

# Inside Cancer

## Web Quest

Name: \_\_\_\_\_

View the presentations about cancer at the Inside Cancer web site (<http://www.insidecancer.org/>) and answer the following questions. Click through the presentations using the arrow at bottom right of the screen.

### Part 1: Hallmarks of Cancer

#### *Overview*

1. Where in the body can cancer arise?
  
2. Why does cancer risk increase with age?

#### *Growing Uncontrollably*

3. How are cancer cells different than normal cells when responding to signals that regulate the cell cycle?

#### *Evading Death*

4. Compare apoptosis cell death in normal cells and in cancer cells.

#### *Processing Nutrients*

5. Define angiogenic.
  
6. Why do cancer cells need to become angiogenic?
  
7. What nutrients do cells need to transport into the cell?
  
8. What wastes do cells need to transport out of the cell?

*Becoming Immortal*

9. What is a telomere?

10. In a normal cell, what happens to the telomere DNA over the course of multiple cell divisions?

11. What is telomerase? In what cells is telomerase normally functioning?

12. What does telomerase do in cancer cells?

*Invading Tissues*

13. What is metastasis?

14. In general, why can cancer be deadly?

*Avoiding Detection*

15. What is the function of B cells in the immune response?

16. What is the function of T cells in the immune response?

17. What is adjuvant therapy?

*Promoting Mutations*

18. How are gene mutations acquired in cells? (3 ways)

19. How many genes on average are changed to get a cancer?

## Part 2: CAUSES AND PREVENTION

### Overview

20. What percent of cancers are inherited?
21. What percent of cancers are due to synthetic chemicals?
22. For each cancer, indicate its leading cause and location of highest global incidence.
  - Lung Cancer:
  - Liver Cancer:
  - Stomach Cancer:
  - Skin Cancer:
  - Breast Cancer:
  - Cervical Cancer:
  - Colon Cancer:

### Smoking

23. Select the link to *Lung cancer epidemic*. For each cancer, indicate what percent of cancer deaths each cancer cause and the number of Americans that die each year because of the cancer.

Cancer Type	Percent of Cancer Deaths	Number of Deaths / Year
Lung		
Colon		
Breast		
Pancreas		
Prostate		
Leukemia		
Lymphoma		
Ovary		
Liver		
Esophagus		
Bladder		
Brain		
Kidney		
Stomach		
Myeloma		
Uteran		
Skin		
Others		

24. Select the link to *Killers in Smoke*. With each inhale, how many cancer causing chemicals does a smoker inhale?
25. Select the link to *Smoking Gun*. How does Benzo[a]pyrene, a chemical in cigarette smoke, mutate DNA?
26. Select the link to *K-ras*. What is the normal function of the K-ras protein? What happens if the K-ras gene is mutated?
27. Select the link to *p53* and answer the following questions:
- What is the function of the p53 protein?
  
  
  - At what points in the cell cycle is the p53 protein active?
  
  
  - What happens if p53 is mutated?
28. Select the link to *Nicotine Connection* and answer the following questions:
- What is Akt?
  
  
  - What activates Akt?
  
  
  - What is Akt's role in the development of cancer?

*Diet*

29. What foods and cooking methods have been associated with cancer development?

**Part 3: PATHWAYS TO CANCER**

Click through each of the remaining segments within the pathways to cancer section to view an animation of signal transduction and protein synthesis.