

1. Record Nr.	UNINA9910678097703321
Titolo	Carbon monoxide in drug discovery : basics, pharmacology, and therapeutic potential // edited by Leo E. Otterbein, Binghe Wang
Pubbl/distr/stampa	Hoboken, New Jersey : , : John Wiley & Sons, Inc., , [2022] ©2022
ISBN	1-119-78341-0 1-119-78343-7 1-119-78342-9
Descrizione fisica	1 online resource (1005 pages)
Collana	Wiley Series in Drug Discovery and Development
Disciplina	615.1072
Soggetti	Drugs - Research
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Includes index.
Nota di contenuto	Intro -- Carbon Monoxide in Drug Discovery -- Contents -- List of Contributors -- Preface: Carbon Monoxide: Promises and Challenges in Its Pharmaceutical Development -- Section I General Background and Physiological Actions -- 1 Endogenous CO Production in Sickness and in Health -- 2 Molecular Mechanisms of Actions for CO: An Overview -- 3 Pharmacokinetic Characteristics of Carbon Monoxide -- 4 Carbon Monoxide and Energy Metabolism -- 5 Role of CO in Circadian Clock -- 6 Carbon Monoxide and Mitochondria -- 7 Carbon Monoxide, Oxygen, and Pseudohypoxia -- 8 Nitric Oxide in Human Physiology: Production, Regulation, and Interaction with Carbon Monoxide Signaling -- 9 When Carbon Monoxide Meets Hydrogen Sulfide -- 10 Biliverdin and Bilirubin as Parallel Products of CO Formation: Not Just Bystanders -- Section II Delivery Forms -- 11 Delivery Systems and Noncarrier Formulations -- 12 Metal-Based Carbon Monoxide-Releasing Molecules (CO-RMs) as Pharmacologically Active Therapeutics -- 13 Organic CO Donors that Rely on Photolysis for CO Release -- 14 Organic Carbon Monoxide Prodrugs that Release CO Under Physiological Conditions -- 15 Targeted Delivery of Carbon Monoxide -- 16 Anesthesia-Related Carbon Monoxide Exposure -- 17 Natural Products that Generate Carbon Monoxide: Chemistry and Nutritional Implications -- Section III Carbon Monoxide Sensing and Scavenging -- 18 Fluorescent Probes for

Intracellular Carbon Monoxide Detection -- Section IV Therapeutic Applications -- 19 CO in Solid Organ Transplantation -- 20 Carbon Monoxide in Lung Injury and Disease -- 21 Carbon Monoxide in Acute Brain Injury and Brain Protection -- 22 CO as a Protective Mediator of Liver Injury: The Role of PERK in HO-1/CO-Mediated Maintenance of Cellular Homeostasis in the Liver -- 23 CO and Cancer -- 24 CO and Diabetes -- 25 Carbon Monoxide and Acute Kidney Injury. 26 CO as an Antiplatelet Agent: An Energy Metabolism Perspective -- 27 CO in Gastrointestinal Physiology and Protection -- 28 Carbon Monoxide and Sickle Cell Disease -- 29 CO and Pain Management -- 30 Clinical Trials of Low-Dose Carbon Monoxide -- Index -- EULA.

Sommario/riassunto

"Carbon monoxide, one of the smallest organic natural molecules, is widely known for its toxicity. Formation of CO via incomplete combustion is a major contributing factor to accidental or intentional CO poisoning, leading to severe health consequences or death. In addition, CO is a by-product of tobacco smoking, and has been associated with some of the harmful effects of smoking. However, less known and probably far more important is the recognition of the essential physiological roles of CO as a signaling molecule in mammals. Against over more than a century of negative connotation, the last few decades have proven that CO possesses a multitude of physiological roles and therapeutic functions including regulation of the immune response, cellular proliferation, and control of cell survival. This concept is supported by the discovery that CO is produced by all cells and more so under conditions of stress. This book comprehensively summarizes key aspects of CO's endogenous roles, therapeutic functions, and challenges that we face in its development as a therapeutic agent. We hope this preface will provide a thread for reading this book and a birds-eye view of the landscape for understanding this field, and more importantly lay out the challenges ahead in understanding the detailed mechanisms of action of CO and in its development as a therapeutic agent. We have divided the book into four sections that provide a framework for the reader to follow the evolution of CO from an accepted poison to a bioactive molecule that may offer enormous clinical benefits"--
