubiquitous and diverse system of cell signaling. It offers much more than the accessibility and authority of a primary text book, exploring topics ranging from the fundamental aspects of calcium signaling to its varied clinical implications. It presents comprehensive discussion of cutting-edge research alongside detailed analysis of critical issues, at the same time as setting out testable hypotheses that point the way to future scientific endeavors. The contributions feature material on theoretical and methodological topics as well as related subjects including mathematical modeling and simulations. They examine calcium signaling in a host of contexts, from mammalian cells to bacteria, fruit fly and zebrafish. With much of interest to newcomers to the field as well as seasoned experts, this new publication is both wide-ranging and authoritative. The chapter “Calcium Signaling: From Basic to Bedside” is available open access under a Creative Commons Attribution 4.0 International License via link.springer.com.