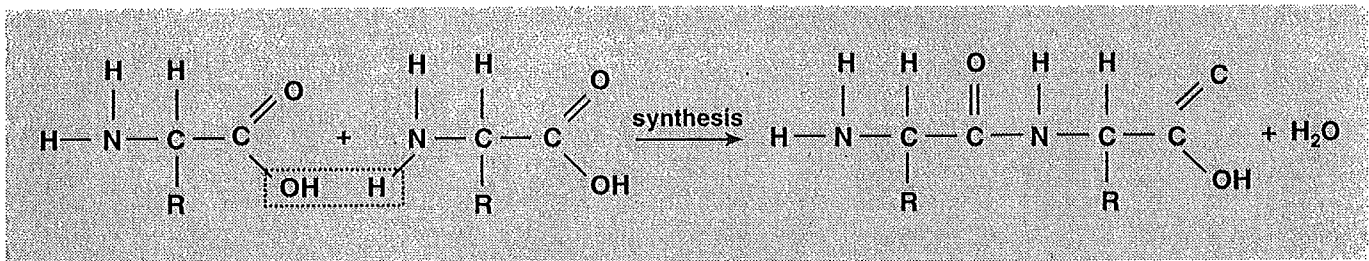


A. Cell Structures

1. The factor being tested in an experiment is the
- A. data.
 - B. variable.
 - C. conclusion.
 - D. observation.

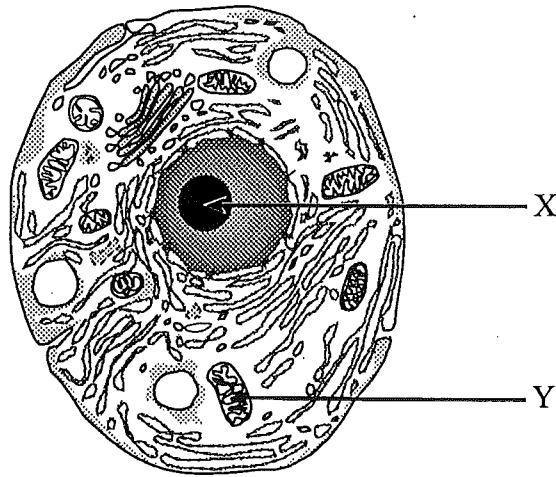
2. Evidence, either supporting or contradicting an hypothesis, is obtained by
- A. stating a purpose.
 - B. developing a theory.
 - C. reaching a conclusion.
 - D. performing an experiment.

Use the following diagram to answer question 3.



3. At which of the following organelles would the reaction shown take place?
- A. nucleus
 - B. ribosome
 - C. lysosome
 - D. smooth endoplasmic reticulum
4. Which of the following types of molecules are synthesized at the rough endoplasmic reticulum?
- A. lipids
 - B. proteins
 - C. nucleic acids
 - D. carbohydrates
5. The products of mitochondria include ATP and
- A. water.
 - B. lipids.
 - C. oxygen.
 - D. glucose.

Use the following diagram to answer questions 6 and 7.



6. The structure labelled X is a

- A. nucleus.
- B. ribosome.
- C. nucleolus.
- D. Golgi body.

7. The process that occurs in the structure labelled Y is

- A. cell division.
- B. active transport.
- C. protein synthesis.
- D. cellular respiration.

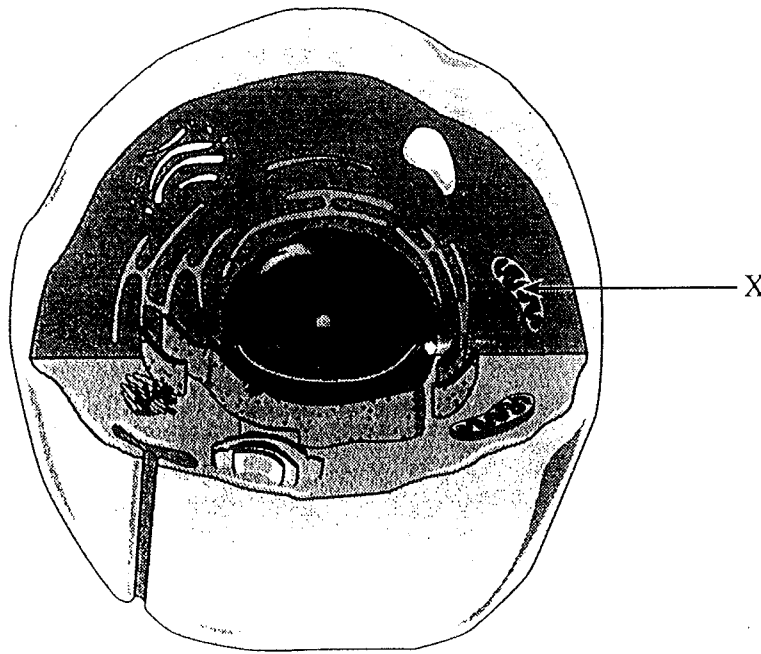
8. For each of the following structures, identify a cellular process in which the structure is involved. **(3 marks: 1 mark each)**

chromosomes:

mitochondria:

lysosomes:

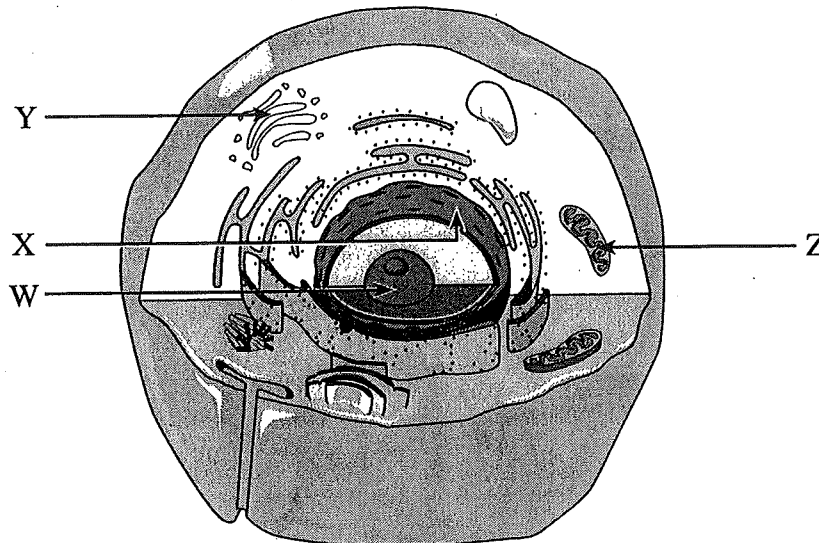
Use the following diagram to answer question 9.



9. The organelle labelled X is a

- A. vacuole.
- B. ribosome.
- C. Golgi body.
- D. mitochondrion.

Use the following diagram to answer question 10.



10. A protein being packaged and modified for export would be found in

- A. W.
- B. X.
- C. Y.
- D. Z.

11. An organelle composed of membranous tubules that synthesize testosterone is the

- A. vacuole.
- B. Golgi apparatus.
- C. rough endoplasmic reticulum.
- D. smooth endoplasmic reticulum.

Use the following information to answer question 12.

1. Vesicle fuses with a lysosome.
2. Bacterium is taken into the macrophage.
3. Digestion of the bacterium occurs.
4. Vesicle is formed around the bacterium.

12. Which of the following is the correct sequence to describe what happens to a bacterium after a type of white blood cell called a macrophage encounters it?

- A. 1, 3, 2, 4
- B. 1, 4, 2, 3
- C. 2, 3, 4, 1
- D. 2, 4, 1, 3

13. Consider the functions of the following:

- | |
|---|
| <ul style="list-style-type: none">■ sperm■ heart muscle cells■ cells lining the proximal convoluted tubules |
|---|

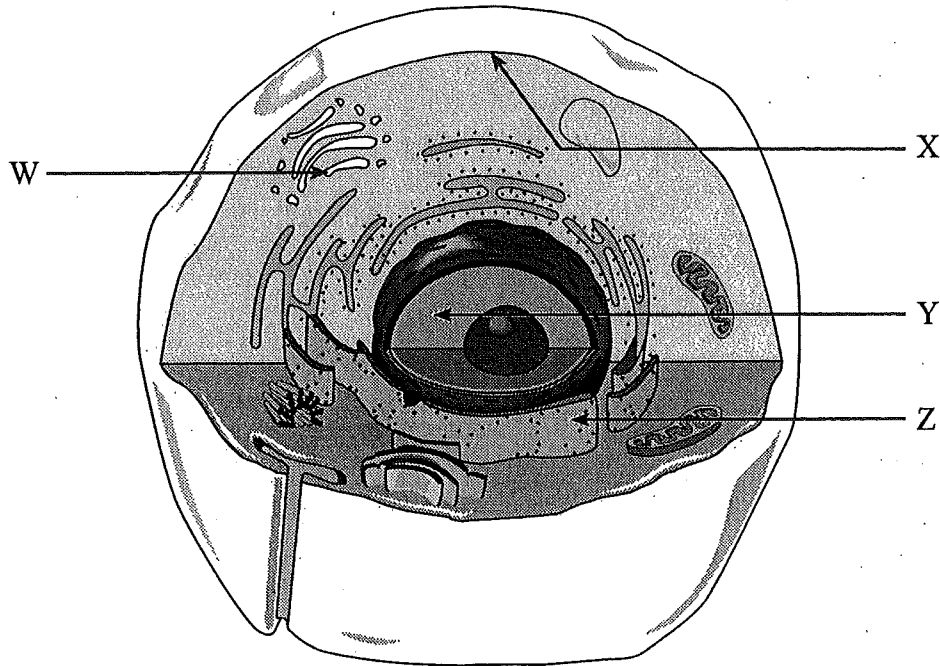
In order for these metabolically active cells to carry out their functions effectively, they require large numbers of which organelle?

- A. ribosomes
- B. lysosomes
- C. Golgi bodies
- D. mitochondria

14. Specialized vacuoles containing molecules that catalyze the hydrolysis of macromolecules are

- A. nucleoli.
- B. ribosomes.
- C. lysosomes.
- D. chromosomes.

Use the following diagram to answer question 15.



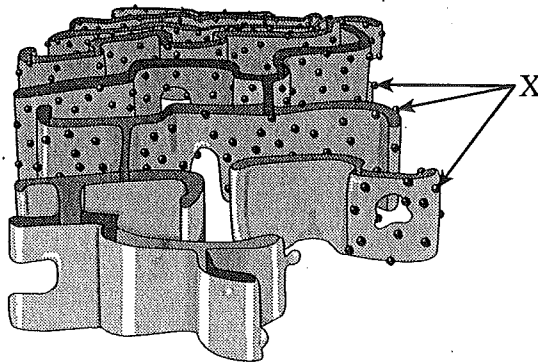
15. Which letter indicates the part of the cell where genetic material is stored?

- A. W
- B. X
- C. Y
- D. Z

16. If the nucleolus ceases to function, the cellular function first affected would be

- A. DNA replication.
- B. cellular respiration.
- C. ribosome production.
- D. storage of chromosomes.

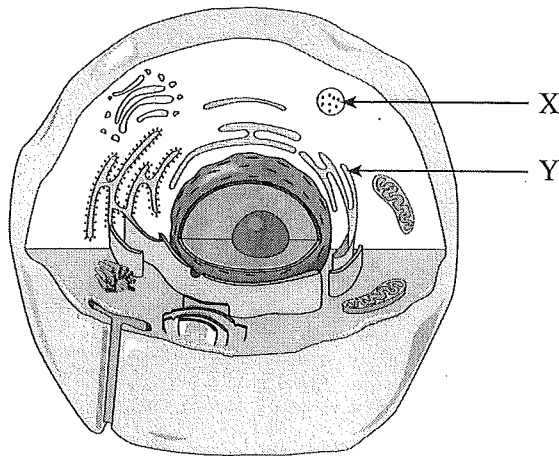
Use the following diagram to answer question 17.



17. Structure X is composed of molecules produced by the

- A. nucleus.
- B. vesicles.
- C. nucleolus.
- D. lysosomes.

Use the following diagram to answer questions 18 and 19.



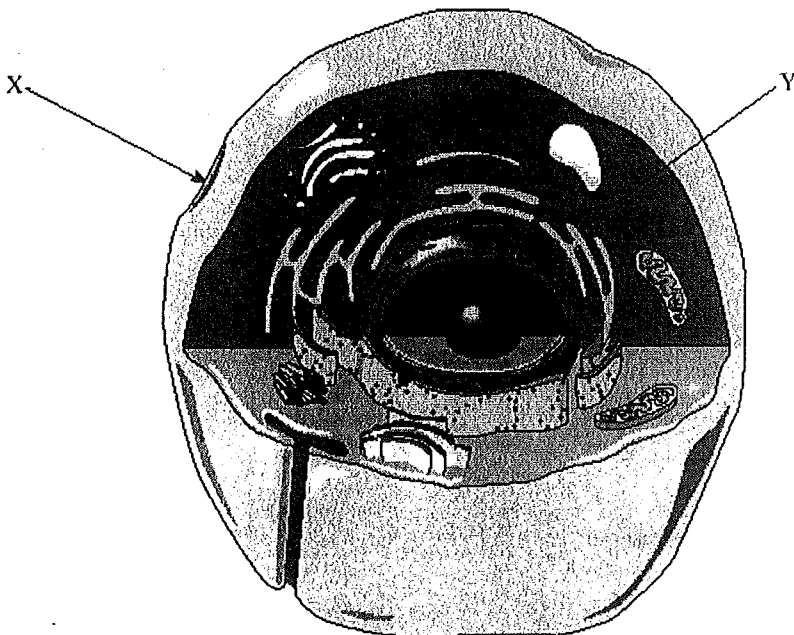
18. Structure X contains enzymes and is a

- A. ribosome.
- B. lysosome.
- C. chromosome.
- D. mitochondrion.

19. The structure labelled Y is the site of

- A. lipid synthesis.
- B. protein synthesis.
- C. packaging and modification of proteins.
- D. chemical reactions that release energy from glucose.

Use the following diagram to answer questions 20 + 21.



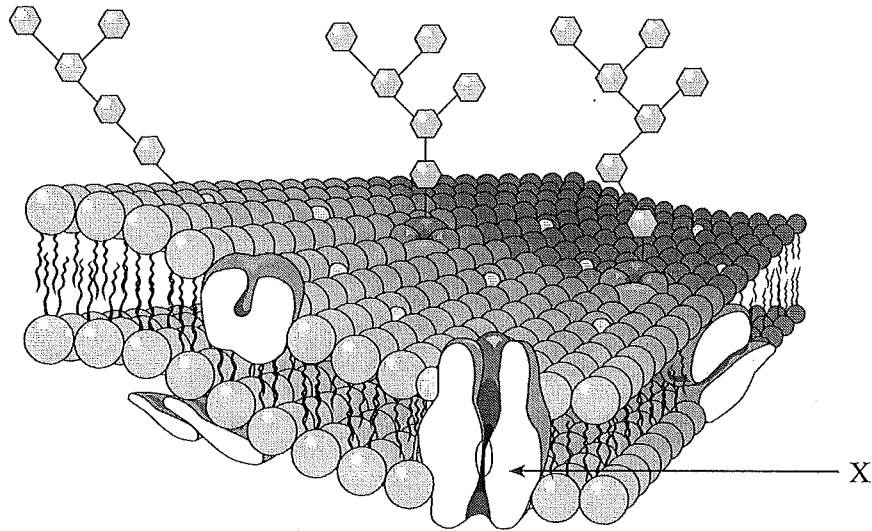
20 The structure labelled X is composed mostly of

- A. glycogen and protein.
- B. nucleic acid and glycogen.
- C. protein and phospholipids.
- D. nucleic acid and phospholipids.

21. One function of the structure labelled Y is to

- A. replicate DNA.
- B. control cell division.
- C. digest food molecules.
- D. produce digestive enzymes.

Use the following diagram to answer question 22.



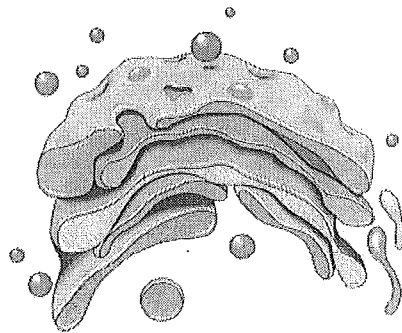
22. If a substance temporarily interferes with the function of the structure labelled X, which of the following would occur?

- A. The breakdown of worn-out cell organelles would stop.
- B. There would be an increase in the production of mRNA.
- C. The number of amino acid molecules entering the cell would decrease.
- D. The active transport of water across the cell membrane would decrease.

23. The products of ribosomes are long chains composed of

- A. glucose.
- B. fatty acids.
- C. nucleotides.
- D. amino acids.

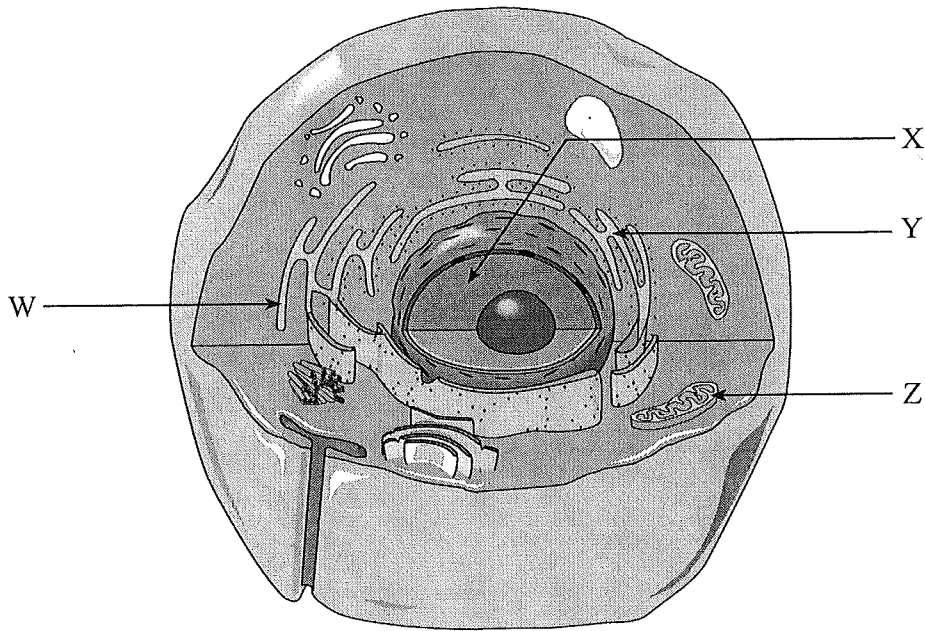
Use the following diagram to answer question 24.



24. Which of the following is packaged and stored by the structure above?

- A. water
- B. enzymes
- C. carbon dioxide
- D. messenger RNA

Use the following diagram to answer questions 25 to 27.



25. Which of the following structures is labelled X?

- A. nucleus
- B. nucleolus
- C. lysosome
- D. Golgi apparatus

26. The function of the organelle labelled Z is to

- A. replicate DNA and transcribe mRNA.
- B. determine what enters and leaves the cell.
- C. produce ATP to be used in cell processes.
- D. package and store substances made in the cell.

27. Which of the following is a correct statement regarding structures W and Y?

- A. Structure W produces ATP and structure Y produces lipids.
- B. Both structures have ribosomes embedded in their membranes.
- C. Both structures produce substances that are stored in the nucleolus.
- D. Structure W produces steroid hormones and structure Y produces proteins.

28. Which of the following organelles is correctly matched with its product?

- A. nucleolus — DNA
- B. mitochondria — ATP
- C. Golgi apparatus — lipid
- D. smooth endoplasmic reticulum — protein

29. Which of the following structures produces vesicles?

- A. nucleus
- B. ribosome
- C. nucleolus
- D. Golgi body

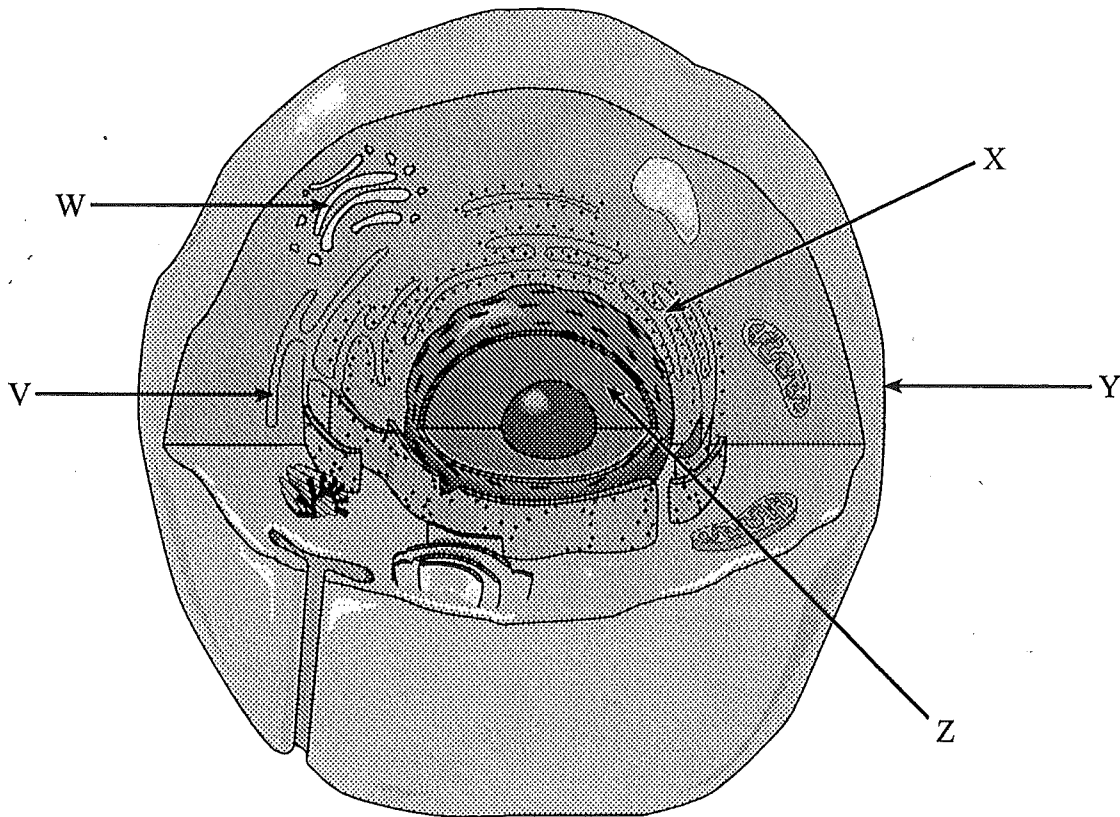
Use the following information to answer question 30.

1. packaging of lipase at a Golgi body
2. peptide bonding of valine with other amino acids on the rough endoplasmic reticulum
3. hydrolysis of a protein containing valine
4. vesicles fusing with the plasma membrane

30. The amino acid valine is used in the synthesis of lipase. What would be the correct sequence of events in the production and release of lipase?

- A. 1 → 3 → 2 → 4
- B. 2 → 3 → 4 → 1
- C. 3 → 2 → 1 → 4
- D. 4 → 1 → 2 → 3

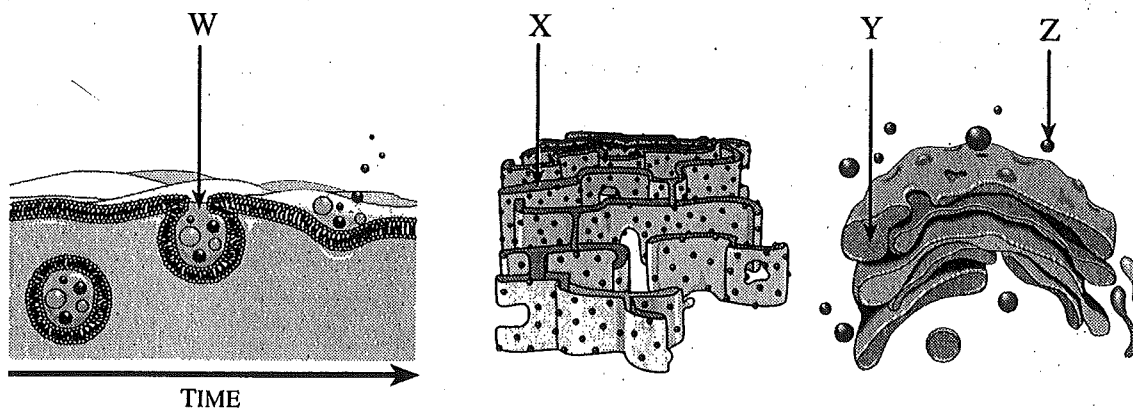
Use the following diagram to answer question 31.



31. The cell produces, stores, packages and exports a steroid hormone. What is the correct order of structures involved in this process?

- A. Z, X, W
- B. V, W, X
- C. X, W, Y
- D. V, W, Y

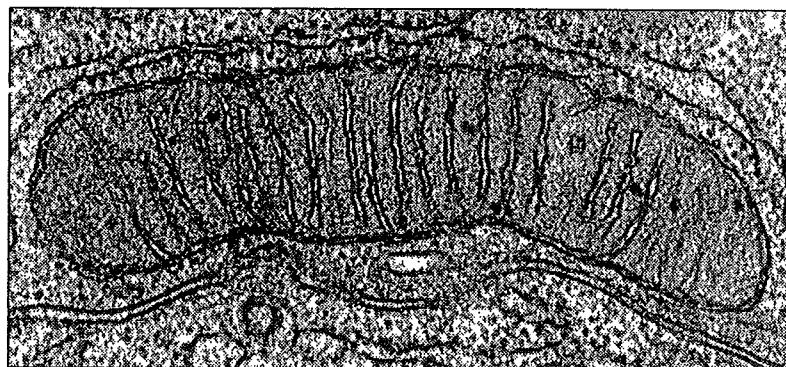
Use the following diagrams to answer question 32



32. Which of the following describes the sequence in which the above events would occur in the production and secretion of a protein?

- A. W, X, Y, Z
- B. W, Z, X, Y
- C. X, Y, W, Z
- D. X, Y, Z, W

Use the following diagram to answer question 33.



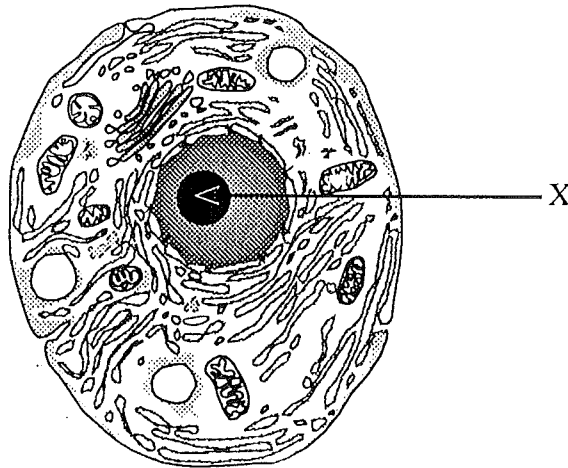
33. Which of the following is a **product** of the structure above?

- A. urea
- B. oxygen
- C. glucose
- D. carbon dioxide

34. Lysosomes can be expected to be present in large numbers in cells which

- A. have cilia.
- B. produce centrioles.
- C. are actively dividing.
- D. carry out phagocytosis.

Use the following diagram to answer question 35.



35. The structure labelled X is a

- A. nucleus.
- B. vacuole.
- C. nucleolus.
- D. chromosome.

36. A function of smooth endoplasmic reticulum is to

- A. form ribosomes.
- B. synthesize lipids.
- C. store nucleic acid.
- D. breakdown carbohydrates.

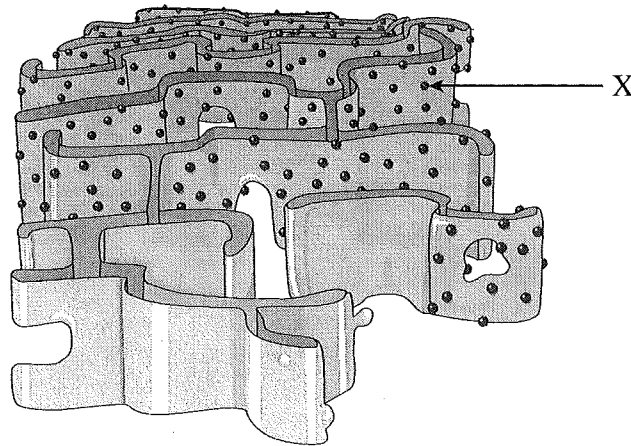
37. Which of the following organelles breaks down dead cells?

- A. nucleus
- B. lysosome
- C. Golgi apparatus
- D. rough endoplasmic reticulum

38. Which of the following produces ribosomal RNA?

- A. nucleolus
- B. mitochondrion
- C. rough endoplasmic reticulum
- D. smooth endoplasmic reticulum

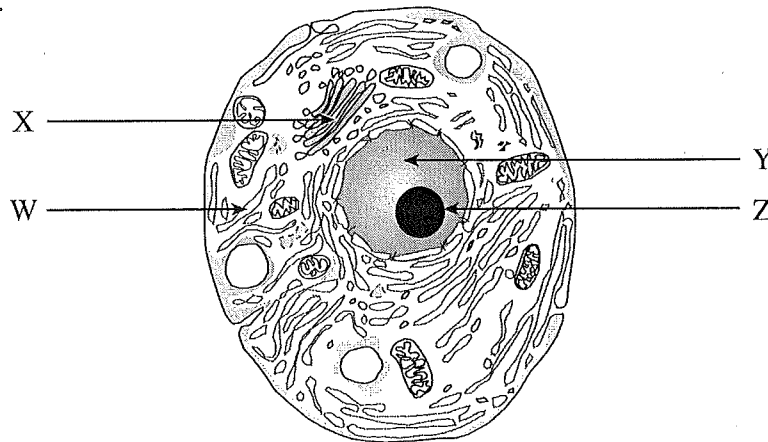
Use the following diagram to answer question 39.



39. One function of structure X is to

- A. replicate DNA.
- B. produce amylase.
- C. transcribe mRNA.
- D. hydrolyze nuclease.

Use the following diagram to answer question 40.



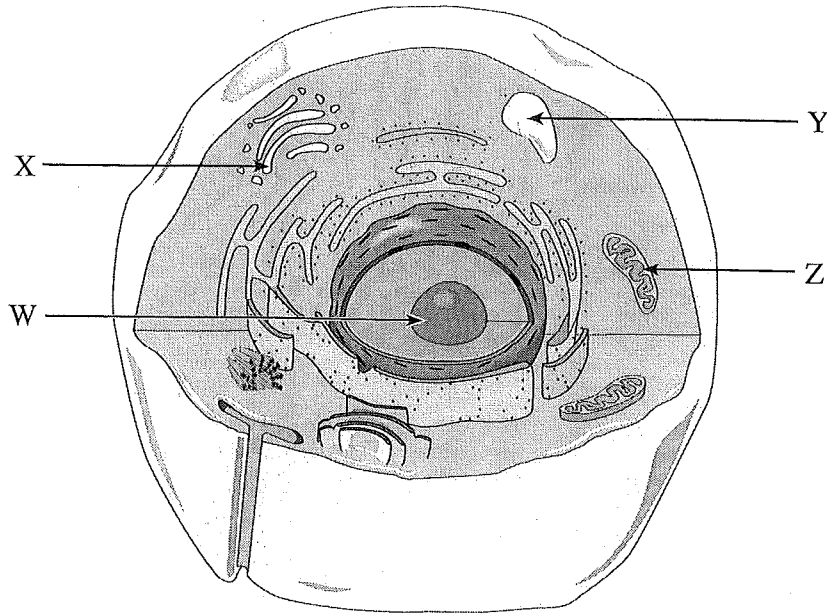
40. Which of the structures manufactures rRNA?

- A. W
- B. X
- C. Y
- D. Z

41. During cell division, genetic material is contained in structures called

- A. vacuoles.
- B. lysosomes.
- C. Golgi bodies.
- D. chromosomes.

Use the following diagram to answer question 42



42. Which of the organelles in the diagram packages proteins for secretion?

- A. W
- B. X
- C. Y
- D. Z

43. In contrast to the nuclear envelope, the inner membrane of the mitochondrion

- A. contains pores.
- B. has many folds.
- C. is not permeable.
- D. has two phospholipid layers.

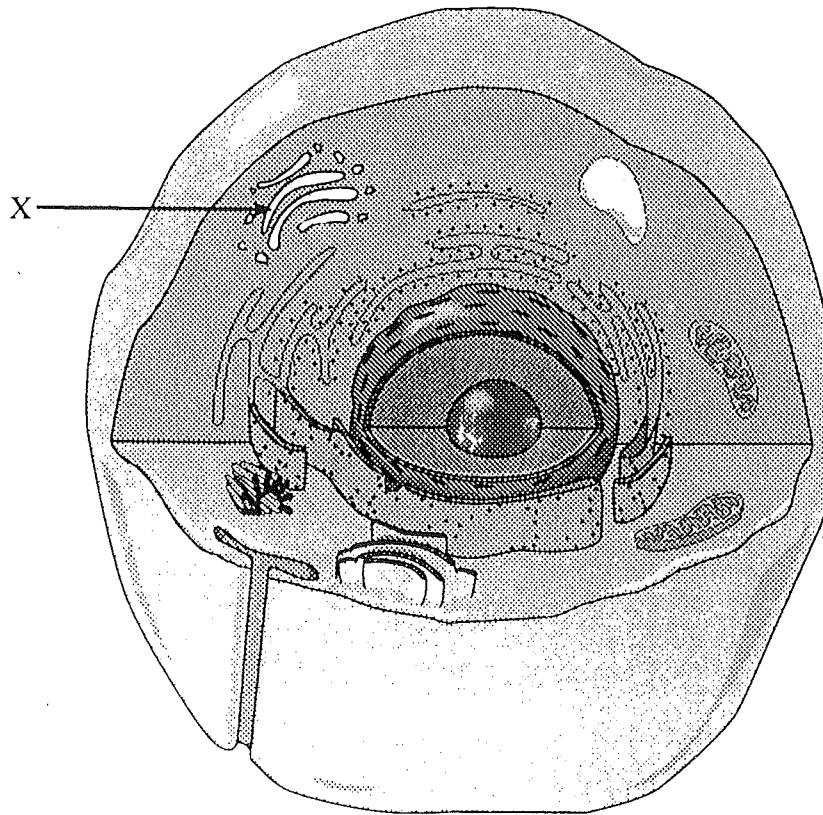
44. Which organelle provides the energy for protein synthesis?

- A. nucleus
- B. nucleolus
- C. mitochondrion
- D. rough endoplasmic reticulum

45. What is the function of an organelle that produces vesicles and is composed of a stack of flattened saccules?

- A. produce ATP
- B. replicate DNA
- C. package proteins
- D. produce vitamins

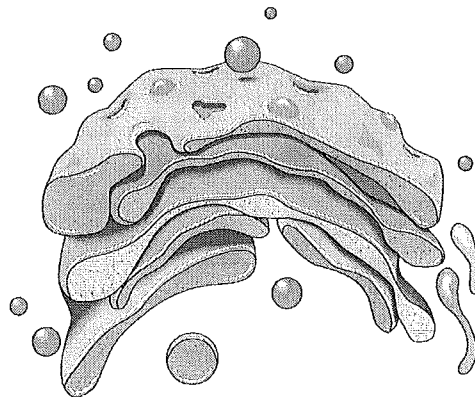
Use the following diagram to answer question 46.



46. The cell organelle labelled X in the diagram is a

- A. vacuole.
- B. lysosome.
- C. Golgi body.
- D. mitochondrion.

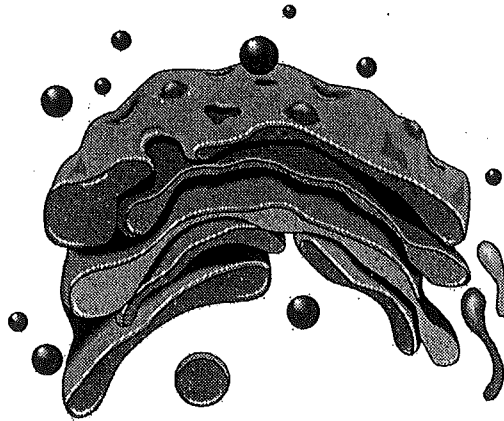
Use the following diagram to answer question 47.



47. The organelle above is

- A. a nucleolus.
- B. a mitochondrion.
- C. a Golgi apparatus.
- D. an endoplasmic reticulum.

Use the following diagram to answer question 48.



48. The function of the organelle shown in the diagram is to

- A. produce ATP.
 - B. detoxify alcohol.
 - C. package molecules.
 - D. synthesize nucleic acids.
-

49. Cells that contain large amounts of smooth endoplasmic reticulum, Golgi bodies and vesicles are found in which of the following?

- A. liver and testes
 - B. testes and alveoli
 - C. stomach and liver
 - D. stomach and alveoli
-

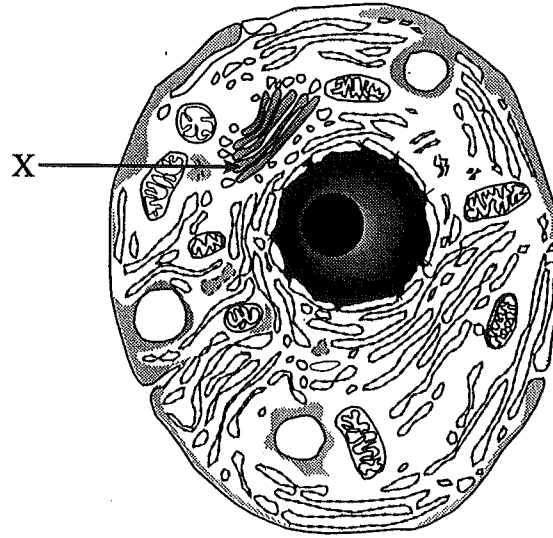
50. At which of the following cell structures would adenine bond with thymine but not uracil?

- A. nucleus
 - B. ribosomes
 - C. Golgi bodies
 - D. endoplasmic reticulum
-

51. Chromosomes are composed of

- A. tRNA and DNA.
- B. tRNA and lipids.
- C. DNA and proteins.
- D. RNA and ribosomes.

Use the following diagram to answer question 52.



52. The structure labelled X is a(n)

- A. vacuole.
 - B. Golgi body.
 - C. mitochondrion.
 - D. endoplasmic reticulum.
-

53. During the metamorphosis from tadpole to frog, which of the following organelles would cause the cells of the tail of a tadpole to be broken down and digested?

- A. ribosomes
- B. lysosomes
- C. Golgi bodies
- D. endoplasmic reticulum

54. Two functions of rough endoplasmic reticulum are to

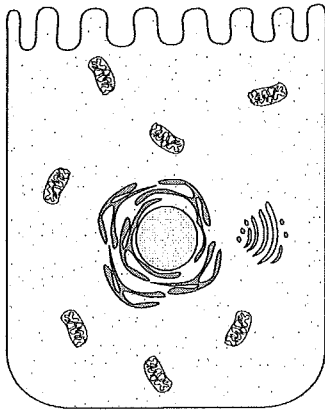
- A. detoxify and transport drugs.
- B. modify and activate hormones.
- C. synthesize and transport enzymes.
- D. join with and hydrolyze food vacuoles.

55. The majority of cell processes are controlled by the

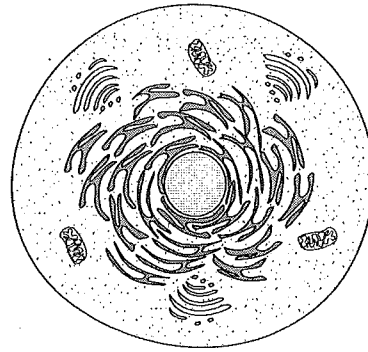
- A. nucleus.
- B. lysosome.
- C. mitochondria.
- D. endoplasmic reticulum.

Use the following diagrams to answer question 56.

Cell A



Cell B



56. Cell A is found lining the proximal convoluted tubule of the nephron. Cell B is found in the liver. Identify **three** visible differences between the two cells and explain how each difference aids the cell in carrying out its specific functions. (6 marks: 2 marks each)

Difference 1: _____

Explanation: _____

Difference 2: _____

Explanation: _____

Difference 3: _____

Explanation: _____

57. State **one** function of each of the following. (4 marks: 1 mark each)

i) Vesicles: _____

ii) Smooth endoplasmic reticulum: _____

iii) Nuclear envelope: _____

iv) Mitochondria: _____