1. Record Nr. UNINA9910734884203321

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Titolo	NADPH Oxidases Revisited: From Function to Structure / / edited by Edgar Pick
Pubbl/distr/stampa	Cham : , : Springer International Publishing : , : Imprint : Springer, , 2023
ISBN	3-031-23752-8
Edizione	[1st ed. 2023.]
Descrizione fisica	1 online resource (583 pages)
Disciplina	571.6 572.7
Soggetti	Cytology Stress (Physiology) Biomolecules Physical biochemistry Macromolecules Diseases Proteins Cellular Stress Structural Biology Mechanisms of Disease Protein Biochemistry
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di contenuto	Part. I. History, Recollections, And Homages -- Paradigm Shifts in the History of Nox2 and Its Regulators: An Appreciative Critique -- The Phagocyte Oxidase: The Early Years -- Reflections on My Life in Noxes -- The Discovery and Characterisation of Nox2, a Personal Journey -- Reminiscences on Positional Cloning of X-CGD Gene (Aka CYBB, gp91phox, Nox2) -- On Katsuko Kakinuma: Spectroscopic Studies of Redox Centers in NADPH Oxidase “Identifying and Observing the Key Players That Pass an Electron to Oxygen” -- Pierre Vignais, from One Respiratory Chain to Another -- Gary M. Bokoch, the Rac-n-Rho Man: His fascination with Rho-GTPases -- History and Discovery of the

Noxes: From Nox1 to the DUOXes -- Part. II. Canonical NADPH Oxidases -- NADPH Oxidase 1: At the Interface of the Intestinal Epithelium and Gut Microbiota -- Physiological Functions and Pathological Significance of NADPH Oxidase 3 -- Nox 4: From Discovery to Pathophysiology -- Nox5 - Molecular Regulation and Pathophysiology.-DUOX1 and DUOX2, DUOXA1 and DUOXA2 -- Part. III. NADPH Oxidase Regulators -- p47phox and NOXO1, the Organizer Subunits of the NADPH Oxidase 2 (Nox2) and NADPH Oxidase 1 (Nox1) -- The NADPH Oxidase Activator p67phox and Its Related Proteins -- p40phox: Composition, Function and Consequences of Its Absence -- Rho Family GTPases and their Modulators -- Part IV. Tools, Inhibitors, and Neighbors -- Tools to Identify Noxes and their Regulators -- Methods to Measure Reactive Oxygen Species Production by NADPH Oxidases -- Isoform-Selective Nox Inhibitors: Advances and Future Perspectives -- Proteins Cross-talking with Nox Complexes: The Social Life of Noxes -- Part V. Non-Mammalian NADPH Oxidases -- NADPH Oxidase-Dependent Processes in the Social Amoeba Dictyostelium Discoideum -- Discovery and Functional Analysis of the Single-Celled Yeast NADPH Oxidase, Yno1 -- NADPH Oxidases in Fungi -- Plant NADPH Oxidases -- Nematode Noxes: The DUOXes of Caenorhabditis elegans -- NADPH Oxidases in Arthropods -- NADPH Oxidases in Zebrafish -- Part VI. Structure -- Structural Insights into the Mechanism of DUOX1-DUOXA1 Complex -- Structure, Function and Mechanism of Six-Transmembrane Epithelial Antigen of the Prostate (STEAP) Enzymes -- Part VII. Pathology -- Chronic Granulomatous Disease -- Definitive Treatments for Chronic Granulomatous Disease with a Focus on Gene Therapy -- Part VIII. Future -- Quo Vadis NADPH Oxidases: Perspectives on Clinical Translation.

Sommario/riassunto

This book provides a unique, comprehensive, and up-to-date overview of the various NADPH oxidases and narrates the history of their discovery, biochemical characteristics, genetics, molecular structure, and multiple functions in health and disease. It covers the subject in a manner that serves both the expert and the novice researcher in the field. The book starts with an overview of the major milestones in the discovery of the archetypical NADPH oxidase, known as cytochrome b558, and its cytosolic regulators. This is followed by personal recollections by pioneers of the field, descriptions of the work of the major figures of the past by their followers, and a rendering of the history of the discovery of the Nox family. The central section of the book consists of chapters devoted specifically to an in depth description of the individual members of the Nox family, and is followed by chapters focused on the modulators of their function. A subsequent section comprises chapters dealing with methodologies of Nox research, interaction with other proteins, and Nox inhibitors. A distinct section of the book deals with non-mammalian Noxs, from amoeba to zebrafish. Subsequent chapters focus on Nox structure, a field in which extraordinary progress was made in recent years. The volume ends with chapters on Chronic Granulomatous Disease, the consequence of Nox loss-of-function, and its treatment by gene therapy. The coda is a crystal ball perspective of the hopes for the clinical translation of basic Nox research. Written for biochemists, cell biologists, molecular biologists, and clinicians, this book is aimed at both senior scientists and young investigators in the field.