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Nitric oxide biology & pathobiology (3rd edition) editors: Louis Ignarro & Bruce Freeman

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The third Edition of *Nitric Oxide Biology and Pathobiology* provides a welcome update on an already successful series of informative publications from world-leading experts on the physiological and pathological roles of this ubiquitous signalling molecule. Highlights unique to this Edition include key interactions of NO with other small molecule bioregulators (e.g. CO, H_2S), which is a contemporary and critical consideration for those interested in studying such species, and extensive discussion of the recent discovery of the nitrate-nitrite-NO pathway and its therapeutic implications.

The Edition starts with an excellent historical perceptive of the discovery of mammalian NO generation and convergence with the identification and characterisation of the endothelium-derived relaxing factor (EDRF). This is followed by important chapters detailing the chemical underpinnings of NO (patho)physiology focusing on interactions with other biological molecules and how the products are thought to impact biology (e.g. peroxynitrite, S-nitrosothiols); the importance of NO degradation by haemoproteins is also described. These aspects culminate with a thorough piece describing the structure and function of the NO-receptor guanylyl cyclase. Having laid the chemical and biochemical groundwork, this Edition then provides updates on the role of endothelial NOS (eNOS) uncoupling in cardiovascular disorders and the interface between NO and the mitochondria in health and disease. Subsequently, several chapters are dedicated to comprehensively covering the novel sequential reduction of inorganic nitrate to nitrite then NO by endogenous mechanisms as a reservoir of bioactivatable NO, which reflects the ever increasing appreciation of the physiological, pathological and pharmacological importance of this pathway. This area includes description of the mechanisms as a whole, the endogenous reductive processes, and proof-of-concept clinical evaluation. Further Chapters deal with contemporary research in the regulation of NO production in the blood vessel wall, comprising work on NO diffusion and consumption, asymmetric dimethylarginine as an endogenous inhibitor, and redox signalling involving nitrated nucleotides; there is also brief coverage of the recent identification of cysteine persulfides in biological systems.

The Third Edition then proceeds to consider the importance of NO signalling in specific disorders, with contributions providing fascinating insight into sepsis, hypertension, myocardial infarction, sickle cell disease, neurodegeneration, cancer, obesity, diabetes, and erectile dysfunction. These complementary Chapters consider not only disease mechanisms but also the likelihood of successful NO-based therapies. Indeed, arguably the first and most successful treatment following the discovery of endogenous NO generation, that of inhaled NO, is given its own specific Chapter recounting its current use in respiratory distress syndromes, in neonates principally but also adults, then proposing future indications including ischaemia/reperfusion injury.

In sum, this new Edition successfully captures all the contemporary advances in NO biology with contributions from internationally-renowned, key opinion leaders in the field. These aspects are nicely balanced by fascinating historical perspectives and concise background information. This publication should appeal to scientists and clinicians alike, early stage through to senior academics, with an interest in NO physiology, pathology and pharmacology. Furthermore, the Edition will dovetail perfectly with the interests of industry, highlighting novel roles of NO across a range of disorders and proffering verification of mechanism(s) that might be tractable in terms of new drug targets.

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