

CONTENTS

Contributors

vii

1. New Insights into the Mechanism of Lens Development Using Zebra Fish	1
Teri M. S. Greiling and John I. Clark	
1. Introduction	2
2. Lens Developmental Stages	5
3. Structural Components of the Lens	31
4. Concluding Remarks	47
References	48
2. The Subcommissural Organ and the Development of the Posterior Commissure	63
Jesús M. Grondona, Carolina Hoyo-Becerra, Rick Visser, Pedro Fernández-Llebrez, and María Dolores López-Ávalos	
1. Introduction	64
2. Axon Guidance and the Development of Commissures	66
3. Posterior Commissure Development	83
4. The Subcommissural Organ as a Specialized Ependyma	86
5. SCO-Spondin as an Axonal Guidance Molecule	101
6. Expression of Axonal Guidance Molecules in the Subcommissural Organ	108
7. Subcommissural Organ-Posterior Commissure Alterations in Mutant Models	111
8. Concluding Remarks	117
Acknowledgments	118
References	119
3. Hypoxia and Hypoxia Signaling in Tissue Repair and Fibrosis	139
Zerina Lokmic, James Musyoka, Timothy D. Hewitson, and Ian A. Darby	
1. Introduction	140
2. Oxygen and Cellular Functions	142
3. Hypoxia-Inducible Factor-1	144
4. Skin Wound Repair and Acute Hypoxia	148

5. Aberrant Wound Repair and Chronic Hypoxia	165
6. Manipulating Hypoxia Signaling Pathway: Potential for Therapy	171
7. Concluding Remarks	172
References	173
4. Factors Involved in Signal Transduction During Vertebrate Myogenesis	187
Yohtaroh Takagaki, Hiroyuki Yamagishi, and Rumiko Matsuoka	
1. Introduction	188
2. Cells Involved in Myogenesis	190
3. Signal Transduction in Cardiac Myogenesis	196
4. Genes Involved in Skeletal Muscle Development	230
5. Signal Transduction in the Development of SMs	239
6. Regulatory ncRNAs in Muscle Development	242
7. Concluding Remarks	247
Acknowledgments	248
References	249
5. Biological Effects of Lysophosphatidic Acid in the Nervous System	273
Frisca Frisca, Roger A. Sabbadini, Yona Goldshmit, and Alice Pébay	
1. Introduction	274
2. LPA: Metabolism and Signaling	275
3. LPA Receptor Expression in the Developing and Adult Nervous System	279
4. Cellular Effects of LPA in the Nervous System	282
5. Physiological Effects of LPA in the Nervous System	292
6. Therapeutic Intervention	302
7. Concluding Remarks	308
Acknowledgments	308
References	308
<i>Index</i>	<i>323</i>