

AQA GCSE Cell Structure

AQA Specification 4.1.1 Cell Structure

What are **cells**?

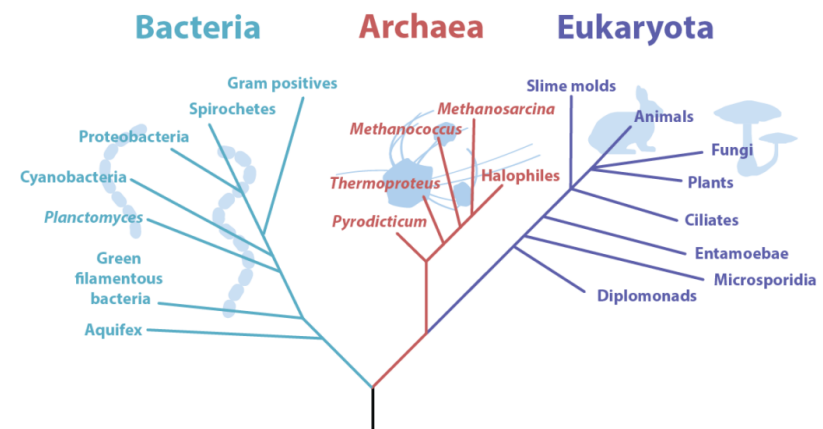
- Cells are the basic unit of all forms of life.
- In this section we explore how structural differences between types of cells enables them to perform specific functions within the organism.
- These differences in cells are controlled by genes in the nucleus.

Explore Further:

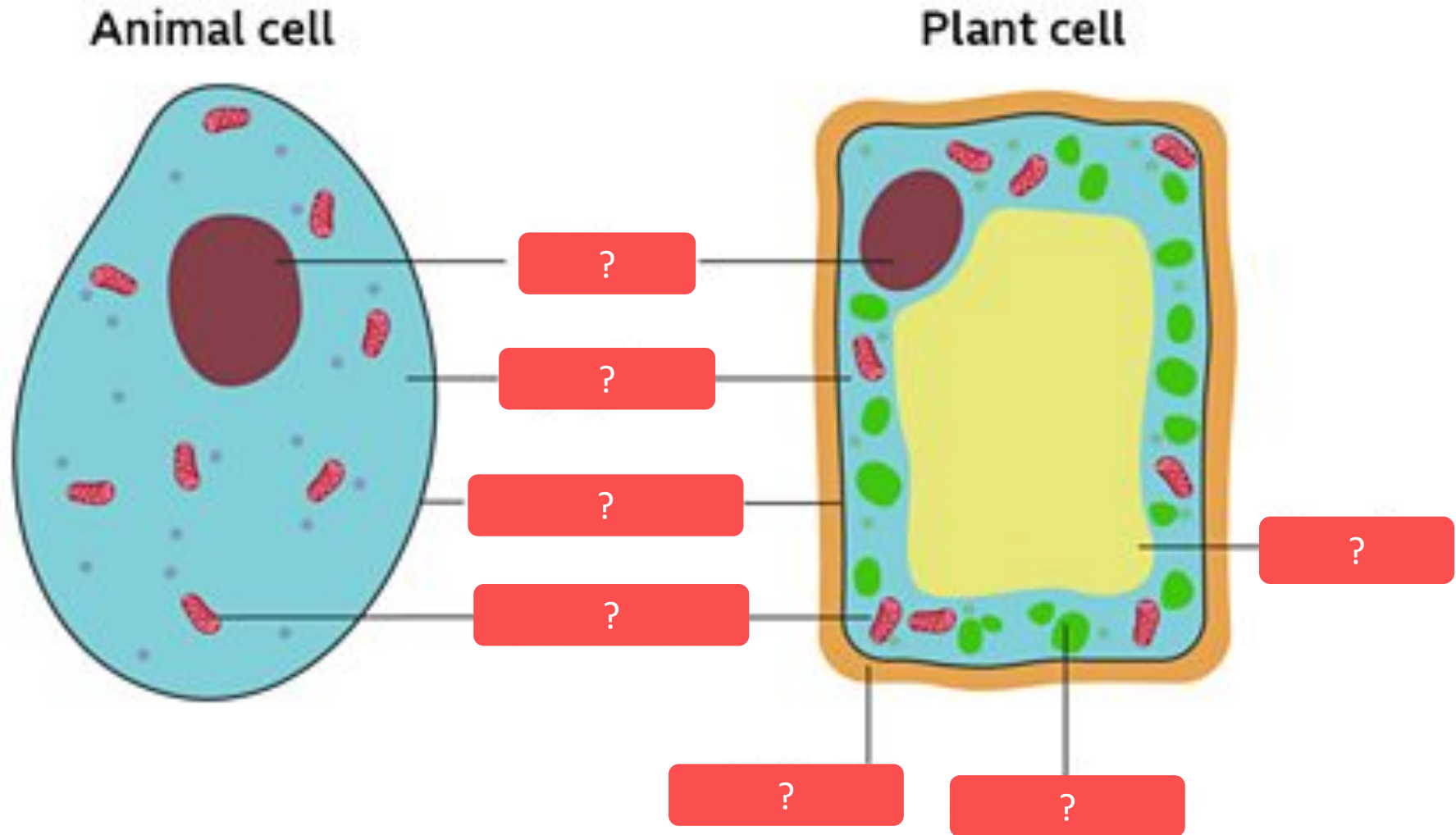
Know the relative scale of cells - The Scale of the Universe: <https://scaleofuniverse.com/>

Prokaryotes vs Eukaryotes

- Eukaryotes are organisms made of eukaryotic cells
- Eukaryotes include animals, plants, algae, protists and fungi
- A prokaryote is a prokaryotic cell
- Prokaryotes include bacteria and archaea



Plant vs Animal Cells



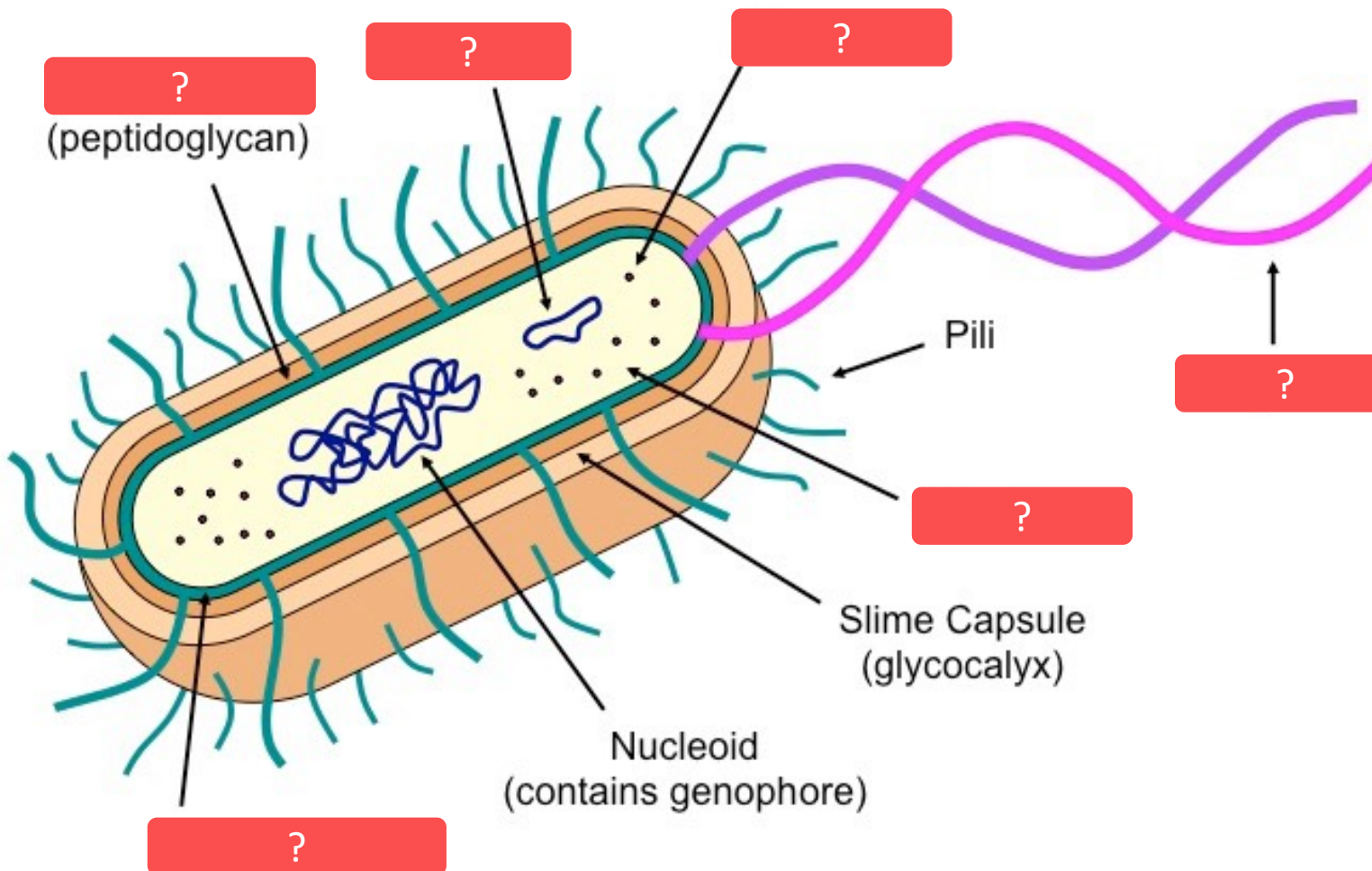
Organelle Functions (present in animal and plant cells)

- – controls all the activities of the cell and contains chromosomes with genetic material needed for protein synthesis.
- – a liquid gel which the organelles are suspended and the site for most enzymatic reactions and metabolic activity
- – controls the movement of substances in and out of the cell
- – where aerobic respiration takes place, releasing energy for the cell
- – where protein synthesis happens

Organelle Functions (present only in plant cells)

- ? – made of cellulose, strengthens the cell and gives it support
- ? – where photosynthesis occurs, contains chlorophyll which absorbs light needed for photosynthesis
- ? – a space in the cytoplasm filled with cell sap, important for keeping the cells rigid to support the plant

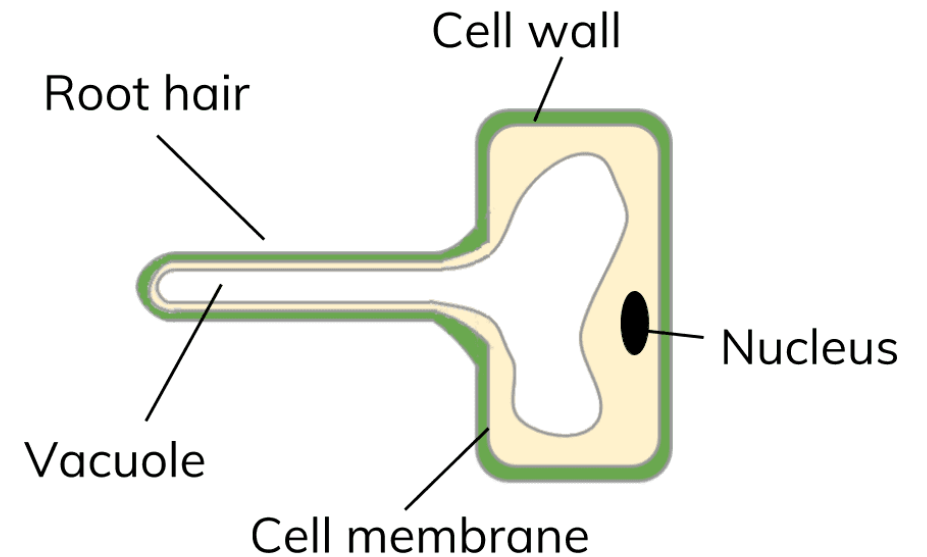
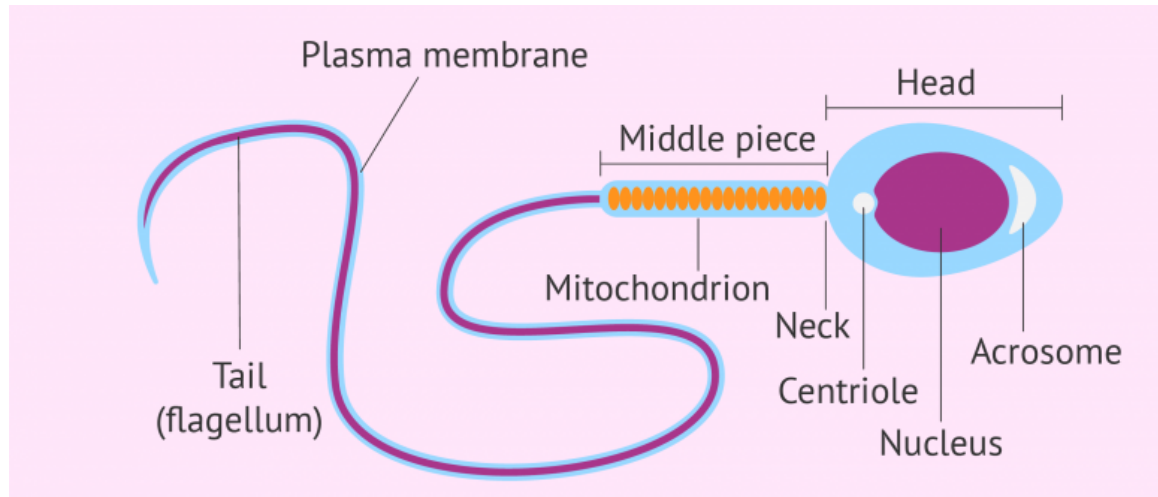
Prokaryotic cell structure



- Prokaryotic cells have cytoplasm and a cell membrane surrounded by a cell wall.
- The genetic material is not enclosed in a nucleus.
- It is a single DNA loop and there may be one or more small rings of DNA called plasmids.

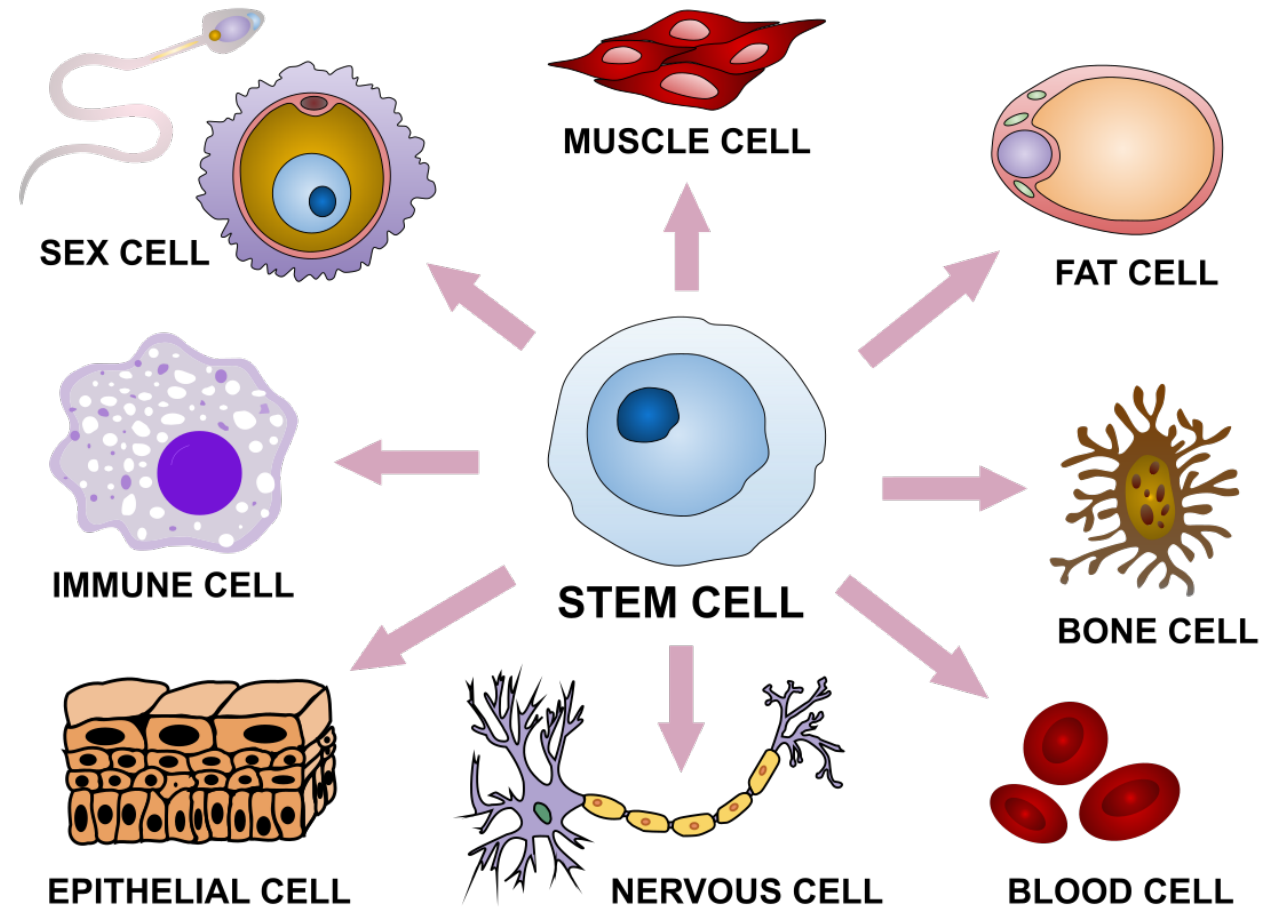
Cell Specialisation

- Cells may be specialised to carry out a particular function.
- You need to know **sperm cells**, **nerve cells** and **muscle cells** in animals as well as **root hair cells**, **xylem** and **phloem cells** in plants.



Cell Differentiation

- As an organism develops, cells differentiate to form different types of cells.
- Most types of ? cell differentiate at an early stage.
- Many types of ? cells retain the ability to differentiate throughout life.



More Cell Differentiation

- In mature animals, cell division is mainly restricted to repair and replacement.
- As a cell differentiates it acquires different sub-cellular structures to enable it to carry out a certain function.
- It has become a specialised cell.