

Answers to Chapter 10 Review for Quiz

Multiple Choice:

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|------|------|------|------|-------|
| 1. D | 2. C | 3. B | 4. C | 5. C |
| 6. A | 7. B | 8. B | 9. A | 10. A |

Short Answer:

12. When a cell is small, the information stored in its DNA is able to meet all of the cell's needs. But if a cell were to grow without limit, and "information crisis" would occur. *Recall the "library" analogy from class; as the population of a town increases, greater demands are put on the information in the library, so sometimes people have to wait to borrow a book.*

14. A cell's ratio of surface area to volume decreases as it grows larger. This means that the area available for diffusion also decreases. Thus, if a cell grows too large, it is unable to take in all needed materials and expel all its wastes. These problems impose limits on the growth of a cell.

15. Well before cell division, each chromosome is replicated. At the beginning of cell division, each chromosome consists of two identical sister chromatids.

18. The genetic information that is passed on from one generation of cells to the next is carried by chromosomes, which are made up of DNA. Before cell division, chromosomes are replicated, so that each chromosome consists of two identical sister chromatids. Sister chromatids are attached at an area called the centromere.

20. The number of chromosomes in each of the two cells equals the number in the original cell. *e.g. Human skin cell = 46 chromosomes; after cell division is complete, each daughter cell has 46 chromosomes.*

22. Yes, new cells will replace the removed cells because of the process of cell division, which will continue until the new cells come in contact with other cells. When that occurs, cell division will stop.

23. Cyclins regulate the timing of the cell cycle in eukaryotic cells.

24. The consequences of uncontrolled cell growth are severe, as in cancer, for example.

29. a. The cell is in metaphase. It most resembles that of an animal cell because there is no evidence of a cell wall, as there would be in the cell of a plant. Also, this cell has centrioles at opposite ends of the spindle, which are not found in plant cells.

b. The two strands carry the same genetic information, which is important because the cells needs this information to function.