

# Edexcel (A) Biology A-level

## 4.7 to 4.12 - Properties of plants

### Flashcards

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Describe the structure and function of a plant's cell wall.



Describe the structure and function of a plant's cell wall.

Made of cellulose. Outer layer is called the middle lamella. Holds adjacent cells together, as well as providing support and protection.



Describe the structure and function of a chloroplast.



Describe the structure and function of a chloroplast.

Contain thylakoid membranes which are stacked into grana. These contain chlorophyll. Surrounded by stroma, a liquid which contains photosynthetic enzymes.



Describe the structure and function of amyloplasts.



Describe the structure and function of amyloplasts.

Produces and stores starch composed of amylose and amylopectin. Surrounded by a double membrane.



Describe the structure and function of a vacuole.





Describe the structure and function of a vacuole.

A sac filled with cell sap, surrounded by a single membrane (tonoplast). Storage for nutrients needed by the plant, as well as waste materials until they can be removed. Also provides cell with support.



Describe the structure and function of the plasmodesmata.



Describe the structure and function of the plasmodesmata.

Extensions of the cytoplasm that connect two neighbouring cells together, allowing transport of substances between them.



Describe the structure and function of the pits.



Describe the structure and function of the pits.

Thin sections of the cell wall that allow easy diffusion, therefore enabling substances to be transferred between cells.



# How do plant cells differ from animal cells?



# How do plant cells differ from animal cells?

Plant cells have features animals cells do not e.g. chloroplast, vacuole, cell wall.

Animal cells have features plant cells do not e.g. lysosomes, and are also generally smaller and less regularly shaped.



Give two examples of polysaccharides found in plants.





Give two examples of polysaccharides found in plants.

- Starch
- Cellulose



Relate the structure of starch to its function.



Relate the structure of starch to its function.

Mixture of two polysaccharides;

- Amylose = coiled to make the molecule compact, so large amounts can be stored.
- Amylopectin = highly branched, so energy can be released quickly.



Relate the structure of cellulose to its function.



Relate the structure of cellulose to its function.

Composed of long beta-glucose chains, which are held together by hydrogen bonds to form microfibrils. Hydrogen bonds are very strong, meaning cellulose is suited to providing structural support within cell walls.



Relate the structure of xylem and sclerenchyma fibres to their function.



Relate the structure of xylem and sclerenchyma fibres to their function.

- Cellulose microfibrils form a net-like arrangement in the cell walls of the fibres.
- Secondary thickening further strengthens the fibres by adding lignin.
- Fibres are suited to their function of structurally supporting the plant.



How can the physical properties of xylem and sclerenchyma fibres be used by humans?





How can the physical properties of xylem and sclerenchyma fibres be used by humans?

In materials that require strength e.g. ropes and fabrics.



Differentiate between xylem, phloem,  
and sclerenchyma fibres.



## Differentiate between xylem, phloem, and sclerenchyma fibres.

- Xylem = made of dead tissue with open ends, transport water and minerals, structural support.
- Phloem = made of living cells, translocate organic substances from leaves to storage.
- Sclerenchyma fibres = made of dead tissue with closed ends, structural support.



Explain why water is important to plants.



Explain why water is important to plants.

- Required for photosynthesis
- Maintain rigidity of cells
- Transport of substances
- Thermoregulation



Name three inorganic ions and explain why they are important to plants.



Name three inorganic ions and explain why they are important to plants.

- Nitrate = supply nitrogen for production of DNA, proteins, and chlorophyll.
- Calcium = forms calcium pectate for cell wall, used in growth.
- Magnesium = production of chlorophyll, activation of enzymes.

