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| Nota di contenuto       | <p>List of Contributors -- About the Guest Editor -- Preface -- Chapter 1: Neuronal -- Opportunities and Limitations of Modelling Alzheimer's Disease with Induced Pluripotent Stem Cells -- Induced Pluripotent Stem Cells Derived from Alzheimer's Disease Patients: The Promise, the Hope and the Path Ahead -- iPSC-based Models to Unravel Key Pathogenetic Processes underlying Motor Neuron Diseases</p> <p>Development -- Chapter 2: Cardiac -- Bioengineering and Stem Cell Technology in the Treatment of Congenital Heart Disease -- Scalable Electrophysiological Investigation of iPS Cell Derived Cardiomyocytes Obtained by a Lentiviral Purification Strategy -- Clinical Potentials of Cardiomyocytes Derived from Patient-Specific Induced Pluripotent Stem Cells -- Chapter 3: Eye -- iPS Cells for Modelling and Treatment of Retinal Diseases -- Patient-Specific iPSC-Derived RPE for Modeling of Retinal Diseases -- Potential role of Induced Pluripotent Stem Cells (IPSCs) for Cell-Based Therapy of the Ocular Surface -- Chapter 4: Spinal Cord Injury -- The Potential for iPSC-Derived Stem Cells as a Therapeutic Strategy for Spinal Cord Injury: Opportunities and Challenges -- The State of Play with iPSCs and Spinal Cord Injury Models -- Chapter 5: Liver -- Potential and Challenges of Induced Pluripotent Stem Cells in Liver Diseases Treatment -- Chapter 6: Muscle -- Myogenic Precursors from iPS Cells for Skeletal Muscle Cell Replacement Therapy -- Chapter 7: Bone -- The Use of Patient-Specific Induced Pluripotent Stem Cells (iPSCs) to Identify Osteoclast Defects in Rare Genetic Bone Disorders -- Chapter 8: Germ Cells -- Human iPS</p> |

Cell-derived Germ Cells: Current Status and Clinical Potential -- Chapter 9: Genetic Disorders -- Comparing ESC and iPSC-Based Models for Human Genetic Disorders -- Design of a Tumorigenicity Test for Induced Pluripotent Stem Cell (iPSC)-Derived Cell Products -- Concise Review: Methods and Cell Types Used to Generate Down Syndrome Induced Pluripotent Stem Cells -- Chapter 10: Immune Response -- The Possible Future Roles for iPSC-Derived Therapy for Autoimmune Diseases.

**Sommario/riassunto**

The field of reprogramming somatic cells into induced pluripotent stem cells (iPSC) has moved very quickly, from bench to bedside in just eight years since its first discovery. The best example of this is the RIKEN clinical trial this year in Japan, which will use iPSC derived retinal pigmented epithelial (RPE) cells to treat macular degeneration (MD). This is the first human disease to be tested for regeneration and repair by iPSC-derived cells and others will follow in the near future. Currently, there is an intense worldwide research effort to bring stem cell technology to the clinic for application to treat human diseases and pathologies. Human tissue diseases (including those of the lung, heart, brain, spinal cord, and muscles) drive organ bioengineering to the forefront of technology concerning cell replacement therapy. Given the critical mass of research and translational work being performed, iPSCs may very well be the cell type of choice for regenerative medicine in the future. Also, basic science questions, such as efficient differentiation protocols to the correct cell type for regenerating human tissues, the immune response of iPSC replacement therapy and genetic stability of iPSC-derived cells, are currently being investigated for future clinical applications.