Prime Scholars Library

Short Communication

Available online at
https://primescholarslibrary.org/

Vol. 10(1), pp.08 - 09, March, 2022

Stem cell technology

David Archer*

Department of Biology, Chalmers University of Technology, Gothenburg, Sweden.

Received: 04-Mar-2022, Manuscript No. ALSB-22-56165; **Editor assigned**: 07-Mar-2022, Pre QC No. ALSB -22-56165 (PQ); **Reviewed**: 21-Mar-2022, QC No. ALSB -22-56165; **Revised**: 28-Mar-2022, Manuscript No. ALSB -22-56165 (R); **Published**: 05-Apr-2022, DOI: 10.51268/2736-1837.22.10.65.

DESCRIPTION

Stem cells are the raw materials cells from which all other cells with specialized features are generated. Under the right conditions in the body or a laboratory, stem cells divide to form more cells known as daughter cells. These daughter cells either become new stem cells (self-renewal) or become specialised cells (differentiation) with a more specific function, such as blood cells, brain cells, coronary heart muscle cells or bone cells. No other cell in the body has the natural ability to generate new cell sorts. Adult stem cells are found in a few select locations in the body, known as niches, such as those in the bone marrow or gonads. They exist to replenish rapidly lost cell types and are multipotent or unipotent, meaning they only differentiate into some cell types or one type of cell. In mammals, they include, among others, hematopoietic stem cells, which replenish blood and immune cells, basal cells, which maintain the pores and skin epithelium, and mesenchyme stem cells, which maintain bone, cartilage, muscle and fats cells. Adult stem cells are a small minority of cells are the progenitor cells and terminally differentiated cells that they differentiate into.

Embryonic stem cells

Embryonic Stem Cells (ESC) are present in the inner cell mass of human blastocysts, in the early stages of developing embryos, which last from 4 to 7 days after fertilization (Ritchie, et al 2020). In normal embryonic development, it disappears after 7 days and begins to form three layers of embryonic tissue. However, ESCs extracted from the inner cell mass during the blastocyst stage can be cultured in the laboratory and grow indefinitely under appropriate conditions. ESCs that grow in this undifferentiated state retain the potential to differentiate into cells of all three germ layers. Studies using human ESC are central to the ethical debate about the use and potential of stem.

Adult stem cells

Adult stem cells (also known as somatic stem cells or tissue stem cells) are a rare cell population found in the body throughout most of their life after birth, and the limited number of maturations that make up the tissues in which they reside. Their offspring replace cells lost due to tissue remodeling or damage while maintaining tissue homeostasis. Examples that are well studied in mammals include blood, skin, intestine, and muscle stem cells, but it is not clear whether all organs contain dedicated tissue-specific stem cells. This shows the advances made in identifying stem cells in various tissues and understanding their regulation during and after injury in normal tissues (Chisti, 2007).

Induced pluripotent stem cells

Scientists have succeeded in converting normal adult cells into stem cells using gene reprogramming. By modifying the genes in adult cells, researchers can reprogram the cells to act like embryonic stem cells. This new technology allows researchers to use reprogrammed cells instead of embryonic stem cells to prevent the immune system from rejecting new stem cells (Pulz and Gross, 2004). However, scientists still do not know if the use of manipulated adult cells will have a negative impact on humans. Researchers have succeeded in taking normal connective tissue cells and reprogramming them into functional heart cells. In the study, heart failure animals injected with new heart cells experienced improved cardiac function and survival.

Perinatal stem cells

Researchers have found stem cells in both amniotic fluid and cord blood. These stem cells also have the ability to transform into specialized cells. Amniotic fluid fills the sac that surrounds and protects the developing floatation in the womb. Researchers have identified stem cells in amniotic fluid samples from pregnant women to test for abnormalities.

REFERENCES

Ritchie H, Roser M, Rosado P. CO_2 and greenhouse gas emissions. Our world in data. 2020.

Daroch M, Geng S, Wang G. Recent advances in liquid biofuel production from algal feedstocks. Applied Energy. 2013;102:1371-1381.

Vicente G, Martınez M, Aracil J. Integrated biodiesel production: a comparison of different homogeneous catalysts systems. Bioresource technology. 2004;92(3):297-305.

Chisti Y. Biodiesel from microalgae. Biotechnology advances. 2007;25(3):294-306.

Pulz O, Gross W. Valuable products from biotechnology of microalgae. Applied Microbiol Biotechnology 2004;65(6):635-648.