Record Nr. UNINA9910635385203321 Autore Meesane Jirut **Titolo** Mimicked tissue engineering scaffolds for maxillofacial and articular cartilage surgery / / Jirut Meesane Pubbl/distr/stampa Gateway East, Singapore: ,: Springer, , [2023] ©2023 **ISBN** 9789811978302 9789811978296 Descrizione fisica 1 online resource (192 pages) Collana **Engineering Materials** Disciplina 611.0183 Soggetti Articular cartilage Maxilla - Surgery Tissue scaffolds Lingua di pubblicazione Inglese **Formato** Materiale a stampa Livello bibliografico Monografia Nota di bibliografia Includes bibliographical references and index. Nota di contenuto Intro -- Contents -- About the Author -- 1 Introduction -- 1.1 Tissue Engineering -- 1.1.1 Cells -- 1.1.2 Growth Factors -- 1.1.3 Extracellular Matrix -- 1.2 Mimicking for Tissue Engineering -- 1.2.1 Mimicked Structure in Scaffolds -- 1.2.2 Mimicked Function in Scaffolds -- 1.3 Mimicked Scaffolds in Maxillofacial -- 1.4 Mimicked Scaffolds in Articular Cartilage Surgery -- References -- 2 Principles of Tissue Engineering -- 2.1 Cells and Their Function -- 2.2 Growth Factors and Their Function -- 2.3 Extracellular Matrix and Its Function -- 2.4 Application of Cells in Tissue Engineering -- 2.5 Application of Growth Factors in Tissue Engineering -- 2.6 Application of Extracellular Matrix in Tissue Engineering -- References -- 3 Mimicking in Tissue Engineering -- 3.1 Mimicking in Cell Manipulation -- 3.2 Mimicking in the Design of Growth Factors -- 3.3 Mimicking in the Design of Extracellular Matrix -- 3.4 Mimicking in the Design of the Microenvironment -- References -- 4 Mimicked Molecular Structures in Scaffolds -- 4.1 Mimicked Molecular Structure of ECM in Scaffolds -- 4.1.1 Mimicked Amino Acid Motifs and the Molecular

Chain of Proteins -- 4.1.2 Mimicked Self-Organization

of the Assembled Collagen -- 4.1.3 Mimicked Self-Organization

of Assembled Collagen with Mineralization -- 4.1.4 Mimicked Self-Organization of Assembled Collagen with Biological Molecules -- 4.2 Mimicked Self-Organization, Based on Synthetic Molecules -- 4.3 Molecular Modification in Mimicked Molecular Structures -- 4.4 Chemical Treatment for Mimicked Molecular Structures -- References -- 5 Mimicked Morphology and Geography in Scaffolds -- 5.1 Fabrication of Mimicked Morphological Structures in Scaffolds -- 5.1.1 Freeze Drying -- 5.1.2 Particle Leaching -- 5.1.3 Particle Leaching with Freeze Drying -- 5.1.4 Three Dimensional (3D) Printing -- 5.1.5 Solution Casting. 5.1.6 Electro-Spinning -- 5.2 Construction of Mimicked Geometrical Structure in Scaffolds -- 5.2.1 Construction of Hydrogel, with Porous Scaffolds, into Biphasic Scaffolds -- 5.2.2 Construction of 2D with 3D Scaffolds into Biphasic Scaffolds -- References -- 6 Mimicked Physical and Mechanical Functions in Scaffolds -- 6.1 Mimicking of Physical Function in Scaffolds -- 6.2 Mimicking of Mechanical Function in Scaffolds -- 6.3 Approaches in Mimicking of Physical and Mechanical Function -- 6.3.1 Physical Approach for Molecular Organization in Mimicking -- 6.3.2 Chemical Approaches for Molecular Organization in Mimicking -- References -- 7 Mimicked Biological Function of Scaffolds -- 7.1 Mimicking of the Biological Function in Scaffolds --7.1.1 Mimicking of Degradation During Tissue Formation -- 7.1.2 Mimicking of Bioactivity for Enhancement of Tissue Formation -- 7.2 Physical Approach in Mimicked Biological Function on Scaffolds --7.2.1 Physical Approach with an Irregular Formation of Molecules --7.2.2 Physical Approach with Regular Formation of Molecules -- 7.3 Chemical Approach in Mimicked Biological Function on Scaffolds --7.3.1 Surface Immobilization in Mimicked Biological Function on Scaffolds -- 7.3.2 Molecular Grafting or Conjugation in Mimicked Biological Function of Scaffolds -- 7.4 Design of Mimicked Biological Function in Scaffolds -- References -- 8 Mimicked 3D Scaffolds for Maxillofacial Surgery -- 8.1 3D Scaffolds for Maxillofacial Surgery -- 8.1.1 3D Scaffolds for Bone Resorption at Mandible -- 8.1.2 3D Scaffolds for Alveolar Cleft Lip and Palate -- 8.2 Mimicked 3D Scaffolds for Maxillofacial Defects -- 8.2.1 Mimicked Molecular Structural 3D Scaffolds -- 8.2.2 Mimicked Morphologically Structural 3D Scaffolds --8.2.3 Mimicked Geographically Structural 3D Scaffolds -- 8.2.4 Mimicked Physical and Mechanical 3D Scaffolds. 8.2.5 Mimicked Biochemical and Biological 3D Scaffolds -- References -- 9 Mimicked 2D Scaffolds for Maxillofacial Surgery -- 9.1 2D Scaffolds for Maxillofacial Surgery -- 9.1.1 2D Scaffolds for Guided Bone Regeneration -- 9.1.2 2D Scaffolds for Alveolar Cleft Lip and Palate -- 9.2 Mimicked 2D Scaffolds for Maxillofacial Surgery --9.2.1 Structural Mimicking in Scaffolds -- 9.2.2 Mimicked Function in Scaffolds -- References -- 10 Mimicked Hydrogel Scaffolds for Articular Cartilage Surgery -- 10.1 Hydrogel Scaffolds for Articular Cartilage Surgery -- 10.2 Mimicked Hydrogels for Articular Cartilage Surgery -- 10.2.1 Mimicked Structure of Microenvironments for Hydrogel -- 10.2.2 Mimicked Function of Microenvironments for Hydrogel -- 10.3 Fabrication in Mimicked Hydrogels -- 10.4 Modification in Mimicked Hydrogels -- 10.4.1 Conjugation of Enzyme Degradable Domains in Mimicked Hydrogels -- 10.4.2 Incorporation of Biological Signals in Mimicked Hydrogels -- References -- 11 Mimicked 3D Scaffolds for Articular Cartilage Surgery -- 11.1 3D Scaffolds for Cartilage Defect Without Bone Tissue -- 11.2 3D Scaffolds for Cartilage with Bone Defects -- 11.3 Mimicked 3D Scaffolds for Articular Cartilage Surgery -- 11.3.1 Mimicking in Structure of Cartilage Tissue -- 11.3.2 Mimicking in Function of Cartilage Tissue

-- 11.4 Construction of Mimicked 3D Scaffolds -- 11.5 Modification in Mimicked 3D Scaffolds -- References -- 12 Mimicked 2D Scaffolds in Articular Cartilage Surgery -- 12.1 2D Scaffolds for Supporting Articular Cartilage Surgery -- 12.2 Mimicked 2D Scaffolds for Articular Cartilage Surgery -- 12.3 Fabrication in Mimicked 2D Scaffolds -- 12.4 Modifications in Mimicked 2D Scaffolds -- References.