

Stem Cell Study

Anusha Swarna*

Department of Pharmacology, Nandha college of Pharmacy, Erode, Tamilnadu, India

Abstract

Stem cells are undifferentiated, or “blank,” cells. This means they're capable of developing into cells that serve numerous functions in several parts of the body. Most cells in the body are differentiated cells. These cells can only serve a selected purpose during a particular organ. For example, red blood cells are specifically designed to hold oxygen through the blood.

Keywords: Cells • Blood

Introduction

All humans start out as only one cell. This cell is called a zygote, or a fertilized egg. The zygote divides into two cells, then four cells, and so on. Eventually, the cells begin to differentiate, taking on a certain function in a part of the body. This process is called differentiation.

Stem cells are cells that haven't differentiated yet. They have the power to divide and make an indefinite number of copies of themselves. Other cells in the body can only replicate a limited number of times before they begin to break down. When a somatic cell divides, it can either remain a somatic cell or become a differentiated cell, like a muscle fiber or a red blood corpuscle.

Types of stem cells

There are several sorts of stem cells which will be used for various purposes.

1. Embryonic stem cells

Embryonic stem cells come from human embryos that are three to 5 days old. They are harvested during a process called in-vitro fertilization. This involves fertilizing an embryo during a laboratory rather than inside the feminine body. Embryonic stem cells are referred to as pluripotent stem cells. These cells can produce to virtually the other sort of cell within the body.

2. Adult stem cells

Adult stem cells have a misleading name, because they're also found in infants and youngsters. These stem cells come from developed organs and tissues within the body. They're employed by the body to repair and replace damaged tissue within the same area during which they're found.

For example, hematopoietic somatic cells are a kind of adult stem cell found in bone marrow. They make new red blood cells, white blood cells, and other types of blood cells. Doctors are performing somatic cell transplants,

also referred to as bone marrow transplants, for many years using hematopoietic stem cells so as to treat certain sorts of cancer.

Adult stem cells can't differentiate into as many other sorts of cells as embryonic stem cells can.

3. Embryonic Germ Cells

Germ cells are the precursors to the gametes (egg and sperm) and are therefore found in adult testes and ovaries, and in the areas of the embryo that ultimately differentiate into testes or ovaries. These cells appear to be as pluripotent as other embryonic stem cells. However, they have been found to differentiate spontaneously, which would suggest that there is less control over their development than with other stem cells.

Studies suggest that adult stem cells can be easily derived from germ cells of both sexes. Further research is needed to explore the validity of this hypothesis, though the findings are certainly intriguing and potentially useful.

4. Cord blood stem cells and amniotic fluid stem cells

Cord blood stem cells are harvested from the umbilical cord after childbirth. They can be frozen in cell banks to be used within the future. These cells are successfully used to treat children with blood cancers, like leukemia, and certain genetic blood disorders.

Stem cells have also been found in amniotic fluid. This is the fluid that surrounds a developing baby inside the mother's womb. However, more research is required to assist understand the potential uses of amniotic fluid stem cells.

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*Address for Correspondence: Anusha Swarna, Department of Pharmacology, Nandha college of Pharmacy, Erode, Tamilnadu, India; E-mail: swarna.anu03@gmail.com

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