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Stem Cell Research

**Introduction**

The stem cells have proven capability of replicating as well as transforming into specialized cells that are useful in many biological and clinical situations. The stem cells are undifferentiated, and they can give rise to undifferentiated as well as differentiated cells, both in a natural way as well as in controlled conditions. This paper defines the stem cells, describes their various kinds, and elaborates their various uses.

**Discussion**

Stem cells are undifferentiated cells that have the ability to divide into many different types of offspring cells. These offspring cells may be the stem cells, or differentiated cells other than the stem cells that have become specialized. These cells develop during the early years of an individual. The stem cells help in repairing the damaged tissues of the body by dividing into a countless number of cells. The stem cells continue to carry out internal repair until a biological organism is alive. The differentiated cells produced as a result of stem cells’ divisions serve specific purposes in their respective organs. Examples of offspring specialized cells include red blood cells that specialize in carrying oxygen through the bloodstream, brain cells responsible for carrying reflexes or messages through different parts of the body, muscle cells that contract and expand, etc.

Among the many different kinds of stem cells are the embryonic cells that evolve from (human) embryos and are often referred to as pluripotent stem cells (Rezania and Xu, N.p.). These cells are capable of developing into more than two hundred differentiated, or specialized cells in the organism. Other stem cells originate from the developed organs in the body, and these cells are used by the body to repair the damaged tissues in the same organs or areas from where they originate. These are referred to by the non-embryonic stem cells. An example of these cells are the stem cells found in bone marrow, which are used in developing new RBCs, WBCs, and other kinds of blood cells. Bone marrow transplantation has been possible due to the regenerative capabilities of these stem cells. A new kind of stem cells are induced pluripotent stem cells that can be produced by the intervention of medical technology by changing adult stem cells into pluripotent stem cells. These cells can be used to produce cells of all organs of the body (Tasoglu and Demirci, 16).

The stem cell biology research areas demonstrate great diversity. The stem cells are used to treat liver diseases by transforming these cells into specialized liver cells. These cells are used to derive neurons from them to conduct a study of neuron diseases. Bone marrow cells are generated with the use of the stem cells. The stem cells are also being tested in the production of pancreatic cells if they might have useful results in the treatment of diabetes. The stem cells have shown their effectiveness in treating cancer through immune cells generated using those cells (Bielecka et al., 1506). There are several other uses of the stem cells that prove their significance in curing diseases efficiently. These include treatment of injuries of the spinal cord, heart diseases, arthritis, diseases of kidney, and strokes (Boltze et al., 1143). The stem cells are being tested for their effectiveness in treating the damaged cells in the inner side of the ear, thereby restoring the loss of hearing. These cells are also being examined for treating AIDS by making changes to their genetic codes.

The stem cells' production from the embryonic cells has been a controversial issue, because this process completes at the cost of the embryo that is destroyed at all. Therefore, the social work professionals raise this issue and protest against it. They claim it is against the ethical values of a civilized society, and declare it to be a social crime (McLaren, 130).

**Conclusion**

Research on stem cells is still in the process of evolution. The stem cells have already proved helpful in treating several diseases. The scientists are hoping to reap benefits from the stem cells in future researches.

Works Cited

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