STEM CELL RESEARCH

NAME_____

To begin your research, log on to the following website:

http://gslc.genetics.utah.edu/units/stemcells/

Click on "What is a Stem Cell?" then answer the following questions:

1. What is a stem cell?

2. When a stem cell receives a signal, it begins to differentiate. What does that mean?

3. Draw and Label three different types of cells that a stem cell can become:

Cell type #1 Name:	Cell type #2 Name:	Cell type #3 Name:
Drawing:	Drawing:	Drawing:

Click on "What are Some Different Types of Stem Cells?"

4. What are early embryonic stem cells?

5. Define Totipotent:

6. What are blastocyst embryonic stem cells?

7. Define Pluripotent:

8. a. What are fetal stem cells?

   b. Are fetal stem cells Totipotent or Pluripotent?

9. What are umbilical cord stem cells?

10. Define Multipotent:

11. a. What are adult stem cells?

    b. Are they Totipotent, Pluripotent, or Multipotent?

Click on "Stem Cell Therapies Today" to trace the basic steps in a bone marrow transplant. Read the information on the site, and then fill in the missing information below:

12. Step one- The patient has cancer of the leukocytes or _____

    Step two- Leukocytes are made from stem cells in the _____ _____.

    Step three- Successful treatment of leukemia involves getting rid of all abnormal leukocytes and the patient's _____ through a combination of _____ and _____

    Step four- Donor bone marrow containing healthy _____ _____ are introduced into the patient's _____.

    Step five- If the transplant is successful, the stem cells will migrate into the patient's _____ and _____ _____.

Click on "Additional Resources", then "Yahoo News Full Coverage of Human Stem Cell Research"

13. List FIVE new treatments that stem cells may provide in the future:
    a)

    b)

    c)

    d)

    e)

Click on "Stem Cell Therapies in the Future," then "View student Activity"

14. Why would using a patient's own stem cells to grow new tissue be better than using donor cells?

15. Please read the information carefully, then fully explain three difficulties researchers have to overcome for this therapy to become available to patients in the future:
    a.

    b.

    c.

16. Research into the use of a patient's stem cells for therapy such as this is currently prohibited by law. Why do you think that the government has enacted such a law? (Why is stem cell research controversial, even though it may hold the key to curing things like Alzheimer's, Parkinson's disease and diabetes?)