International Journal of Advanced Research in Commerce, Management & Social Science (IJARCMSS)
ISSN : 2581-7930, General Impact Factor : 0.9063, Volume 02, No. 02, April - June, 2019, pp 55-59

STEM CELL BANKING - RISING TREND: A HARVEST TO HOPE TO PRESERVE FUTURE

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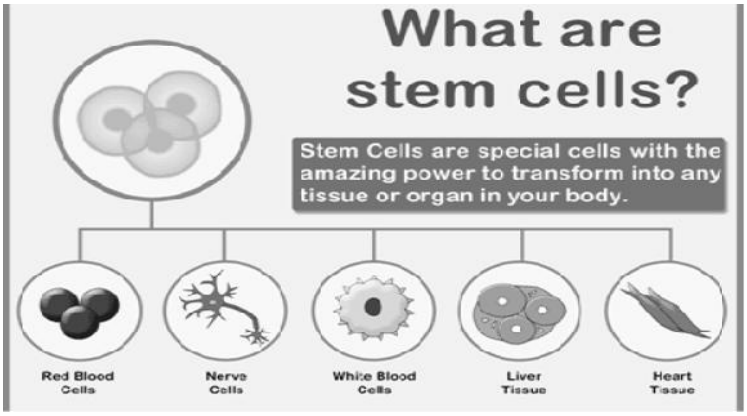
Abstract

Stem cells possess the power to separate into specific kind of cell. The two recognize qualities of these cells are perpetual self-renewal and in this way possess the capacity to separate into a particular adult cell. Mainly two classes of stem cells: pluripotent which will turn out to any cell within the adult body, and multipotent those are confined to turning into a more limited population of cells. Stem cells own an extraordinary possibilities in tissue recovery and repair, however much still must be learned concerning their biology, control and safety before their full therapeutic potential will be accomplished.

Keywords: *Stem Cells, Umbilical Cord Blood, Stem Cell Therapy, Transplantation.*

Introduction

Stem cells are special cells with the superb power to change into any tissue or organ in human body. Because of these special powers, they have the capabilities to treat life threatening disease and disorders. They're undifferentiated living cells that can separate into specialized cells and have the potential to divide to supply a lot of stem cells. Indeed, however there are different kinds of stem cells that exist in the human body. Stem cell therapy utilizes two main varieties, Hematopoietic Stem Cells (HSC) and Mesenchymal Stem Cells (MSC).



Stem Cells

These are the foremost cells that function as basic building blocks of our body. Much the same as a seed of a plant that offers ascend to branches, leaves and fruits. These cells own the conceivable outcomes to separate into specialized cells like blood cells, muscle cells, brain cells, etc., of our body.

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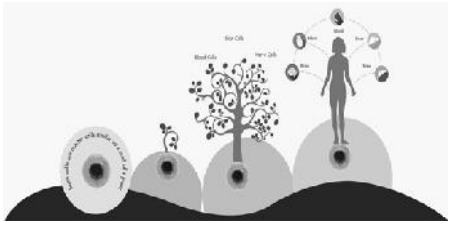
Stem Cell Banking

It is a method of extracting, processing & storing newborn's cord blood stem cells in a vault. These cells have the flexibility to regenerate several specialized cells and therefore, can then be utilize in the treatment of in excess of 80 life threatening disorders.



Umbilical Cord

Umbilical cord is a long cord; usually 20 inches long that connects the foetus to its mother within the uterus. It originates from an opening on the foetus abdomen and is connected to the placenta inside the womb. The umbilical cord plays a significant role within the growth of the baby, the foremost necessary being carrying oxygen and nutrients from the placenta to the foetus circulation. After birth of the baby, the umbilical cord is clamped and cord blood collected before being sent to the laboratory. The stem cells separated from the umbilical cord then can be preserved in a cord blood bank.

Sources of Stem Cells

Stem cells emerge from two main sources: adult body tissue and embryos.

Adult Stem Cells

These also names as tissue specific or somatic stem cells. These stem cells are present inside different types of tissue including:

- The Brain
- Bone marrow
- Blood and blood vessels
- Skeletal muscles
- Skin
- The liver

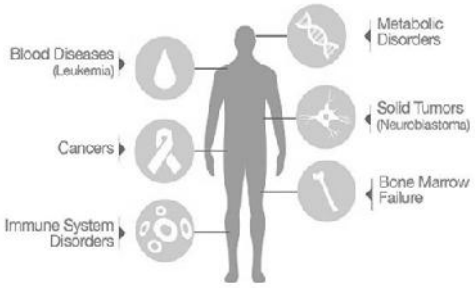
Embryonic Stem Cells

Embryonic stem cell originates from a blastocyst that is 4-5 days old. Embryonic stem cells can separate into a lot of cell types than adult stem cells.

- Mesenchymal stem cells (MSC)
- Induced Pluripotent stem cells (iPSCs)
- On other hand, Sources of stem cells are many, most common is umbilical cord. In general, some of the rich sources of stem cells are-
- Placenta
- Umbilical cord
- Amniotic fluid
- Dental stem cells
- Menstrual fluid
- Adipose tissue

Uses of Stem Cell

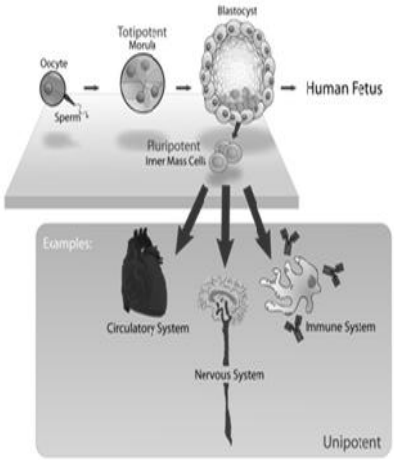
Stem cells are currently used in modern day medicine & will facilitate treat over medical conditions through replacement and repair approaches. For over fifty years, in excess of 13 lakh transplants have been done utilizing stem cells across the world. Presently the number is in excess of 50,000 transplants each year and growing as we tend to speak.



Types of Stem Cells

Stem Cells categorize according to their capabilities to differentiate into other kinds of cells. Full classification includes:

- **Totipotent:** These stem cells will transform into all possible cell types. The first few cells that seem as the zygote starts to divide are totipotent.
- **Pluripotent:** These cells will turn into almost any cell. Cell from the early embryo are pluripotent
- **Multipotent:** These cells will transform into a closely related family of cells. Adult hematopoietic stem cells, for example, will wind up red and white blood cells or platelets.
- **Oligopotent:** These will convert into a couple of different cells types. Adult lymphoid cells can do this.
- **Unipotent:** These will solely produce cells of one kind, which is their own type. Example includes adult muscle stem cells.



Stem Cells Transplantation Across the Globe

Till mid-2015, over 1.3 million stem cell transplant have been performed comprehensively. Nowadays a lot of than 50,000 transplants are carried out annually worldwide. Hence, stem cells have a growing potential in treatment of numerous illness even later on.

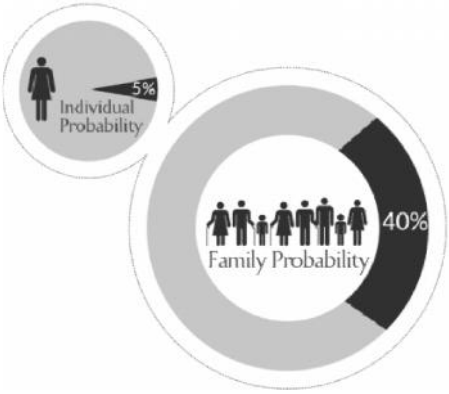
Application of Stem Cells

Possibilities of stem cells application are developing day by day. At present, stem cells are utilized in treating over eighty medical conditions like:

- Blood disorders
- Cancers
- Immune disorders
- Metabolic disorders

Treatment Likelihood by Stem Cells

Each individual incorporates a 5% likelihood of being determined to have a condition that will be treatable by stem cells. For a group of eight family members includes the child, siblings, parents and grandparents, there's high likelihood of 40 % for the family members to be determined to have a condition that necessities stem cells for its treatment. One in 217 will experience a stem cell transplant by the age of seventy years.

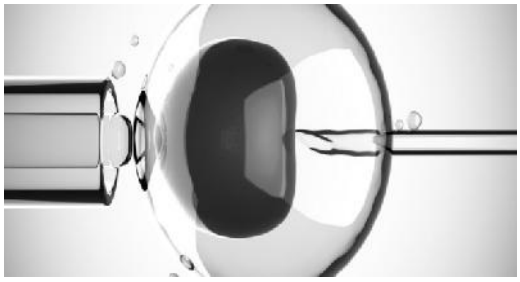


Stem Cell Therapy

Everybody is brought into the world utterly totally different, some are born absolutely healthy and stay healthy for the remainder of their lives, and a few are born with certain neuromuscular disorders, whereas some might develop degenerative disorders.

Stem Cell Therapy (SCT) is that the treatment of different sorts of disorder, non-serious to dangerous, by using stems cells. These stem cells is procured from tons of completely different sources and used to treat in excess of 80 disorders, including neuromuscular and degenerative disorders.

Disordersof blood likesickle cell anemia, thalassemia, leukemia, aplastic anemia, MDS, storage disorders etc., have an effect on the bone marrow and manifest with numerous systemic complications. Stem cells from a donor (either from cord blood or bone marrow) are known to reconstitute the defective bone marrow and permanently for good overcome the disorder.



Role of Stem Cells in Current Health Scenario

Presently, stem cells have the possibility for treatment of approx eighty blood related medical condition like Thalassemia, Lymphoma, Leukemia, Multiple Myeloma, Neuroblastoma, etc,. Over five hundred clinical preliminaries for conditions like Autism, Cerebral Palsy, Stroke and Diabetes are presently underway expanding the extent of future medicines.

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