Record Nr. UNINA9910495163303321 Cell biology and translational medicine . Volume 13 Stem cells in **Titolo** development and disease / / Kursad Turksen, editor Pubbl/distr/stampa Cham, Switzerland:,: Springer,, [2021] ©2021 **ISBN** 3-030-79058-4 1 online resource (195 pages) Descrizione fisica Collana Advances in experimental medicine and biology;; 1341 Disciplina 616.02774 Soggetti Stem cells Cèl·lules mare Llibres electrònics Lingua di pubblicazione Inglese **Formato** Materiale a stampa Livello bibliografico Monografia Nota di bibliografia Includes bibliographical references and index. Intro -- Preface -- Contents -- Conventional and Emerging Markers in Nota di contenuto Stem Cell Isolation and Characterization -- 1 Introduction -- 2 Conventional Markers -- 2.1 Neural Stem Cell (NSC) Markers -- 2.2 Epidermal Stem Cell Markers -- 2.3 Mesenchymal Stem Cell (MSC) Markers -- 3 Emerging Markers -- 3.1 Neural Stem Cell (NSC) Markers -- 3.2 Epidermal Markers -- 3.3 Cardiac Stem Cell Markers -- 3.4 Osteoprogenitor Markers -- 3.5 Mesenchymal Stem Cell (MSC) Markers -- 3.6 Intestinal Stem Cell Markers -- 4 Conclusion -- References --Therapeutic Potential of Adipose Stem Cells -- 1 Introduction -- 2 ASCs in Regenerative Medicine -- 2.1 ASCs as Therapy for Cardiac Disease -- 2.2 ASCs and Biomaterials -- 2.2.1 ASC and Biomaterials for Angiogenesis -- 3 ASCs as Immunomodulators -- 3.1 ASCs as Therapy for Autoimmune Diseases -- 3.1.1 Multiple Sclerosis -- 3.1.2 Rheumatoid Arthritis -- 3.1.3 Type 1 Diabetes Mellitus -- 3.2 ASCs in Neurodegenerative Diseases -- 3.2.1 Alzheimer's Disease -- 3.2.2 Parkinson's Disease -- 3.2.3 Amyotrophic Lateral Sclerosis -- 4

Clinical Applications of ASCs -- 4.1 Clinical Trials -- 5 Future
Directions -- References -- Decellularized Extracellular Matrix as a
Potent Natural Biomaterial for Regenerative Medicine -- 1 Introduction
-- 2 Natural Extracellular Matrix (ECM), a Naive Version of ECM Versus

Decellularized ECM (dECM) -- 3 Versatility of Decellularization

-- 3.2 The Efficiency of Chemical Methods for Decellularization -- 3.3 Combined Chemical and Physical Methods for Decellularization -- 3.4 Combination of Chemical and Enzymatic Methods for Decellularization -- 3.5 The Combination of Physical, Chemical, and Enzymatic Methods for Decellularization -- 4 Challenges Faced by Emerging Decellularization Technique. 5 Potential Opportunities and Possibilities -- 5.1 Extracellular Matrix (ECM)-Based Bioink -- 5.2 Particulate Form of the Extracellular Matrix (ECM) -- 5.3 Mimicking the Vascular System -- 6 Conclusion and Outlooks -- References -- Stem Cell Based Exosomes: Are They Effective in Disease or Health? -- 1 Introduction -- 2 Gene Delivery Systems -- 3 Stem Cells and Their Exosomes -- 3.1 Exosomes or Stem Cells? -- 4 Synthetic Exosome-Mimics -- 5 Banking of Exosomes --5.1 Exosome Isolation and Characterization Methods -- 5.2 Exosomes Storage Conditions -- 6 Manufacturing Exosomes -- 7 Conclusion --References -- Interests of Exosomes in Bone and Periodontal Regeneration: A Systematic Review -- 1 Introduction -- 2 Materials and Methods -- 2.1 Focused Question -- 2.2 Screening and Selection Criteria -- 2.3 Eligibility Criteria -- 2.4 Outcomes -- 3 Results -- 3.1 Study Selection -- 3.2 Studies Characteristics -- 3.3 Induction of the Periodontal or Bony Defect -- 3.4 Exosomes Sources -- 3.5 Mode of Exosomes Administration and Dose -- 3.6 Timing and Administration of Exosomes -- 3.7 Bone Healing -- 3.8 Exosomes Role in Angiogenesis -- 3.9 Exosomes Role in Cells Proliferation and Migration -- 4 Discussion -- 5 Conclusion -- References -- The Design and Application of an Appropriate Parkinson's Disease Animal Model in Regenerative Medicine -- 1 Introduction -- 2 Current Treatments for Parkinson's Disease -- 3 Developmental Process of Regenerative Medicine -- 4 Animal Study Design for Parkinson's Disease -- 5 Appropriate Animal Model -- 6 Humanized Animal Modeling -- 7 Validation and Critical Evaluation of Provided Model -- 8 Neuroimaging and Validation of Parkinson's Disease Model -- 9 The Importance of Guidelines and Standards to Model Animals for Parkinson's Disease --10 Conclusion and Future Perspectives -- References. Cell Therapy Targets for Autism Spectrum Disorders: Hopes, Challenges and Future Directions -- 1 Introduction -- 2 Background and History of Autism -- 3 Causes and Mechanisms of Autism -- 3.1 Genetic Factors -- 3.2 Chronic Neuro Inflammation -- 3.3 Mitochondrial Dysfunction -- 3.4 Oxidative Stress -- 3.5 Immune Dysregulation -- 3.6 Hormonal Imbalance -- 3.7 Environmental Factors -- 4 Stem Cells and Autism Spectrum Disorders -- 4.1 The Types of Applied Stem Cells for the Autism Treatment -- 4.2 Appropriate Dosage and Delivery Route of Stem Cells -- 4.3 Mechanism of Stem Cell Function -- 4.4 Scientific Evidences -- 4.4.1 Preclinical Investigations -- 4.4.2 Clinical Investigations -- 5 Conclusions and Future Research Directions --References -- Regenerative Medicine Perspectives in Polycystic Ovary Syndrome -- 1 Introduction -- 2 Polycystic Ovary Syndrome and Its Pathophysiology -- 3 Hereditary and Environmental Factors -- 4 PCOS Current Treatments -- 5 Animal Models of PCOS -- 6 Characteristics of Stem Cells in PCOS Patients -- 6.1 Differential Expression of Genes Responsible for Insulin Resistance and Obesity in Adipocytes Derived from Human ESCs of P... -- 6.2 Inflammatory and Oncogenic Potential -- 6.3 Neuroendocrine Characteristics -- 7 Challenges in iPSC-Based Models and Therapies for PCOS -- 8 Regenerative Medicine in PCOS --8.1 Preclinical Investigations About RM in PCOS -- 8.1.1 Tissue Transplantation in PCOS Models -- 8.1.2 Cell-Based Approaches in PCOS Models -- 8.2 Clinical Advancements -- 9 Conclusion --

Protocols -- 3.1 The Efficiency of Physical Methods for Decellularization

References -- Opportunities and Challenges in Stem Cell Aging -- 1 Introduction -- 2 Stem Cell Aging -- 3 Mechanisms of Aging in Stem Cells -- 4 Rejuvenation Strategies -- 4.1 Genetic Modification and DNA Damage -- 4.2 Epigenetic Modification -- 4.3 Repressing the Levels of Cell Cycle Inhibitors -- 4.4 Targeting Signaling Pathways. 4.5 Improving Mitochondrial Function and Targeting Oxidative Stress -- 4.6 Pharmaceutical Administration -- 4.7 Extrinsic Strategies --4.7.1 Modification of Stem Cell Niche -- 4.7.2 Modification of Systemic Environment -- 4.8 Cellular Reprogramming -- 5 Stem Cells' Potential to Model and Study Aging -- 6 Conclusion -- References -- Role of Tumor Specific niche in Colon Cancer Progression and Emerging Therapies by Targeting Tumor Microenvironment -- 1 Introduction -- 2 Tumor Microenvironment (TME) -- 2.1 Structural Scaffold for the Tumor Stroma -- 2.2 Cellular Components of the TME in Colon Cancer -- 2.2.1 Immune Cells -- 2.2.2 Tumor Associated Macrophages (TAM's) -- 2.2.3 Mesenchymal Stem Cells (MSCs) -- Migration of MSC's to the TME and Their Potential Interface -- 2.2.4 Cancer Associated Fibroblasts (CAF's) -- 2.2.5 Vascular Endothelial Cells and Pericytes -- 2.2.6 Myeloid Derived Suppressor Cells (MDSC) -- 3 Noncellular Components of the TME of Colon Cancer -- 3.1 miRNA in Colon TME -- 3.2 miRNA from TAMs in Colon Cancer TME -- 3.3 Extracellular Matrix (ECM) -- 3.4 Matrix Metalloproteinases -- 3.5 Cytokines -- 4 Future Perspectives and Therapy -- 4.1 Effective Molecular Interaction of MSCs with Tumor Cells -- 4.2 Targeting of TME by miRNAs -- 5 Concluding Remarks -- References -- Index.