Activity #1: What is Cancer?

Cancer affects over 1.3 million people per year in the United States. Some cases of cancer are linked to lifestyles choices people make and others are not. You are going to take the time to research some of the facts associated with cancer.

Go to http://science.education.nih.gov/supplements/nih1/cancer/activities/activity2_animations.htm

Animation 1: Stages of Cancer

1. **True or False.** The rate and timing of cell division is normally precisely regulated by your body.
2. **True or False.** Chemical messengers between neighboring cells keep the rate of cell division equal to the rate of cell death.
3. **True or False.** Cells ALWAYS divide normally.
4. **True or False.** Cells can break free from the original tissue and move to other parts of the body.
5. It could be said that cells divide: **in a controlled way OR in an uncontrolled way.**

Animation 2: Cell Cycle Clock

6. **True or False.** Scientists now know that the cell cycle clock helps to control cell division.
7. How many stages are in the cell cycle? 1 OR 2 OR 3 OR 4
8. **True or False.** In G1 the cell stays the same size.
9. What gets copied during the S phase? **Entire Nucleus OR DNA**
10. What does the G in G1 and G2 stand for? **Growth OR Gap**
11. **True or False.** Cells ALWAYS go right back into the cell cycle and start dividing all over again.

Animation 3: PO and TS

12. **True or False.** Proto-Oncogens (PO) encourages a cell to grow and divide.

13. What gene inhibits (stops) cell division? **PO OR TS**

Animation 4: Mutagens

14. **True or False.** According to their graph, if something has a high ability to cause a mutation, it will also have a high ability to cause cancer.

15. Do all cancers fit this simple model? **YES or NO**
Animation 5: PO and TS mutations

16. **True or False.** If a PO becomes an O it can cause excessive division.

17. **True or False.** If a TS becomes inactive, cells will not divide.

18. Smoking bans in public places are being debated all across this country; even in our town. Take a side on this issue and write a well-developed paragraph as to your viewpoint on this controversial topic. Include statistics or data to support and give validity to your viewpoint

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Now go to: http://www.cancer.org/Cancer/CancerBasics/what-is-cancer to answer the following questions:

1. How do ALL cancers start?

2. What important cellular component gets damaged in cancer cells?

3. What normally happens to a cell that has damage to its genetic material?

4. What is metastasis?

5. Using terms from the chapter on the cell cycle and cancer information you have just learned about, write a well-developed paragraph that illustrates the connection between cancer and the cell cycle. Be thorough and specific.

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Activity #2: How is Fido Going to Help Humans?

Cancer research is a huge area of research across the world. There is even groundbreaking research being done close to home by scientists at the Purdue University Cancer Research Center. Many of you may be familiar with or heard of the Mayo Clinic or the National Cancer Institute and would agree that they are doing research on the causes of human cancers, but did you ever stop to think that the growth on your pets back or the tumor on her mammary gland could prove to save human lives!

1. Read the article printed from the Colorado State University Website. The link is below or a re-print of the article is provided for you.
   www.colostate.edu/features/cancer-collaboration-cu.aspx
2. After reading the article, do an Internet search and find an article that links animal cancer research and/or treatments and/or cures to humans.
3. Print the article; this will be turned in.
4. Read the article and write a synopsis of it. This should be a well-developed paragraph that highlights where the research is being done, what organizations/colleges/institutions/individuals are involved, what type of cancer is being targeted and what the link is to humans.
5. Staple the article to your synopsis and turn in.