

# Contents

<b>Preface</b> .....	v
<b>Contributors</b> .....	xi
<b>Section I Introduction</b>	
<b>Chapter 1 Introduction</b> .....	3
Satomi Miwa, Florian L. Muller, and Kenneth B. Beckman	
<b>Chapter 2 The Basics of Oxidative Biochemistry</b> .....	11
Satomi Miwa, Florian L. Muller, and Kenneth B. Beckman	
<b>Section II The Role of Oxidative Stress in Aging</b>	
<b>Part II-A Different Model Systems</b>	
<b>Chapter 3 Retrograde Response, Oxidative Stress, and Cellular Senescence</b> .....	39
João F. Passos and Thomas von Zglinicki	
<b>Chapter 4 Reactive Oxygen Species in Molecular Pathways Controlling Aging in the Filamentous Fungus <i>Podospora anserina</i></b> .....	53
Heinz D. Osiewacz and Christian Q. Scheckhuber	
<b>Chapter 5 Oxidative Stress and Aging in the Budding Yeast <i>Saccharomyces cerevisiae</i></b> .....	67
Stavros Gonidakis and Valter D. Longo	
<b>Chapter 6 Oxidative Stress and Aging in the Nematode <i>Caenorhabditis elegans</i></b> .....	81
David Gems and Ryan Doonan	

<b>Chapter 7</b>	<b>Roles of Oxidative Stress in the Aging Process of <i>Drosophila melanogaster</i></b> . . . . .	111
	Robin J. Mockett, Rajindar S. Sohal, and William C. Orr	
<b>Chapter 8</b>	<b>Does Oxidative Stress Limit Mouse Life Span?</b> . . . . .	129
	Florian L. Muller	
<b>Part II-B The Comparative Approach</b>		
<b>Chapter 9</b>	<b>Mitochondrial Free Radical Production and Caloric Restriction: Implications in Vertebrate Longevity and Aging</b> . . . . .	149
	Mónica López-Torres and Gustavo Barja	
<b>Section III Oxidative Stress in Human Aging and Diseases</b>		
<b>Chapter 10</b>	<b>Deregulation of Mitochondrial Function: A Potential Common Theme for Cardiovascular Disease Development</b> . . . . .	165
	Scott W. Ballinger	
<b>Chapter 11</b>	<b>Oxidative Stress in Type 2 Diabetes Mellitus</b> . . . . .	191
	Muhammad A. Abdul-Ghani and Ralph A. DeFronzo	
<b>Chapter 12</b>	<b>DNA Oxidative Damage and Cancer</b> . . . . .	213
	Jeffrey A. Stuart and Melissa M. Page	
<b>Chapter 13</b>	<b>Oxidative Stress in Hypertension</b> . . . . .	229
	Sean P. Didion, Sophocles Chrissobolis, and Frank M. Faraci	
<b>Chapter 14</b>	<b>Aging and Cardiac Ischemia—Mitochondria and Free Radical Considerations</b> . . . . .	253
	Paul S. Brookes and David L. Hoffman	
<b>Chapter 15</b>	<b>Role of the Antioxidant Network in the Prevention of Age-Related Diseases</b> . . . . .	269
	Mauro Serafini	

**Section IV Future**

<b>Chapter 16</b>	<b>Reactive Oxygen Species as Signaling Molecules. . . . .</b>	<b>293</b>
	Ilsa I. Rovira and Toren Finkel	
<b>Chapter 17</b>	<b>Summary and Outlook. . . . .</b>	<b>309</b>
	Satomi Miwa, Florian L. Muller, and Kenneth B. Beckman	
<b>Index . . . . .</b>		<b>313</b>