

Name:

Date:

Assignment: **Cell Division & Cancer Drugs**

LO: Describe cell division.

SLE: Think critically.

Background

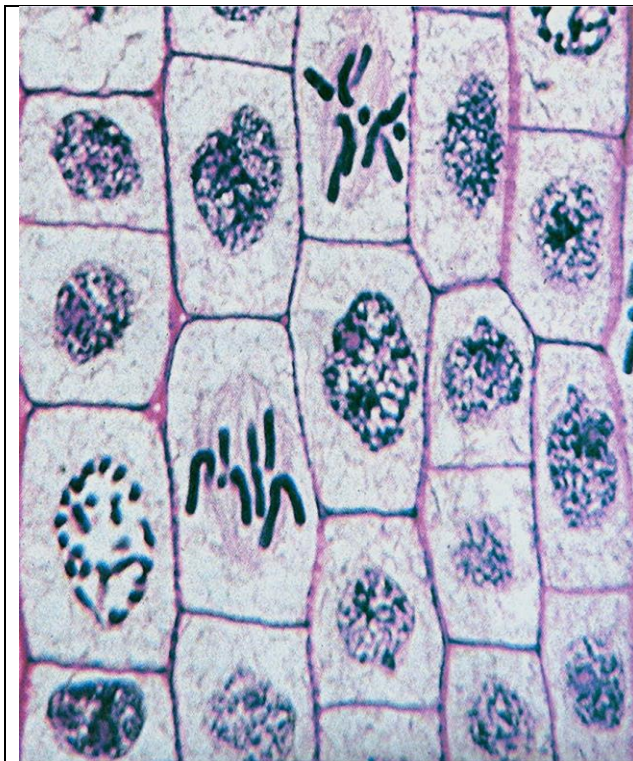
Cancer is uncontrolled cell division. Many cancer drugs aim to slow or stop this cell division. Understanding these drugs can also help us understand the division of normal (non-cancer) cells.

Here are 2 of the ways in which cancer drugs may work:

- (A) Drugs may prevent replication of DNA.
- (B) Drugs may interfere with the spindle (the structure that guides chromosomes during mitosis).

Cells that are treated with these drugs can't progress through all the stages of the cell cycle, and may "freeze" in the stage that is disrupted (before eventually dying).

Questions



Normal (non-cancerous) cells are shown in the microscope image at left (taken from <https://www.superteachertools.us/jeopardy/jeopardy-review-game.php?gamefile=219831#.Wd5TLGhSzi>; original source unknown). The DNA is stained and appears dark.

1. Which stage of the cell cycle are MOST of these cells in? How can you tell?

2. A cell is “frozen” in a stage of the cell cycle because it is trying to replicate its DNA, but failing. What stage of the cell cycle is this? Draw the cell in this stage. Label the chromosomes (if present), nucleus (if present), and spindle (if present).

3. A cell is “frozen” in a stage of the cell cycle because it is trying to set up a spindle, but failing. What stage of the cell cycle is this? Draw the cell in this stage. Label the chromosomes (if present), nucleus (if present), and spindle (if present).

4. Cancer drugs like those mentioned above generally have side effects (that is, they make you feel bad, lose your hair, etc.). Using your knowledge of the cell cycle, briefly explain why. (Hint: could the cancer drugs also affect non-cancer cells?)