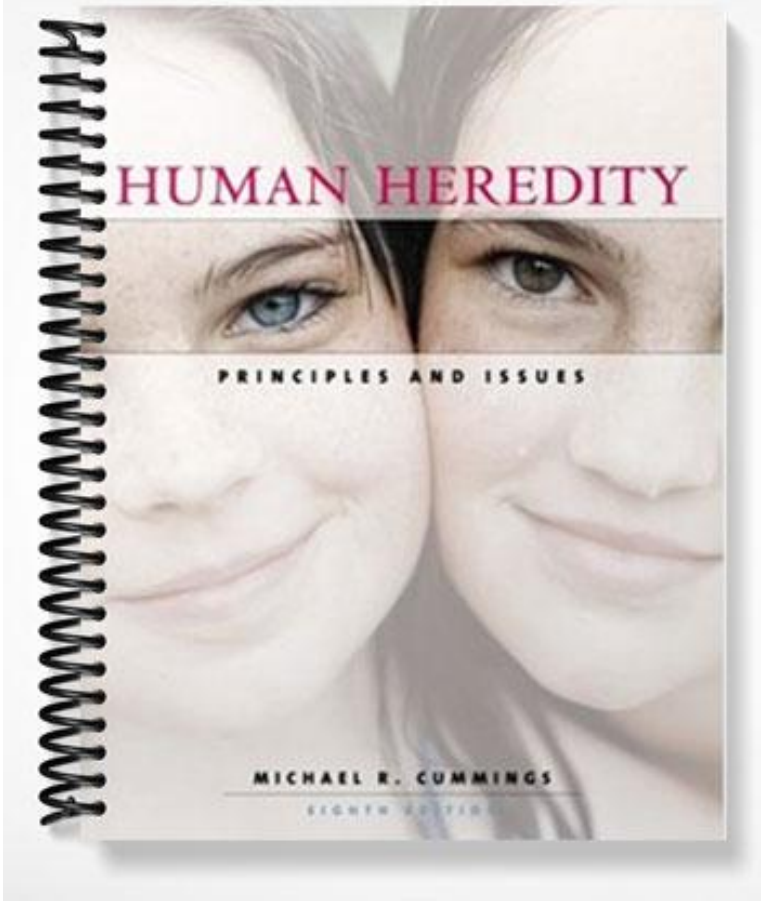
TEST BANK



Chapter 2--Cells and Cell Division

Student: _____

1. The process of meiosis results in:

   A. the production of four identical cells
   B. no change in chromosome number from parental cells
   C. a doubling of the chromosome number
   D. a reduction in chromosome number
   E. two interphase cells

2. In the cell cycle, the G1 phase represents:

   A. the time of DNA synthesis
   B. splitting of the chromosomes into chromatids
   C. a period of growth
   D. the stage just prior to mitosis
   E. the stage just prior to meiosis

3. Ribosomes are organelles that function in:

   A. separation of chromosomes by spindle fibers
   B. cellular energy production
   C. synthesis of gene products
   D. transport of materials throughout the cytoplasm
   E. conversion of chromatin into chromosomes

4. Which of the following genetic diseases involve defects in DNA repair, which affect cell division?

   A. Gaucher disease and Werner syndrome
   B. Kearns-Sayre syndrome and Progeria
   C. Progeria and Werner syndrome
   D. Gaucher disease and Cystic fibrosis
   E. Progeria and Werner syndrome

5. For cells grown in the laboratory, the largest part of the cell cycle is:

   A. Interphase.
   B. Mitosis.
   C. Cytokinesis.
   D. They are all about equal.
   E. There is no rule.

6. Pieces of *what* are exchanged during crossing-over?

   A. sister chromatids
   B. the maternal and paternal chromosomes
   C. centromeres
   D. a chromatid of the maternal chromosome and a chromatid of the paternal chromosome
   E. X and Y chromosome

7. If an organism has a diploid chromosome number of 4, how many chromosome pairs will be visible in meiosis?

   A. 0
   B. 2
   C. 4
   D. 6
   E. 8

8. Autosomes represent:

   A. all chromosomes including the sex chromosomes
   B. the half of the chromosomes inherited from one parent
   C. all chromosomes other than the sex chromosomes
   D. chromosome pairs with unlike members
   E. those chromosomes found only in gametes

9. During meiosis in an organism where $2n = 6$, how many chromatids will be present in a cell at the beginning of meiosis II?

   A. 2
   B. 4
   C. 6
   D. 8
   E. 12

10. The Hayflick limit describes:

    A. the size limit to which a cell can grow
    B. the number of divisions a cultured cell can undergo
    C. the largest number of chromosomes an organism can possess
    D. the ratio of nucleus to cytoplasm
    E. none of these

11. In meiosis, the centromeres divide at:

    A. metaphase I
    B. anaphase I
    C. metaphase II
    D. anaphase II
    E. telophase

12. Haploid gametes contain:

    A. the 2*n* chromosome number
    B. half the 2*n* chromosome number
    C. twice the 2*n* chromosome number
    D. half the *n* chromosome number
    E. none of these

13. Endoplasmic reticulum is involved in:

    A. energy production
    B. transport of materials throughout the cell
    C. ribosome synthesis
    D. carrying genetic information
    E. generation of polar bodies

14. A cell that could not form spindle fibers could not perform:

    A. mitosis
    B. meiosis
    C. mitosis or meiosis
    D. DNA replication
    E. protein synthesis

15. Tay-Sachs disease is associated with abnormality of which part of the cell?

    A. endoplasmic reticulum
    B. lysosomes
    C. mitochondria
    D. Golgi apparatus
    E. plasma membrane

16. Molecules on or in a cell's plasma membrane are responsible for:

    A. transport of substances into the cell
    B. providing a molecular identity for the cell
    C. determining blood type
    D. all of these
    E. none of these

17. Which of the following is the first event that occurs in prophase of mitosis?

    A. The chromosomes are duplicated.
    B. The nuclear envelope starts to break up.
    C. The mitotic spindle begins to form.
    D. The chromosomes begin to condense.
    E. The cleavage furrow forms and deepens.

18. A cell in G_0 state is a cell:

    A. that will shortly enter G_1
    B. that never divides
    C. that has just finished mitosis but has not yet begun cytokinesis
    D. in cytokinesis
    E. just after cytokinesis

19. Centromeres:

    A. organize microtubules into spindle fibers
    B. connect sister chromatids
    C. attach chromosomes to spindle fibers
    D. both connect sister chromatids and attach chromosomes to spindle fibers
    E. all of the answers are correct

20. Which of the following are NOT haploid?

    A. polar bodies and secondary spermatocytes
    B. primary oocytes and spermatids
    C. secondary spermatocytes and spermatogonia
    D. primary oocytes and spermatogonia
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21. Formation of eggs and sperm are the same in what way(s)?

    A. when during a person's life they begin and end
    B. the way chromosomes behave during meiosis
    C. the way cytoplasm divides during cytokinesis
    D. both the way chromosomes behave during meiosis and the way cytoplasm divides during cytokinesis
    E. all of these

22. The enzymes present in lysosomes must previously have been in the Golgi apparatus and endoplasmic reticulum.

    True False

23. Skin cells typically do not divide.

    True False

24. Chromatin is the term for a chromosome before it is duplicated.

    True False

25. Mitotic divisions reduce the number of chromosomes found in daughter cells.

    True False

26. Cytokinesis usually occurs just after mitosis.

    True False

27. Autosomal chromosome pairs are identical, whereas the sex chromosome pair in males is not.

    True False

28. "Random Assortment" is partially responsible for our genetic diversity.

    True False

29. Crossing over occurs between chromatids of chromosome pairs.

    True False

30. There are 92 chromosomes in a normal human cell undergoing mitosis at the anaphase stage.

    True False

31. The S stage of interphase is followed immediately by mitosis.

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32. A polar body, once formed, has no further function and dies.

    True False

33. How many autosomes are present in a human egg? _____

    _____

34. The switch points that regulate the cell cycle are controlled by proteins called _____.

    _____

35. What is the chromosomal structure that anchors the spindle fiber to the chromosome?
    _____

    _____

36. What occurs during "S" phase of the cell cycle? _____

    _____

37. In mitosis, chromatids separate and move to opposite poles of the spindle during
    _____.

    _____

38. In many respects, the events of telophase seem to be the reverse of those occurring in _____.

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39. In meiosis, sister chromatids separate and move to opposite poles of the spindle during _____.

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40. In cell division, toward the end of nuclear division, the _____ divides by a process called cytokinesis to produce two identical cells.

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41. The only cytoplasmic organelles that contain DNA are the _____.

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42. Ribosomes exist either free in the cytoplasm or attached to the membranes of _____.

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43. One primary spermatocyte produces _____ (how many?) functional sperm(s); one primary oocyte produces _____ functional egg(s).

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44. Since in most specialized cells of the body only a relatively small number of genes is active, why must mitosis involve the replication of a complete set of genes?

45. From an evolutionary standpoint, does it seem logical that mitosis evolved before meiosis, and that meiosis is really a specialized form of mitosis? Or should mitosis be regarded as a degenerate form of meiosis?

46. Would an understanding of the mechanism of the Hayflick limit lead to an increase in the human life span?

47. What is the difference between life span and life expectancy? Which genetic and non-genetic factors contribute to the gap between life span and life expectancy?

48. Compare and contrast the following:
    a. prophase of mitosis and prophase I of meiosis
    b. interphase preceding meiosis I and interphase preceding meiosis II
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49. What evidence exists that mitosis and the cell cycle are under genetic control?

50. Of what significance is crossing over? What other event in Meiosis I is of similar significance?

51. Describe the cell cycle. Do all cells go through this cycle at the same time?

52. Compare and contrast five items in mitosis and meiosis.

53. What is accomplished by the unequal cytokinesis of oogenesis?

Chapter 2--Cells and Cell Division Key

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4; 1 *or*
four; one

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