

Contents

<i>Preface</i>	<i>v</i>
<i>Contributors</i>	<i>ix</i>
1. Human Embryo Culture and Assessment for the Derivation of Embryonic Stem Cells (ESC)	1
<i>A. Henry Sathianathan and Tiki Osianlis</i>	
2. Derivation of Human Embryonic Stem Cell Lines from Vitrified Human Embryos	21
<i>Teija T. Peura, Julia Schaft, and Tomas Stojanov</i>	
3. Growth of Human Embryonic Stem Cells Using Derivates of Human Fibroblasts	55
<i>Carmen Escobedo-Lucea and Miodrag Stojkovic</i>	
4. In Vitro Neural Differentiation of Human Embryonic Stem Cells Using a Low-Density Mouse Embryonic Fibroblast Feeder Protocol	71
<i>John A. Ozolek, Esther P. Jane, James E. Esplen, Patti Petrosko, Amy K. Wehn, Teresa M. Erb, Sara E. Mucko, Lyn C. Cote, and Paul J. Sammak</i>	
5. Optimization of Physiological Xenofree Molecularly Defined Media and Matrices to Maintain Human Embryonic Stem Cell Pluripotency.	97
<i>Isabelle Peiffer, Romain Barbet, Antoinette Hatzfeld, Ma-Lin Li, and Jacques A. Hatzfeld</i>	
6. Serum-Free and Feeder-Free Culture Expansion of Human Embryonic Stem Cells	109
<i>Katherine E. Wagner and Mohan C. Vemuri</i>	
7. Single Cell Enzymatic Dissociation of Human Embryonic Stem Cells: A Straightforward, Robust, and Standardized Culture Method	121
<i>Catharina Ellerström, Johan Hyllner, and Raimund Strehl</i>	
8. Monitoring Stemness in Long-Term hESC Cultures by Real-Time PCR	135
<i>Amparo Galán and Carlos Simón</i>	
9. Culture and Preparation of Human Embryonic Stem Cells for Proteomics-Based Applications	151
<i>Charles C. King</i>	
10. A Two- and Three-Dimensional Approach for Visualizing Human Embryonic Stem Cell Differentiation	179
<i>Christian B. Bröchner, Peter S. Vestentoft, Niels Lynnerup, Claus Yding Andersen, and Kjeld Møllgård</i>	
11. Immunofluorescence and mRNA Analysis of Human Embryonic Stem Cells (hESCs) Grown Under Feeder-Free Conditions.	195
<i>Aashir Awan, Roberto S. Oliveri, Pernille L. Jensen, Søren T. Christensen, and Claus Yding Andersen</i>	

12.	Study of Gap Junctions in Human Embryonic Stem Cells	211
	<i>Raymond C.B. Wong and Alice Pébay</i>	
13.	hESC Engineering by Integrase-Mediated Chromosomal Targeting	229
	<i>Ying Liu, Uma Lakshmipathy, Ali Ozgenc, Bhaskar Thyagarajan, Pauline Licu, Andrew Fontes, Haipeng Xue, Kelly Scheyhing, Chad MacArthur, and Jonathan D. Chesnut</i>	
14.	Human Embryonic Stem Cell Differentiation on Periodontal Ligament Fibroblasts	269
	<i>Y. Murat Elçin, Bülend İnanç, and A. Eser Elçin</i>	
15.	Generation of Neural Crest Cells and Peripheral Sensory Neurons from Human Embryonic Stem Cells.	283
	<i>Ronald S. Goldstein, Oz Pomp, Irina Brokhman, and Lina Ziegler</i>	
16.	Embryonic Stem Cells as a Model for Studying Melanocyte Development.	301
	<i>Susan E. Zabierowski and Meenhard Herlyn</i>	
17.	In Vitro Derivation of Chondrogenic Cells from Human Embryonic Stem Cells.	317
	<i>Wei Seong Tob, Eng Hin Lee, Mark Richards, and Tong Cao</i>	
18.	Vascular Differentiation of Human Embryonic Stem Cells in Bioactive Hydrogel-Based Scaffolds	333
	<i>Sharon Gerecht, Lino S. Ferreira, and Robert Langer</i>	
19.	Differentiation of Neural Precursors and Dopaminergic Neurons from Human Embryonic Stem Cells.	355
	<i>Xiao-Qing Zhang and Su-Chun Zhang</i>	
20.	Transplantation of Human Embryonic Stem Cells and Derivatives to the Chick Embryo.	367
	<i>Ronald S. Goldstein</i>	
21.	Genetic Manipulation of Human Embryonic Stem Cells	387
	<i>Silvina Epsztejn-Litman and Rachel Eiges</i>	
22.	Genetic Manipulation of Human Embryonic Stem Cells in Serum and Feeder-Free Media.	413
	<i>Stefan R. Braam, Chris Denning, and Christine L. Mummery</i>	
23.	Human-Induced Pluripotent Stem Cells: Derivation, Propagation, and Freezing in Serum- and Feeder Layer-Free Culture Conditions	425
	<i>Hossein Baharvand, Mehdi Totonchi, Adelch Taci, Ali Seifinejad, Nasser Aghdami, and Ghasem Hosseini Salekdeh</i>	
	<i>Index</i>	445