**Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Class: \_\_\_\_\_\_\_\_\_\_\_\_\_**

**Part 1: Catching Some Killer Rays**

Sheena had always liked to lie out in the sun. She just wasn’t happy unless her skin was a

golden brown color. Even in the winter, she insisted upon removing the cold white

appearance of her skin. “I’ve got to get to the tanning bed!” would be her weekly slogan.

Towards the end of her senior year in college, Sheena began to notice a strange black spot

on her back. It had not been there a few years ago, and it seemed to look a little

different everyday.

Sheena decided to show this strange black mark to her doctor. He diagnosed her with

malignant melanoma, a serious form of skin cancer. Her doctor described “Melanoma” as a

disease of the skin in which cancer (malignant) cells are found in the cells that color the

skin (melanocytes).” He further explained that the first step in treatment is the removal

of the melanoma, and the standard method of doing this is by surgical excision - cutting it

out. If the cancer has spread, then chemotherapy will be necessary.

Sheena’s head was spinning. She knew she needed a minute to digest the information just

given to her. Before Sheena made any decisions, she decided to do a little research.

Much of the information that Sheena found centered upon the cell cycle. She

remembered taking biology in high school, but couldn’t recall anything about the cell cycle.

She decided to investigate a little further.

1. Define cancer.
2. What is the cell cycle?
3. What is the process of cell division called?
4. What is the period of growth between cell divisions called?

5. Using the following terms (mitosis, G1, G2, S, and cytokinesis), complete the Cell Cycle

Diagram that shows the phases of the cell cycle.



5. Complete the following chart by explaining what happens to the cell and the

chromosomes during each phase:

|  |  |  |
| --- | --- | --- |
| Cell Division | Mitosis |  |
| Cytokinesis |  |
| Interphase | G1 |  |
| S |  |
| G2 |  |

**Questions:**

1. Summarize the importance of checkpoints ( ) during the cell cycle.
2. What is the relationship between the cell cycle and cancer?

3. Over half of all sporadic (random, non-hereditary) cancers have a mutation in

the P53 gene. Why do you think a mutation in the p53 gene leads to so many

cancers?

4. If you were a cancer researcher, what approach might you use to prevent,

diagnose, treat and cure cancer?

5. Research one current cancer treatment and explain what it targets and how this

relates to the cell cycle.