

Chapter 02 The Cell: Basic Unit of Structure and Function

Multiple Choice Questions

1. The unit of measurement often used to measure cell size is the
- A. millimeter.
 - B. micrometer.**
 - C. hectometer.
 - D. centimeter.
 - E. meter.

Bloom's Level: 3. Apply

Gradable: automatic

Learning Objective: 02.01.01. Compare and contrast the advantages and disadvantages of LM, TEM, and SEM.

Section: 02.01a

Topic: Cells

2. The microscope of choice for a detailed three-dimensional study of the surface of a specimen is the
- A. scanning electron microscope.**
 - B. transmission electron microscope.
 - C. light microscope.
 - D. naked eye.
 - E. telescope.

Bloom's Level: 1. Remember

Gradable: automatic

Learning Objective: 02.01.01. Compare and contrast the advantages and disadvantages of LM, TEM, and SEM.

Section: 02.01a

Topic: Cells

3. An image produced by passing visible light through a specimen is obtained using the
- A. transmission electron microscope.
 - B.** light microscope.
 - C. scanning electron microscope.
 - D. dissecting scope.
 - E. ocular examination method.

Bloom's Level: 1. Remember

Gradable: automatic

Learning Objective: 02.01.01. Compare and contrast the advantages and disadvantages of LM, TEM, and SEM.

Section: 02.01a

Topic: Cells

4. Functions of human body cells include
- A. covering.
 - B. storage.
 - C. movement.
 - D. communication.
 - E.** All of the choices are correct.

Bloom's Level: 1. Remember

Gradable: automatic

Learning Objective: 02.01.02. Describe the relationship between structure and function in cells.

Section: 02.01b

Topic: Cells

5. Human body cells have many functions, including
- A. making connections.
 - B. providing for defense.
 - C. lining surfaces.
 - D. producing new cells.
 - E.** All of the choices are correct.

Bloom's Level: 1. Remember

Gradable: automatic

Learning Objective: 02.01.02. Describe the relationship between structure and function in cells.

Section: 02.01b

Topic: Cells

Chapter 02 - The Cell: Basic Unit of Structure and Function

6. The _____ is responsible for forming the outer, limiting barrier of a cell.
- A. peroxisome
 - B. ribosome
 - C. mitochondrion
 - D. plasma membrane**
 - E. centrosome

Bloom's Level: 1. Remember

Gradable: automatic

HAPS Objective: C06.01 Identify the three main parts of a cell, and list the general functions of each.

HAPS Topic: Module C06 Intracellular organization of nucleus and cytoplasm.

Learning Objective: 02.02.01. Identify the characteristics of the plasma membrane, cytoplasm, and nucleus.

Section: 02.02

Topic: Cells

7. The _____ is the cell's control center.
- A. Golgi apparatus
 - B. nucleus**
 - C. lysosome
 - D. cytosol
 - E. smooth ER

Bloom's Level: 1. Remember

Gradable: automatic

HAPS Objective: C06.01 Identify the three main parts of a cell, and list the general functions of each.

HAPS Topic: Module C06 Intracellular organization of nucleus and cytoplasm.

Learning Objective: 02.02.01. Identify the characteristics of the plasma membrane, cytoplasm, and nucleus.

Section: 02.02

Topic: Cells

8. The _____ are responsible for synthesizing most of a human body cell's ATP.
- A. lysosomes
 - B. microfilaments
 - C. nucleoli
 - D. ribosomes
 - E. mitochondria**

Bloom's Level: 1. Remember

Gradable: automatic

HAPS Objective: C09.02c Describe the function of each different type of organelle associated with human cells.

HAPS Topic: Module C09 Organelles.

Learning Objective: 02.02.02. Describe the contents of a prototypical cell.

Section: 02.02

Topic: Cells

9. Which is a nonmembrane-bound organelle?
- A. Microtubule**
 - B. Lysosome
 - C. Golgi apparatus
 - D. Rough endoplasmic reticulum
 - E. Mitochondrion

Bloom's Level: 3. Apply

Gradable: automatic

HAPS Objective: C09.02b Describe the structure of each different type of organelle associated with human cells.

HAPS Topic: Module C09 Organelles.

Learning Objective: 02.02.02. Describe the contents of a prototypical cell.

Section: 02.02

Topic: Cells

10. Which of the following structures function in holding organelles in place, maintaining cell shape and rigidity, and direct organelle movement?

- A. Centrioles
- B. Flagella
- C. Golgi apparatus
- D. Microtubules**
- E. Cilia

Bloom's Level: 1. Remember

Gradable: automatic

HAPS Objective: C09.02c Describe the function of each different type of organelle associated with human cells.

HAPS Topic: Module C09 Organelles.

Learning Objective: 02.02.02. Describe the contents of a prototypical cell.

Section: 02.02

Topic: Cells

11. Identify the organelle that provides enzymes for autolysis.

- A. Peroxisomes
- B. Mitochondria
- C. Smooth ER
- D. Golgi apparatus
- E. Lysosomes**

Bloom's Level: 1. Remember

Gradable: automatic

HAPS Objective: C09.02c Describe the function of each different type of organelle associated with human cells.

HAPS Topic: Module C09 Organelles.

Learning Objective: 02.02.02. Describe the contents of a prototypical cell.

Section: 02.02

Topic: Cells

12. Which are *not* considered to be "inclusions" in the cytoplasm?

- A. Melanin droplets
- B. Protein droplets
- C. Ribosomes**
- D. Glycogen granules
- E. Lipid droplets

Bloom's Level: 1. Remember

Gradable: automatic

HAPS Objective: C09.02a Name each different type of organelle associated with human cells.

HAPS Topic: Module C09 Organelles.

Learning Objective: 02.02.02. Describe the contents of a prototypical cell.

Section: 02.02

Topic: Cells

13. Which of these is considered a "gate keeper" that regulates the passage of materials in or out of the cell?

- A. Cilia
- B. Plasma membrane**
- C. Lysosome
- D. Cholesterol molecule
- E. Flagellum

Bloom's Level: 1. Remember

Gradable: automatic

HAPS Objective: C06.01 Identify the three main parts of a cell, and list the general functions of each.

HAPS Topic: Module C06 Intracellular organization of nucleus and cytoplasm.

Learning Objective: 02.03.01. Describe the structure of the plasma membrane.

Section: 02.03

Topic: Cells

14. Proteins that are embedded within, and extend across, the phospholipid bilayer are called _____ proteins.

- A. catalytic
- B. integral**
- C. cytoskeleton
- D. peripheral
- E. transport

Bloom's Level: 1. Remember

Gradable: automatic

HAPS Objective: C07.03 Describe how proteins are distributed in a cell membrane, and explain their functions.

HAPS Topic: Module C07 Membrane structure and function.

Learning Objective: 02.03.01. Describe the structure of the plasma membrane.

Section: 02.03a

Topic: Cells

15. Proteins that assist the movement of a substance across the membrane are called _____ proteins.

- A. catalytic
- B. cytoskeleton
- C. transport**
- D. cell-to-cell recognition (identification)
- E. intercellular attachment

Bloom's Level: 1. Remember

Gradable: automatic

HAPS Objective: C07.03 Describe how proteins are distributed in a cell membrane, and explain their functions.

HAPS Topic: Module C07 Membrane structure and function.

Learning Objective: 02.03.01. Describe the structure of the plasma membrane.

Section: 02.03a

Topic: Cells

16. Among the factors that influence cell membrane permeability are
- A. phospholipid composition of the membrane.
 - B. ionic charge along the membrane.
 - C. presence or absence of transport proteins.
 - D. molecule size.
 - E. All of the choices are correct.**

Bloom's Level: 3. Apply

Gradable: automatic

HAPS Objective: C08.01b Describe the mechanism by which movement of material occurs in each membrane transport process – simple diffusion, facilitated diffusion, osmosis, active transport, exocytosis, endocytosis, phagocytosis, pinocytosis, and filtration.

HAPS Topic: Module C08 Mechanisms for movement of materials across cell membranes.

Learning Objective: 02.03.02. Understand the functions of selective permeability.

Section: 02.03c

Topic: Cells

17. Which is an active transport process?
- A. Simple diffusion
 - B. Bulk filtration
 - C. Osmosis
 - D. Facilitated diffusion
 - E. Ion pump**

Bloom's Level: 1. Remember

Gradable: automatic

HAPS Objective: C08.01c Discuss the energy requirements and, if applicable, the sources of energy for each process – simple diffusion, facilitated diffusion, osmosis, active transport, exocytosis, endocytosis, phagocytosis, pinocytosis, and filtration.

HAPS Topic: Module C08 Mechanisms for movement of materials across cell membranes.

Learning Objective: 02.03.03. Identify the specific types of passive and active transport.

Section: 02.03c

Topic: Cells

18. The movement of glucose across a plasma membrane is achieved by
- A. ion pumps.
 - B. receptor-mediated exocytosis.
 - C. osmosis.
 - D.** facilitated diffusion.
 - E. phagocytosis.

Bloom's Level: 1. Remember

Gradable: automatic

HAPS Objective: C08.01d Give examples of each membrane transport process in the human body – simple diffusion, facilitated diffusion, osmosis, active transport, exocytosis, endocytosis, phagocytosis, pinocytosis, and filtration.

HAPS Topic: Module C08 Mechanisms for movement of materials across cell membranes.

Learning Objective: 02.03.03. Identify the specific types of passive and active transport.

Section: 02.03c

Topic: Cells

19. Which is a passive transport process?
- A. Phagocytosis
 - B. Pinocytosis
 - C. Receptor-mediated endocytosis
 - D.** Osmosis
 - E. Ion pump

Bloom's Level: 1. Remember

Gradable: automatic

HAPS Objective: C08.01c Discuss the energy requirements and, if applicable, the sources of energy for each process – simple diffusion, facilitated diffusion, osmosis, active transport, exocytosis, endocytosis, phagocytosis, pinocytosis, and filtration.

HAPS Topic: Module C08 Mechanisms for movement of materials across cell membranes.

Learning Objective: 02.03.03. Identify the specific types of passive and active transport.

Section: 02.03c

Topic: Cells

20. Another name for the intracellular fluid is

- A. cytosol.
- B. interstitial fluid.
- C. intercellular matrix.
- D. cytoplasm.
- E. cisternae.

Bloom's Level: 1. Remember

Gradable: automatic

HAPS Objective: C06.02 Explain how cytoplasm and cytosol are different.

HAPS Topic: Module C06 Intracellular organization of nucleus and cytoplasm.

Learning Objective: 02.04.01. Identify the characteristics of the three parts of a cell's cytoplasm.

Section: 02.04a

Topic: Cells

21. Bulk filtration occurs as a result of

- A. molecular movement with carrier assistance.
- B. hydrostatic pressure.
- C. the expenditure of energy in the form of ATP.
- D. concentration gradients.
- E. ion pumps.

Bloom's Level: 2. Understand

Gradable: automatic

HAPS Objective: C08.01c Discuss the energy requirements and, if applicable, the sources of energy for each process – simple diffusion, facilitated diffusion, osmosis, active transport, exocytosis, endocytosis, phagocytosis, pinocytosis, and filtration.

HAPS Topic: Module C08 Mechanisms for movement of materials across cell membranes.

Learning Objective: 02.03.03. Identify the specific types of passive and active transport.

Section: 02.03c

Topic: Cells

22. Exocytosis occurs as a result of
- A. hydrostatic pressure.
 - B. the expenditure of energy in the form of ATP.**
 - C. molecular movement with carrier assistance.
 - D. concentration gradients.
 - E. ion pumps.

Bloom's Level: 1. Remember

Gradable: automatic

HAPS Objective: C08.01b Describe the mechanism by which movement of material occurs in each membrane transport process – simple diffusion, facilitated diffusion, osmosis, active transport, exocytosis, endocytosis, phagocytosis, pinocytosis, and filtration.

HAPS Topic: Module C08 Mechanisms for movement of materials across cell membranes.

Learning Objective: 02.03.03. Identify the specific types of passive and active transport.

Section: 02.03c

Topic: Cells

23. In order to process digested nutrients and detoxify chemical agents such as drugs and alcohol, the _____ contains abundant amounts of smooth ER.
- A. liver**
 - B. kidney
 - C. small intestine
 - D. pancreas
 - E. stomach

Bloom's Level: 3. Apply

Gradable: automatic

HAPS Objective: C09.02c Describe the function of each different type of organelle associated with human cells.

HAPS Topic: Module C09 Organelles.

Learning Objective: 02.04.02. Describe the structures and functions of cellular organelles.

Section: 02.04c

Topic: Cells

24. The uptake of cholesterol into cells is an example of

- A. phagocytosis.
- B. pinocytosis.
- C. receptor-mediated endocytosis.
- D. receptor-mediated exocytosis.
- E. simple diffusion.

Bloom's Level: 3. Apply

Gradable: automatic

HAPS Objective: C08.01d Give examples of each membrane transport process in the human body – simple diffusion, facilitated diffusion, osmosis, active transport, exocytosis, endocytosis, phagocytosis, pinocytosis, and filtration.

HAPS Topic: Module C08 Mechanisms for movement of materials across cell membranes.

Learning Objective: 02.03.03. Identify the specific types of passive and active transport.

Section: 02.03c

Topic: Cells

25. Which is *not* a membrane-bound organelle?

- A. Endoplasmic reticulum
- B. Lysosome
- C. Golgi apparatus
- D. Peroxisome
- E. All of the choices are correct.

Bloom's Level: 1. Remember

Gradable: automatic

HAPS Objective: C09.01 Define the term organelle.

HAPS Topic: Module C09 Organelles.

Learning Objective: 02.04.02. Describe the structures and functions of cellular organelles.

Section: 02.04c

Topic: Cells

26. Removal of old organelles is via a process called

- A. pinocytosis.
- B. autophagy.**
- C. autolysis.
- D. filtration.
- E. vascularization.

Bloom's Level: 3. Apply

Gradable: automatic

HAPS Objective: C09.02c Describe the function of each different type of organelle associated with human cells.

HAPS Topic: Module C09 Organelles.

Learning Objective: 02.03.03. Identify the specific types of passive and active transport.

Section: 02.03c

Topic: Cells

27. Catalase-containing peroxisomes are most abundant in _____ cells.

- A. liver**
- B. kidney
- C. pancreas
- D. thymus
- E. pituitary

Bloom's Level: 3. Apply

Gradable: automatic

HAPS Objective: C09.02c Describe the function of each different type of organelle associated with human cells.

HAPS Topic: Module C09 Organelles.

Learning Objective: 02.04.02. Describe the structures and functions of cellular organelles.

Section: 02.04c

Topic: Cells

28. The factor that determines the number of mitochondria in a cell is its _____ need.
- A. water
 - B. protein
 - C. energy**
 - D. stimulus
 - E. fat

Bloom's Level: 3. Apply

Gradable: automatic

HAPS Objective: C09.02c Describe the function of each different type of organelle associated with human cells.

HAPS Topic: Module C09 Organelles.

Learning Objective: 02.04.02. Describe the structures and functions of cellular organelles.

Section: 02.04c

Topic: Cells

29. The folds of the internal membrane of a mitochondrion are called
- A. matrix.
 - B. vesicles.
 - C. vacuoles.
 - D. cristae.**
 - E. cisternae.

Bloom's Level: 1. Remember

Gradable: automatic

HAPS Objective: C09.02b Describe the structure of each different type of organelle associated with human cells.

HAPS Topic: Module C09 Organelles.

Learning Objective: 02.04.02. Describe the structures and functions of cellular organelles.

Section: 02.04c

Topic: Cells

30. The organelles responsible for organizing microtubules that are a part of the mitotic spindle are called

- A. centrioles.
- B. nucleoli.
- C. microvilli.
- D. cilia.
- E. vesicles.

Bloom's Level: 1. Remember

Gradable: automatic

HAPS Objective: C09.02c Describe the function of each different type of organelle associated with human cells.

HAPS Topic: Module C09 Organelles.

Learning Objective: 02.04.02. Describe the structures and functions of cellular organelles.

Section: 02.04c

Topic: Cells

31. Which are often associated with mucin-secreting goblet cells?

- A. Cilia
- B. Flagellum
- C. Microvilli
- D. Ribosomes
- E. Cisternae

Bloom's Level: 2. Understand

Gradable: automatic

HAPS Objective: C09.02c Describe the function of each different type of organelle associated with human cells.

HAPS Topic: Module C09 Organelles.

Learning Objective: 02.04.02. Describe the structures and functions of cellular organelles.

Section: 02.04c

Topic: Cells

32. In humans, the only cell that bears a flagellum is the _____ cell.
- A. kidney
 - B. oocyte
 - C. red blood
 - D. brain
 - E. sperm**

Bloom's Level: 1. Remember

Gradable: automatic

HAPS Objective: C09.02c Describe the function of each different type of organelle associated with human cells.

HAPS Topic: Module C09 Organelles.

Learning Objective: 02.04.02. Describe the structures and functions of cellular organelles.

Section: 02.04c

Topic: Cells

33. Which of the following serve to increase the surface area of a cell for absorption and/or secretion?
- A. Flagella
 - B. Microvilli**
 - C. Cilia
 - D. Cilia and flagella
 - E. Cilia and microvilli

Bloom's Level: 3. Apply

Gradable: automatic

HAPS Objective: C09.02c Describe the function of each different type of organelle associated with human cells.

HAPS Topic: Module C09 Organelles.

Learning Objective: 02.04.02. Describe the structures and functions of cellular organelles.

Section: 02.04c

Topic: Cells

34. Since they produce ribosome subunits, one would expect to find large numbers of nucleoli in cells that synthesize
- A. energy sources.
 - B. pigments.
 - C. solubility-enhancing substances.
 - D. steroid hormones.
 - E. proteins.**

Bloom's Level: 3. Apply

Gradable: automatic

HAPS Objective: C09.02c Describe the function of each different type of organelle associated with human cells.

HAPS Topic: Module C09 Organelles.

Learning Objective: 02.05.01. Describe the contents and function of the nucleus.

Section: 02.05b

Topic: Cells

35. All resting nucleated human cells contain
- A. melanin.
 - B. chromosomes.
 - C. chromatin.**
 - D. insulin.
 - E. glycogen.

Bloom's Level: 1. Remember

Gradable: automatic

HAPS Objective: C12.01a Describe the events that take place in each stage of generalized cell cycle, including interphase and the stages of mitosis.

HAPS Topic: Module C12 Somatic cell division.

Learning Objective: 02.05.02. Compare and contrast the relationship between chromatin and chromosomes.

Section: 02.05c

Topic: Cells

36. Which are the smallest components of the cytoskeleton?

- A. Microtubules
- B. Microfilaments**
- C. Intermediate filaments
- D. Centrosomes
- E. Centrioles

Bloom's Level: 1. Remember

Gradable: automatic

HAPS Objective: C09.02b Describe the structure of each different type of organelle associated with human cells.

HAPS Topic: Module C09 Organelles.

Learning Objective: 02.04.02. Describe the structures and functions of cellular organelles.

Section: 02.04c

Topic: Cells

37. The building blocks that form the DNA double helix are called

- A. nucleoli.
- B. nucleotides.**
- C. bases.
- D. nucleic acids.
- E. nuclear pores.

Bloom's Level: 1. Remember

Gradable: automatic

HAPS Objective: C12.03 Describe DNA replication.

HAPS Topic: Module C12 Somatic cell division.

Learning Objective: 02.05.01. Describe the contents and function of the nucleus.

Section: 02.05c

Topic: Cells

38. Which is *not* one of the bases found in DNA nucleotides?

- A. Adenine
- B. Cytosine
- C. Guanine
- D. Thymine
- E.** Diamine

Bloom's Level: 1. Remember

Gradable: automatic

HAPS Objective: C12.03 Describe DNA replication.

HAPS Topic: Module C12 Somatic cell division.

Learning Objective: 02.05.02. Compare and contrast the relationship between chromatin and chromosomes.

Section: 02.05c

Topic: Cells

39. During its mitotic phase a cell is

- A. undergoing maintenance.
- B.** dividing.
- C. hibernating.
- D. changing into a gamete.
- E. going from a gamete to a somatic cell.

Bloom's Level: 1. Remember

Gradable: automatic

HAPS Objective: C12.01c Analyze the functional significance of each stage of generalized cell cycle, including interphase and the stages of mitosis.

HAPS Topic: Module C12 Somatic cell division.

Learning Objective: 02.06.02. Identify and define the phases of mitosis and the activities that occur during each phase.

Section: 02.06b

Topic: Cells

40. The function of the nucleolus is to make
- A. DNA molecules.
 - B. the subunits of ribosomes.**
 - C. the secretions that will be packaged by the Golgi apparatus.
 - D. histones.
 - E. the deoxyribose sugar.

Bloom's Level: 1. Remember

Gradable: automatic

HAPS Objective: C09.02c Describe the function of each different type of organelle associated with human cells.

HAPS Topic: Module C09 Organelles.

Learning Objective: 02.05.01. Describe the contents and function of the nucleus.

Section: 02.05b

Topic: Cells

41. The life cycle of the cell is called the _____ cycle.
- A. mitotic
 - B. motor
 - C. somatic
 - D. cell**
 - E. armstrong

Bloom's Level: 1. Remember

Gradable: automatic

HAPS Objective: C12.01c Analyze the functional significance of each stage of generalized cell cycle, including interphase and the stages of mitosis.

HAPS Topic: Module C12 Somatic cell division.

Learning Objective: 02.06.01. Describe the events that occur during interphase.

Section: 02.06a

Topic: Cells

42. Which of the following shows the correct sequence of mitosis?

- A. Prophase - metaphase - anaphase - telophase
- B. Metaphase - prophase - anaphase - telophase
- C. Telophase - metaphase - prophase - anaphase
- D. Metaphase - telophase - anaphase - prophase
- E. Prophase - anaphase - metaphase - telophase

Bloom's Level: 1. Remember

Gradable: automatic

HAPS Objective: C12.01a Describe the events that take place in each stage of generalized cell cycle, including interphase and the stages of mitosis.

HAPS Topic: Module C12 Somatic cell division.

Learning Objective: 02.06.02. Identify and define the phases of mitosis and the activities that occur during each phase.

Section: 02.06b

Topic: Cells

43. The phase of mitosis that begins as spindle fibers pull sister chromatids apart at the centromere is

- A. metaphase.
- B. anaphase.
- C. telophase.
- D. prophase.
- E. interphase.

Bloom's Level: 3. Apply

Gradable: automatic

HAPS Objective: C12.01a Describe the events that take place in each stage of generalized cell cycle, including interphase and the stages of mitosis.

HAPS Topic: Module C12 Somatic cell division.

Learning Objective: 02.06.02. Identify and define the phases of mitosis and the activities that occur during each phase.

Section: 02.06b

Topic: Cells

44. The phase of mitosis that begins with the arrival of a group of single-stranded chromosomes at each pole of the cell is

- A. metaphase.
- B. anaphase.
- C. telophase.
- D. prophase.
- E. S phase.

Bloom's Level: 3. Apply

Gradable: automatic

HAPS Objective: C12.01a Describe the events that take place in each stage of generalized cell cycle, including interphase and the stages of mitosis.

HAPS Topic: Module C12 Somatic cell division.

Learning Objective: 02.06.02. Identify and define the phases of mitosis and the activities that occur during each phase.

Section: 02.06b

Topic: Cells

45. Which does *not* occur during the G₂ phase?

- A. Centriole replication is completed.
- B. Organelle production continues.
- C. Enzymes needed for cell division are synthesized.
- D. Each DNA molecule replicates.
- E. All of the choices are correct.

Bloom's Level: 1. Remember

Gradable: automatic

HAPS Objective: C12.01a Describe the events that take place in each stage of generalized cell cycle, including interphase and the stages of mitosis.

HAPS Topic: Module C12 Somatic cell division.

Learning Objective: 02.06.01. Describe the events that occur during interphase.

Section: 02.06a

Topic: Cells

46. The last part of interphase is called

- A. the first "gap" phase.
- B. the second "gap" phase.**
- C. telophase.
- D. the S phase.
- E. anaphase.

Bloom's Level: 1. Remember

Gradable: automatic

HAPS Objective: C12.01a Describe the events that take place in each stage of generalized cell cycle, including interphase and the stages of mitosis.

HAPS Topic: Module C12 Somatic cell division.

Learning Objective: 02.06.01. Describe the events that occur during interphase.

Section: 02.06a

Topic: Cells

47. The replication of the DNA molecule during interphase occurs during the

- A. first "gap" phase.
- B. S phase.**
- C. second "gap" phase.
- D. generation "gap" phase.

Bloom's Level: 1. Remember

Gradable: automatic

HAPS Objective: C12.01a Describe the events that take place in each stage of generalized cell cycle, including interphase and the stages of mitosis.

HAPS Topic: Module C12 Somatic cell division.

Learning Objective: 02.06.01. Describe the events that occur during interphase.

Section: 02.06a

Topic: Cells

48. It is during _____ that the chromosomes line up along the equatorial plate of a dividing cell.

- A. anaphase
- B. metaphase**
- C. prophase
- D. telophase
- E. interphase

Bloom's Level: 1. Remember

Gradable: automatic

HAPS Objective: C12.01a Describe the events that take place in each stage of generalized cell cycle, including interphase and the stages of mitosis.

HAPS Topic: Module C12 Somatic cell division.

Learning Objective: 02.06.02. Identify and define the phases of mitosis and the activities that occur during each phase.

Section: 02.06b

Topic: Cells

49. The interphase period of cell division has _____ distinct phases.

- A. 2
- B. 3**
- C. 4
- D. 5
- E. 6

Bloom's Level: 1. Remember

Gradable: automatic

HAPS Objective: C12.01a Describe the events that take place in each stage of generalized cell cycle, including interphase and the stages of mitosis.

HAPS Topic: Module C12 Somatic cell division.

Learning Objective: 02.06.01. Describe the events that occur during interphase.

Section: 02.06a

Topic: Cells

50. Which is *not* characteristic of a cell undergoing apoptosis?

- A. Chromatin degradation
- B. Shrinkage in volume
- C. Abnormal development in organelle structure
- D. Abnormal development in plasma membrane structure
- E.** All of the choices are correct.

Bloom's Level: 1. Remember

Gradable: automatic

HAPS Objective: C14.01 Provide specific examples to demonstrate how individual cells respond to their environment (e.g., in terms of organelle function, transport processes, protein synthesis, or regulation of cell cycle) in order to maintain homeostasis in the body.

HAPS Topic: Module C14 Application of homeostatic mechanisms.

Learning Objective: 02.07.01. Describe the effects of aging on cells.

Section: 02.07

Topic: Cells

51. Hyperplasia is defined as

- A. the abnormal development of a tissue.
- B. the movement or spread of malignant cells.
- C. an abnormal growth of cells that invades surrounding tissue.
- D. a generalized increase in the size of a part of an organ.
- E.** an increase in the normal number of cells within a tissue or organ.

Bloom's Level: 3. Apply

Gradable: automatic

HAPS Objective: C14.01 Provide specific examples to demonstrate how individual cells respond to their environment (e.g., in terms of organelle function, transport processes, protein synthesis, or regulation of cell cycle) in order to maintain homeostasis in the body.

HAPS Topic: Module C14 Application of homeostatic mechanisms.

Learning Objective: 02.07.01. Describe the effects of aging on cells.

Section: 02.07

Topic: Cells

52. Metastasis is

- A. the abnormal development of a tissue.
- B. the movement or spread of malignant cells.**
- C. an obvious loss of cellular or structural differentiation in the orientation of cells to each other.
- D. a generalized increase in the size of a part of an organ.
- E. an increase in the normal number of cells within a tissue or organ.

Bloom's Level: 2. Understand

Gradable: automatic

HAPS Objective: C15.01 Predict factors or situations that could disrupt organelle function, transport processes, protein synthesis, or the cell cycle.

HAPS Topic: Module C15 Predictions related to homeostatic imbalance, including disease states and disorders.

Learning Objective: 02.07.01. Describe the effects of aging on cells.

Section: 02.07

Topic: Cells

53. The root "chroma" means

- A. body.
- B. characteristic.
- C. strength.
- D. color.**
- E. condition.

Bloom's Level: 3. Apply

Gradable: automatic

HAPS Objective: C12.04 Analyze the interrelationships among chromatin, chromosomes and chromatids.

HAPS Topic: Module C12 Somatic cell division.

Learning Objective: 02.07.01. Describe the effects of aging on cells.

Section: 02.07

Topic: Cells

54. The term "flagellum" is appropriate for the structure it represents because it means

- A. an eyelid.
- B. the center.
- C. a nut or kernel.
- D.** a whip.
- E. a bench.

Bloom's Level: 1. Remember

Gradable: automatic

HAPS Objective: C09.02a Name each different type of organelle associated with human cells.

HAPS Topic: Module C09 Organelles.

Learning Objective: 02.01.02. Describe the relationship between structure and function in cells.

Section: 02.01b

Topic: Cells

True / False Questions

55. Transmission electron microscopy (TEM) uses an electron beam to create an image for viewing.

TRUE

Bloom's Level: 1. Remember

Gradable: automatic

Learning Objective: 02.01.01. Compare and contrast the advantages and disadvantages of LM, TEM, and SEM.

Section: 02.01a

Topic: Cells

56. Some muscle and nerve cells in humans may approach a meter in length.

TRUE

Bloom's Level: 1. Remember

Learning Objective: 02.01.02. Describe the relationship between structure and function in cells.

Section: 02.01b

Topic: Cells

57. Some cells are designed solely to produce new individuals.

TRUE

Bloom's Level: 1. Remember

Learning Objective: 02.01.02. Describe the relationship between structure and function in cells.

Section: 02.01a

Topic: Cells

58. Often, a cell's functions are reflected in either its size or shape.

TRUE

Bloom's Level: 2. Understand

Learning Objective: 02.01.02. Describe the relationship between structure and function in cells.

Section: 02.01b

Topic: Cells

59. Among the many functions of the liver's cells is the storage of carbohydrates as glycogen.

TRUE

Bloom's Level: 1. Remember

Learning Objective: 02.01.02. Describe the relationship between structure and function in cells.

Section: 02.01b

Topic: Cells

60. Fibroblast cells form protein fibers that function to attach structures together.

TRUE

Bloom's Level: 1. Remember

Learning Objective: 02.01.02. Describe the relationship between structure and function in cells.

Section: 02.01b

Topic: Cells

61. Lysosome functions range from the digestion of materials ingested by the cell to the self-destruction of the cell.

TRUE

Bloom's Level: 1. Remember

HAPS Objective: C09.02c Describe the function of each different type of organelle associated with human cells.

HAPS Topic: Module C09 Organelles.

Learning Objective: 02.02.02. Describe the contents of a prototypical cell.

Section: 02.02

Topic: Cells

62. Mitochondria are responsible for the synthesis of most of the energy-rich ATP molecules used by human cells.

TRUE

Bloom's Level: 1. Remember

HAPS Objective: C09.02c Describe the function of each different type of organelle associated with human cells.

HAPS Topic: Module C09 Organelles.

Learning Objective: 02.02.02. Describe the contents of a prototypical cell.

Section: 02.02

Topic: Cells

63. Among the functions of the plasma membrane are to form specialized intercellular connections, provide for selective permeability, and facilitate the recognition and response to molecular signals.

TRUE

Bloom's Level: 1. Remember

HAPS Objective: C06.01 Identify the three main parts of a cell, and list the general functions of each.

HAPS Topic: Module C06 Intracellular organization of nucleus and cytoplasm.

Learning Objective: 02.02.01. Identify the characteristics of the plasma membrane, cytoplasm, and nucleus.

Section: 02.03a

Topic: Cells

64. Materials tend to move less rapidly when their concentrations are significantly different between two compartments.

FALSE

Bloom's Level: 1. Remember

HAPS Objective: C08.01b Describe the mechanism by which movement of material occurs in each membrane transport process – simple diffusion, facilitated diffusion, osmosis, active transport, exocytosis, endocytosis, phagocytosis, pinocytosis, and filtration.

HAPS Topic: Module C08 Mechanisms for movement of materials across cell membranes.

Learning Objective: 02.03.02. Understand the functions of selective permeability.

Section: 02.03c

Topic: Cells

65. If the inside of a cell has a net negative (ionic) charge, a negative ion outside the membrane is more likely to be attracted to the intracellular environment.

FALSE

Bloom's Level: 1. Remember

HAPS Objective: C08.01b Describe the mechanism by which movement of material occurs in each membrane transport process – simple diffusion, facilitated diffusion, osmosis, active transport, exocytosis, endocytosis, phagocytosis, pinocytosis, and filtration.

HAPS Topic: Module C08 Mechanisms for movement of materials across cell membranes.

Learning Objective: 02.03.01. Describe the structure of the plasma membrane.

Section: 02.03c

Topic: Cells

66. The cellular uptake of large particulate substances and macromolecules is called endocytosis.

TRUE

Bloom's Level: 1. Remember

HAPS Objective: C08.01b Describe the mechanism by which movement of material occurs in each membrane transport process – simple diffusion, facilitated diffusion, osmosis, active transport, exocytosis, endocytosis, phagocytosis, pinocytosis, and filtration.

HAPS Topic: Module C08 Mechanisms for movement of materials across cell membranes.

Learning Objective: 02.03.03. Identify the specific types of passive and active transport.

Section: 02.03c

Topic: Cells

67. The amount of rough ER is greater in cells producing large amounts of protein for secretion.

TRUE

Bloom's Level: 1. Remember

HAPS Objective: C09.02c Describe the function of each different type of organelle associated with human cells.

HAPS Topic: Module C09 Organelles.

Learning Objective: 02.04.01. Identify the characteristics of the three parts of a cell's cytoplasm.

Section: 02.04a

Topic: Cells

68. Everything packaged by the Golgi apparatus for secretion leaves the cell within a vesicle.

TRUE

Bloom's Level: 1. Remember

HAPS Objective: C09.02c Describe the function of each different type of organelle associated with human cells.

HAPS Topic: Module C09 Organelles.

Learning Objective: 02.04.02. Describe the structures and functions of cellular organelles.

Section: 02.04c

Topic: Cells

69. Lysosomes contain enzymes that prepare the vesicles that will be used by the Golgi apparatus to package its secretory products.

FALSE

Bloom's Level: 1. Remember

HAPS Objective: C09.02c Describe the function of each different type of organelle associated with human cells.

HAPS Topic: Module C09 Organelles.

Learning Objective: 02.04.02. Describe the structures and functions of cellular organelles.

Section: 02.04c

Topic: Cells

70. Organelles that are always in direct contact with the cytosol are called nonmembrane-bound organelles.

TRUE

Bloom's Level: 1. Remember

HAPS Objective: C09.01 Define the term organelle.

HAPS Topic: Module C09 Organelles.

Learning Objective: 02.04.02. Describe the structures and functions of cellular organelles.

Section: 02.04c

Topic: Cells

71. Ribosomes that are attached to the RER are called "free ribosomes".

FALSE

Bloom's Level: 1. Remember

HAPS Objective: C09.02b Describe the structure of each different type of organelle associated with human cells.

HAPS Topic: Module C09 Organelles.

Learning Objective: 02.04.02. Describe the structures and functions of cellular organelles.

Section: 02.04c

Topic: Cells

72. Generally, the shape of a nucleus mirrors the shape of the cell within which it is found.

TRUE

Bloom's Level: 3. Apply

HAPS Objective: C09.02b Describe the structure of each different type of organelle associated with human cells.

HAPS Topic: Module C09 Organelles.

Learning Objective: 02.05.01. Describe the contents and function of the nucleus.

Section: 02.05a

Topic: Cells

73. The subunits of ribosomes are exported outside the nucleus into the cytoplasm, where they are assembled into their finished product.

TRUE

Bloom's Level: 1. Remember

HAPS Objective: C09.02c Describe the function of each different type of organelle associated with human cells.

HAPS Topic: Module C09 Organelles.

Learning Objective: 02.04.02. Describe the structures and functions of cellular organelles.

Section: 02.04c

Topic: Cells

74. The condensed, "wound" nature of chromosomes during cell division prevents the DNA from directing the production of additional cellular proteins.

TRUE

Bloom's Level: 2. Understand

HAPS Objective: C12.04 Analyze the interrelationships among chromatin, chromosomes and chromatids.

HAPS Topic: Module C12 Somatic cell division.

Learning Objective: 02.05.02. Compare and contrast the relationship between chromatin and chromosomes.

Section: 02.05c

Topic: Cells

75. Cancers are more prevalent in the elderly because the mechanism of cell division becomes faultier with age.

TRUE

Bloom's Level: 1. Remember

HAPS Objective: C15.02 Predict the types of problems that would occur if the cells could not maintain homeostasis due to abnormalities in organelle function, transport processes, protein synthesis, or the cell cycle.

HAPS Topic: Module C15 Predictions related to homeostatic imbalance, including disease states and disorders.

Learning Objective: 02.07.01. Describe the effects of aging on cells.

Section: 02.07

Topic: Cells

76. Metaplasia is the abnormal transformation of a fully differentiated adult tissue into a differentiated tissue of another kind.

TRUE

Bloom's Level: 1. Remember

HAPS Objective: C14.01 Provide specific examples to demonstrate how individual cells respond to their environment (e.g., in terms of organelle function, transport processes, protein synthesis, or regulation of cell cycle) in order to maintain homeostasis in the body.

HAPS Topic: Module C14 Application of homeostatic mechanisms.

Learning Objective: 02.07.01. Describe the effects of aging on cells.

Section: 02.07

Topic: Cells

Fill in the Blank Questions

77. Within the bone marrow are _____ cells that continuously produce new blood cells.
stem

Bloom's Level: 1. Remember

Learning Objective: 02.01.02. Describe the relationship between structure and function in cells.

Section: 02.01b

Topic: Cells

78. Collagen produced by _____ cells forms ligaments that attach bone to bone.
fibroblast

Bloom's Level: 1. Remember

Learning Objective: 02.01.02. Describe the relationship between structure and function in cells.

Section: 02.01b

Topic: Cells

79. _____ is the general term for all cellular contents located between the plasma membrane and the nucleus.

Cytoplasm

Bloom's Level: 1. Remember

HAPS Objective: C06.01 Identify the three main parts of a cell, and list the general functions of each.

HAPS Topic: Module C06 Intracellular organization of nucleus and cytoplasm.

Learning Objective: 02.02.01. Identify the characteristics of the plasma membrane, cytoplasm, and nucleus.

Section: 02.04a

Topic: Cells

80. _____ are short, membrane-attached projections containing microtubules that occur in large numbers on exposed membrane surfaces.

Cilia

Bloom's Level: 1. Remember

HAPS Objective: C09.02b Describe the structure of each different type of organelle associated with human cells.

HAPS Topic: Module C09 Organelles.

Learning Objective: 02.03.01. Describe the structure of the plasma membrane.

Section: 02.03a

Topic: Cells

81. The term used to describe the fluid within a cell is _____, or intracellular fluid.

cytosol

Bloom's Level: 1. Remember

HAPS Objective: C06.02 Explain how cytoplasm and cytosol are different.

HAPS Topic: Module C06 Intracellular organization of nucleus and cytoplasm.

Learning Objective: 02.02.01. Identify the characteristics of the plasma membrane, cytoplasm, and nucleus.

Section: 02.04a

Topic: Cells

82. The _____ proteins are those that are not embedded in the membrane lipid bilayer but are attached loosely to its external and internal surfaces.

peripheral

Bloom's Level: 1. Remember

HAPS Objective: C07.03 Describe how proteins are distributed in a cell membrane, and explain their functions.

HAPS Topic: Module C07 Membrane structure and function.

Learning Objective: 02.03.01. Describe the structure of the plasma membrane.

Section: 02.03b

Topic: Cells

83. The fuzzy coat made of glycoproteins and glycolipids found on the external surface of the plasma membrane is called the _____.
glycocalyx

Bloom's Level: 2. Understand

HAPS Objective: C07.01 Describe how lipids are distributed in a cell membrane, and explain their functions.

HAPS Objective: C07.02 Describe how carbohydrates are distributed in a cell membrane, and explain their functions.

HAPS Objective: C07.03 Describe how proteins are distributed in a cell membrane, and explain their functions.

HAPS Topic: Module C07 Membrane structure and function.

Learning Objective: 02.03.01. Describe the structure of the plasma membrane.

Section: 02.03b

Topic: Cells

84. A membrane that is able to regulate the movement of materials in and out of the cell is described as being _____ (2 words).
selectively permeable

Bloom's Level: 1. Remember

HAPS Objective: C06.01 Identify the three main parts of a cell, and list the general functions of each.

HAPS Topic: Module C06 Intracellular organization of nucleus and cytoplasm.

Learning Objective: 02.03.02. Understand the functions of selective permeability.

Section: 02.03c

Topic: Cells

85. In _____ transport, substances move across a plasma membrane without the expenditure of energy by the cell.
passive

Bloom's Level: 1. Remember

HAPS Objective: C08.01c Discuss the energy requirements and, if applicable, the sources of energy for each process – simple diffusion, facilitated diffusion, osmosis, active transport, exocytosis, endocytosis, phagocytosis, pinocytosis, and filtration.

HAPS Topic: Module C08 Mechanisms for movement of materials across cell membranes.

Learning Objective: 02.03.03. Identify the specific types of passive and active transport.

Section: 02.03c

Topic: Cells

86. _____ transport is required to move a substance across a membrane against a concentration gradient.

Active

Bloom's Level: 1. Remember

HAPS Objective: C08.01c Discuss the energy requirements and, if applicable, the sources of energy for each process – simple diffusion, facilitated diffusion, osmosis, active transport, exocytosis, endocytosis, phagocytosis, pinocytosis, and filtration.

HAPS Topic: Module C08 Mechanisms for movement of materials across cell membranes.

Learning Objective: 02.03.03. Identify the specific types of passive and active transport.

Section: 02.03c

Topic: Cells

87. The means by which large molecules are brought into the cell is called _____.

endocytosis

Bloom's Level: 1. Remember

HAPS Objective: C08.01a State the type of material moving in each of the membrane transport process – simple diffusion, facilitated diffusion, osmosis, active transport, exocytosis, endocytosis, phagocytosis, pinocytosis, and filtration.

HAPS Topic: Module C08 Mechanisms for movement of materials across cell membranes.

Learning Objective: 02.03.03. Identify the specific types of passive and active transport.

Section: 02.03c

Topic: Cells

88. A cell-mediated process that transports large molecules across the plasma membrane and out of the cell is called _____.

exocytosis

Bloom's Level: 1. Remember

HAPS Objective: C08.01a State the type of material moving in each of the membrane transport process – simple diffusion, facilitated diffusion, osmosis, active transport, exocytosis, endocytosis, phagocytosis, pinocytosis, and filtration.

HAPS Topic: Module C08 Mechanisms for movement of materials across cell membranes.

Learning Objective: 02.03.03. Identify the specific types of passive and active transport.

Section: 02.03c

Topic: Cells

89. The technical term for "cellular drinking" is _____.
pinocytosis

Bloom's Level: 1. Remember

HAPS Objective: C08.01a State the type of material moving in each of the membrane transport process – simple diffusion, facilitated diffusion, osmosis, active transport, exocytosis, endocytosis, phagocytosis, pinocytosis, and filtration.

HAPS Topic: Module C08 Mechanisms for movement of materials across cell membranes.

Learning Objective: 02.03.03. Identify the specific types of passive and active transport.

Section: 02.03c

Topic: Cells

90. The first "R" in RER stands for _____.
rough

Bloom's Level: 1. Remember

HAPS Objective: C09.02a Name each different type of organelle associated with human cells.

HAPS Topic: Module C09 Organelles.

Learning Objective: 02.04.01. Identify the characteristics of the three parts of a cell's cytoplasm.

Section: 02.04c

Topic: Cells

91. The digestion of a cell by its own enzymes is called _____.
autolysis

Bloom's Level: 3. Apply

HAPS Objective: C09.02c Describe the function of each different type of organelle associated with human cells.

HAPS Topic: Module C09 Organelles.

Learning Objective: 02.07.02. Identify two causes of cell death.

Section: 02.07

Topic: Cells

92. _____ ribosomes are responsible for the synthesis of proteins that remain within the cell.
Free

Bloom's Level: 1. Remember

HAPS Objective: C09.02c Describe the function of each different type of organelle associated with human cells.

HAPS Topic: Module C09 Organelles.

Learning Objective: 02.04.02. Describe the structures and functions of cellular organelles.

Section: 02.04c

Topic: Cells

93. The cytoskeleton has three separate components: microfilaments, intermediate filaments, and _____.
microtubules

Bloom's Level: 1. Remember

HAPS Objective: C09.02a Name each different type of organelle associated with human cells.

HAPS Topic: Module C09 Organelles.

Learning Objective: 02.04.01. Identify the characteristics of the three parts of a cell's cytoplasm.

Section: 02.04c

Topic: Cells

94. DNA is organized into discrete units called _____ that provide information for the production of specific proteins.
genes

Bloom's Level: 1. Remember

HAPS Objective: C09.02c Describe the function of each different type of organelle associated with human cells.

HAPS Topic: Module C09 Organelles.

Learning Objective: 02.05.02. Compare and contrast the relationship between chromatin and chromosomes.

Section: 02.05c

Topic: Cells

95. Nuclear _____ are open passageways that penetrate fused regions of the double membrane of the nuclear envelope.
pores

Bloom's Level: 1. Remember

HAPS Objective: C09.02b Describe the structure of each different type of organelle associated with human cells.

HAPS Topic: Module C09 Organelles.

Learning Objective: 02.05.01. Describe the contents and function of the nucleus.

Section: 02.05a

Topic: Cells

96. The production of sperm and oocytes is achieved through a cell division process called _____.
meiosis

Bloom's Level: 1. Remember

HAPS Objective: C13.04 Compare and contrast the processes of mitosis and meiosis.

HAPS Topic: Module C13 Reproductive cell division.

Learning Objective: 02.06.02. Identify and define the phases of mitosis and the activities that occur during each phase.

Section: 02.06b

Topic: Cells

97. The two identical cells that arise from mitosis are called _____ cells.
daughter

Bloom's Level: 1. Remember

HAPS Objective: C13.04 Compare and contrast the processes of mitosis and meiosis.

HAPS Topic: Module C13 Reproductive cell division.

Learning Objective: 02.06.02. Identify and define the phases of mitosis and the activities that occur during each phase.

Section: 02.06b

Topic: Cells

98. _____ is the division of the cytoplasm during cell division.
Cytokinesis

Bloom's Level: 3. Apply

HAPS Objective: C12.02 Distinguish between mitosis and cytokinesis.

HAPS Topic: Module C12 Somatic cell division.

Learning Objective: 02.06.02. Identify and define the phases of mitosis and the activities that occur during each phase.

Section: 02.06b

Topic: Cells

99. The duplicated chromosome that appears during prophase consists of two genetically identical structures called sister _____.
chromatids

Bloom's Level: 1. Remember

HAPS Objective: C12.04 Analyze the interrelationships among chromatin, chromosomes and chromatids.

HAPS Topic: Module C12 Somatic cell division.

Learning Objective: 02.06.02. Identify and define the phases of mitosis and the activities that occur during each phase.

Section: 02.06b

Topic: Cells