

Name: _____

Date: _____

Lesson 7 Specialized Cells & Stem Cells (Nelson p.54-56;77-78)

Learning Goals:

- I can explain how the structure relates to the functions of the specialized cells.
- I can explain the different types of stem cells.
- I can explain the importance of stem cell research and the ethical issues related to stem cell applications.

- All multicellular organisms are made up mostly of _____.
- Specialized cells** have _____ and _____ that allow them to do _____ (jobs)

Cell Specialization:

Cell specialization: Cells change from _____ into cells that have _____

A specialized cell: A cell that

✓ comes from a _____ cell (**stem cell**)

✓ _____ from each other:

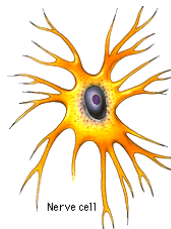
- **Red blood cells:** smooth surface and edges that allow them to flow easily
- **Skin cells:** flat and grow in layers to cover and protect the body
- **Nerve cells:** long and thin with many branches that allow them to send signals quickly



Red blood cell



Muscle cells



Nerve cell



Leaf pore guard cells

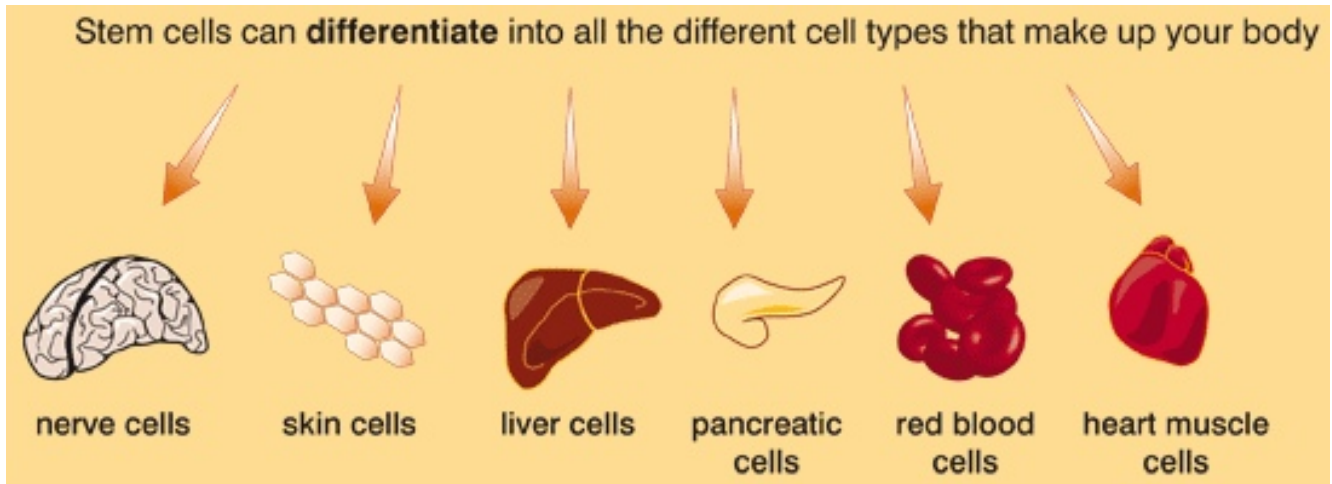
✓ is _____ (inside cell)

- **Muscle cells** have more mitochondria that allow them to use a lot of energy
- **Cells in intestine** have more Golgi bodies that produce mucus
- **Fat cells** have a large vacuole that store fat

✓ carry out a _____

- **Bone cells** store calcium and build new bone
- **Skeletal muscle cells** contract to allow movement
- **Fat cells** store fat
- **Red blood cells** deliver oxygen and remove carbon dioxide
- **Skin cells** cover the body and reduce water loss

What are Stem Cells?



Stem Cells:

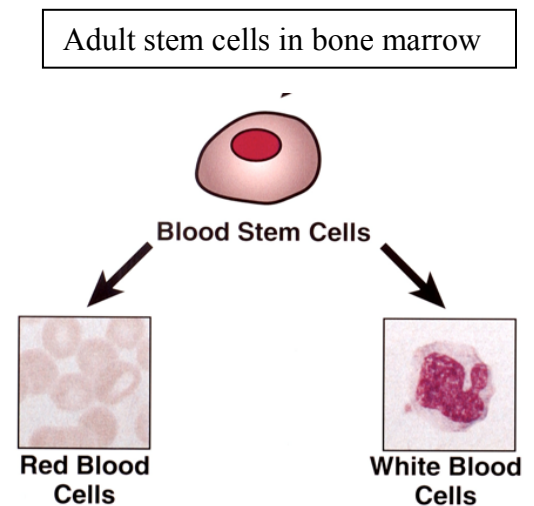
- Are cells that are _____
- Can become _____ cells
- Can _____ to produce copies of themselves through _____ and _____

Adult Stem Cells

- Exist within _____ or _____
- Can become _____ of cells
- **Purpose:** to _____ and _____ the tissue in which they are found

Why is Stem Cell Useful?

- To _____ and _____ damaged human tissue
- To _____ and _____ diseases and injuries



Stem Cell Therapy:

- Isolate stem cells from blood sample, letting them divide repeatedly, and return them to the body
- **OBSTACLES:**
 - Have not identified stem cells for all specialized cells in the body
 - Shortage of adult stem cells
 - Damage to stem cells due to age and exposure to toxins