

APOLLO

Cell structure

HL

Biology

First assessment 2025

4 questions | questions

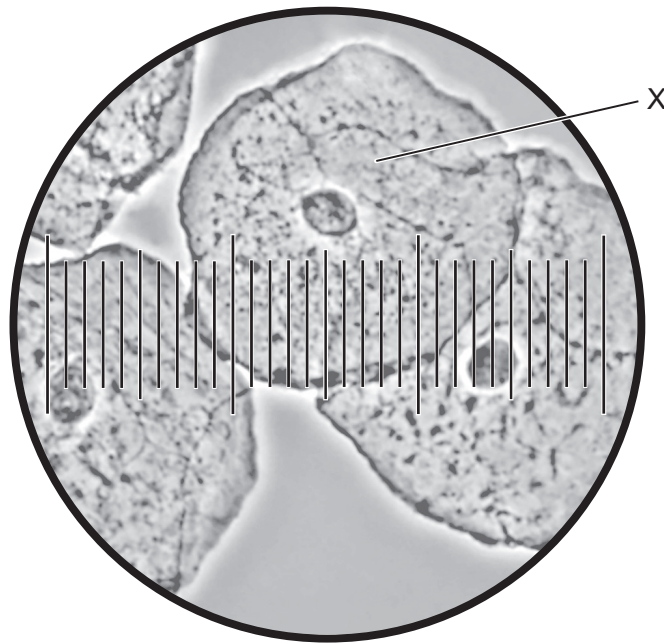
- 12.** In 2020, Peplow and co-workers obtained an image showing a GABA_A cell membrane protein receptor. The technique they used allowed them to take the image at a particular moment in time by treating the sample so that the protein molecules were firmer and more stable. What technique did they use to obtain this image?
- A. Electrophoresis
 - B. Immunofluorescence
 - C. Cryogenic electron microscopy
 - D. Fluorescent dyes

12. What is a feature of immunofluorescence in light microscopy?

- A. Can only be used on dead cells
- B. Enables higher resolution
- C. Attaches a fluorescent stain to an antibody
- D. Attaches a fluorescent stain to an antigen

Turn over

1. The micrograph is an image of human cheek cells viewed with a light microscope.



- (a) Identify the piece of equipment that is used together with the microscope to measure the size of the cells.

[1]

.....
.....

- (b) Each small division of the scale in the micrograph is equivalent to $2.5\mu\text{m}$.

- (i) Calculate the diameter of the cell labelled X.

[1]

.....

(This question continues on the following page)

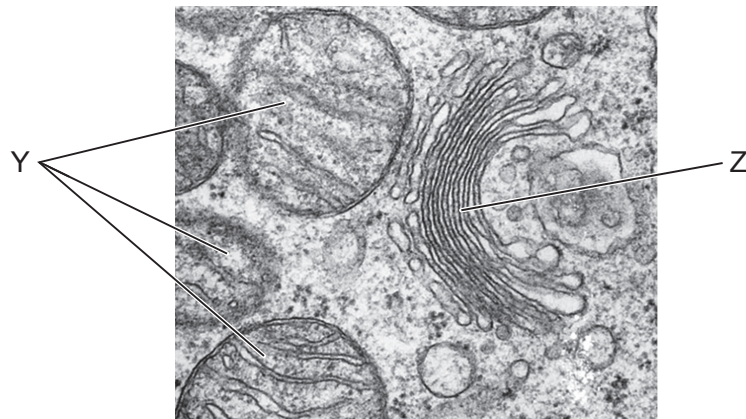


(Question 1 continued)

(ii) Calculate the magnification of the image.

[1]

(c) The electron micrograph shows part of an animal cell.



Outline the functions of Y and Z in the cell.

[2]

.....

.....

.....

.....

.....

.....

(This question continues on page 5)



Turn over

— T —

0020—0020

Please **do not** write on this page.

Answers written on this page
will not be marked.



(Question 1 continued)

(d) Viruses depend on living cells to reproduce. Compare and contrast the lysogenic and lytic cycles of the bacteriophage lambda.

[3]

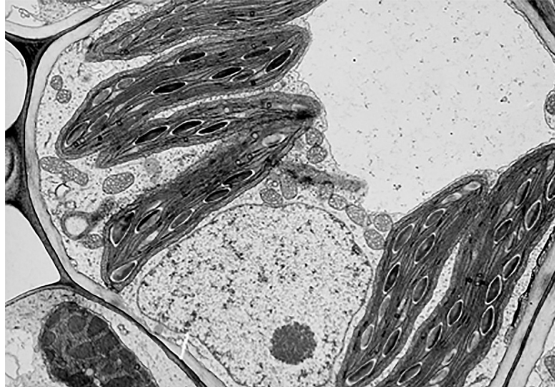


Turn over

Section A

Answer **all** questions. Answers must be written within the answer boxes provided.

2. The cytoplasm in eukaryotic cells is compartmentalized into membrane-bound organelles, as seen in this electron micrograph of a plant cell.



- (a) State **two** membrane-bound organelles that are common to both plant and animal cells. [2]

.....

.....

.....

.....

- (b) (i) State **one** organelle that is found in a plant cell but not in an animal cell. [1]

.....

.....

- (ii) State **one** organelle that is common to prokaryotic and eukaryotic cells. [1]

.....

.....

