

Stem Cells

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ELE 282 – Professor Ying Sun

With today's advancements in science technologies there is one topic that is on the mind of every scientist, religious figure, and politician alike: stem cells.

Stem cells are primal cells found in all multi-cellular organisms. Essentially, they are undifferentiated cells that, when under the right conditions, can develop into mature cells with specific functions. There are two types of stem cells: embryonic and adult.

Embryonic stem cells are derived from an inner mass of an early stage embryo known as a blastocyst. They are pluripotent which means they can differentiate into all derivatives of cells. These stem cells can also proliferate for a year or more inside of a laboratory.

Adult stem cells are undifferentiated cells found inside the body that divide to regenerate dying cells and regenerate damaged tissues. These cells are multipotent, as far as research shows to date, and can only differentiate to specific types of cells. Although the discovery and isolation of such cells are extremely difficult, the advantage of this type of stem cell is that there is no moral issue surrounding them.

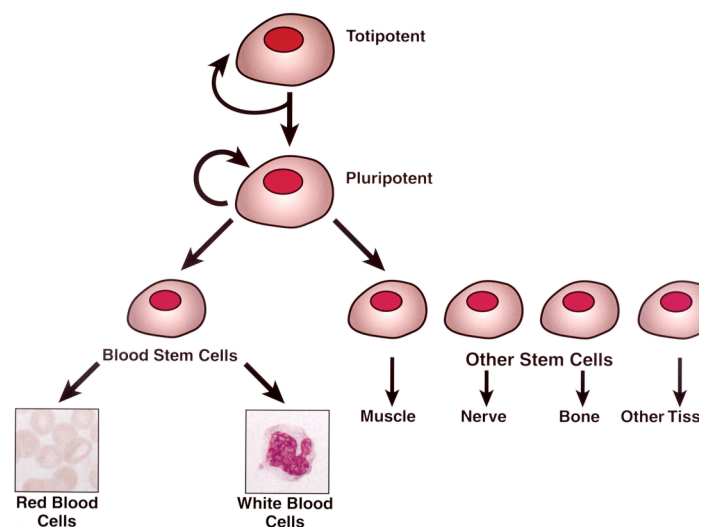
The further research in stem cells will lead to better scientific knowledge of different drugs and diseases. They can be used to generate cells and tissues to supply research for diseases such as Parkinson's, Alzheimer's, spinal cord injury, stroke, heart disease, burn victims, diabetes, osteoarthritis, rheumatoid arthritis, blood stem cells, and to further the knowledge of treatment of cancer

Along with this research much question is raised regarding the morality of such experiments. Some cultures and religions believe that no matter what the condition of the cells it is still human life. Other cultures and religions believe that stem cell research has validity and is not morally questionable due since an embryo only gains status as a human being after a couple of weeks

Currently, all forms of stem cell research in the U.S. are legal at the federal level. That is, it is not illegal to make or work with new embryonic stem cell lines. However, the use of federal funds for human embryonic stem cell research is restricted to the cell lines that were available as of August 9, 2001. The creation of new embryonic stem cell lines can only occur when scientists are working with non-federal funding.

The decision on the status of stem cell needs to be carefully evaluated over the next couple years. There is much potential for extraordinary research in this field, but it all depends on how government and religious official influence scientific progress.

Hierarchy of Stem Cells



Sources:

- <http://stemcells.nih.gov/index.asp>
- http://en.wikipedia.org/wiki/Stem_cell
- http://en.wikipedia.org/wiki/Embryonic_stem_cell
- http://en.wikipedia.org/wiki/Adult_stem_cell
- <http://www.northwestern.edu/science-outreach/stemcell/index.html>
- http://dels.nas.edu/dels/rpt_briefs/Undertanding_Stem_Cells.pdf