

REVIEW ARTICLE

Stem Cells: Basics and its Prospective uses in Medical field

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ABSTRACT:

Stem cells abilities to self-renew and differentiate have captured the attention of both developmental biologist and medical practitioners. Stem cells are potentially immortal cells capable of self-renewal and give rise to differentiated cells. No area of research except gene therapy has evolved so much enthusiasm and hope as stem cells. Most medical expert view stem cells research as the new frontiers in medicine, a huge breakthrough that could save millions of life. Medicine today's are based on drug therapy dominated by antibiotics, chemotherapy, and other pharmaceuticals. Medicine of future would be based on cell therapies, focused on repair of tissues/organs by cell transplant i.e. instead of drugs to prevent malfunction or death, diseased cell would be replaced by healthy differentiated stem cell. This article presents a comprehensive review on basics of stem cells and its potential uses in coming future.

KEYWORDS: Stem cell, self-renewal, cell transplant.

1. INTRODUCTION:

The derivation of various scientific areas has altered the living condition of human being a lot. This has been possible mainly because of evolution of new experimental protocol showing full mechanism, discovery various pharmacological elements that play a major role in building and working of numerous cells and tissues and differentiating various cell on the basis of their functions and structure. Considering these things a special emphasis was given on the cells, as the cells are the basic elements of our body. Thus, a new era of science developed and was recognized as stem cell technology. The stem cell caught a significant attention to researcher across the globe as the disease can be treated from the root with the use of stem cell.^[1]

Stem cells have the amazing conceivable to nurture into many cell types in the body throughout early life and growth.^[2] In addition, in many tissues they endow with a sort of internal mend system, multiplying basically without bound to replenish other cells provided that the animal or person is still living. When a stem cell goes through separation, each new cell has the potential either to remain a stem cell or become an additional type of cell with a more specific function.^[3]

Stem cell is characterized from other cell types by two main uniqueness. First, they are unspecialized cells, growing themselves throughout cell division, sometimes after increased periods of redundancy^[4]. Second, under certain physiologic or experimental situation, they can be induced to develop into tissue- or organ-specific cells with unique functions. In some organs, such as bone marrow and gut, stem cells quite often divide to repair and reinstate worn out or damaged tissues. In other organs, however, such as heart and the pancreas, stem cells only divide under special circumstances.^[5]

There are four basic steps, which are taken for consideration for customized stem cell therapy to be