

Contents

Part I Basics and Principles of Tissue Engineering

1	Micro- and Nanotechnology in Tissue Engineering.....	3
	Daniela Coutinho, Pedro Costa, Nuno Neves, Manuela E. Gomes, and Rui L. Reis	
2	Biomimetic Scaffolds in Tissue Engineering	31
	Ian O. Smith and Peter X. Ma	
3	Natural and Synthetic Scaffolds	41
	Patricia S. Wolfe, Scott A. Sell, and Gary L. Bowlin	
4	Pluripotent Stem Cells: Sources and Characterization.....	69
	Sean P. Palecek	
5	Adult Stem Cells: Sources and Characterization.....	83
	Hitoshi Okochi	
6	Isolation and Growth of Stem Cells.....	93
	Jeffrey M. Gimble, Bruce A. Bunnell, Farshid Guilak, Steven R. Smith, and Adam J. Katz	
7	Differentiation and Plasticity of Stem Cells for Tissue Engineering.....	113
	Yao-Hua Song, Lukas Prantl, and Eckhard Alt	
8	Animal Models for the Evaluation of Tissue Engineering Constructs	131
	Daniel A.W. Oortgiesen, Gert J. Meijer, Rob B.M. de Vries, X. Frank Walboomers, and John A. Jansen	
9	Biomedical Imaging and Image Processing in Tissue Engineering.....	155
	Haiou Shen, Aaron S. Goldstein, and Ge Wang	
10	Bioreactors for Tissue Engineering	179
	Scott Maxson, David Orr, and Karen J.L. Burg	

Part II Tissue Engineering of Organs

11	Issues in Bioartificial Liver Support Therapy for Acute Liver Failure	201
	John F. Patzer II and Jörg C. Gerlach	
12	Central Nervous System	221
	T. Führmann, J. Gerardo-Nava, and G.A. Brook	
13	Tissue Engineering for Peripheral Nerve Regeneration.....	245
	Andrew Hart, Giorgio Terenghi, and Mikael Wiberg	
14	Tissue Engineering of Blood Vessels: How to Make a Graft.....	263
	Sajoscha Sorrentino and Hermann Haller	
15	Biohybrid Strategies for Vascular Grafts	279
	Robert van Lith and Guillermo A. Ameer	
16	Heart and Cardiovascular Engineering.....	317
	Axel Haverich and Mathias Wilhelmi	
17	Tissue Engineering of Organs: Eye/Retina.....	335
	Stephen Redenti, Henry Klassen, and Michael Young	

Part III Tissue Types

18	Engineering of Adipose Tissue.....	349
	Laurence A. Galea, Heidi E. Lilja, Gregory PL. Thomas, Keren M. Abberton, Jason A. Palmer, and Wayne A. Morrison	
19	Blood Substitutes.....	371
	Andreas Pape and Oliver Habler	
20	Tissue Engineering of Blood Vessels: How to Make a Graft.....	395
	Andrew A. Gassman and Howard P. Greisler	
21	Bone Tissue Engineering	431
	J.C. Reichert and D.W. Hutmacher	
22	Tissue Engineering of Organs: Brain Tissues	457
	Deniece Fon, David R. Nisbet, George A. Thouas, Wei Shen, and John S. Forsythe	
23	Engineering Cartilage Tissue.....	493
	Robert L. Mauck and Jason A. Burdick	
24	Pancreatic Tissues	521
	Grace J. Lim and Anthony Atala	

25	Tendons: Engineering of Functional Tissues.....	537
	D.I. Zeugolis, J.C.Y. Chan, and A. Pandit	
26	Tissue Engineering in Oral and Maxillofacial Surgery (OMFS).....	573
	Wolfgang C. Puelacher	
27	Tissue Engineering of Musculoskeletal Tissue	597
	Lu Zhang and Myron Spector	
	Index	625