

IB Diploma  
**BIOLOGY**  
HL P1  
2017 — 2023

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1 - (BIOLO/11\_HL\_Summer\_2017\_Q1) - *Cell Biology*

Which structure found in eukaryotes has a single membrane?

- A. Nucleus
- B. Lysosome
- C. Chloroplast
- D. Mitochondrion

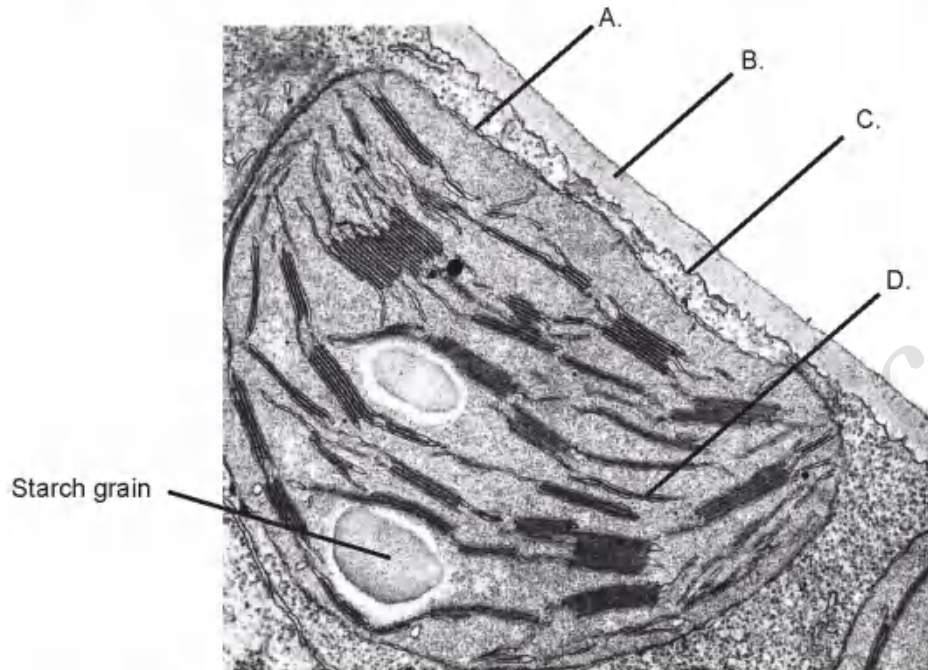
2 - (BIOLO/11\_HL\_Summer\_2017\_Q2) - *Cell Biology*

Which evidence falsifies the Davson–Danielli model?

- I. The presence of globular proteins within the phospholipid bilayer
  - II. Non-polar amino acids cause proteins to remain embedded in membranes
  - III. Membrane proteins remain in a fixed position inside a membrane
- A. I only
  - B. I and II only
  - C. II and III only
  - D. I, II and III

3 - (BIOLO/11\_HL\_Summer\_2017\_Q3) - Cell Biology

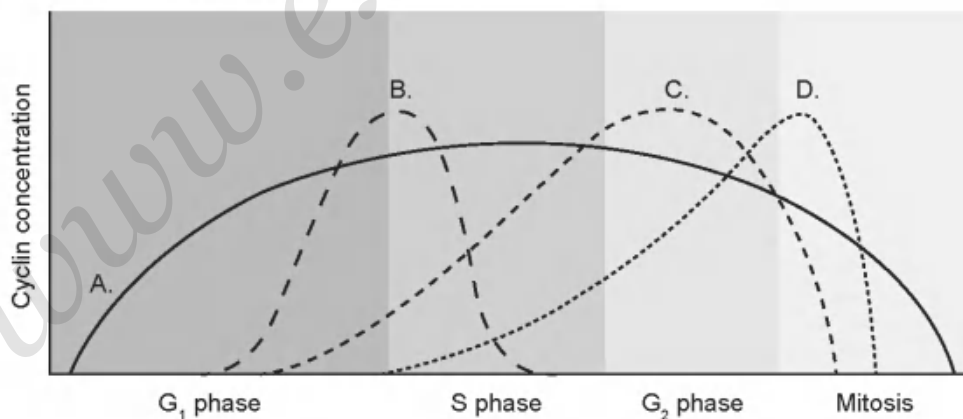
The following electron micrograph shows part of a palisade mesophyll cell. Which of the labelled structures controls the exchange of substances to and from the cell?



[Source: adapted from Eldon Newcomb, <http://botit.botany.wisc.edu/about.html>]

4 - (BIOLO/11\_HL\_Summer\_2017\_Q4) - Cell Biology

The diagram shows the concentration of four cyclins during the cell cycle. Which curve represents the cyclin that promotes the assembly of the mitotic spindle?



[Source: [http://upload.wikimedia.org/wikipedia/commons/thumb/c/ce/Cyclin\\_Expression.svg/400px-Cyclin\\_Expression.svg.png](http://upload.wikimedia.org/wikipedia/commons/thumb/c/ce/Cyclin_Expression.svg/400px-Cyclin_Expression.svg.png)]

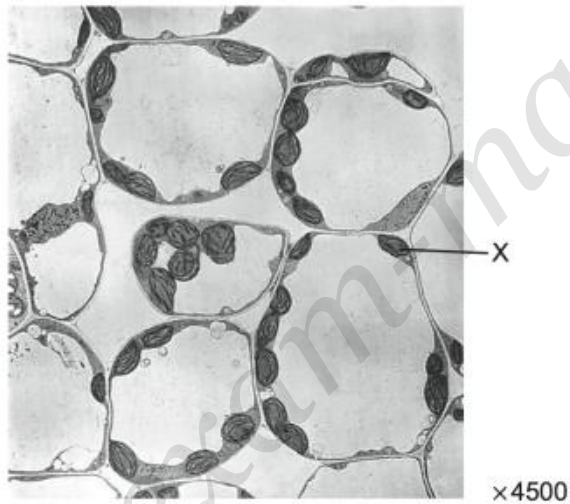
5 - (BIOLO/12\_HL\_Summer\_2017\_Q1) - Cell Biology

The giant alga *Acetabularia* has a feature that suggests it is an exception to the cell theory. What feature is this?

- A. It lacks a nucleus.
- B. It lacks a cell wall.
- C. It has only one mitochondrion.
- D. It lacks subdivision into separate cells.

6 - (BIOLO/12\_HL\_Summer\_2017\_Q2) - Cell Biology

The image shows an electron micrograph of mesophyll cells.



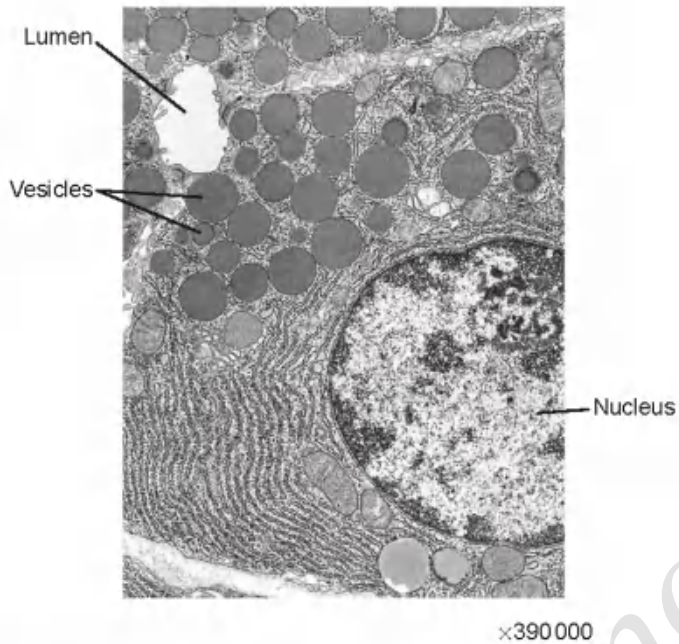
[Source: BIOPHOTO ASSOCIATES/SCIENCE PHOTO LIBRARY]

What is the name of the structure labelled X?

- A. Cytoplasm
- B. Mitochondrion
- C. Nucleus
- D. Chloroplast

7 - (BIOLO/12\_HL\_Summer\_2017\_Q3) - Cell Biology

The image shows an electron micrograph of pancreatic exocrine cells.



[Source: Meschner AL, *Junqueira's Basic Histology: Text and Atlas*, 12th edition. Copyright McGrawHill Education.]

What is the role of the vesicles shown in the micrograph?

- A. To transport hormones between the rough endoplasmic reticulum and the Golgi apparatus
- B. To store glycogen when blood glucose levels are high
- C. To move enzymes out of the cell by exocytosis
- D. To digest cellulose

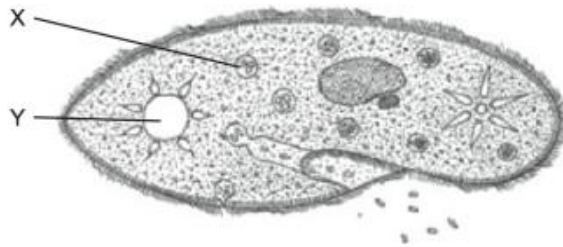
8 - (BIOLO/12\_HL\_Summer\_2017\_Q4) - Cell Biology

What is evidence for the endosymbiotic theory?

- A. RNA can catalyse metabolic reactions.
- B. Meteorites contain organic molecules.
- C. Amino acids can be synthesized from inorganic compounds.
- D. Mitochondria possess their own DNA.

9 - (BIOLO/10\_HL\_Winter\_2017\_Q1) - Cell Biology

The image of a *Paramecium* refers to question 1 and question 2.



[Source: Adapted from www.biology-resources.com. Copyright 2004–2017 D G Mackean & Ian Mackean. All rights reserved.]

Which function is accomplished by structures X and Y in the *Paramecium*?

	X	Y
A.	digestion	homeostasis
B.	feeding	metabolism
C.	food storage	movement
D.	DNA replication	respiration

10 - (BIOLO/10\_HL\_Winter\_2017\_Q2) - Cell Biology

The salt concentration inside the *Paramecium* is 1.8%. The salt concentration in the surrounding medium suddenly drops to 0.2%. What will be the likely response?

- A. The cell will lose salt to the medium.
- B. The contractile vacuole will expel more water.
- C. The cell will swell and eventually burst.
- D. The membrane will become more permeable to salt.

# ANSWERS

[www.examinations.com](http://www.examinations.com)

1 - (BIOLO/11\_HL\_Summer\_2017\_Q1) - *Cell Biology*

B

2 - (BIOLO/11\_HL\_Summer\_2017\_Q2) - *Cell Biology*

B

3 - (BIOLO/11\_HL\_Summer\_2017\_Q3) - *Cell Biology*

C

4 - (BIOLO/11\_HL\_Summer\_2017\_Q4) - *Cell Biology*

D

5 - (BIOLO/12\_HL\_Summer\_2017\_Q1) - *Cell Biology*

D

6 - (BIOLO/12\_HL\_Summer\_2017\_Q2) - *Cell Biology*

D

7 - (BIOLO/12\_HL\_Summer\_2017\_Q3) - *Cell Biology*

C

8 - (BIOLO/12\_HL\_Summer\_2017\_Q4) - *Cell Biology*

D

9 - (BIOLO/10\_HL\_Winter\_2017\_Q1) - *Cell Biology*

A

10 - (BIOLO/10\_HL\_Winter\_2017\_Q2) - *Cell Biology*

B