ACTIVE OXYGEN IN BIOCHEMISTRY

EDITORS: JOAN SELVERSTONE VALENTINE University of California, Los Angeles

CHRISTOPHER S. FOOTE University of California, Los Angeles

ARTHUR GREENBERG University of North Carolina at Charlotte

JOEL F. LIEBMAN University of Maryland Baltimore County



BLACKIE ACADEMIC & PROFESSIONAL

An Imprint of Chapman & Hall London · Glasgow · Weinheim · New York · Tokyo · Melbourne · Madras

¢

Contents

.

	Preface	vii
	Series Preface	ix
	Structure Energetics and Reactivity in Chemistry Series (SEARCH series)	xi
	Editorial Advisory Board	xii
	Contributors	xv
1	Biological Reactions of Dioxygen: An Introduction Raymond Y. N. Ho, Joel F. Liebman, and Joan Selverstone Valentine	1
2	Oxygen Activation by Flavins and Pterins Bruce A. Palfey, David P. Ballou, and Vincent Massey	37
3	Reactions of Dioxygen and Its Reduced Forms with Heme Proteins and Model Porphyrin Complexes <i>Teddy G. Traylor and Patricia S. Traylor</i>	84
4	Dioxygen Reactivity in Copper Proteins and Complexes Stephen Fox and Kenneth D. Karlin	188

ç

v

vi	Contents	
5	Oxygen Activation at Nonheme Iron Centers Lawrence Que, Jr.	232
6	The Mechanism of Lipoxygenases Mark J. Nelson and Steven P. Seitz	276
7	The Biological Significance of Oxygen-Derived Species <i>Barry Halliwell</i>	313
8	Metal-Complex-Catalyzed Cleavage of Biopolymers Rosemary A. Marusak and Claude F. Meares	336
9	Exploration of Selected Pathways for Metabolic Oxidative Ring Opening of Benzene Based on Estimates of Molecular Energetics <i>Arthur Greenberg</i>	401
10	The Role of Oxidized Lipids in Cardiovascular Disease Judith A. Berliner and Andrew D. Watson	433
	Index	450

ç

•