

## Stem Cell Treatments

Every organ in the body is made up of cells that originated as stem cells, which are then **differentiated** (changed) into different forms.

Stem cells have special ability to become more than one type of cell in the body and also to keep dividing and multiplying without limits. The more potent a stem cell is, the more types of cells it can become. The most potent stem cells are **embryonic stem cells**, which are found in the very early stages of pregnancy or can be made outside the body using in vitro fertilization. **Adult stem cells**, which are present throughout life, are less potent but still very important for maintaining overall health. Adult stem cells were first found in bone marrow but now are thought to be present in almost every organ in the body. These adult stem cells also include neonatal stem cells that are found in the umbilical cord and placenta. Finally, **induced pluripotent stem cells** are adult cells that are reprogrammed in a laboratory to revert back to a stem cell that is similar to an embryonic stem cell.

### Importance of Stem Cells in Medicine

Stem cells have many medical uses. Stem cells in the bone marrow, called **hematopoietic stem cells**, are used for bone marrow transplantation in patients with cancer or other blood disorders.

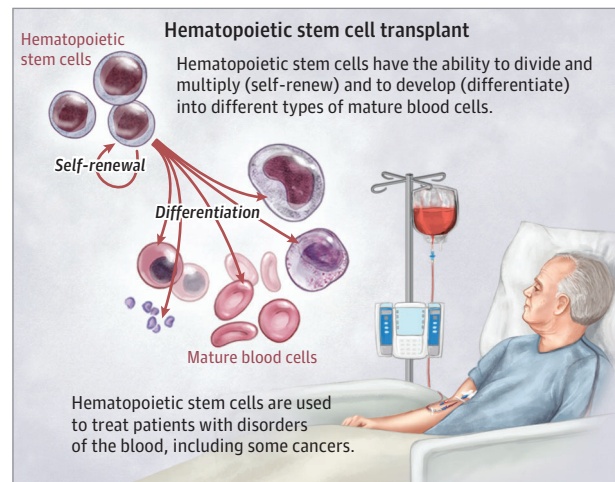
Theoretically, stem cells or their derivatives can be used to restore any tissue in the body that is lost or damaged by either illness or injury. Examples of these potential treatments that are currently being studied include

- Restoring bone growth after bone injury
- Restoring vision in retinal disease
- Restoring nerve cell function in spinal cord injury, Parkinson disease, and Huntington disease
- Restoring heart tissue after heart attack

### Stem Cell Treatments: What to Watch Out For

Many stem cell treatments are unproven and still experimental. Although stem cells may offer large potential in helping people in the future, they also can be dangerous if used incorrectly. They can travel to the wrong parts of the body and cause problems, and they also have the ability to become tumors.

In recent years, there have been many "stem cell clinics," both in the United States and around the world, that offer various "stem cell treatments" that are not scientifically proven and not regulated by the US Food and Drug Administration (FDA). These clinics mostly claim to use stem cells from one's own body fat, bone marrow, and blood, although some use cells from amniotic fluid,



placental tissue, umbilical cord tissue, and even unknown sources of cells from other donors. It is unknown whether the cells used are actually stem cells. These clinics tend to engage in false marketing to the public, with promises that stem cell treatments can improve cosmetic appearance as well as help a variety of conditions ranging from arthritis to autism. The FDA is currently in the process of developing guidelines to more strictly regulate these clinics.

### The Bottom Line

A lot of claims about stem cell treatments are untrue. Talk to your doctor before going to a stem cell treatment center for any type of treatment.

#### FOR MORE INFORMATION

- US Food and Drug Administration  
<http://www.fda.gov/AboutFDA/Transparency/Basics/ucm194655.htm>
- FDA Consumer Updates  
<http://www.fda.gov/ForConsumers/ConsumerUpdates/ucm286155.htm>

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