

CONTENTS

Preface.....	v
Contributors	ix
Companion CD	xi

Part I Evolution of the Visual System

1 An Organ of Exquisite Perfection.....	3
<i>George Ayoub</i>	

Part II Photoreceptor Structure, Function, and Development

2 Development of the Foveal Specialization	17
<i>Keely M. Bumsted O'Brien</i>	
3 An Update on the Regulation of Rod Photoreceptor Development..	35
<i>Edward M. Levine and Sabine Fuhrmann</i>	

Part III The Retinal Pigment Epithelium and the Visual Cycle

4 Photoreceptor–RPE Interactions: <i>Physiology and Molecular Mechanisms</i>	67
<i>Silvia C. Finnemann and Yongen Chang</i>	
5 Molecular Biology of IRBP and Its Role in the Visual Cycle.....	87
<i>Diane E. Borst, Jeffrey H. Boatright, and John M. Nickerson</i>	

Part IV Visual Signaling in the Outer Retina

6 Regulation of Photoresponses by Phosphorylation	125
<i>Alecia K. Gross, Qiong Wang, and Theodore G. Wensel</i>	
7 The cGMP Signaling Pathway in Retinal Photoreceptors and the Central Role of Photoreceptor Phosphodiesterase (PDE6).....	141
<i>Rick H. Cote</i>	
8 Rhodopsin Structure, Function, and Involvement in Retinitis Pigmentosa	171
<i>Scott Gleim and John Hwa</i>	
9 Multiple Signaling Pathways Govern Calcium Homeostasis in Photoreceptor Inner Segments	197
<i>Tamas Szikra and David Krizaj</i>	
10 The Transduction Channels of Rod and Cone Photoreceptors	225
<i>Dimitri Tränkner</i>	

11	Rhodopsins in <i>Drosophila</i> Color Vision.....	251
	<i>David Jukam, Preet Lidder, and Claude Desplan</i>	
12	INAD Signaling Complex of <i>Drosophila</i> Photoreceptors	267
	<i>Armin Huber and Nina E. Meyer</i>	

Part V Visual Processing in the Inner Retina

13	Visual Signal Processing in the Inner Retina.....	287
	<i>Botir T. Sagdullaev, Tomomi Ichinose, Erika D. Eggers, and Peter D. Lukasiewicz</i>	

Part VI Color Vision and Adaptive Processes

14	Human Cone Spectral Sensitivities and Color Vision Deficiencies	307
	<i>Andrew Stockman and Lindsay T. Sharpe</i>	
15	Luminous Efficiency Functions	329
	<i>Lindsay T. Sharpe and Andrew Stockman</i>	
16	Cone Pigments and Vision in the Mouse	353
	<i>Gerald H. Jacobs</i>	
17	Multifocal Oscillatory Potentials of the Human Retina	375
	<i>Anne Kurtenbach and Herbert Jägle</i>	

Part VII Aging and Vision

18	The Aging of the Retina	391
	<i>Caren Bellmann and José A. Sahel</i>	
19	Aging of the Retinal Pigment Epithelium	403
	<i>Michael E. Boulton</i>	
20	Visual Transduction and Age-Related Changes in Lipofuscin.....	421
	<i>Małgorzata Różanowski and Bartosz Różanowski</i>	

Part VIII Nonphotoreceptor Light Detection and Circadian Rhythms

21	A Nonspecific System Provides Nonphototic Information for the Biological Clock	465
	<i>Marian H. Lewandowski</i>	
22	The Circadian Clock: <i>Physiology, Genes, and Disease</i>	481
	<i>Michael C. Antle</i>	
	Index	501