

IB Diploma

BIOLOGY

HL P1
2017 — 2024

Chapter 1	Cell Biology	Page 1
Chapter 2	Molecular Biology	Page 50
Chapter 3	Genetics	Page 106
Chapter 4	Ecology	Page 155
Chapter 5	Evolution & Biodiversity	Page 190
Chapter 6	Human Physiology	Page 224
Chapter 7	Nucleic Acids (AHL)	Page 291
Chapter 8	Metabolism, Cell, Respiration & Photosynthesis (AHL)	Page 318
Chapter 9	Plant Biology (AHL)	Page 357
Chapter 10	Genetics & Evolution (AHL)	Page 386
Chapter 11	Animal Physiology (AHL)	Page 408
Chapter 12	Data Analysis	Page 443
Chapter 13	Database	-----
	Answers	Page 444

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

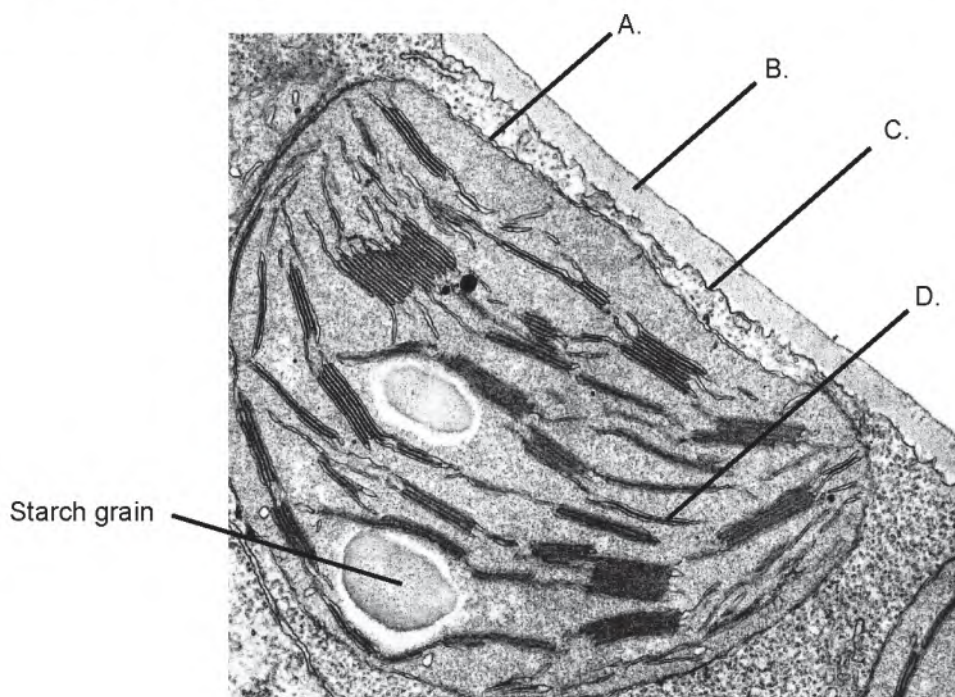
2 - (BIOLO/11_HL_Summer_2017_Q2) - *Cell Biology*

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

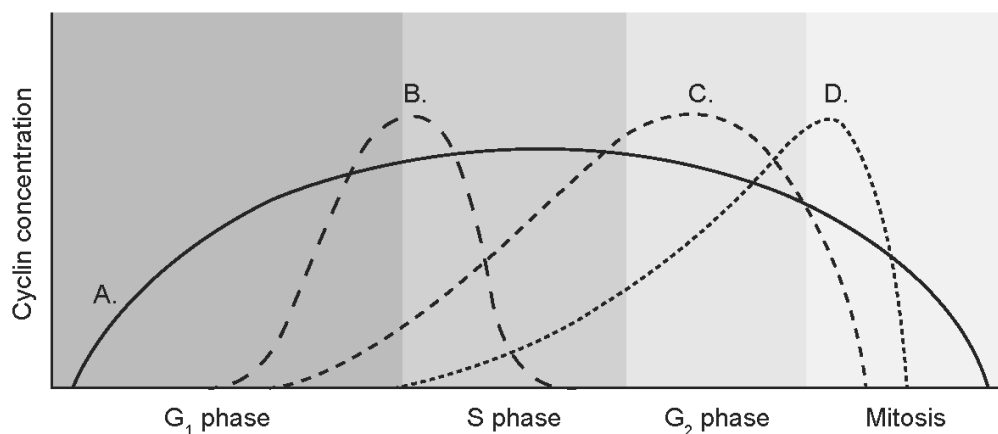
The following electron micrograph shows part of a palisade mesophyll cell. Which of the labelled structures controls the exchange of substances to and from the cell?



[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]

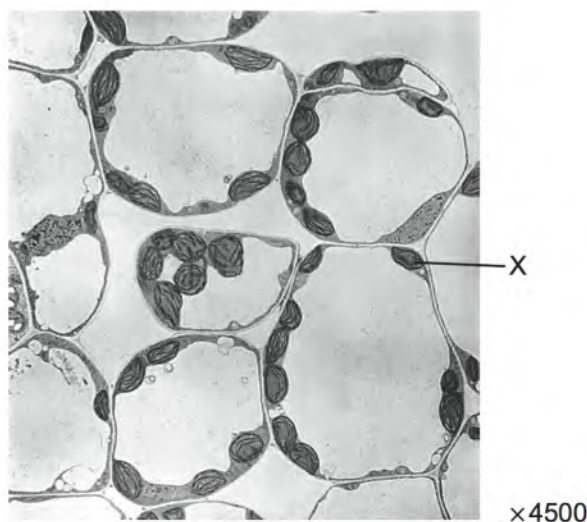
5 - (BIOLO/12_HL_Summer_2017_Q1) - Cell Biology

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.



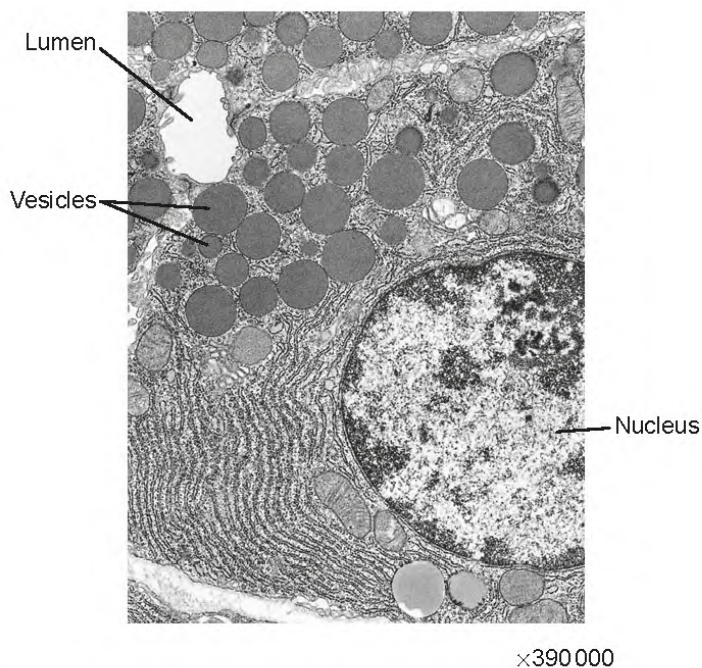
[Source: BIOPHOTO ASSOCIATES/SCIENCE PHOTO LIBRARY]

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

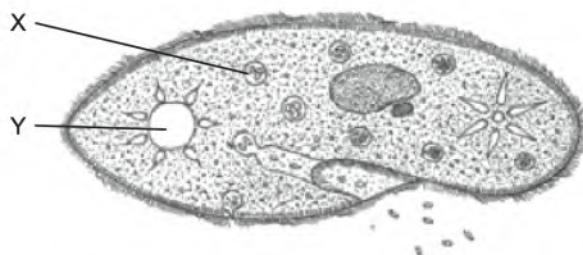
8 - (BIOLO/12_HL_Summer_2017_Q4) - Cell Biology

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

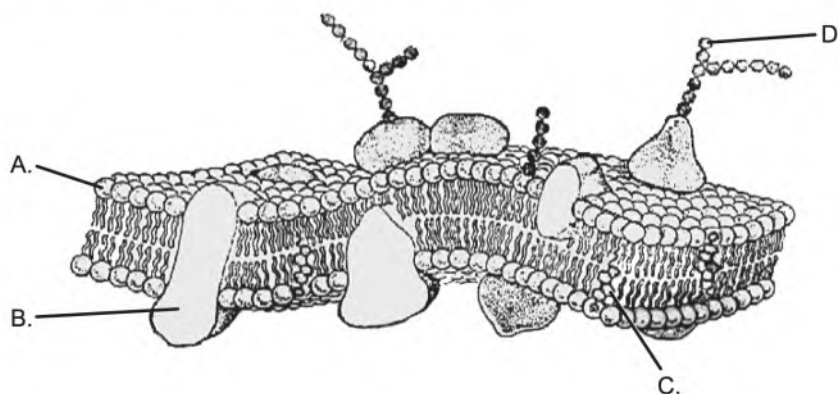
10 - (BIOLO/10_HL_Winter_2017_Q2) - Cell Biology

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.

11 - (BIOLO/10_HL_Winter_2017_Q3) - Cell Biology

The diagram of a membrane refers to question 3 and question 4.



[Source: © International Baccalaureate Organization 2017]

In the diagram, which structure is an intrinsic or integral protein?

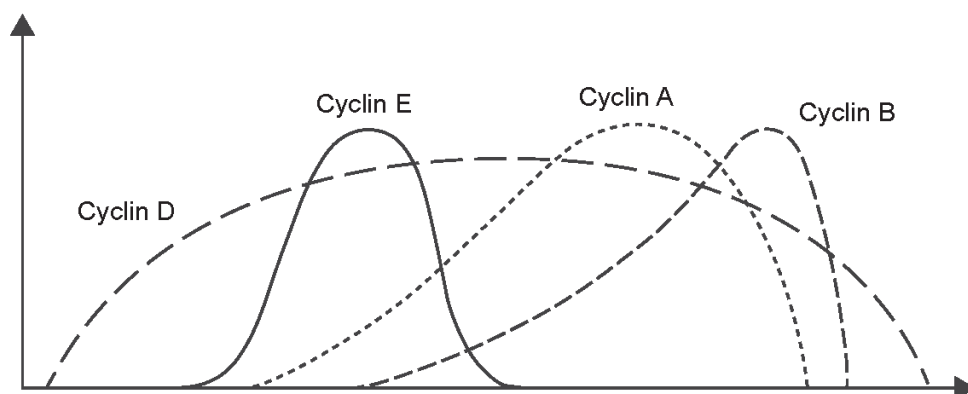
12 - (BIOLO/11_HL_Summer_2018_Q3) - Cell Biology

Which organelle provides evidence that eukaryotic cells originated when large prokaryotes engulfed small free-living prokaryotes?

- A. Chloroplast
- B. Nucleoid
- C. 80S ribosome
- D. Vacuole

13 - (BIOLO/11_HL_Summer_2018_Q4) - *Cell Biology*

The concentrations of cyclins rise and fall in cells at certain times.



[Source: https://en.wikipedia.org/wiki/Cyclin#/media/File:Cyclin_Expression.svg]

What times are these?

- A. Day and night
- B. Seasons of the year
- C. Stages of mitosis and interphase
- D. Developmental stages in the life cycle

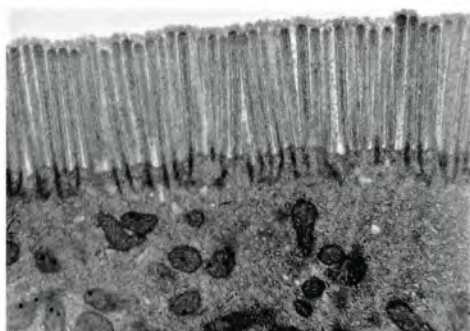
14 - (BIOLO/12_HL_Summer_2018_Q1) - *Cell Biology*

When compared to other body cells, which characteristic of stem cells is the most important for therapeutic uses?

- A. Less differentiation
- B. Less excretion
- C. Lower rate of reproduction
- D. Lower rate of metabolism

15 - (BIOLO/12_HL_Summer_2018_Q2) - *Cell Biology*

The micrograph shows part of a cell.



[Source: Louisa Howard/Katherine Connolly <https://commons.wikimedia.org/wiki/File:Microvilli.jpg>]

Which principal function is this cell likely to have, as judged by its cell structure and organelles?

- A. High rate of protein processing
- B. High rate of absorption
- C. High rate of photosynthesis
- D. High rate of movement

16 - (BIOLO/12_HL_Summer_2018_Q3) - *Cell Biology*

Which molecule regulates the fluidity of cell membranes?

- A. Phospholipid
- B. Cholesterol
- C. Glycoprotein
- D. Peripheral protein

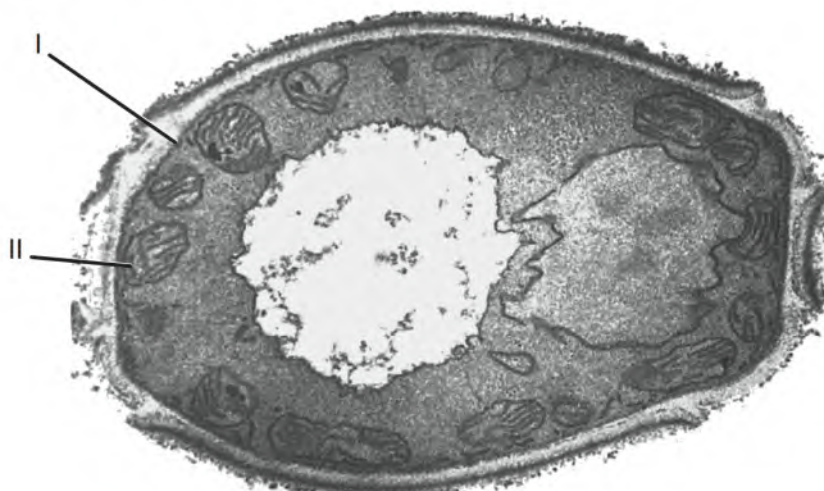
17 - (BIOLO/12_HL_Summer_2018_Q4) - *Cell Biology*

Which type of transportation happens in the sodium–potassium pump?

- A. Facilitated diffusion
- B. Osmosis
- C. Simple diffusion
- D. Active transport

18 - (BIOLO/10_HL_Winter_2018_Q1) - Cell Biology

The image shows an electron micrograph of a fungus, *Candida albicans*.



[Source: adapted from Centers for Disease Control and Prevention]

Which terms identify the structures labelled I and II in the image?

	I	II
A.	cell membrane	vesicle
B.	cell wall	chloroplast
C.	plasma membrane	mitochondrion
D.	cell wall	mitochondrion

19 - (BIOLO/10_HL_Winter_2018_Q2) - Cell Biology

Which method provides biochemical evidence that cells have begun to differentiate?

- A. Observation with a light microscope
- B. Observation with an electron microscope
- C. Examination of the DNA sequence
- D. Analysis of the proteins

ANSWERS

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

11 - (BIOLO/10_HL_Winter_2017_Q3) - *Cell Biology*

B

12 - (BIOLO/11_HL_Summer_2018_Q3) - *Cell Biology*

A

13 - (BIOLO/11_HL_Summer_2018_Q4) - *Cell Biology*

C

14 - (BIOLO/12_HL_Summer_2018_Q1) - *Cell Biology*

A

15 - (BIOLO/12_HL_Summer_2018_Q2) - *Cell Biology*

B

16 - (BIOLO/12_HL_Summer_2018_Q3) - *Cell Biology*

B

17 - (BIOLO/12_HL_Summer_2018_Q4) - *Cell Biology*

D

18 - (BIOLO/10_HL_Winter_2018_Q1) - *Cell Biology*

C

19 - (BIOLO/10_HL_Winter_2018_Q2) - *Cell Biology*

D

To access the full eBook and explore more content, visit:

www.examinent.com