

Cell Structure

GCSE Biology · Written to the shared content for AQA, Edexcel and OCR

Name _____ Class _____ Date _____

1. Worked example

Describe two differences between a plant cell and a bacterial cell. (2 marks)

Step 1 · Pick a structural difference

The plant cell has a nucleus; the bacterial cell has no nucleus, its DNA is a single loop in the cytoplasm.

Step 2 · Pick a second

The plant cell has chloroplasts and mitochondria (membrane-bound organelles); the bacterial cell has none, but may have plasmids.

Step 3 · Write it comparison

Use 'whereas' so each point names both cells.

Answer: e.g. Plant cell has a nucleus whereas bacterial DNA is a free loop; plant cell has chloroplasts whereas bacteria have none

Check: Both cells have a cell wall, membrane, cytoplasm and ribosomes, so these are NOT differences.

2. Now try one with the steps

A root hair cell has no chloroplasts. Suggest why. (2 marks)

Step 1 · Where is the cell?

Step 2 · Link to function

Answer:

3. Practice

Show your working. The marks tell you how much is expected.

1. State the function of the ribosomes. [1]

2. Name three structures found in plant cells but not in animal cells. [3]

3. State what the cell wall of a plant cell is made of. [1]

4. Describe where the genetic material is found in a bacterial cell. [2]
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5. Explain why a muscle cell contains many mitochondria. [2]
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6. Give two structures found in both prokaryotic and eukaryotic cells. [2]
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7. Compare the sizes of eukaryotic and prokaryotic cells. [2]
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8. Convert 0.03 mm into micrometres (μm). [1]
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9. A cheek cell is 60 μm across. Convert this to millimetres. [1]
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10. Write 0.000 05 m in standard form. [1]
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11. A plant cell is 100 μm long and a bacterium is 2 μm long. Calculate how many times longer the plant cell is. [1]
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12. Explain why a mature red blood cell cannot make new proteins. [2]
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13. A cell is 1×10^{-5} m wide and a virus is 1×10^{-7} m wide. How many orders of magnitude larger is the cell? [1]
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14. Explain why the cell membrane is described permeable, and why this matters to the cell. [2]
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4. Before you hand it in

"Animal cells have a cell wall."

All cells have a membrane. Only plant, fungal and bacterial cells have a wall; plant walls are cellulose.

"Bacteria have a nucleus but it is small."

Prokaryotes have NO nucleus. Their DNA is a single loop in the cytoplasm, plus plasmids.

"Mitochondria make energy."

Mitochondria are the site of aerobic respiration, which TRANSFERS energy from glucose for the cell to use.

"All plant cells have chloroplasts."

Root cells and many stem cells have no chloroplasts because they receive no light.