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BIOLOGY

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Biology QUIZ

Chapter 12: The Cell cycle

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1. The function of the mitotic cell cycle is to produce daughter cells that _____.

Hint: Consider the relationships among your somatic cells.

- A. have a random assortment of maternal and paternal chromosomes
- B. have the same number of chromosomes as the parent cell but not the same genetic content
- C. have the same number of chromatids as the parent cell had chromosomes
- D. are genetically identical to the parent cell (assuming no mutation has occurred)

2. Which of the following is FALSE regarding sister chromatids?

Hint: Consider when and how sister chromosomes are formed.

- A. Sister chromatids are attached to one another at the centromere.
- B. Sister chromatids are separated during mitosis.
- C. Both of the sister chromatids end up in the same daughter cell after cytokinesis has occurred.
- D. Sister chromatids form in the S-phase stage of the cell cycle.

3. The complex of DNA and protein that makes up a eukaryotic chromosome is properly called _____.

Hint: This term starts with the same word root as chromosome.

- A. a chromatid
- B. a centromere
- C. chromatin
- D. a centrosome

4. The region of a chromosome in which the two double strands of replicated DNA are held together is called _____.

Hint: Kinetochores are located in this region.

- A. an aster
- B. chromatin

- C. a centriole
- D. a centromere

5. A cell entering the cell cycle with 32 chromosomes will produce two daughter cells, each with _____.

Hint: Consider the function of the cell cycle.

- A. 16 chromosomes
- B. 32 pairs of chromosomes
- C. 64 chromosomes
- D. None of the above

6. "Cytokinesis" refers to _____.

Hint: Cytokinesis usually follows mitosis.

- A. the division of the nucleus
- B. the division of the entire cell
- C. the movement of a cell from one place to another
- D. the division of the cytoplasm

7. Chromatids are _____.

Hint: Sister chromatids separate during mitosis.

- A. identical copies of each other if they are part of the same duplicated chromosome
 - B. found only in aberrant chromosomes
 - C. composed of RNA
 - D. held together by the centrioles
8. If a cell contains 60 chromatids at the start of mitosis, how many chromosomes will be found in each daughter cell at the completion of the cell cycle?

Hint: Review the relationship between chromosomes and chromatids.

- A. 15
- B. 30
- C. 60
- D. 120

9. A biochemist measured the amount of DNA in cells growing in the laboratory and found that the quantity of DNA in the cells doubled _____.

Hint:

- A. between the G1 and G2 phases
- B. during the M phase of the cell cycle
- C. between the G2 phase and prophase
- D. between anaphase and telophase

10. If a human somatic cell is just about to divide, it has _____ chromatids.

Hint: Review the relationship between chromosomes and chromatids.

- A. 92
- B. 23
- C. 46
- D. There is insufficient information to answer the question.

11. During what phase in the cell cycle would you find the most DNA per cell?

Hint: Consider the events of each of the phases of the cell cycle.

- A. G1
- B. G0
- C. G2
- D. S

12. In a human skin cell that is going through the cell cycle, when do the centrosomes separate?

Hint: Review the events of each phase of the cell cycle.

- A. metaphase
- B. G2 phase
- C. prophase
- D. Anaphase

13. The phase of mitosis during which the chromosomes move toward separate poles of the cell is _____.

Hint: Review the events of each phase of the cell cycle.

- A. anaphase
- B. prometaphase
- C. telophase
- D. Metaphase

14. Which of the following represents a *mismatch* or incorrect description?

Hint: Review the events of each phase of the cell cycle.

- A. prophase: chromosomes become more tightly coiled
- B. metaphase: the nuclear envelope disappears
- C. telophase: chromosomes become more extended
- D. metaphase: chromosomes line up on the equatorial plane

15. During which stage of the cell cycle do sister chromatids separate?

Hint: Review the events of each phase of the cell cycle.

- A. anaphase
- B. prophase
- C. metaphase
- D. G2 phase

16. In animal cell mitosis, the cleavage furrow forms during which stage of the cell cycle?

Hint: Review the events of each phase of the cell cycle.

- A. the G1 phase
- B. prophase
- C. metaphase
- D. Cytokinesis

17. You would know that a dividing cell was a plant cell rather than an animal cell if you saw that _____.

Hint: Plants have cell walls.

- A. it had two pairs of centrioles during prophase
- B. it had formed a cell plate
- C. it had formed a cleavage furrow
- D. it had microtubules

18. You would be UNLIKELY to see which of the following human cells dividing?

Hint: Consider the function and location of each of these cells.

- A. cancer cell
- B. cell from an embryo
- C. nerve cell
- D. All of these cell types are equally unlikely to divide at any given time.

19. What is the difference between a benign tumor and a malignant tumor?

Hint: A person with a malignant tumor is said to have cancer.

- A. Cells of benign tumors metastasize; those of malignant tumors do not.
- B. Benign tumors will not kill you; malignant tumors will.
- C. Benign tumors arise by transformation; malignant tumors do not.
- D. Cells of benign tumors do not metastasize; those of malignant tumors do.

Answers:

1.D

2.C

3.C

4.D

5.D

6.D

7.A

8.B

9.A

10.A

11.C

12.C

13.A

14.B

15.A

16.D

17.B

18.C

19.D