

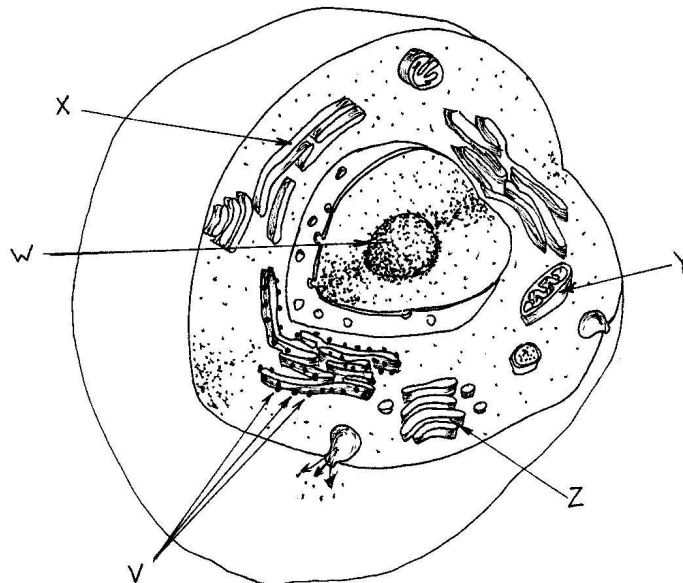
# Cytology

## Part A - Multiple Choice Questions

- Inhibitors that prevent ATP production in cells would **MOST** likely affect the
  - ribosomes.
  - mitochondria.
  - Golgi apparatus.
  - rough endoplasmic reticulum.
- Cells lacking rough endoplasmic reticulum would **NOT** likely be able to produce
  - vesicles.
  - any proteins.
  - steroid hormones.
  - enzymes for secretion.
- Which organelles give off oxygen and use up carbon dioxide?
  - Lysosomes.
  - Chloroplasts.
  - Mitochondria.
  - Endoplasmic reticulum.
- Which of the following **BEST** describes a function of smooth endoplasmic reticulum?
  - Protein storage.
  - Communication.
  - Energy distribution.
  - Intracellular transport.
- Which of the following organelles are rich in RNA?
  - ribosomes.
  - lysosomes.
  - mitochondria.
  - transport vesicles.
- Vesicles which fuse with the cell membrane for exocytosis are **MOST** likely produced by the
  - ribosomes.
  - Golgi apparatus.
  - nuclear membrane.
  - endoplasmic reticulum.
- Which of the following **BEST** describes traffic through a nuclear pore?
  - Enzymes in; nucleic acids in.
  - Enzymes out; nucleic acids in.
  - Enzymes in; nucleic acids out.
  - Enzymes out; nucleic acids out.
- Where in a cell are steroids produced?
  - Nucleus.
  - Cytoplasm.
  - Rough endoplasmic reticulum.
  - Smooth endoplasmic reticulum.
- Which of the following **MOST** correctly identifies the sequence of organelles involved in the production and secretion of a protein?
  - Ribosome, Golgi apparatus, vesicle, rough ER, cell membrane.
  - Ribosome, rough ER, Golgi apparatus, vesicle, cell membrane.
  - Rough ER, ribosome, vesicle, Golgi apparatus, cell membrane.
  - Cell membrane, vesicle, ribosome, rough ER, Golgi apparatus.

10. Which of the following **BEST** describes the function of Golgi apparatus?
- Phagocytosis.
  - Protein synthesis.
  - Intracellular digestion.
  - Modifying cellular products for secretion.
11. Which of the following is **LEAST** likely a role of RER?
- Producing vesicles.
  - Intracellular transport.
  - Detoxification of cytoplasm.
  - Synthesis of membrane phospholipids.
12. Lysosomes are produced by the
- nucleus.
  - cell membrane.
  - Golgi apparatus.
  - endoplasmic reticulum.
13. The interconnected nature of RER and SER may facilitate
- greater distribution of ribosomes throughout the cytoplasm.
  - steroid producing enzymes to move from the RER to the SER.
  - vesicle movement from the endoplasmic reticulum to the Golgi apparatus.
  - the movement of phospholipids from SER to vesicle-producing sections of RER.

Use the following diagram to answer the next two questions.



14. Which of the following is synthesized by structure **V**?
- ATP.
  - proteins.
  - vesicles.
  - ribosomes.
15. Which of the organelles in the diagram synthesizes the subunits of ribosomes?
- W
  - X
  - Y
  - Z

16. When secretory products are being transported to the cell membrane for export, they
- move through the ER.
  - are enclosed in a vesicle.
  - are transported by carrier molecules.
  - diffuse freely through the cytoplasm.
17. Which of the following is **FALSE**?
- The contents of a lysosome could destroy a cell.
  - The Golgi apparatus is a packaging area for cell products.
  - RER is associated with the production and distribution of proteins.
  - When RER loses its ribosomes, it begins to manufacture steroid hormones.
18. Cells that engulf and digest foreign bacterial cells could be expected to have lots of
- nuclei.
  - nucleoli.
  - ribosomes.
  - lysosomes.
19. Which of the following structures are **NOT** membranous organelles?
- Vesicles.
  - Ribosomes.
  - Lysosomes.
  - Mitochondria.
20. Which of the following structures contains genetic information?
- Polysomes.
  - Ribosomes.
  - Lysosomes.
  - Chromosomes.
21. What type of biochemical are flagella and cilia composed of?
- Lipids.
  - Proteins.
  - Nucleic acid.
  - Carbohydrates.
22. Cells with lots of vesicles could logically be expected to contain
- Golgi apparatus.
  - Rough endoplasmic reticulum.
  - Smooth endoplasmic reticulum.
  - All of these answers could be correct.
23. Which sequence of cell parts given below is most closely associated with protein secretion?
- |  |
|--|
| <ol style="list-style-type: none"> <li>1. vesicle</li> <li>2. cell membrane</li> <li>3. Golgi apparatus</li> <li>4. RER</li> </ol> |
|--|
- 4, 1, 2, 1, 3
  - 2, 1, 3, 1, 4
  - 4, 1, 3, 1, 2
  - 4, 3, 1, 2, 1
24. Chose the **FALSE** statement from among the following.
- Photosynthesis takes place in chloroplasts.
  - Ribosomes are the centers of protein synthesis.
  - Mitochondria are the sites of cellular respiration.
  - The nuclear envelope is a non-porous barrier between the nucleoplasm and cytoplasm.

25. Which sequence of these cell parts is correctly associated with intracellular digestion?

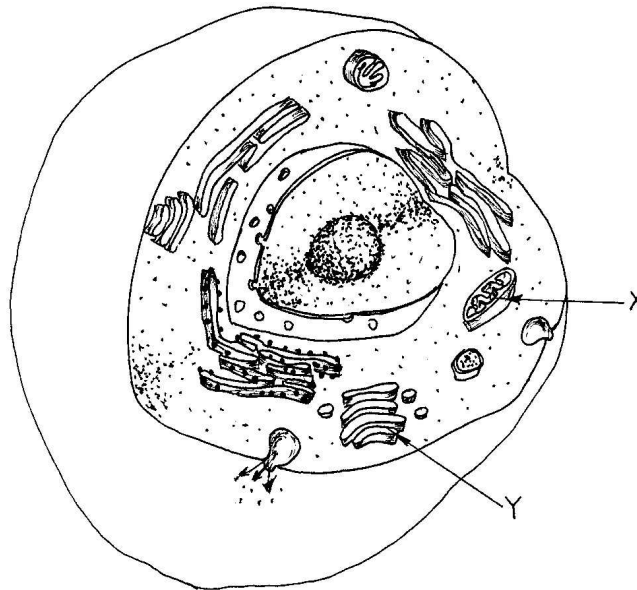
- |                  |
|------------------|
| 1. food vacuole  |
| 2. cell membrane |
| 3. lysosome      |

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

26. The regulation of the movement of materials into and out of a cell is the function of the

- A. vesicles.
- B. cell wall.
- C. cell membrane.
- D. Golgi apparatus.

**Use the following diagram to answer the next two questions.**



27. A function of the organelle labeled **X** is to

- A. make ATP.
- B. synthesize proteins.
- C. manufacture glucose.
- D. prepare secretory vesicles.

28. A function of the structure labeled **Y** is

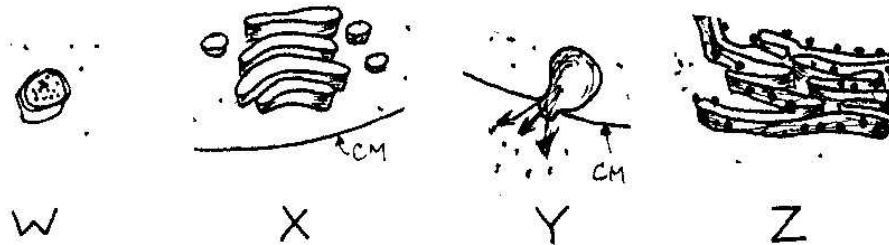
- A. enzyme storage.
- B. lysosome production.
- C. detoxify the cytoplasm.
- D. steroid manufacture and packaging.

29. The presence of an inner membrane that is folded to form cristae is characteristic of

- A. lysosomes.
- B. chloroplasts.
- C. mitochondria.
- D. Golgi apparatus.

30. Where are the chemical substances contained within lysosomes actually produced?
- Outside the cell.
  - Golgi apparatus.
  - Rough endoplasmic reticulum.
  - Ribosomes embedded in RER.
31. A function of the Golgi apparatus is
- synthesizing RNA.
  - manufacturing ATP.
  - preparing cell secretions.
  - controlling genetic variation.
32. Cells that produce large numbers of steroid hormones are expected to have
- fatty deposits.
  - extra-large vacuoles.
  - a great many ribosomes.
  - smooth endoplasmic reticulum.

The next question refers to the following set of diagrams.

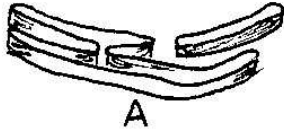


33. Which of the following is the correct sequence of the events and organelles involved in the production and secretion of a protein? (Note: CM = cell membrane.)
- Z, Y, W, X
  - Y, X, Z, W
  - W, Z, X, Y
  - Z, W, X, Y
34. Which of the following is true for SER, but **NOT** for RER?
- Produce vesicles.
  - Intracellular transport.
  - Detoxify substances for the cell.
  - Associated with the synthesis of hormones.
35. Which of the following organelles most likely has the function of enzyme storage?
- Lysosome.
  - Chloroplast.
  - Mitochondria.
  - Golgi apparatus.

## Part B – Written Answers

- Using “paragraph format”, describe how a cell would produce and secrete a steroid hormone. Name and describe the functions of at least four cell structures that are involved.
- State **ONE** way that the following pairs of cell structures are functionally related.
  - ribosomes and lysosomes.
  - vesicles and Golgi apparatus.
  - cell membrane and vesicle.
  - ribosomes and endoplasmic reticulum.

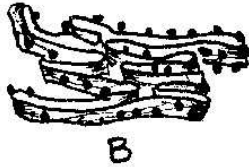
3. Describe the process of **intracellular digestion**. Name the organelles involved in this process and state the purpose of it.
4. Contrast each of the following in **ONE** way. *State the basis of contrast each time.*
  - a. chloroplast vs. mitochondrion
  - b. endocytosis vs. exocytosis
  - c. SER vs. RER
  - d. vesicle vs. lysosome
5. Study each of the following electron micrographs.
  - a. Name the organelle in each picture.
  - b. Describe **ONE** function of each organelle.



A



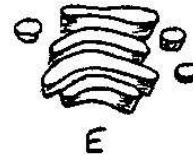
C



B



D



E