

CONTENTS

Contributors

vii

1. Cross-Talk Among Integrin, Cadherin, and Growth Factor Receptor: Roles of Nectin and Nectin-Like Molecule	1
Hisakazu Ogita and Yoshimi Takai	
1. Introduction	2
2. Molecular and Structural Features of Nectin and Nectin-Like Molecule	4
3. Formation of Adherens Junctions Induced by the Nectin-Afadin System	9
4. Formation of Tight Junctions Regulated by the Nectin-Afadin System	22
5. Roles of Nectin and Nectin-5	27
6. Common Utilization of Signaling Molecules in Forming Leading Edges and Cell-Cell Adhesion	39
7. Concluding Remarks	40
References	41
2. Neural Stem Cells in the Mammalian Brain	55
A. V. Revishchin, L. I. Korochkin, V. E. Okhotin, and G. V. Pavlova	
1. Introduction	56
2. Neural Stem Cells and Their Niches in the Adult Mammalian Brain	57
3. Transcriptional Regulation of NSC Self-Renewal and Differentiation	68
4. Neural Stem and Progenitor Cell-Based Therapy	82
5. Conclusions	90
Acknowledgments	91
References	91
3. Mechanisms of Mitotic Spindle Assembly and Function	111
Claire E. Walczak and Rebecca Heald	
1. Introduction	112
2. Molecular Components of the Mitotic Spindle	113
3. Major Pathways of Spindle Assembly	119
4. Mechanisms of Chromosome Congression and Attachment	129
5. Mechanisms of Chromosome Segregation	138
6. Conclusions and Future Directions	143
Acknowledgments	144
References	144

4. Multiple Actions of Secretin in the Human Body	159
Ian P. Y. Lam, Francis K. Y. Siu, Jessica Y. S. Chu, and Billy K. C. Chow	
1. Introduction	160
2. Structure and Regulation of Secretin and the Gene	163
3. Secretin's Actions in the Gastrointestinal Tract	164
4. Secretin's Actions in Other Tissues	172
5. Summary and Future Prospects	178
References	179
5. Biology of the Striated Muscle Dystrophin-Glycoprotein Complex	191
James M. Ervasti and Kevin J. Sonnemann	
1. Introduction	192
2. Composition of the Core Dystrophin-Glycoprotein Complex	192
3. Function in Mammals	195
4. Function in Model Organisms	205
5. Concluding Remarks	207
Acknowledgments	208
References	208
6. Providing Unique Insight into Cell Biology via Atomic Force Microscopy	227
Victor Shahin and Nelson P. Barrera	
1. Introduction	228
2. AFM: Principle of Operation and Operation Modes	229
3. AFM Can Measure Forces and Elasticity	232
4. Advantages of AFM	234
5. Application of AFM to Biology	235
6. Conclusions	246
Acknowledgments	247
References	247
7. Characteristics of Oxysterol Binding Proteins	253
Daoguang Yan and Vesa M. Olkkonen	
1. Introduction	254
2. Subcellular Distribution of the ORPs	258
3. Role of the Mammalian ORPs in Lipid Metabolism	262
4. The Yeast <i>S. cerevisiae</i> ORPs	269
5. Role of ORPs in Cell Signaling	272
6. Future Perspectives	274
Acknowledgments	276
References	277