Name: _____

The Nature of Stem Cells

Go to Stem Cell Exploration - link is on my Weebly Site or go to learngenetics.com View the Nature of Stem Cells and Unlocking Stem Cell Potential.

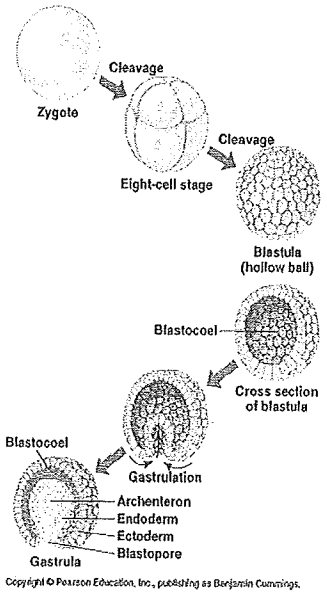
The Nature of Stem Cells

What is an undifferentiated cell?

What is a differentiated cell?

How does an undifferentiated cell become a differentiated cell?

What is a blastocyst?



The blastocyst will become the ectoderm, mesoderm, and endoderm.

Each of these will form different components of the embryo.

Ectoderm: _____

Mesoderm: _____

Endoderm: _____

Go through "Go, Go Stem Cells" to learn the niches where stem cells exist in the body and how they produce new cells.

A niche is the site for protecting and maintaining stem cells. The niche regulates stem cell growth. Signals activated by the genes transform the stem cell and will send the new cell to where it is needed. The original stem cells stay in the niche.

For each niche you click on it is best to click on the "Show Text" button so you can fill in the answers to the questions.

Bone Cell Niche

1. What is the function of the osteoblasts? _____

2. The most abundant protein in the human body is _____. It makes of 25% of the protein in the body and is a key component of the cornea, cartilage, bone, and tendons.

Blood Cell Niche

3. Blood cells are produced in the _____.

4. The types of blood cells are White Blood Cells, Red Blood Cells, and Platelets.

   What is the function of each:

   White Blood Cells: _____

   Red Blood Cells: _____

   Platelets: _____

5. How long will a red blood cell last in the body? _____

Intestinal Cell Niche

6. The finger-like projections of the digestive system are called _____. These increase the surface area of the lining of our digestive tract to increase absorption of nutrients.

7. A whole villus can form in _____ days.

Hair Follicle Niche

8. What is the protein that gives hair its strength? _____

Brain Cell Niche

9. _____ send and receive signals in your brain.

Click on each part of the brain and match it to its function. Place the letter of its function on the line provided.

_____10. Cerebellum	A. converts short term memory to long term memory
_____11. Corpus callosum	B. senses odors
_____12. Hippocampus	C. controls motor functions like walking and standing
_____13. Thalamus	D. sends and receives sensory information (anesthesia shuts this part of brain off)
_____14. Hypothalamus	E. processes emotions like fear, depression, and motivation
_____15. Amygdala	F. nerve fibers that connect the left and right hemispheres of brain
_____16. Pons	G. regulates hormones and functions like metabolism and body temperature
_____17. Olfactory Bulb	H. controls swallowing, posture, and facial expressions

Go Back to Main Menu. View "The Stem Cell Debate: Is it Over?"

18. What is one of the biggest ethical concerns over embryonic stem cell research?