
Contents

Series Preface.....	xi
Preface.....	xiii
Editors.....	xv
List of Contributors.....	xvii

Section 1 *Vertebrate Visual Phototransduction*

Chapter 1	Biophysical Approaches to the Study of G-Protein Structure and Function.....	3
	<i>Anita M. Preininger, William M. Oldham, and Heidi E. Hamm</i>	
Chapter 2	Photoactivation of Rhodopsin and Signal Transfer to Transducin.....	33
	<i>Oleg G. Kisselev</i>	
Chapter 3	How Rod Arrestin Achieved Perfection: Regulation of Its Availability and Binding Selectivity	55
	<i>Vsevolod V. Gurevich, Susan M. Hanson, Eugenia V. Gurevich, and Sergey A. Vishnivetskiy</i>	
Chapter 4	Function and Regulation of PDE6.....	89
	<i>Michael Natochin, Hakim Muradov, and Nikolai O. Artemyev</i>	
Chapter 5	Biochemical Characterization of Phototransduction RGS9-1–GAP Complex.....	99
	<i>Qiong Wang and Theodore G. Wensel</i>	
Chapter 6	Guanylate Cyclase-Based Signaling in Photoreceptors and Retina.....	121
	<i>Karl-Wilhelm Koch and Andreas Helten</i>	
Chapter 7	Transgenic Strategies for Analysis of Photoreceptor Function	145
	<i>Janis Lem and Kibibi Rwayitare</i>	

Section 2 Vertebrate Nonvisual Phototransduction

- Chapter 8** Melanopsin Signaling and Nonvisual Ocular Photoreception 165
Sowmya V. Yelamanchili, Victoria Piamonte, Surendra Kumar Nayak, Nobushige Tanaka, Quansheng Zhu, Kacee Jones, Hiep Le, and Satchidananda Panda

Section 3 Invertebrate Visual Phototransduction

- Chapter 9** Phototransduction in *Drosophila*: Use of Microarrays in Cloning Genes Identified by Chemically Induced Mutations Causing ERG Defects..... 195
Hung-Tat Leung, Lingling An, Julie Tseng-Crank, Eunju Kim, Eric L. Harness, Ying Zhou, Junko Kitamoto, Guohua Li, Rebecca W. Doerge, and William L. Pak

Section 4 Insulin Receptor-Based Signaling in the Vertebrate Retina

- Chapter 10** Insulin Receptor-Based Signaling in the Retina 221
Patrice E. Fort, Ravi S.J. Singh, Mandy K. Losiewicz, and Thomas W. Gardner
- Chapter 11** Probing the Interactions between the Retinal Insulin Receptor and Its Downstream Effectors..... 237
Raju V.S. Rajala and Robert E. Anderson

Section 5 Signal Transduction in Vertebrate Retinal Development and Vascular Homeostasis

- Chapter 12** Signal Transduction in Retinal Progenitor Cells..... 269
Branden R. Nelson, Susan Hayes, Byron H. Hartman, and Thomas A. Reh
- Chapter 13** Probing the Hedgehog Pathway in Retinal Development 299
Brian McNeill, Dana Wall, Shawn Beug, and Valerie A. Wallace
- Chapter 14** Thrombospondin-1 Signal Transduction and Retinal Vascular Homeostasis..... 329
Nader Sheibani, Yixin Tang, Terri DiMaio, Shuji Kondo, Elizabeth A. Scheef, and Christine M. Sorenson

Section 6 *Lipid Mediators and Signaling in the RPE***Chapter 15** Lipidomic Approaches to Neuroprotection Signaling
in the Retinal Pigment Epithelium 349

*Nicolas G. Bazan, Victor L. Marcheselli, Yan Lu, Song Hong,
and Fannie Jackson*

Index 375