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Nota di contenuto	Preface; Contents; Abbreviations Symbols and Definitions; Introduction; The Beginning of the Chemical Study of Bioluminescence; Luciferin; Photoprotein; Chemical Studies on Bioluminescence in the Last One Hundred Years; Chemical Study of Bioluminescence in the Future; The Contents of this Book; 1 The Fireflies and Luminous Insects; 1.1 The Fireflies; 1.1.1 An Overview of the Firefly Luminescence Reaction; 1.1.2 Firefly Luciferin and Oxyluciferin; 1.1.3 Firefly Luciferase; 1.1.4 Assays of Luciferase Activity ATP and Luciferin; 1.1.5 General Characteristics of the Bioluminescence of Fireflies 1.1.6 Mechanisms of the Bioluminescence 1.1.7 Light Emitters in the Firefly Luminescence System; 1.1.8 A Note on the Dioxetanone Pathway and the ¹⁸ O-incorporation Experiment; 1.2 Phengodidae and Elateroidae; 1.2.1 Phengodidae; 1.2.2 Elateridae; 1.3 Diptera; 1.3.1 The Glow-worm Arachnocampa; 1.3.2 The American Glow-worm Orfelia; 2 Luminous Bacteria; 2.1 Factors Required for Bioluminescence; 2.2 Bacterial Luciferase; 2.3 Long-chain Aldehyde; 2.4 Mechanism of Luminescence Reaction; 2.5 Assay of Luciferase Activity (Hastings et al., 1978; Baldwin et al., 1986) 2.6 Quantum Yield of Long-chain Aldehydes 2.7 In vivo Luminescence of Luminous Bacteria; 3 The Ostracod Cypridina (Vargula) and Other Luminous Crustaceans; 3.1 The Ostracod Cypridina; 3.1.1 Overview of

Ostracoda; 3.1.2 Cypridina hilgendorffii Muller; 3.1.3 Research on Cypridina Luminescence before 1955; 3.1.4 Purification and Crystallization of Cypridina Luciferin; 3.1.5 Properties of Cypridina Luciferin; 3.1.6 Oxyluciferin and Etioluciferin; 3.1.7 Purification and Molecular Properties of Cypridina Luciferase; 3.1.8 Luciferin-luciferase Luminescence Reaction; 3.1.9 Quantum Yield
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3.3 The Decapod Shrimp Oplophorus gracilirostris; 3.3.1 Oplophorus Luciferase; 3.3.2 Coelenterazine-luciferase Reaction; 3.4 Copepoda; 4 The Jellyfish Aequorea and Other Luminous Coelenterates; 4.1 The Hydrozoan Medusa Aequorea aequorea; 4.1.1 History of the Biochemical Study of Aequorea Bioluminescence; 4.1.2 Extraction and Purification of Aequorin; 4.1.3 Properties of Aequorin
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5.1 Discovery of Coelenterazine

Sommario/riassunto

This book, written by a distinguished scientist in the field, provides a comprehensive overview of the biochemical aspects of all luminous organisms currently known. It is the first and only book that provides chemical information on all known bioluminescence systems, in a single volume. Some 35 different types of bioluminescence organisms are discussed in 10 chapters. The descriptions include: a history of the discovery of luminescence substances such as luciferins, luciferases and photoproteins; the process of research, explaining how luminescent substances have been isolated and purified; t
