

Contents

Preface	ix
Volume 1	
Part I Basic Biology	1
1 Epigenetic Regulation in Pluripotent Stem Cells	3
<i>Lin Liu and Lingyi Chen</i>	
2 Induced Pluripotent Stem Cells	41
<i>Kazutoshi Takahashi and Shinya Yamanaka</i>	
3 Naturally Occurring Adult Pluripotent Stem Cells	63
<i>Henry E. Young and Asa C. Black Jr</i>	
4 Spermatogonial stem cell (SSCs) system	95
<i>G. Ian Gallicano and Shenglin Chen</i>	
5 Stem Cell Dormancy: Maintaining a Reserved Population	119
<i>John M. Perry, Xi C. He, Ryohichi Sugimura and Linheng Li</i>	
6 Stem Cells in the Adult Brain: Neurogenesis	133
<i>Michael A. Bonaguidi, Guo-li Ming, and Hongjun Song</i>	
7 Embryonic Stem Cells	151
<i>Mahendra Rao</i>	
Part II Laboratory Methods	175
8 Cardiomyocytes from Human Embryonic Stem Cells	177
<i>Xiu Qin Xu, Manasi Nandihalli, Kar Tong Tan, and William Sun</i>	
9 Cloned Mice from Adult Stem Cells	209
<i>Haruko Obokata and Teruhiko Wakayama</i>	

10	Cloned Mice from Embryonic Stem Cells	233
	<i>Chong Li and Teruhiko Wakayama</i>	
11	Haploid Embryonic Stem Cells	255
	<i>Ni Hong and Yunhan Hong</i>	
12	Muscle Stem Cells: Their Discovery, Properties, and <i>In-Vitro</i> Manipulation	273
	<i>Sean McFarland, Ioanna Pagani, and Irina Conboy</i>	
13	Nuclear Transfer for Cloning Animals	299
	<i>Andras Dinnyes, Xiuchun Cindy Tian, and Björn Oback</i>	
14	Induction of Pluripotent Stem Cells from Umbilical Cord Blood	345
	<i>Kejin Hu and Igor Slukvin</i>	
15	Development and Renewal of Ventricular Heart Muscle from Intrinsic Progenitor Cells	371
	<i>William C.W. Chen and Bruno Péault</i>	
Volume 2		
Part III	Stem Cell Therapy	389
16	Gene Therapy of Genetic Diseases of Blood Cells	391
	<i>Gabriela Kuftinec, Jennifer Wherley and Donald B. Kohn</i>	
17	Mesenchymal Stem Cells Characteristics, Niches, and Applications for Cell Therapy	429
	<i>Joni H. Ylöstalo and Thomas J. Bartosh</i>	
18	Stem Cells and Parkinson's Disease	471
	<i>Emma Lane, Maria Sundberg, and Jan Pruszek</i>	
19	Stem Cell-Based Approaches to Spinal Cord Injury	503
	<i>Alexa L. Reeves and Hans Keirstead</i>	
20	Therapeutics against Cancer Stem Cells: Targeting the Root of Cancer	521
	<i>Kristen M. Smith and Catriona H. M. Jamieson</i>	
21	Translating Stem Cells to the Clinic: From Modeling Disease to Cellular Products	573
	<i>Emmanuel Nivet, Ignacio Sancho-Martinez, and Juan Carlos Izpisua Belmonte</i>	
Part IV	Stem Cells and Disease	601
22	Cancer Stem Cells	603
	<i>Mei Zhang and Jeffrey M. Rosen</i>	

23 Normal and Neoplastic Stem Cells	627
<i>Axel Schulenburg and Brigitte Marian</i>	
24 Prostate Tissue Stem Cells and Prostate Cancer Progression	655
<i>Collene R. Jeter and Dean G. Tang</i>	
25 The Stem Cell Niche and Its Role in Self-Renewal, Aging, and Malignancy	677
<i>Peter Breslin S.J., Andrew Volk and Jiwang Zhang</i>	
26 Stem Cells and Colon Cancer	727
<i>Simone Di Franco, Antonina Benfante, Flora Iovino, Sebastiano Bonventre, Francesco Dieli, Giorgio Stassi and Matilde Todaro</i>	
Index	751

