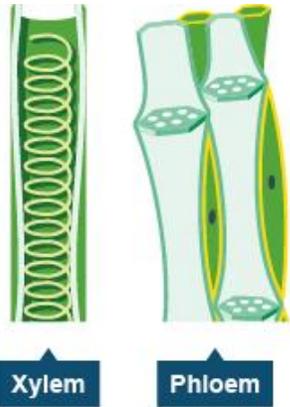
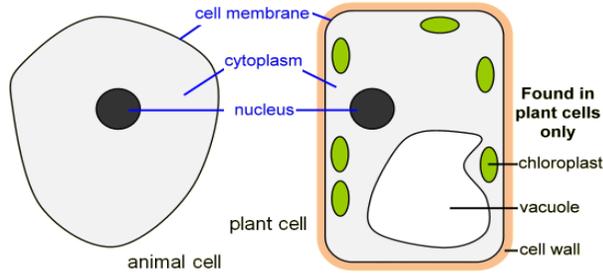


Animal V Plant Cell (Eukaryotic cells)



How are the xylem cells specialised?

- They transport water and have vessels made of a thick cell wall.
- The cells are dead and hollow.

How are the phloem cells specialised?

- They transport sugar and are not completely hollow.
- The cells are alive .

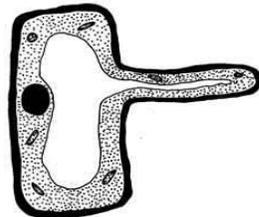
Prokaryotic cells

Bacterial cell (Prokaryotic) consists of: circular DNA, cell wall, cytoplasm, plasmids and flagellum. They are **MUCH SMALLER** than eukaryotic cells.

Key words:

1. **Cell wall:** support and structure, stops the cell bursting
2. **Cell membrane:** lets substances in and out of the cell
3. **Cytoplasm:** cell chemical reactions take place
4. **Nucleus:** Contains genetic information and controls the cell
5. **Chloroplast:** Absorbs sunlight for photosynthesis
6. **Permanent vacuole:** Stores cell sap
7. **Cell specialisation:** A cell that has features that allow it to carry out its function
8. **Microscope:** Used to enlarge very small objects
9. **Magnification:** How many times larger an object is compared to its actual size
10. **Diffusion:** Movement from a high concentration to a low concentration

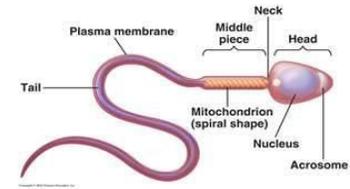
Specialised plant cells



How is a root hair cell specialised?

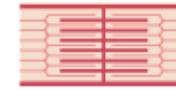
- They have a thin cell wall so water can be easily absorbed into the cell.
- They have a big surface area so as much water as possible is absorbed.

Specialised animal cells

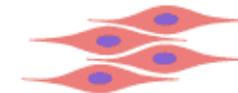


How is a sperm cell specialised?

- The tail helps the sperm to move to the egg.
- Lots of energy is stored in the middle section of the sperm cell.
- The head is designed to penetrate into the egg cell.



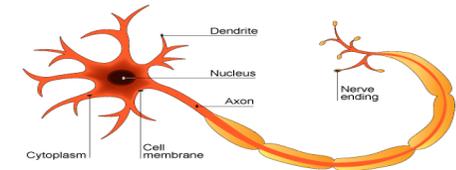
Striated muscle fibre



Smooth muscle cell

How is a muscle cell specialised?

- Striated have long protein fibres to stretch and lots of mitochondria for energy
- Smooth muscles have short fibres and lots of mitochondria for energy

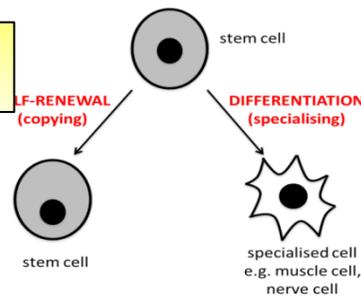


How is a nerve cell specialised?

- They are long and thin so messages can be carried all over the body.
- They are specialised to carry electrical signals.
- They have connections at each end.

• A stem cell is an undifferentiated cell that can divide to produce lots more undifferentiated cells.

- Stem cells from human embryos can be cloned and made to differentiate into most different types of human cells.
- Stem cells from adult bone marrow can form many types of cells including blood cells.
- Meristem tissue in plants can differentiate into any type of plant cell, throughout the life of the plant.

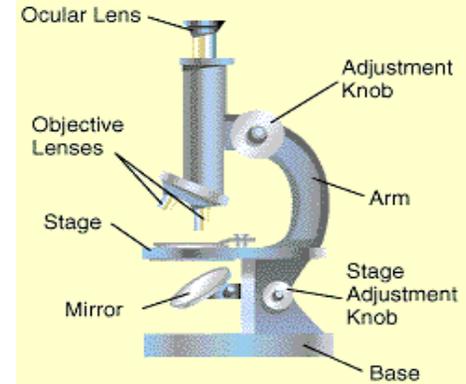


Cell differentiation is when a cell changes to become specialised for its job. Cells develop different structures and turn into different cells which allows them to carry out specific functions (jobs). These can then go on to make tissues and organs

Stem cells and differentiation

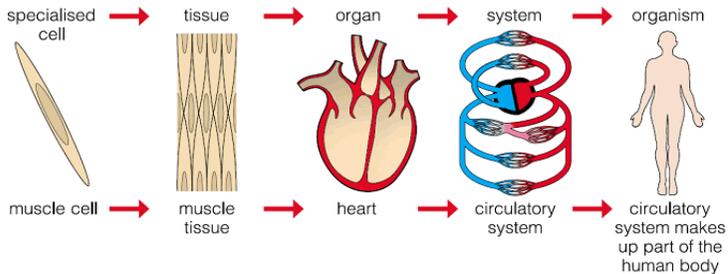
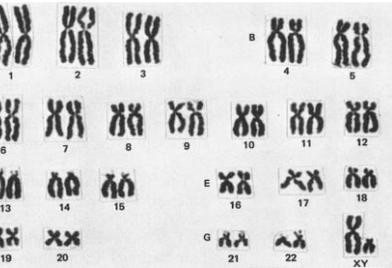
MICROSCOPES

1. Prepare a thin sample to allow light to get through and stain cells
2. Place a cover slip over the top
3. Place slide on stage
4. Put objective lens on lowest magnification
5. Look down ocular lens
6. Use adjustment knob to focus



Cell division

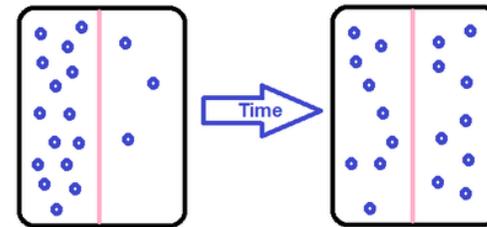
Most cells in the body contain a nucleus and in the nucleus are chromosomes which are coiled up lengths of DNA. Body cells have two copies of each chromosome one from each parent. Humans have 23 pairs of chromosomes. Mitosis is important for organisms to grow, repair and replace new cells.



Organisation

Key words:

- Cell:** Building blocks of life.
- Tissue:** Group of similar cells working together.
- Organ:** Group of similar tissues working together.
- Organ system:** Group of organs working together.
- Multicellular:** Many types of cells or more than one cell.
- Organism:** A living thing, e.g. an animal or plant.

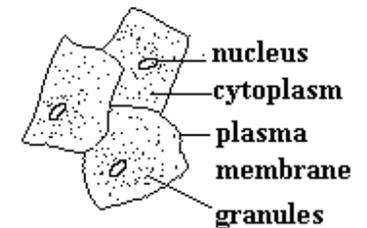


Diffusion

1. Substances move from a high concentration to a low concentration
2. Down the concentration gradient

DRAWING CELLS

Draw the cells with a pencil. Make sure it has clear unbroken lines with no shading or colouring.



Revision questions

1. Name the structures a plant and an animal cell have in common.
2. Name the three additional structures a plant cell has.
3. Name three specialised animal or plant cells.
4. Describe how a nerve cell is adapted to do its job. What is its job?
5. Which is bigger a bacterial cell or an animal cell?
6. State the structures in a bacterial cell.
7. What is cell differentiation?
8. How do cells differentiate?
9. Describe how a slide is made.
10. Draw some animal cells and label them.
11. Describe diffusion.
12. Why is mitosis so important?
13. How many chromosomes do humans have?
14. Where are chromosomes found and what are they made of?
15. What is a stem cell?
16. Give an example of a cell, a tissue and an organ.