

## **The Cell Cycle**

### **Chapter 12**

1. What is the purpose of cell division?
2. Identify the differences between prokaryotic and eukaryotic cell division.
3. Describe the organization of the chromosome during cell division. Include the terms centromere, chromatin, and sister chromatids.
4. A chicken has 78 chromosomes in its somatic cells.
  - a) How many chromosomes did the chicken inherit from each parent?
  - b) How many chromosomes will be in each somatic cell after mitosis?
  - c) How many chromosomes are in each of the chicken's gametes?
  - d) How many chromosomes will be in each somatic cell of the chicken's offspring?
5. Briefly describe what is happening in each phase of the cell cycle.
6. What is  $G_0$ ?
7. What is the importance of having checkpoints in the cell cycle?
8. Briefly describe what is happening in each phase of mitosis.
9. Describe the role of the centromere, kinetochores, and the microtubules in mitosis.
10. How is cytokinesis accomplished in animal cells? How does this process differ in plant cells?
11. What is a possible sequence for the evolution of mitosis?
12. How do cyclins and cyclin-dependent kinases help regulate the cell cycle?
13. Growth factors, density-dependent inhibition, anchorage dependence, and checkpoints all contribute to the regulation of cell division. Demonstrate an understanding of each.
14. Why is it fairly accurate to describe cancer cells as having escaped the normal control of cell division?
15. Identify the role of tumor-suppressor and proto-oncogenes.