**Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Period: \_\_\_\_\_\_\_\_\_\_\_\_\_\_**

***Stem Cells Web Activity***

<http://learn.genetics.utah.edu/content/tech/stemcells>

*Go to “Nature of Stem Cells.”*

***Turn on “CC” to get text along with the audio. If you do not have headphones, it might be best to mute the sound.***

1. Specialized cells are known as \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
2. What is a stem cell?
3. When does development of a human begin?
4. What do the cells around the outside of the blastocyst become?
5. What is the role of signals in cell differentiation?
6. How many types of cells do you have?
7. How are somatic stem cells different from embryonic stem cells?
8. Where are somatic stem cells found in adults?

*Go back to front page by clicking on the Stem Cells button at the top of the page. Click on “Go, Go Stem Cells” on the right of the page.*

*You will “visit” each of the stem cell niches shown on the picture of the body. Complete the information for each type. The first three questions are the same for all, so only need to be answered once. Click on the “show text” button.*

1. What causes a stem cell to divide and become a differentiated cell?
2. What happens to the stem cell when the chemical signals activate the stem cell?
3. How do stem cells transform (differentiate)?

Blood Cell

1. Where are red blood cells made?
2. What protein do red blood cells make?
3. What happens to the nucleus and organelles after the red blood cell is made?
4. How long do red blood cells last?
5. What is the function of red blood cells?

What is the function of white blood cells? (general function, don’t write much detail)

1. What is the function of platelets?

Hair Follicle

1. What causes a signal to be sent to the hair follicle stem cell niche?
2. How many hairs do you lose on an average day?
3. What type of protein do these stem cells make?
4. What types of cells do these stem cells make? (more than one!)

Brain Cell

1. When are most neurons made?
2. What do neurons do?
3. How are cells of the hippocampus different than neurons in other parts of the body?
4. What is the function of glial cells?
5. How are the new neurons in the hippocampus helpful?

Small intestine

1. What is the function of the small intestine villi?
2. How frequently are these cells made?
3. What types of cells do these stem cells make? (more than one!)

Bone

1. What is the function of bone stem cells?
2. What protein do bone cells make?

*Go back to front page by clicking on the Stem Cells button at the top of the page. Go to “Unlocking Stem Cell Potential” on the right of the page.*

***Turn on “CC” to get text along with the audio. If you do not have headphones, it might be best to mute the sound.***

1. What does regeneration rely on?

1. What is the function of most stem cells in humans?
2. What is the purpose of regenerative medicine?
3. How do some types of antidepressants work?
4. What two types of stem cells can give rise to any type of cell in the body?
5. How might stem cells help with spinal cord injuries?
6. Explain the new kind of gene therapy for genetic disorders.

|  |  |  |  |
| --- | --- | --- | --- |
| **Cell Type** | **Structure** | **Function** | **Sketch** |
| Nerve Cell |  |  |  |
| Muscle Cell (smooth and skeletal) |  |  |  |
| Blood Cell (do red and white) |  |  |  |
| Sperm Cell |  |  |  |
| Xylem Cell |  |  |  |
| Phloem Cell |  |  |  |