

Table of Contents

CONTRIBUTORS TO VOLUME 420	ix
PREFACE	xi
FOREWORD	xiii
VOLUMES IN SERIES	xv

Section I. *In Vitro* Experimentation and Research Tools

1. Human Embryo Culture	AMPARO MERCADER, DIANA VALBUENA, AND CARLOS SIMÓN	3
2. Characterization and Evaluation of Human Embryonic Stem Cells	CHUNHUI XU	18
3. Feeder-Free Culture of Human Embryonic Stem Cells	MICHAL AMIT AND JOSEPH ITSKOVITZ-ELDOR	37
4. Transgene Expression and RNA Interference in Embryonic Stem Cells	HOLM ZAEHRES AND GEORGE Q. DALEY	49
5. Lentiviral Vector-Mediated Gene Delivery into Human Embryonic Stem Cells	MICHAL GROPP AND BENJAMIN REUBINOFF	64
6. The Use of Retroviral Vectors for Gene Transfer into Hematopoietic Stem Cells	JEFF HOLST AND JOHN E. J. RASKO	82
7. Engineering Embryonic Stem Cells with Recombinase Systems	FRANK SCHNÜTGEN, A. FRANCIS STEWART, HARALD VON MELCHNER, AND KONSTANTINOS ANASTASSIADES	100
8. Gene Trapping in Embryonic Stem Cells	WILLIAM L. STANFORD, TREVOR EPP, TAMMY REID, AND JANET ROSSANT	136

9. GeneChips in Stem Cell Research	JASON HIPP AND ANTHONY ATALA	162
10. Microarray Analysis of Stem Cells and Differentiation	HOWARD Y. CHANG, JAMES A. THOMSON, AND XIN CHEN	225
11. Purification and Hematopoietic Stem Cells Using the Side Population	K. K. LIN AND MARGARET A. GOODELL	255
12. Cellular Reprogramming	SADHANA AGARWAL	265
 Section II. Tissue Engineering and Regenerative Medicine		
13. Tissue Engineering Using Adult Stem Cells	DANIEL EBERLI AND ANTHONY ATALA	287
14. Tissue Engineering Using Human Embryonic Stem Cells	SHAHAR COHEN, LUCY LESHANSKI, AND JOSEPH ITSKOVITZ-ELDOR	303
15. Engineering Cardiac Tissue from Embryonic Stem Cells	XI-MIN GUO, CHANG-YONG WANG, X. CINDY TIAN, AND XIANGZHONG YANG	316
16. Mesenchymal Stem Cells and Tissue Engineering	NICHOLAS W. MARION AND JEREMY J. MAO	339
17. Bone Reconstruction with Bone Marrow Stromal Cells	WEI LIU, LEI CUI, AND YILIN CAO	362
18. Engineering Three-Dimensional Tissue Structures Using Stem Cells	JANET ZOLDAN AND SHULAMIT LEVENBERG	381
19. Immunogenicity of Embryonic Stem Cells and Their Progeny	MICHA DRUKKER	391
20. Manufacturing Considerations for Clinical Uses of Therapies Derived from Stem Cells	DARIN J. WEBER	410
AUTHOR INDEX		431
SUBJECT INDEX		469