

# B1.1 - Cell specialisation and differentiation

It all begins with **stem cells**

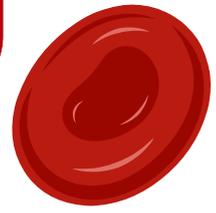


This occurs by switching certain genes on and off to create different \_\_\_\_\_ and \_\_\_\_\_ in the cell!

In \_\_\_\_\_ almost all cells differentiate early, then **lose the ability** to differentiate once \_\_\_\_\_

\_\_\_\_\_ are non-mature cells that differentiate into **specialised** cells.

In **plants**, most cells **retain the ability** to differentiate \_\_\_\_\_



**Specialised** cells are cells that have differentiated in order to \_\_\_\_\_

There are 3 specialised **animal** cells and 3 specialised **plant** cells that you need to know for this topic

## Specialised **animal** cells

### Sperm cell

This cell is specialised to carry the father's \_\_\_\_\_ to the \_\_\_\_\_ to \_\_\_\_\_



**Special properties**

- Streamlined head and \_\_\_\_\_ to swim
- A lot of \_\_\_\_\_ to \_\_\_\_\_
- The \_\_\_\_\_ at the tip of the head contains \_\_\_\_\_, allowing entry

### \_\_\_\_\_ cell

This cell is specialised to \_\_\_\_\_ from \_\_\_\_\_ **one place** in the body to **another**



**Special properties**

- Long \_\_\_\_\_ to carry signals **long distances**
- Lots of **dendrites** forming \_\_\_\_\_ with other nerve cells
- Many \_\_\_\_\_ to supply the energy to create \_\_\_\_\_, allowing the signal to pass from **cell to cell**

### Muscle cell

This cell is specialised to either \_\_\_\_\_ or \_\_\_\_\_ to cause **movement**



**Special properties**

- Muscle filaments** containing \_\_\_\_\_ and \_\_\_\_\_, to slide over each other
- Lots of \_\_\_\_\_, providing \_\_\_\_\_
- \_\_\_\_\_ storage, providing **glucose** to the mitochondria

## Specialised **plant** cells

### \_\_\_\_\_ cell

This cell is specialised to uptake \_\_\_\_\_ and \_\_\_\_\_ from the soil

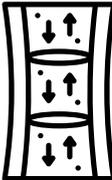


**Special properties**

- \_\_\_\_\_ providing **large surface area**
- Large \_\_\_\_\_ increases **speed** of osmosis
- Lots of \_\_\_\_\_, providing **energy** for \_\_\_\_\_

### Phloem cell

This cell is specialised to transport \_\_\_\_\_ all throughout the plant!

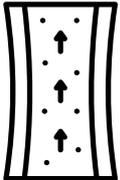


**Special properties**

- \_\_\_\_\_ in between cells allow for cell to cell transport
- \_\_\_\_\_, present next to phloem cells, provide **energy** for these cells to survive
- \_\_\_\_\_**directional**

### Xylem cell

This cell is specialised to transport \_\_\_\_\_ and **minerals** from the \_\_\_\_\_



**Special properties**

- \_\_\_\_\_ **kills the cell** upon differentiation, also enabling the cells to **withstand pressure**
- The cells are \_\_\_\_\_ and join end to end, forming a **tube like structure**, allowing flow.
- \_\_\_\_\_**directional**