Teacher: Ms. Gisser

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Name: _____

HW: CHAP 7 (The Cell) TEST PRACTICE
(DIRECTIONS:
Complete a set of at least 12 questions (or min. 10 if inc. written questions)

1.

Base your answer to the question on the diagram below and on your knowledge of biology. The diagram represents a model cell setup. The locations of three different substances are indicated in the diagram.

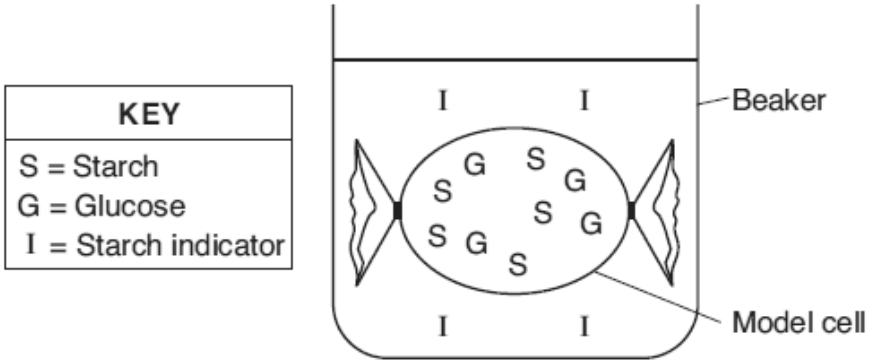


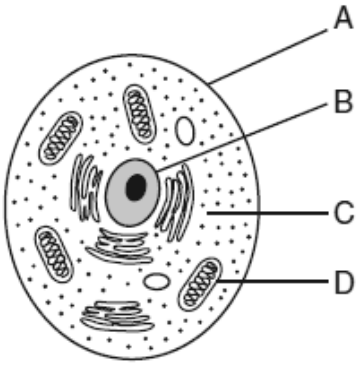
Figure 1

Which row in the chart below best explains the movement of some molecules between the model cell and the solution in the beaker?

Row	Direction of Flow of Molecules	Energy Use
1.	from high to low concentration	without using cellular energy
2.	from high to low concentration	using cellular energy
3.	from low to high concentraion	without using cellular energy
4.	from low to high concentration	using cellular energy

2.

The letters in the diagram below indicate some parts of a cell.

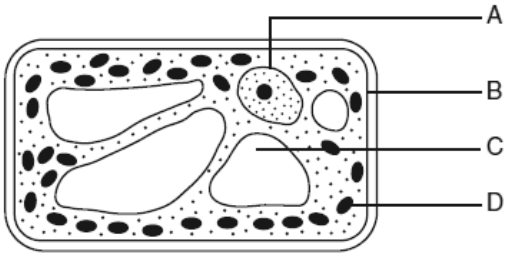


The function of which cell part is most similar to that of the human excretory system?

1. *A* 3. *C*
2. *B* 4. *D*

3.

The cell represented below produces oxygen.



Which structure allows the passage of this oxygen to the environment?

1. *A* 3. *C*
2. *B* 4. *D*

4.

A pesticide that kills an insect by interfering with the production of proteins in the insect would most directly affect the activity of

1. ribosomes 3. chloroplasts
2. minerals 4. mitochondria

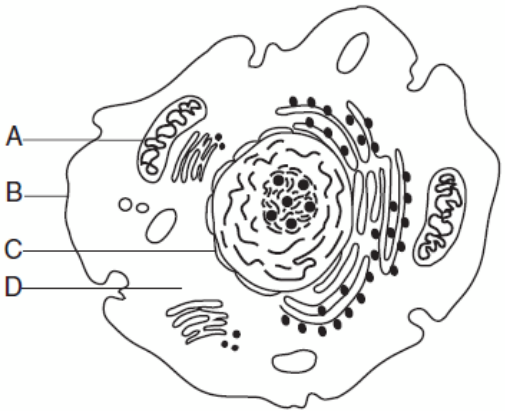
5.

Which substance can enter a cell by diffusion without having to be digested?

1. water 3. starch
2. protein 4. fat

6.

In the diagram below, which letter indicates the part of the cell that carries out a function most similar to a function of the human excretory system?



1. *A* 3. *C*
2. *B* 4. *D*

7.

Which cell structure is correctly paired with its primary function?

1. ribosome–protein synthesis
2. mitochondrion–movement
3. vacuole–cell division
4. nucleus–storage of nutrients

8.

Which sequence represents the levels of biological organization from smallest to largest?

1. organism → cell → tissue → organelle → organ system → organ
2. organ system → organ → organism → cell → tissue → organelle
3. organelle → organ system → cell → organism → tissue → organ
4. organelle → cell → tissue → organ → organ system → organism

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9.

Which row in the chart below contains a cell structure paired with its primary function?

Row	Cell Structure	Function
1.	ribosome	protein synthesis
2.	vacuole	production of genetic information
3.	nucleus	carbohydrate synthesis
4.	mitochondrion	waste disposal

10.

Base your answer to the question on the information below and on your knowledge of biology.

A student prepared four different red blood cell suspensions, as shown in the chart below.

Suspension	Contents
A	red blood cells in normal blood serum (0.7% salt solution)
B	red blood cells in 10% salt solution
C	red blood cells in distilled water
D	red blood cells in tap water

Figure 2

Which process is most likely involved in the change in red blood cell volume?

1. active transport
2. evaporation
3. replication
4. diffusion

11.

[Refer to figure 2]

The change in red blood cell volume is principally due to the movement of

1. serum
2. oxygen
3. water
4. salt

12.

[Refer to figure 2]

Which suspension would contain red blood cells that would appear wrinkled and reduced in volume?

1. *A*
2. *B*
3. *C*
4. *D*

13.

The swordfish contains a heat generating organ that warms its brain and eyes up to 14°C above the surrounding ocean water temperature. Which structures are most likely to be found at relatively high concentrations within the cells of this heat generating organ?

1. nuclei
2. chloroplasts
3. chromosomes
4. mitochondria

14.

Which set of functions is directly controlled by the cell membrane?

1. protein synthesis, respiration, digestion of food molecules
2. active transport, recognition of chemical messages, protection
3. enzyme production, elimination of large molecules, duplication of DNA codes
4. release of ATP molecules, regulation of cell reproduction, food production

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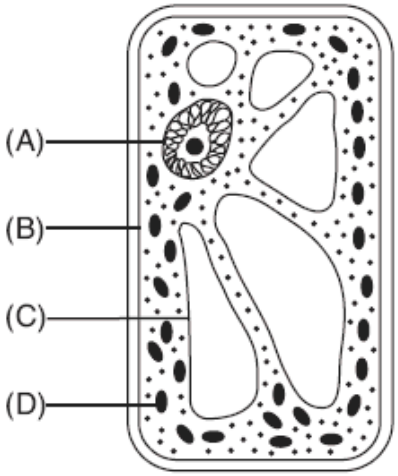
15.

What is the main function of a vacuole in a cell?

1. storage
2. coordination
3. synthesis of molecules
4. release of energy

16.

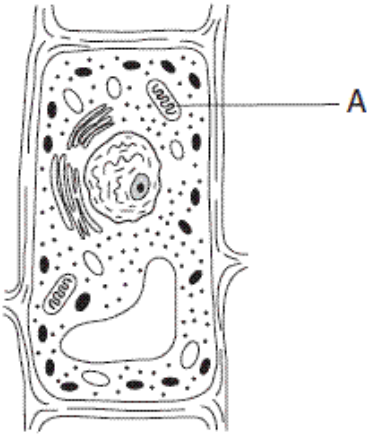
In the cell shown below, which lettered structure is responsible for the excretion of most cellular wastes?



1. *A*
2. *B*
3. *C*
4. *D*

17.

The diagram below represents a plant cell.



Which process takes place in structure *A*?

1. cellular respiration
2. heterotrophic nutrition
3. digestion of fats
4. protein synthesis

18.

If the ribosomes of a cell were destroyed, what effect would this most likely have on the cell?

1. It would stimulate mitotic cell division.
2. The cell would be unable to synthesize proteins.
3. Development of abnormal hereditary features would occur in the cell.
4. Increased protein absorption would occur through the cell membrane.

19.

The ameba represented in the diagram below is a single-celled organism.

Which two processes are most closely associated with structure *A*?

1. insertion and deletion
2. nervous regulation and circulation
3. active transport and diffusion
4. replication and photosynthesis

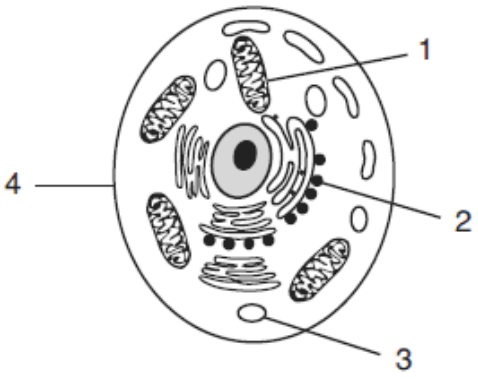
20.

Which structures are listed in order from the least complex to the most complex?

1. plant cell, leaf, chloroplast, rose bush
2. chloroplast, plant cell, leaf, rose bush
3. chloroplast, leaf, plant cell, rose bush
4. rose bush, leaf, plant cell, chloroplast

21.

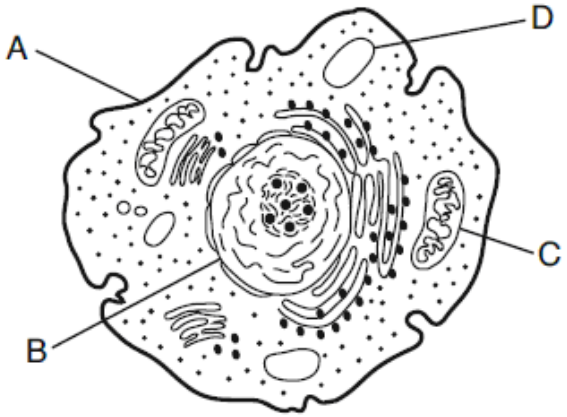
Within which structure shown in the diagram below are energy-rich organic compounds used to produce ATP?



1. 1 3. 3
2. 2 4. 4

22.

The diagram below represents a cell.

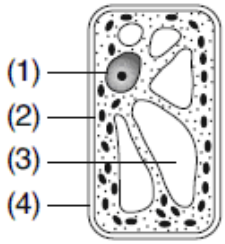


Which statement concerning ATP and activity within the cell is correct?

1. The absorption of ATP occurs at structure *A*.
2. The synthesis of ATP occurs within structure *B*.
3. ATP is produced most efficiently by structure *C*.
4. The template for ATP is found in structure *D*.

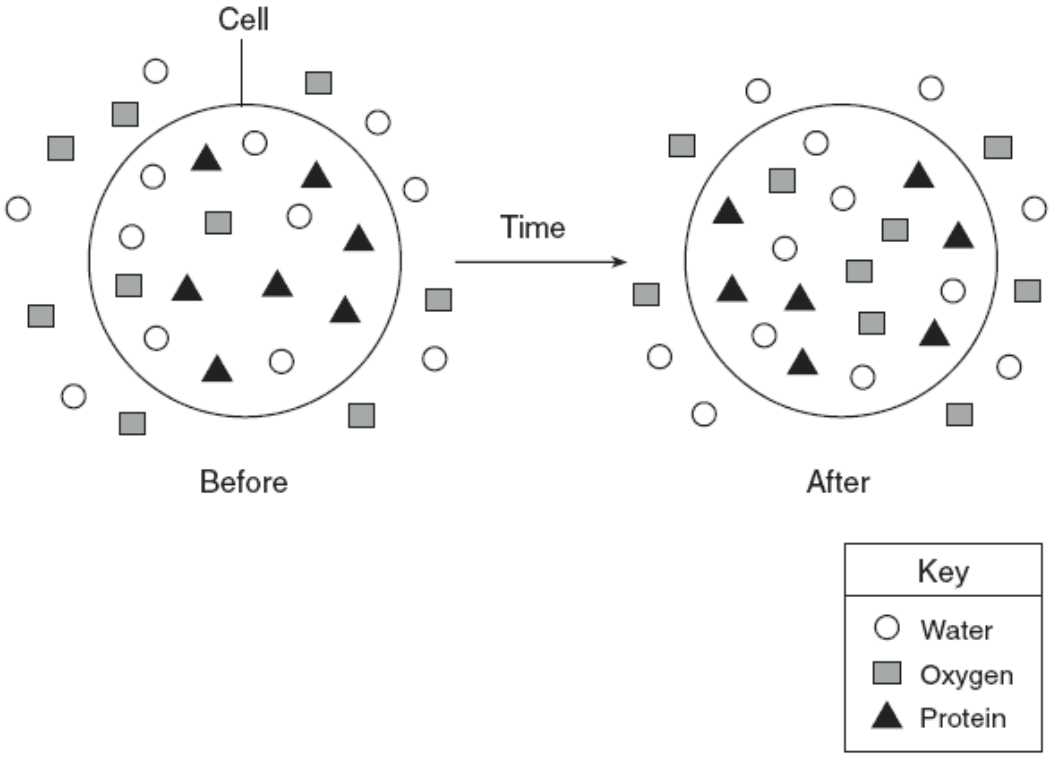
23.

Which cell structure contains information needed for protein synthesis?



24.

The diagram below represents the distribution of some molecules inside and outside of a cell over time.

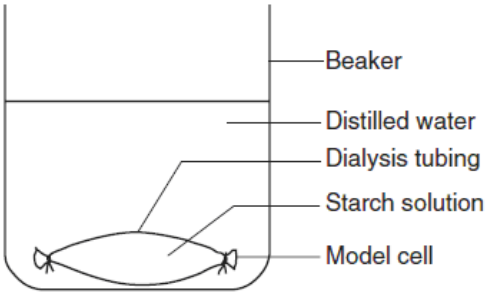


Which factor prevented the protein molecules from moving out of the cell?

1. temperature
2. pH
3. molecule size
4. molecule concentration

25.

A laboratory setup of a model cell is shown in the diagram below.



Which observation would most likely be made 24 hours later?

1. The contents of the model cell have changed color.
2. The diameter of the model cell has increased.
3. The model cell has become smaller.
4. The amount of distilled water in the beaker has increased.

26.

The data table below shows the presence or absence of DNA in four different cell organelles.

Data Table

Organelle	DNA
cell membrane	absent
cell wall	absent
mitochondrion	present
nucleus	present

Information in the table suggests that DNA functions

1. within cytoplasm and outside of the cell membrane
2. both inside and outside of the nucleus
3. only within energy-releasing structures
4. within cell vacuoles

27.

Which sequence shows a *decreasing* level of complexity?

1. organs → organism → cells → tissues
2. organism → cells → organs → tissues
3. cells → tissues → organs → organism
4. organism → organs → tissues → cells

28.

An organelle that releases energy for metabolic activity in a nerve cell is the

1. chloroplast
2. ribosome
3. mitochondrion
4. vacuole

29.

Base your answer to this question on the experimental setup shown below.

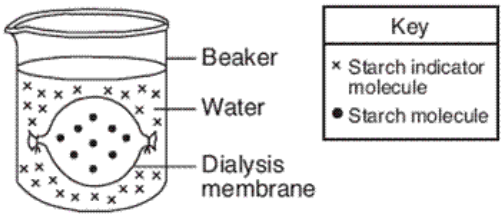
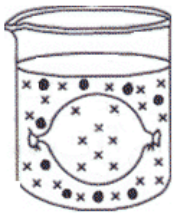


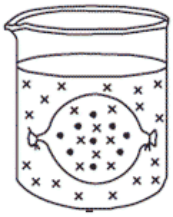
Figure 3

Which beaker correctly shows the expected locations of the molecules after a period of one hour?

1. 

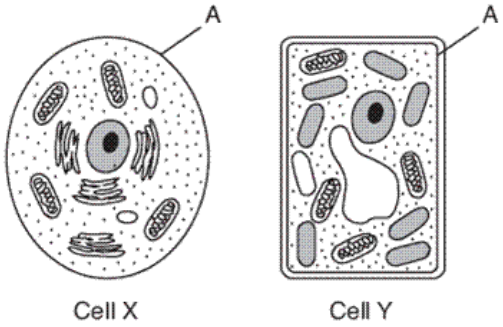
3. 

2. 

4. 

30.

The diagram below represents two cells, *X* and *Y*.



Which statement is correct concerning the structure labeled *A*?

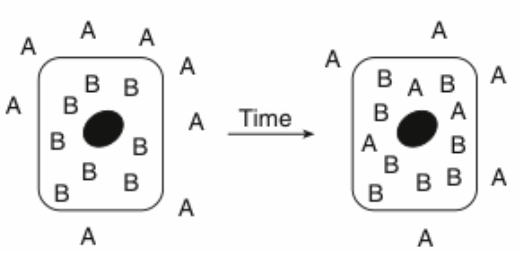
1. It aids in the removal of metabolic wastes in both cell *X* and cell *Y*.
2. It is involved in cell communication in cell *X*, but not in cell *Y*.
3. It prevents the absorption of CO_2 in cell *X* and O_2 in cell *Y*.
4. It represents the cell wall in cell *X* and the cell membrane in cell *Y*.

31.

Some of the pain from a sore throat is caused by swelling of moist throat tissue. A common remedy for a sore throat is to gargle (rinse the throat tissue) with salt water. Explain why gargling with salt water would be expected to relieve the pain of a sore throat.

32.

Two molecules, *A* and *B*, and their distribution inside and outside of a cell are represented in the diagram below.



State *one* possible reason why molecule *A* could diffuse across the membrane of the cell but molecule *B* could not.

33.

Base your answer to this question on the diagram below and on your knowledge of biology.

In a cell, a variety of structures perform specific functions and interact to maintain homeostasis. The diagram below represents a typical cell with three cell structures labeled 1, 2, and 3.

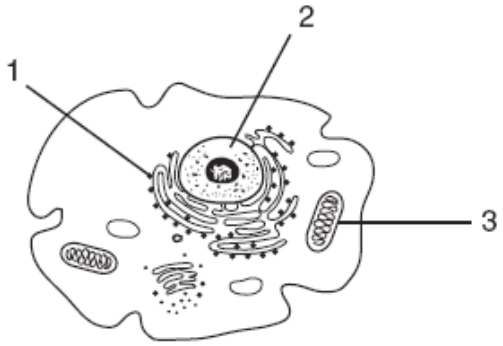


Figure 4

Select *one* cell structure labeled in the diagram and write its number in the space below. Explain how the cell structure you selected helps maintain homeostasis in a cell. In your answer, be sure to:

- identify the cell structure you selected
- state *one* function of this cell structure
- identify *one* substance that is often associated with the cell structure you selected and state how that substance is associated with the cell structure
- identify *one* other cell structure and explain how it interacts with the cell structure you selected to maintain homeostasis in the cell

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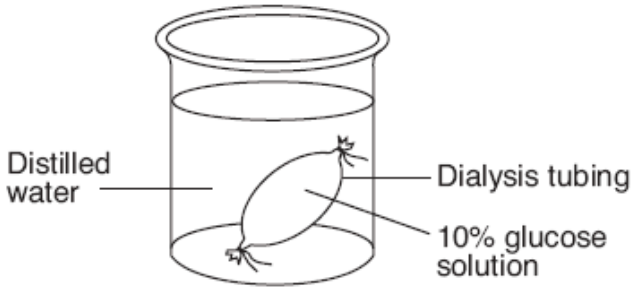
34.

A laboratory setup using an artificial cell made from dialysis tubing is shown in the diagram below.



Identify the process that would most likely be responsible for the movement of glucose from inside the artificial cell to the solution outside of the cell.

35.

Base your answer to this question on the diagram below and on your knowledge of biology. The diagram illustrates what happens when a particular solution is added to a wet-mount slide containing red onion cells being observed using a compound light microscope.

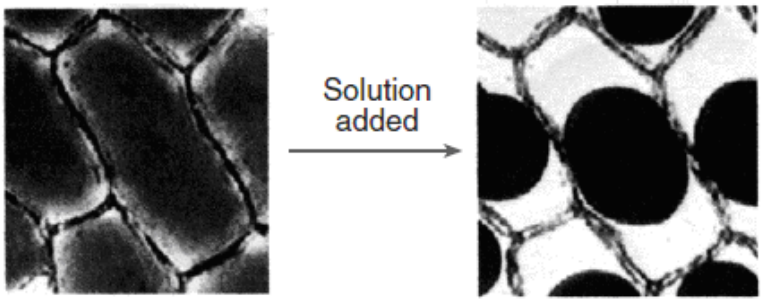


Figure 5

Identify a process that caused the change in the cells.

36.

Base your answer to the question on the information and data table below and on your knowledge of biology.

A student cut three identical slices from a potato. She determined the mass of each slice. She then placed them in labeled beakers and added a different solution to each beaker. After 30 minutes, she removed each potato slice from its solution, removed the excess liquid with a paper towel, and determined the mass of each slice. The change in mass was calculated and the results are shown in the data table below.

Change in Mass of Potato in Different Solutions

Beaker	Solution	Change in Mass
1	distilled water	gained 4.0 grams
2	6% salt solution	lost 0.4 gram
3	16% salt solution	lost 4.7 grams

Figure 6

Explain why the potato slice in beaker 1 increased in mass.

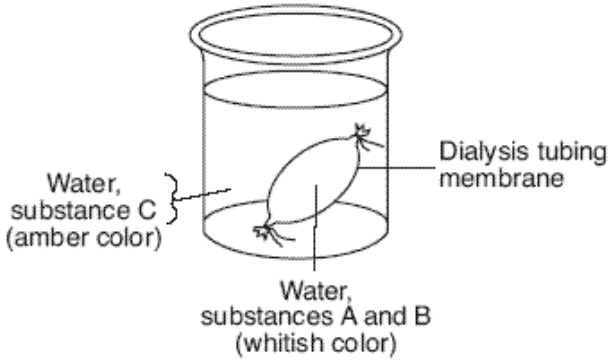
37.

State *one* reason why some molecules can pass through a certain membrane, but other molecules can *not*.

38.

Base your answer to the question on the information and table below and on your knowledge of biology.

A model of a cell is prepared and placed in a beaker of fluid as shown in the diagram below. The letters *A*, *B*, and *C* represent substances in the initial experimental setup.



The table below summarizes the content and appearance of the cell model and beaker after 20 minutes.

Results After 20 Minutes

	Outside of Cell Model	Inside of Cell Model
Substances	water, A, C	water, A, B, C
Color	amber	blue black

Figure 7

Identify substance *B* and explain why it did *not* move out of the model cell.

39.

[Refer to figure 7]

Supply the information needed to complete the table below which summarizes a change in location of substance *C* in the experimental setup.

Name of Substance C	Direction of Movement of Substance C	Reason for the Movement of Substance C

40.

Base your answer to the question on the information below and on your knowledge of biology.

Students prepared four models of cells by using dialysis tubing containing the same blue solution. Each of the model cells originally weighed 10 grams. They then placed each model cell in a beaker containing a different concentration of water. After 24 hours, they recorded the mass of the model cells as shown in the data table below.

Data Table

Concentration of Water Surrounding the Model Cell	Mass of Model Cell
100%	12 grams
90%	11 grams
80%	10 grams
70%	9 grams

Figure 8

What was the concentration of water in the original blue solution? State evidence in support of your answer.

41.

If vegetables become wilted, they can often be made crisp again by soaking them in water. However, they may lose a few nutrients during this process. Using the concept of diffusion and concentration, state why some nutrients would leave the plant cell.

42.

Molecules *A* and *B* are both organic molecules found in many cells. When tested, it is found that molecule *A* cannot pass through a cell membrane, but molecule *B* easily passes through. State one way the two molecules could differ, that would account for the difference in the ability to pass through the cell membrane.

43.

Base your answer to the question on the two different cells shown below. Only cell *A* produces substance *X*. Both cells *A* and *B* use substance *X*.

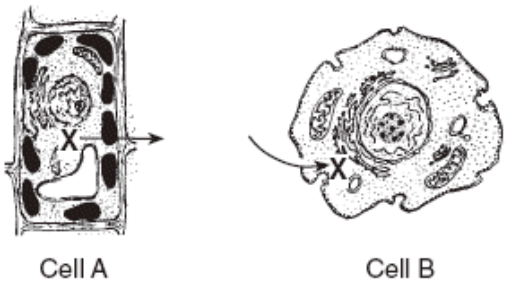


Figure 9

Identify the type of organelle found in both cell *A* and cell *B* that uses substance *X*.

44.

[Refer to figure 9]

Identify the type of organelle in cell *A* that produces substance *X*.

45.

[Refer to figure 9]

Identify substance *X*.

46.

Base your answer to the question on the diagram below, which shows some of the specialized organelles in a single-celled organism, and on your knowledge of biology.

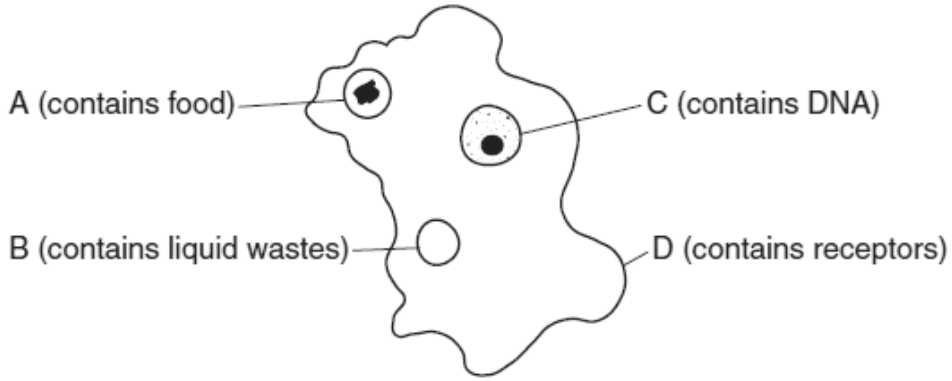


Figure 10

- State the name of the organelle identified by label *D*.
- Explain how the function of organelle *D* assists in the maintenance of homeostasis.
- Identify a system in the human body that performs a function similar to that of organelle *D*.

47.

[Refer to figure 10]

- State the name of the organelle identified by label *C*.
- Explain how the function of organelle *C* assists in the maintenance of homeostasis.
- Identify a system in the human body that performs a function similar to that of organelle *C*.

48.

[Refer to figure 10]

- State the name of the organelle identified by label *B*.
- Explain how the function of organelle *B* assists in the maintenance of homeostasis.
- Identify a system in the human body that performs a function similar to that of organelle *B*.

49.

[Refer to figure 10]

- State the name of the organelle identified by label *A*.
- Explain how the function of organelle *A* assists in the maintenance of homeostasis.
- Identify a system in the human body that performs a function similar to that of organelle *A*.

50.

Base your answer to this question on the information below and on your knowledge of biology.

A wet-mount slide of red onion cells is studied using a compound light microscope. A drawing of one of the cells as seen under high power is shown below.

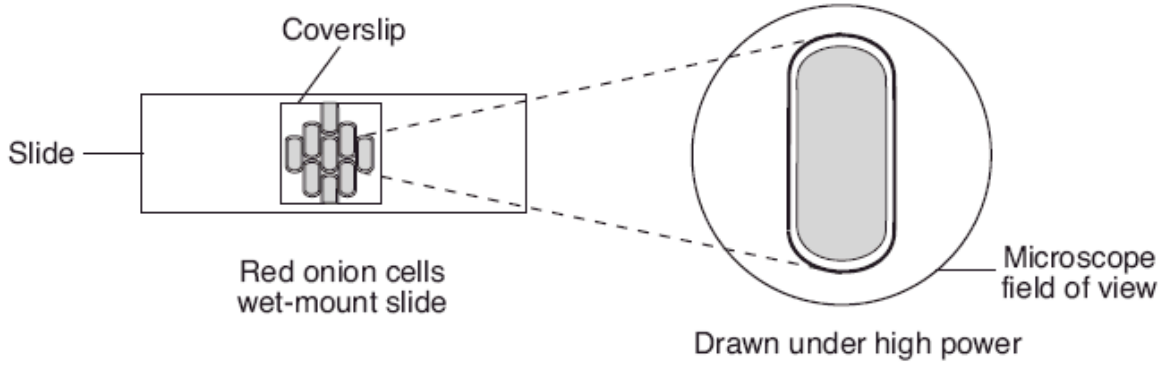
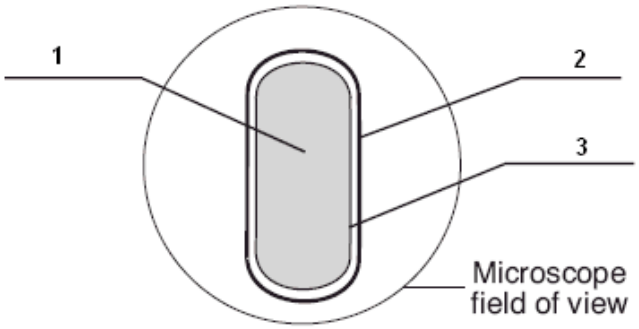


Figure 11

Label the location of each of the cell structures listed.



cell wall: ☐

cytoplasm: ☐

cell membrane: ☐

51.

Base your answer to the question on the diagram below and on your knowledge of biology. The diagram compares cell functions with jobs in a factory.

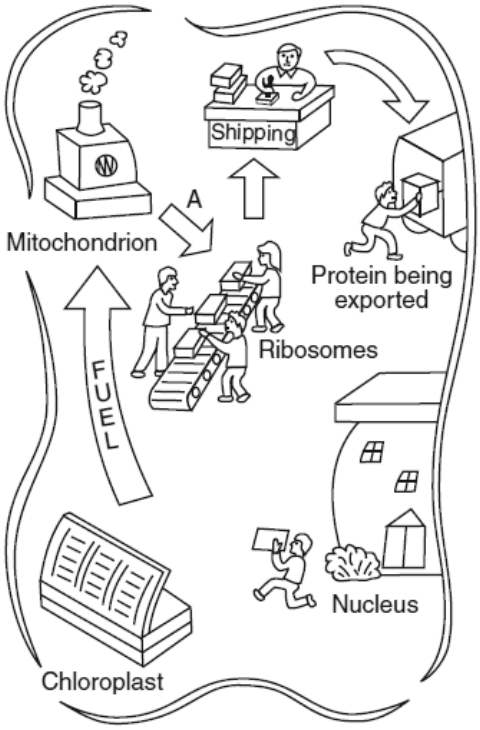


Figure 12

Which cell structure synthesized the "Protein being exported"?
