The National Orthodox School Shmaisani

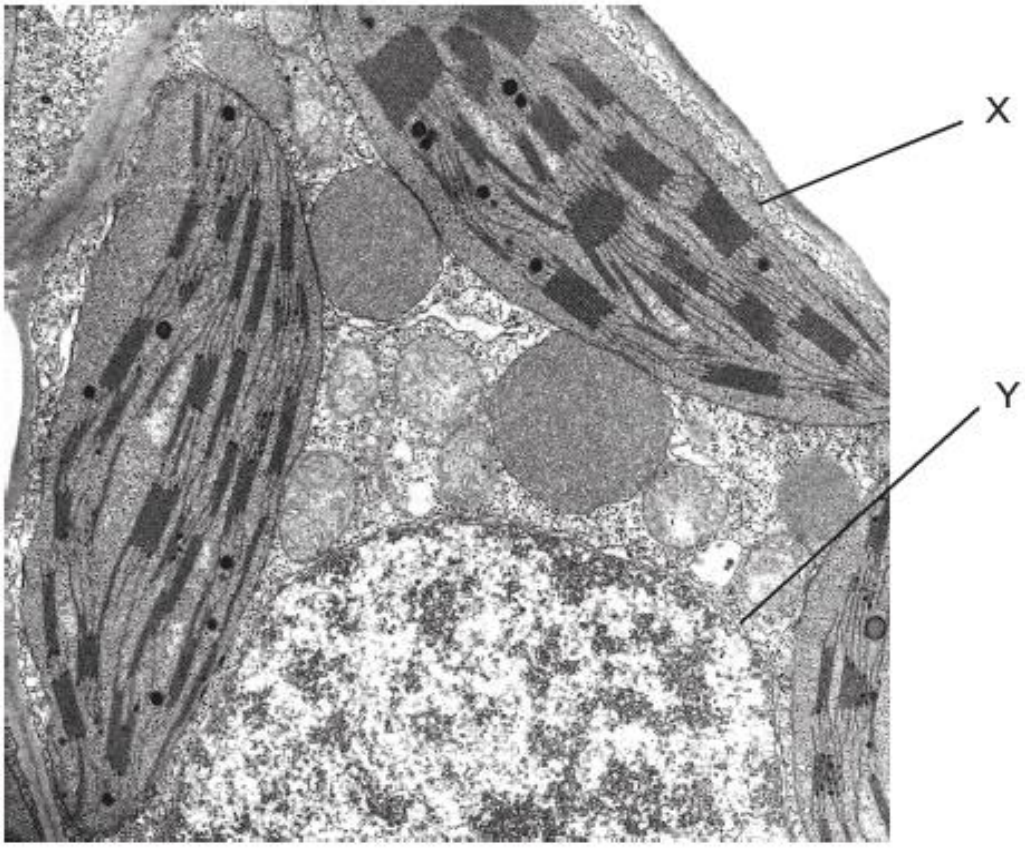
The National Orthodox School / Shmaisani

Subject: Biology **Revision sheet : Ultrastructure of cells**

Name: *Answer key*

Date: **Grade 9 IB**

1. The electron micrograph shows a section through a cell.



What is the name of the cell component labelled Y?

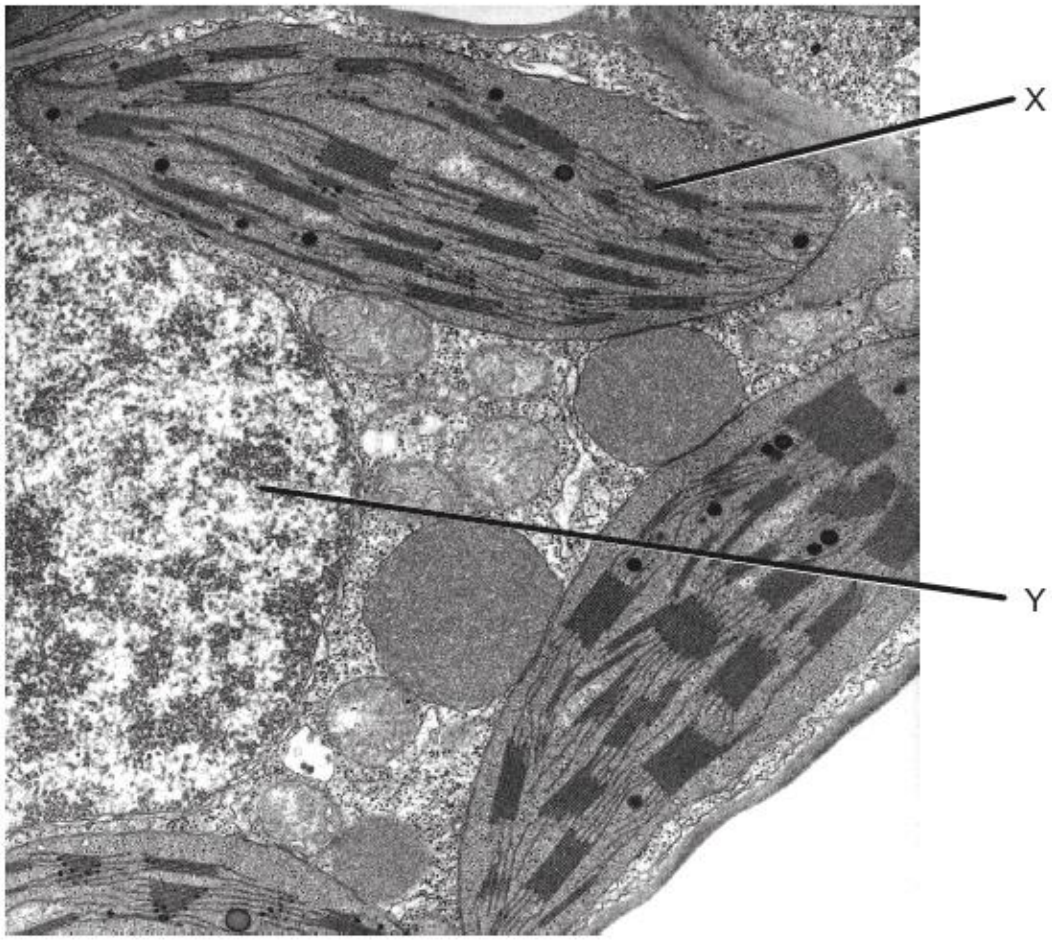
A. Golgi apparatus

B. Nucleus

C. Cytoplasm

D. Vacuole

2. The image shows an electron micrograph of part of a cell.



Which features do the two structures labelled X and Y have in common?

A. They are surrounded by a double membrane.

B. They contain 70S ribosomes.

C. They contain naked DNA.

D. They are only found in leaf cells.

3. Where could genes be located in a prokaryotic cell?

	Nucleoid	Plasmids	Ribosomes
A.		✓	✓
B.	✓	✓	
C.	✓		✓
D.	✓	✓	✓

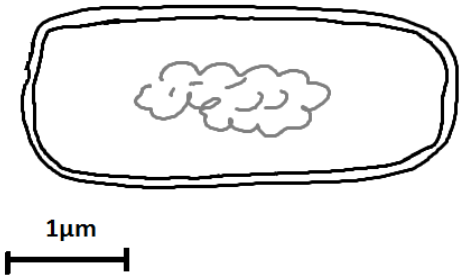
IB Style Exam Questions: *E.coli* a prokaryotic Cell

Multiple Choice Questions

1. What is the best definition of a Nucleoid ?
    1. Organelles made of protein and RNA that direct protein synthesis.
    2. **A dense region of DNA in a prokaryotic cell.**
    3. The basic structural and functional unit of all organisms.
    4. A phospholipid bilayer that surrounds the cell
2. Plasma membrane is best described as….
    1. **A phospholipid bilayer that surrounds the cell**
    2. Organelles made of protein and RNA that direct protein synthesis.
    3. A rigid non-cellulose structure that surrounds cells of bacteria
    4. A dense region of DNA in a prokaryotic cell.
3. Which statement best describes a prokaryote cell wall ?
    1. Hair-like protein structures, that allow bacteria to attach to things.
    2. A phospholipid bilayer that surrounds the cell
    3. A dense region of DNA in a prokaryotic cell.
    4. **A rigid non-cellulose structure that surrounds cells of bacteria**

Data Analysis Question

1. Calculate the length of this prokaryote cell using the scale bar.

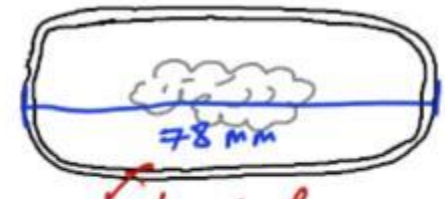


1 mark for the correct working - correct measurements of scale bar and cell in mm (allow length horizontally, or diagonally)

1 mark for the correct answer (including units)

This is an example of a correct answer.

1. Calculate the length of this prokaryote cell using the scale bar. (2 marks)



1 mark for 2 measurements

Working: scale bar size = 25mm
cell size = 78mm
How many scale bars fit in the cell length = $\frac{78}{25} = 3.1$

Size of cell = 3.1 × 1µm
= 3.1µm

✓ one mark for answer and units 3.1 ± 0.1 µm

Model answers to Eukaryotic cells IB Style Questions:

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

5. Organelles are:
   A. Mitochondrion / Mitochondria
   B. Lysosome
   C. Nucleus

7. Each comparison must mention BOTH plant and animal cells, although this could be implicit.
   (1 mark for each comparison, (max 3))

Plant cells	Animal Cells
Have cellulose cell walls	Have no cell walls
Have large central vacuole	Have no large vacuole
Contain Chloroplasts	Have no Chloroplasts
Have no centrioles	Have centrioles
Store Starch	Store Glycogen

Written question

1. Compare the structure of a prokaryote cell with an eukaryote cell (4 marks)
   (click the eye icon to show the model answer)

   One mark for each correct comparison: up to a max of four.

   Here are two examples…

   A prokaryote has DNA in a nucleoid region but a eukaryote has a membrane bound nucleus.

   Prokaryotes contain 70s ribosomes, but eukaryotes have 80s ribosomes.

   Don't accept statements which do not compare the same thing,
   e.g. Prokaryotes have 70s ribosomes, and eukaryotes have mitochondria.

   Accept the following pairs of structures in a comparison.

Prokaryote	**Eukaryote**
Nucleoid	Nucleus

Free Ribosomes 70s	Free ribosomes 80s & attached ribosomes on rER
non-cellulose wall	plants have cellulose wall
no membrane bound organelles	membrane bound organelles eg mitochondria
Similarities in both	Cytoplasm, plasma membrane DNA