

Contents

Part I Stem Cell Therapy Overview

- 1 Stem Cell Applications: An Overview 3**
Sandro Eridani

Part II Biochemistry and Physiology of the Stem Cell

- 2 Adipose Cell Precursors: Stem Cells in Medicine, Tissue Engineering, and Reconstructive Surgery 19**
Michael V. Dodson, Min Du, Sandra G. Velleman,
Douglas C. McFarland, Melinda Fernyhough-Culver,
Shengjuan Wei, Marcio S. Duarte, Zhihua Jiang,
and Gary J. Hausman
- 3 Tissue Engineering of Vascularized Adipose Tissue for Soft Tissue Reconstruction 23**
Silvan M. Klein, Jody Vykoukal, Lukas Prantl,
and Juergen H. Dolderer
- 4 Surface Antigenic Profiles of Stem Cells from the Human Bone Marrow, Subcutaneous Fat, and Omentum Fat 41**
Indumathi Somasundaram, Radhakrishnan Harikrishnan, Rashmi Mishra, Rajkumar J. Sankaran, and Dhanasekaran Marappagounder
- 5 Human Adipose Tissue as a Source of Multipotent Stem Cells 67**
Andrew I. Li, Akishige Hokugo, Reza Jarrahy,
and Patricia A. Zuk
- 6 Adipocytes and Osteoblasts from Human Adipose Tissue Mesenchymal Stem Cells for the Production of Compatible and Safe Biomaterial Crucial in Cosmetic, Reconstructive, and Regenerative Medicine 85**
Toai Cong Tran, Ciro Gargiulo, Thao Duy Huynh,
Khanh Hong Thien Bui, Luis Filgueira, and Douglas M. Strong

7	Adipogenesis Using Human Adipose Tissue-Derived Cells Impregnated with Basic Fibroblast Growth Factor	111
	Ran Ito	
8	The Adipose Organ: Morphological Perspectives of Adipose Tissues	123
	Arianna Smorlesi, Andrea Frontini, and Saverio Cinti	
9	Pericytes: a Ubiquitous Source of Multipotent Adult Tissue Stem Cells	135
	Ludovic Zimmerlin, Tea Soon Park, Vera S. Donnenberg, Elias T. Zambidis, and Albert D. Donnenberg	
10	Adipose-Derived Stem Cells to Modulate Scar Tissue: From Biological Basis to Clinical Applications	149
	Franco Bassetto, Angelo Sapuppo, Giovanni Filippo Borso, and Vincenzo Vindigni	
 Part III Stem Cells and Adipose Tissue Survival		
11	Stem Cells, Mature Adipocytes and Extracellular Matrix: What Does Each Contribute to Fat Graft Survival?	159
	Ali Mojallal, Christo Shipkov, Charlotte Lequeux, Lucas Rifkin, Rod Rohrich, Spencer Brown, and Odile Damour	
12	Multipotential Aspects of Adipose-Derived Stem Cells and Their Spheroids	181
	Sahil K. Kapur and Adam J. Katz	
13	The Influences of the Density of ASCs and the Stromal Condensation Rates (SCR) on Volume Maintenance Rates (VMR) in the Fresh Fat Graft	191
	Hyun-Jin Yang and Hee-Young Lee	
 Part IV Use of Stem Cells in Aesthetic Procedures		
14	Adipose-Derived Stem and Regenerative Cells as Fillers in Plastic and Reconstructive Surgery	203
	Min Zhu, Douglas M. Arm, and John K. Fraser	
15	Advantages of the Transplantation of Fat in Plastic and Reconstructive Surgery	219
	Jose Guerrerosantos	
16	Autologous Fat Transfer: Risk or Benefit?	229
	Norbert Pallua and Bong-Sung Kim	
17	Adipose Tissue Anatomy	239
	Andrea Sbarbati, Giamaica Conti, Pietro Panettiè, and Dario Bertossi	

18	Adipose-Derived Stem and Regenerative Cells: Harvesting, Processing, and Administration	249
	Robert J. Troell	
19	Cell, Tissue, and Organ Culture: Coulter Counter Use in the Enumeration of Muscle and Fat Stem Cells	293
	Melinda Fernyhough-Culver, Deri L. Helterline-Icenogge, Janet L. Vierck, Rod A. Hill, and Michael V. Dodson	
20	Adipose-Derived Regenerative Cells	299
	Todd Malan	
21	Adipose Tissue: From Energy Reservoir to a Source of Cells for Epithelial Tissue Engineering	303
	Angelo Trivisonno, Marc Abecassis, Massimo Monti, Gabriele Toietta, and Athmani Bachir	
22	The Role of Adipose Tissue-Derived Stem Cells and of Angiogenesis	327
	Norbert Pallua and Bong-Sung Kim	
23	Extensive Characterization of Stem Cells Derived from Skin	335
	Giovanni Di Benedetto, Manuela Bottoni, Alessandro Scalise, Stefania Gorbi, Matteo Torresetti, Roberto Di Primio, and Monia Orciani	
24	Current Therapeutic Uses of Adipose-Derived Stem and Regenerative Cells	343
	Robert J. Troell	
25	Mesenchymal Stem Cells in Clinical Practice	365
	John Flynn and Margo Priestly	
26	Adipose-Derived Stem Cells (ADSCs): Current Findings and Future Perspectives in Structural Facial Fat Grafting	383
	Elisa Bolletta, Elisabetta Petrucci, Caterina Tartaglione, and Daniele Bordon	
27	The Stem Cell-Enhanced Regenerative Facelift	415
	Renato P. Calabria	
28	Facial Rejuvenation with Stem Cell Fat Graft: The FAMI™ Procedure	429
	Roger E. Amar	
29	Specialized Stem Cell Fat Transfer to Face	441
	Lewis J. Obi	
30	Fat Transfer for Face Volume Enhancement	463
	Alberto Di Giuseppe, Saverio Cinti, Elisa Bolletta, and Elisabetta Petrucci	

31	Fat Transplantation for Hemifacial Atrophy: In Search for Improved Techniques	493
	Cristina Isac and Aurelia Isac	
32	Secondary Correction of Facial Deformities Following Major Resection and Reconstruction: Fat Stem Cell for Restoration of Facial Asymmetries	499
	Alberto Bedogni, Giordana Bettini, Andrea Fior, and Giorgia Saia	
33	Ear Lobe Revolumization	515
	Nathan Newman	
34	Breast Augmentation and Augmentation of the Tuberous Breast with Adipose Tissue Transfer	519
	Matteo Santoli, Luca Negosanti, and Domenico De Fazio	
35	Breast Augmentation with Stem Cell Fat Transfer and VASER™	529
	Alberto Di Giuseppe and Dennis Wolf	
36	Fat Grafting Supplemented by Adipose-Derived Stem Cells for Breast Augmentation	557
	Hiroshi Mizuno and Hiko Hyakusoku	
37	Breast Augmentation with Stem Cell-Enhanced Fat Transfer: Comparison Between Enhanced and Unenhanced Fat Grafting	563
	Alberto Di Giuseppe and Dennis Wolf	
38	Multipotential Aspects of Breast Periprosthetic Capsule Stem Cells.	573
	Monia Orciani, Elisa Bolletta, Alessandro Scalise, Stefania Gorbi, Raffaella Lazzarini, Matteo Gioacchini and Giovanni Di Benedetto	
39	Tuberous Breast Correction with Stem Cell Fat Transfer	587
	Egle Muti and Fabrizio Tomassetti	
40	Stem Cell Fat Transfer for Mastoplasty Using VASER™ Ultrasound and Office-Devised Stem Cell	601
	Alberto Di Giuseppe and Dennis Wolf	
41	Adipocyte and Stem Cell Grafting: Impact on Cancer Detection.	627
	Khalid Almutairi and J. Peter Rubin	
42	Fat Grafting for Deep Inferior Epigastric Perforator Flap Refinements in Breast Reconstruction: The Hybrid Autologous Reconstruction	635
	Andrea Spano, Daniele Bordoni, Pierfrancesco Cadenelli, Giuseppe Falco, and Maurizio Bruno Nava	

43	Stem Cell Enhanced Fat Grafting to Buttocks	651
	Nathan Newman	
44	Buttock Recontouring	661
	Domenico De Fazio and Matteo Santoli	
45	Improved Methods of Autologous Fat Transplantation in Correcting Buttock Asymmetry	681
	Cristina Isac and Aurelia Isac	
46	Buttock Biomolding with Autologous Adipose Tissue-Derived Stem Cells	689
	Roberto Blum Andrade	
47	Hand Rejuvenation	703
	Nathan Newman	
48	Hand Rejuvenation with Stem Cell Fat Transfer	709
	Andre Berger	
49	Free Fat Graft for Cosmetic Phalloplasty: Twenty-Year Retrospective	721
	Stephen Xavier Giunta	
50	Stem Cell-Assisted Fat Transfer to the Penis	739
	Marc Abécassis	
51	Vaginal Rejuvenation	743
	Marc Abécassis	
52	Free Fat Transfer in Irradiated Tissue	745
	Franco Bassetto, Angelo Sapuppo, Erica Dalla Venezia, and Leonardo Sartore	
53	The GID: A New Device for Fat Harvesting and Washing in Aesthetic Plastic Surgery	753
	Alberto Di Giuseppe and Diana Ronconi	
Part V Complications		
54	Complications of Stem Cell-Assisted Fat Transfer	771
	Melvin A. Shiffman	
55	Interactions Between Adipose Stem Cells and Cancer	785
	Christopher Chung and J. Peter Rubin	
Part VI Commentary		
56	Editor's Commentary	797
	Melvin A. Shiffman	
	Index	801