**The Cell Cycle Lab**

**Part Two: Case Study**

1. Imagine 100 cells were chosen randomly from a tissue sample and examined under a microscope. In which phase of the cell cycle would you expect to fi nd the largest number of cells? Explain.
2. Occasionally cells stop dividing and enter another phase, G0 . If you damage your liver, new liver cells can be produced to replace up to 75% of the liver. However, if you sustain brain damage, your body does not produce new brain cells. Explain this observation using what you have learned about the cell cycle. Why did you choose this location for G0?
3. What could happen, after several cell cycles, to an organism whose damaged cells did not go through apoptosis? In other words, what if a damaged cell that is supposed to die does not?
4. Chemotherapy utilizes chemicals that disrupt various parts of the cell cycle, targeting rapidly growing cells. Paclitaxel (Taxol®) is one such drug that prevents the mitosis phase from taking place. a. Explain how this drug is useful as a cancer treatment. b. How might targeting rapidly growing cells explain common chemotherapy side effects such as hair loss and nausea?
5. A scientist  has found a cool single celled organism that is about to divide. He found that the cell has a mature size, so he concluded that the cell is in G2 phase and it is about to divide. Do you agree with him? Explain.
6. Your instructor gave you a slide of cells in G2 phase to observe. You noticed that the chromosomes are single-strand chromosomes. What would be your observation?
7. You were observing an unknown cell and you noticed increase in the cell's protein synthesis, when you focused on its nucleus you found single strand chromosomes. What would be your conclusion?
8. You instructor gave you a slide of cells in G2 phase to observe. You are observing a slide of a dividing cell and you noticed increase in the cell's organelles replication. What would be your conclusion? Describe the DNA.
9. A scientist was taking samples of certain type of cells from a mammal on different intervals. All samples showed single strand DNA. What phase the cells are in. Verify your answer.