General Biology –Chapter 9 Review

Mary Stangler Center for Academic Success

This review is meant to highlight basic concepts from Chapter 9. It does not cover all concepts presented by your instructor. Refer back to your notes, unit objectives, labs, handouts, etc. to further prepare for your exam.

1. What is the purpose of the cell cycle?
2. Briefly define each stage of the cell cycle.
    a. Interphase:
        i. G_1 Stage:
        ii. S Stage:
        iii. G_2 Stage:
    b. M Stage:
        i. Mitosis
        ii. Cytokinesis
3. Define apoptosis.
4. Define cancer.

Fill in the blank/True or False (if false, what makes the statement true?):

5. Chromatin is genetic material that has been tightly coiled around histone proteins. True or False?
6. Chromatin is present when the cell is not actively dividing. True or False?
7. A chromatid is comprised of one DNA double helix. True or False?
8. Two identical chromatids are called _____, and are formed during the ___-stage of interphase.
9. The haploid number of chromosomes for a human is 46. True or False?
10. Cells contain internal signaling proteins called _____ that must be present for the cell to pass through the checkpoints: G_1 to S, and S to G_2.
11. If a cell does not pass the G_1 checkpoint it may undergo apoptosis. True or F alse?
12. A cell that cannot divide again enters the ____ phase.
13. Enzymes, called caspases, bring about apoptosis, but they must be activated by internal or external signals. True or False?
14. Cells produced through mitosis can have a large variety of genetic variation. True or False?
15. If parent cells have 44 chromosomes, after mitosis the daughter cells will have 22 chromosomes. True or False?
16. A bacterial cells genetic material is contained in a region called the _____.
17. Prokaryotes undergo a process called Mitosis II in order to reproduce. True or False?
18. Sister chromatids are attached to each other at a region called the _____.
19. During late prophase spindle fibers start to attach to the _____ of sister chromatids.
20. Plant cells form a cleavage furrow during the process of cytokinesis. True or False?

Matching: The Mitotic Stage

21. _____Chromatin condenses into chromosomes which become visible
22. _____Chromosomes line up at the center plate of the cell
23. _____Division of the cytoplasm
24. _____Division of the nuclear material
25. _____Nuclear envelope forms around two new daughter nuclei
26. _____Sister chromatids separate toward opposite poles
27. _____Spindle fibers attach to the kinetochore on chromosomes
28. _____The nuclear membrane dissolves
29. _____The nuclear membrane reassembles
30. _____The first phase of mitosis
31. _____The second phase of mitosis
32. _____The third phase of mitosis
33. _____The fourth phase of mitosis
34. _____The fifth phase of mitosis

a. Anaphase
b. Cytokinesis
c. Metaphase
d. Mitosis
e. Prometaphase
f. Prophase
g. Telophase

Matching: Cancer

35. _____A tumor with origins from somewhere else in the body.
36. _____Cancerous growth with the ability to spread.
37. _____Code for proteins that inhibit the cell cycle and promote apoptosis.
38. _____Code for proteins that promote the cell cycle and prevent apoptosis.
39. _____Growth of new vessels into a tumor.
40. _____Multiple layers of cancer cells piled up on each other.
41. _____Non-cancerous growth, usually they don't spread.
42. _____Proto-oncogenes that have become cancerous, a cancer causing agent.

a. Angiogenesis
b. Benign tumor
c. Malignant tumor
d. Metastasis
e. Oncogene
f. Proto-oncogene
g. Tumor
h. Tumor suppressor gene