

Stem cells and cancer stem cells: therapeutic applications in disease and injury; Vol. 3

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Abstrak

It is pointed out that cancer stem cell is a cell type within a tumor that possesses the capacity of cell-renewal and can give rise to the heterogeneous lineages of cancer cells that comprise the tumor. It is emphasized that a cancer stem cell is a tumor initiating cell. That conventional chemotherapy kills most cells in a tumor, but cancer stem cells remain intact is discussed. Vast applications of stem cells, cancer stem cells, mesenchymal stem cells, and human pluripotent stem cells are discussed. Because human embryonic stem cells possess the potential of producing unlimited quantities of any human cell type, considerable focus is placed on their therapeutic potential in this volume. Because of the pluripotency of embryonic stem cells, this volume discusses various applications such as tissue engineering, regenerative medicine, pharmacological and toxicological uses. The role of these cells in cell differentiation is also included. The role of cancer stem cells of breast, colon, and melanoma tumors in response to antitumor therapy is detailed. The role of cancer stem cells, specifically in the deadliest brain cancer, glioblastoma multiforme, is explained. Transplantation of bone marrow-derived stem cells for myocardial infarction and use of mesenchymal stem cells in orthopedics are described.