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Altri autori (Persone)	RamalingamMurugan
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Nota di contenuto	Integrated Biomaterials in Tissue Engineering; Contents; Preface; List of Contributors; 1. Protocols for Biomaterial Scaffold Fabrication; 1.1 Introduction; 1.2 Scaffolding Materials; 1.2.1 Naturally Derived Materials; 1.2.2 Scaffolds Based on Synthetic Polymers; 1.3 Techniques for Biomaterial Scaffolds Fabrication; 1.3.1 Solvent Casting; 1.3.2 Salt-leaching; 1.3.3 Gas Foaming; 1.3.4 Phase Separation; 1.3.5 Electrospinning; 1.3.6 Self-assembly; 1.3.7 Rapid Prototyping; 1.3.8 Membrane Lamination; 1.3.9 Freeze Drying; 1.4 Summary; Acknowledgements; References 2. Ceramic Scaffolds, Current Issues and Future Trends 2.1 Introduction; 2.2 Essential Properties and Current Problems of Ceramic Scaffolds; 2.3 Approaches to Overcome Ceramic Scaffolds Issues for the Next

Generation of Scaffolds; 2.4 Silk - a Bioactive Material; 2.5 Conclusions and Future Trends; Acknowledgements; References; 3. Preparation of Porous Scaffolds from Ice Particulate Templates for Tissue Engineering; 3.1 Introduction; 3.2 Preparation of Porous Scaffolds Using Ice Particulates as Porogens; 3.3 Preparation of Funnel-like Porous Scaffolds Using Embossed Ice Particulate Templates 3.3.1 Overview of Protocol 3.3.2 Preparation of Funnel-like Collagen Sponges; 3.3.3 Preparation of Funnel-like Chitosan Sponges; 3.3.4 Preparation of Funnel-like Hyaluronic Acid Sponges; 3.3.5 Preparation of Funnel-like Collagen-glycosaminoglycan Sponges; 3.4 Application of Funnel-like Porous Scaffolds in Three-dimensional Cell Culture; 3.5 Application of Funnel-like Collagen Sponges in Cartilage Tissue Engineering; 3.6 Summary; References; 4. Fabrication of Tissue Engineering Scaffolds Using the Emulsion Freezing/Freeze-drying Technique and Characteristics of the Scaffolds; 4.1 Introduction 4.2 Materials for Tissue Engineering Scaffolds 4.3 Fabrication Techniques for Tissue Engineering Scaffolds; 4.4 Fabrication of Pure Polymer Scaffolds via Emulsion Freezing/Freeze-drying and Characteristics of the Scaffolds; 4.5 Fabrication of Polymer Blend Scaffolds via Emulsion Freezing/Freeze-drying and Characteristics of the Scaffolds; 4.6 Fabrication of Nanocomposite Scaffolds via Emulsion Freezing/Freeze-drying and Characteristics of the Scaffolds; 4.7 Surface Modification for PHBV-based Scaffolds; 4.8 Concluding Remarks; Acknowledgements; References 5. Electrospun Nanofiber and Stem Cells in Tissue Engineering 5.1 Introduction; 5.2 Biodegradable Materials for Tissue Engineering; 5.3 Nanofibrous Scaffolds; 5.3.1 Technologies to Fabricate Nanofibers; 5.3.2 In Vitro and In Vivo Studies of Nanofibrous Scaffold; 5.4 Stem Cells: A Potential Tool for Tissue Engineering; 5.4.1 Stem Cells in Tissue Engineering and Regeneration; 5.4.2 Effect of Stem Cells on Electrospun Nanofibrous Scaffolds; 5.5 Prospects; Acknowledgement; References; 6. Materials at the Interface Tissue-Implant; 6.1 Introduction; 6.2 Description of the Tissue-Implant Interface 6.3 Expected Function of the Materials at the Interface and their Evaluation and Selection

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### Sommario/riassunto

This book acts as a self-contained resource for understanding the current technological advancement of biomaterials towards tissue engineering applications. It covers impact of biomaterials at different length scales such as macro/micro/nano/ level and offers extensive discussion on cell-biomaterial interactions with illustrative examples. This resource offer a multi-disciplinary approach for the adaptability of integrated biomaterials in tissue repair and reconstruction.

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