

---

# Contents

## Part I Fabrication Methods and Techniques

- 1 3D Printing and Biofabrication for Load Bearing Tissue Engineering..... 3**  
Claire G. Jeong and Anthony Atala
- 2 Microfabrication of Cell-Laden Hydrogels for Engineering Mineralized and Load Bearing Tissues..... 15**  
Chia-Cheng Li, Mahshid Kharaziha, Christine Min, Richard Maas, and Mehdi Nikkhah
- 3 Electrospinning of Bioinspired Polymer Scaffolds..... 33**  
Jose V. Araujo, Pedro P. Carvalho, and Serena M. Best

## Part II Applied Strategies for Tissue Engineering: Bone and Cartilage

- 4 Bone Tissue Engineering Challenges in Oral & Maxillofacial Surgery..... 57**  
Brandon T. Smith, Jonathan Shum, Mark Wong, Antonios G. Mikos, and Simon Young
- 5 Engineering Pre-vascularized Scaffolds for Bone Regeneration..... 79**  
Giada D.G. Barabaschi, Vijayan Manoharan, Qing Li, and Luiz E. Bertassoni
- 6 Morphogenic Peptides in Regeneration of Load Bearing Tissues..... 95**  
Seyedsina Moeinzadeh and Esmail Jabbari
- 7 Osseointegration of Plateau Root Form Implants: Unique Healing Pathway Leading to Haversian-Like Long-Term Morphology ..... 111**  
Paulo G. Coelho, Marcelo Suzuki, Charles Marin, Rodrigo Granato, Luis F. Gil, Nick Tovar, Ryo Jimbo, Rodrigo Neiva, and Estevam A. Bonfante
- 8 Dentin Matrix Proteins in Bone Tissue Engineering ..... 129**  
Sriram Ravindran and Anne George

<b>9</b>	<b>Multiphasic, Multistructured and Hierarchical Strategies for Cartilage Regeneration.....</b>	<b>143</b>
	Clara R. Correia, Rui L. Reis, and João F. Mano	
<b>10</b>	<b>Anterior Cruciate Ligament: Structure, Injuries and Regenerative Treatments .....</b>	<b>161</b>
	Ali Negahi Shirazi, Wojciech Chrzanowski, Ali Khademhosseini, and Fariba Dehghani	
<b>11</b>	<b>Hard-Soft Tissue Interface Engineering .....</b>	<b>187</b>
	Oliver E. Armitage and Michelle L. Oyen	
 <b>Part III Applied Strategies for Tissue Engineering: Dentin, Enamel, Cementum and PDL</b>		
<b>12</b>	<b>Cementum and Periodontal Ligament Regeneration .....</b>	<b>207</b>
	Danijela Menicanin, K. Hynes, J. Han, S. Gronthos, and P.M. Bartold	
<b>13</b>	<b>Amelogenin in Enamel Tissue Engineering .....</b>	<b>237</b>
	Vuk Uskoković	
<b>14</b>	<b>Whole Tooth Regeneration as a Future Dental Treatment .....</b>	<b>255</b>
	Masamitsu Oshima and Takashi Tsuji	
	<b>Index.....</b>	<b>271</b>

Engineering Mineralized and Load Bearing Tissues

Bertassoni, L.E.; Coelho, P.G. (Eds.)

2015, X, 276 p. 60 illus., 54 illus. in color., Hardcover

ISBN: 978-3-319-22344-5