

1 Cell structure – Part 2

Name: _____ Class: _____ Date: _____

Vocabulary

Write each word three times. _____.

English	Write it 3 times (English)		
cell wall	_____	_____	_____
cellulose	_____	_____	_____
chloroplasts	_____	_____	_____
photosynthesis	_____	_____	_____
vacuole	_____	_____	_____
prokaryotic cell	_____	_____	_____
bacterium	_____	_____	_____
peptidoglycan	_____	_____	_____
virus	_____	_____	_____
nucleic acid	_____	_____	_____
capsid	_____	_____	_____
host	_____	_____	_____

Recall

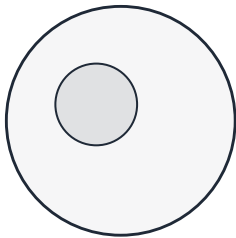
In **Part 1** you met magnification, resolution, and eukaryotic cells with their organelles. Part 2 looks at how plant and animal cells differ, and at two simpler kinds of life – **bacteria** and **viruses**.

New ideas

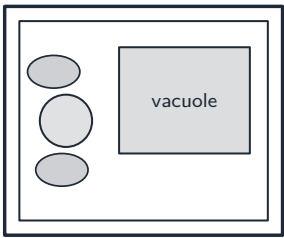
■ 1 Plant and animal cells

Both plant and animal cells have a cell surface membrane, cytoplasm, a nucleus, mitochondria and ribosomes. But **only plant cells** have three extra features:

- a **cell wall** made of **cellulose**, which supports the cell and stops it bursting;
- **chloroplasts**, the site of **photosynthesis**;
- a large permanent **vacuole** that stores water and keeps the cell firm.



animal cell



plant cell

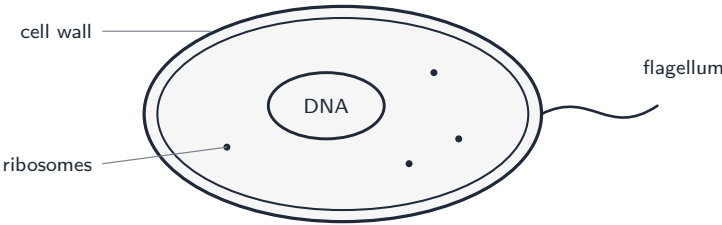
cell wall

chloroplasts

Micro-check. Name **one** feature a plant cell has that an animal cell does not. [1]

■ 2 Prokaryotic cells

A **prokaryotic cell**, such as a **bacterium**, is much smaller and simpler. It has **no nucleus** – its DNA is a single circular loop lying free in the cytoplasm. It also has a cell wall (made of **peptidoglycan**, not cellulose), smaller ribosomes, and **no** membrane-bound organelles (so no mitochondria).

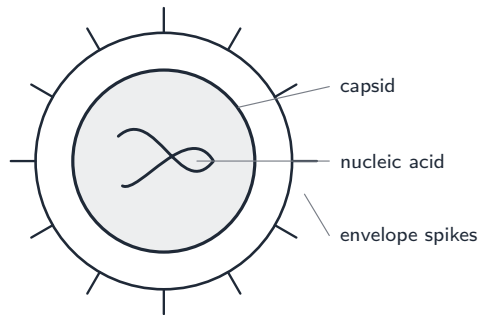


Micro-check. State one way a prokaryotic cell differs from a eukaryotic cell. [1]

■ 3 Viruses

A **virus** is **non-cellular** – it is not made of cells at all. It is just a core of **nucleic acid** (either DNA or RNA) inside a protein coat called a **capsid**, sometimes with an outer envelope.

A virus has no cytoplasm and no ribosomes, so it cannot make its own proteins. It can only copy itself **inside** a living **host** cell.



Micro-check. Why can a virus only reproduce inside a host cell?

[1]

Watch out: a prokaryote has *no* nucleus and *no* membrane-bound organelles (its DNA is a free loop). A virus is *non-cellular* – it is not a cell at all, so never call it one.

Practice

1.1 Name the **three** features that a plant cell has but an animal cell does not.

[3]

1.2 State **one** way a prokaryotic cell is different from a eukaryotic cell.

[2]

1.3 Name the two or three parts of a virus.

[2]

1.4 Explain why a virus is described as **non-cellular**.

[1]

1.5 Explain why a virus cannot reproduce on its own.

[2]

1.6 Challenge. Antibiotics kill many bacteria but have no effect on viruses. Suggest why, using the difference between a bacterium and a virus.

[2]