Unit 3 (Cell Structure and Transport) Practice SOL Questions

Directions: Click and drag the answers to the correct boxes.

Some functions of several structures of a fish are listed in the chart. Complete the chart by placing the structures of a cell next to the function they perform.

Structure and Function Comparison

Function	Single-Cell Structure	Fish Structure
Control of Functions		Brain
Gas Exchange		Gills
Waste Storage		Bladder
Movement		Fins, Tail

Cell Membrane

Flagellum

Nucleus

Vacuole

In 1665 Robert Hooke observed a thin slice of cork under a microscope and presented a drawing similar to the one shown. Hooke called the structures he observed —

F chloroplasts

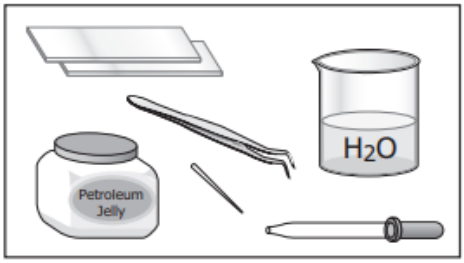
G root hairs

H stomata

J cells

Which set of materials would be *best* to use to prepare a wet mount slide of onion skin cells?

F



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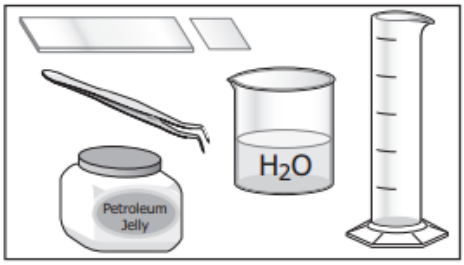

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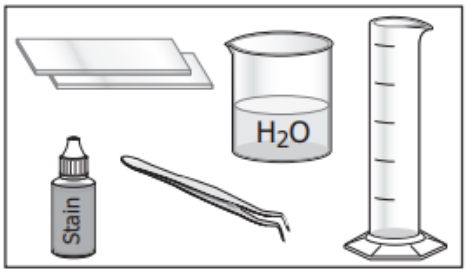

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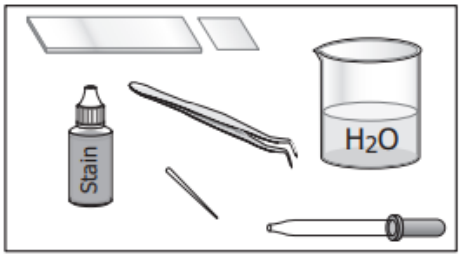
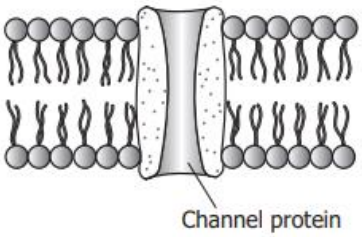


Cell Membrane



The diagram shows a section of a cell membrane that includes a channel protein. The function of this protein is to —

A strengthen the outer boundary of the cell
B connect reproductive cells during fertilization
C allow certain substances to enter or leave the cell
D exchange organelles or chromosomes between specialized cells

Cell Structures and Functions

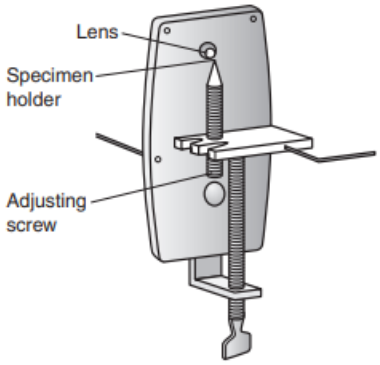
Structure	Function
1	Protein synthesis
2	Support
3	Control of cell functions
4	Storage of water, wastes, and food

Which is the name of structure 4?

A Nucleus
B Ribosome
C Vacuole
D Cell wall

Many marine invertebrates have body surfaces that are permeable to water but not to salt. Osmosis can change the pressure of their body fluids. Fortunately, the ocean is very stable in its salt content. What would happen if a jellyfish were placed in a very low-salt environment such as an estuary?

A It would gain water from the environment.
B It would gain nutrients from the water in the environment.
C It would lose proteins into the water.
D It would lose salt into the water.



Using this tool, Anton van Leeuwenhoek was the *first* scientist to —

A use a telescope
B see microscopic organisms
C magnify plants
D observe light waves

Under a microscope, a series of cells are observed that lack membrane-bound internal organelles. Which of these is the *most* likely cell type?

A Plant cell
B Animal cell
C Eukaryotic cell
D Prokaryotic cell

Which of these supports the cell theory as it is stated today?

F New cells are produced by division of existing cells.
G All organisms are composed of more than one cell.
H Cells must contain a nucleus.
J Not all cells are alive.

Cells of a fungus and an animal were being studied. Which of these would be found in both of these cells?

A Cell wall
B Chloroplasts
C Mitochondria
D Cilia

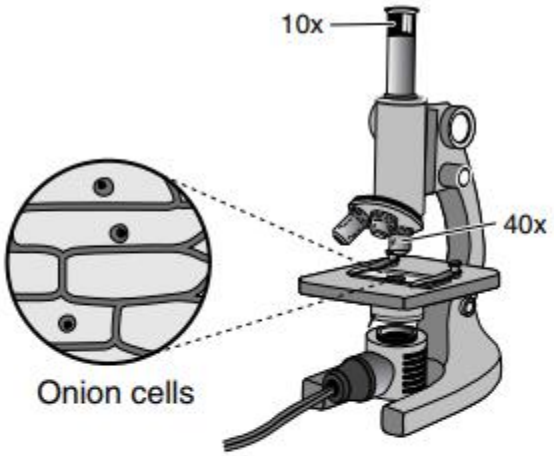
Some peeled pieces of apple were placed in distilled water and some in very salty water. The cells in the apple pieces will —

F lose water in both solutions

G gain water in both solutions

H lose water in the distilled water and gain water in the salty water

J gain water in the distilled water and lose water in the salty water



What is the total magnification used to view these onion cells through this microscope setup?

A 10×

B 40×

C 50×

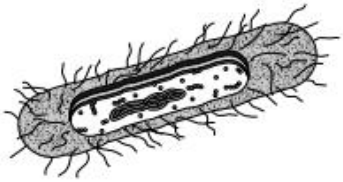
D 400×

What repackages proteins into forms the cell can use, expel, or keep stored?

F Lysosomes
G Mitochondria
H Golgi bodies
J Centrioles

Which of these is the best model of a prokaryotic cell?

F



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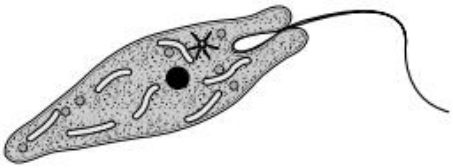

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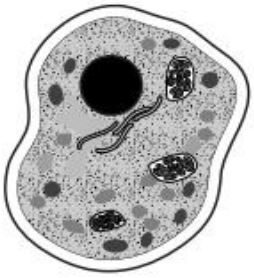

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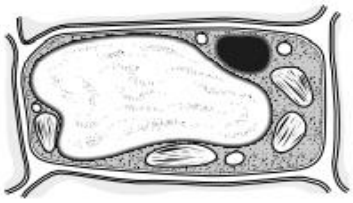


A bacterium will construct different proteins to metabolize the sugars lactose or glucose, depending on which one it detects in the outside environment. What part of the bacterium allows it to recognize different substances in the outside environment?

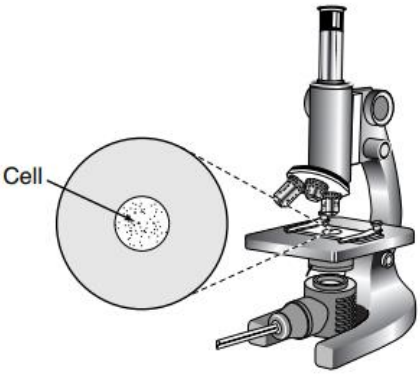
A Endoplasmic reticulum
B Cell membrane
C Nucleus
D Lysosomes

Which of the following came first in the scientific study of living things?

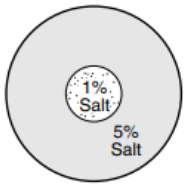
A Light microscope
B Cell theory
C Electron microscope
D Model of DNA

Which of the following organelles is present in both prokaryotes and eukaryotes?

A Nucleus
B Ribosome
C Golgi body
D Endoplasmic reticulum



A student was studying the responses of cells to solutions of varying salt concentrations. Which solution below would cause no change in cell size?



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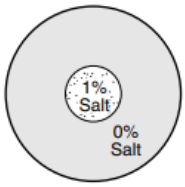

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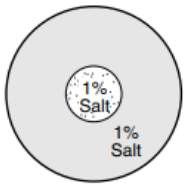

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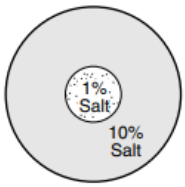

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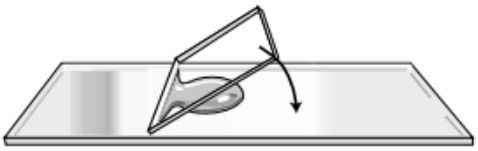


The picture shows a coverslip correctly being lowered onto a slide. This method is used because it —

F reduces the possibility of air bubbles on the slide

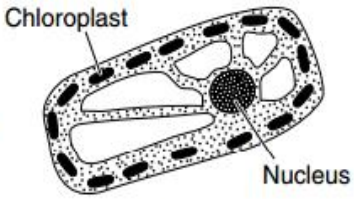
G prevents the escape of microorganisms found in the water

H allows microorganisms to move freely in the water

J prevents the coverslip from moving

Which of these is capable of moving quickly in response to its environment?

F



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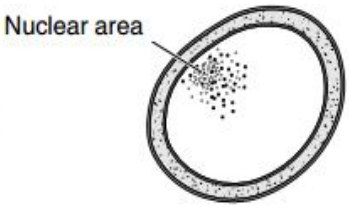

Coccus bacterium

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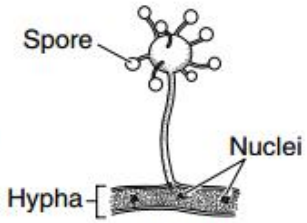

Mildew

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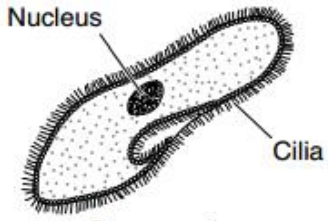

Paramecium