Name _____ Date: _____ Period _____

Stem Cells in the Spotlight Webquest

Go to the following website: http://learn.genetics.utah.edu/content/tech/stemcells/

Click on **The Nature of Stem Cells**. Click on the "CC" button in the bottom left corner to turn on the closed captioning. Answer the questions as you read.

1.) What does it mean to differentiate?

2.) What is a stem cell?

Click on **Reversing Cell Differentiation**.

3.) Once a cell becomes specialized, can it become any other type of cell? Explain.

Click on **Stem Cell Quick Reference**. Complete the chart.

Stem Cell Type:	Embryonic (ES)	Somatic	Induced Pluripotent (iPS)	Therapeutic Cloning
Where they come from:				
Potential as Therapy:				
Special Considerations				
Ethical Considerations				

Click on **Go, Go Stem Cells**. Explore several Stem Cell Niches. Briefly describe several.

Click on **Stem Cells in Use**.

4.) What are three sources of stem cells that can be used to treat blood-based diseases?

Click on **Unlocking Stem Cell Potential**.

5.) Tissue engineers are currently using stem cells to repair what type of tissue?

6.) Tissue engineers have also grown what whole organs in animals?

Click on **The Stem Cell Debate: Is it Over**?

7.) When were stem cells first removed from embryos?

8.) Why is this controversial?

9.) What are the current U.S. laws regarding embryonic stem cells?

CANCER WEBQUEST

Go to http://www.insidecancer.org

Click on Hallmarks of Cancer, then click on each of the tabs to the left to answer the questions below.

CANCER OVERVIEW:

1. Where can cancer, or tumors, occur in the body? _____
2. Solid tumors form _____, while liquid tumors _____.
3. How do cancers start?

4. What percent of cancers are genetically inherited? _____
5. As we age, we accumulate more and more mutations. What does this explain?

GROWING UNCONTROLLABLY:

6. How or why do cancer cells grow?

7. What do cancer cells have to learn how to grow without?
   _____

8. What do cancer cells have to learn how to grow in the presence of?
   _____

EVADING DEATH:

9. How do cancer cells avoid death?

10. What is apoptosis?

PROCESSING NUTRIENTS:

11. How do cancer cells survive? What must they take in and attract?

BECOMING IMMORTAL:

12. The age of a cell and its ability to divide is related to what? Explain.

13. What do telomeres do and how does this relate to cancer?

14. Explain how telomerase enables cancer cells.

INVADING TISSUES:

15. What are 90% of human cancers due to?

AVOIDING DETECTION:

16. What are the two parts to adaptive immune responses?

PROMOTING MUTATIONS:

17. What affects the development of cancer cells?

18. What is genomic instability?

19. Name 2 ways in which we accumulate changes in our genes that can cause cancer?

Click on the CAUSES & PREVENTION section and answer the following questions.

20. What percent of cancer does pollution, food additives, and industrial wastes have an effect on?

21. Choose **2** of the tabs to the left to research forms of cancer. Read the information and describe the types of cancer caused by each. SMOKING, INHERITANCE, DIET, MOLD, VIRUSES, SUNLIGHT