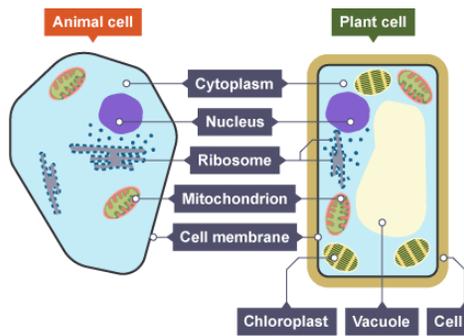


# Biology knowledge organiser: unit 1 Cell Biology

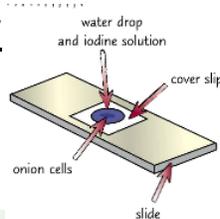


12.

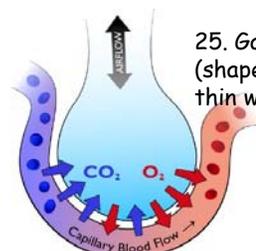
$$\text{magnification} = \frac{\text{measured size}}{\text{actual size}}$$

## Preparing a microscope slide

- Add a **drop of water** to the middle of a clean slide.
- Cut up an onion and take off one **layer**.
- Use **tweezers** to peel off some **epidermal tissue** (the clear 'skin') from the **bottom** of the layer.
- Using the tweezers, place the skin into the **water** on the slide.
- Add a drop of **iodine solution**. Iodine solution is a **stain**.
- Stains can make different parts of a cell **easier to see**.
- Place a **cover slip** on top. Try **not** to get any **air bubbles** under it.

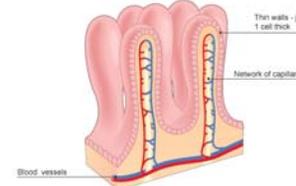


22. Diffusion	Spreading out of particles from an area of higher concentration to an area of lower concentration.
23. Osmosis	The movement of <b>water</b> molecules across a partially permeable membrane from a less concentrated solution to a more concentrated solution.
24. Active Transport	Movement from a lower concentration to a higher concentration, <b>against the concentration gradient</b> .

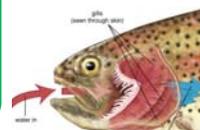


25. Gas exchange in the lungs takes place in the **alveoli** (shape = large surface area. Good blood supply and thin walls).

26. The small intestine is covered in tiny villi which absorb food (shape = large surface area. Good blood supply)



- Adult stem cells can only produce certain types of cell -found in bone marrow
- Embryonic stem cells** can produce all types of cells -controversial
- Plant stem cells found in **meristems**



27. Fish have **gills** to absorb oxygen from water (large surface area)

1. Eukaryotic	A complex cell with a nucleus (e.g. animal or plant cells)
2. Prokaryotic	A smaller cell without a nucleus (e.g. bacterial cell)
3. Nucleus	Contains genetic material.
4. Cytoplasm	Where a cell's chemical reactions happen.
5. Cell membrane	Controls what goes into and out of a cell.
6. Ribosome	Part of a cell where proteins are made.
7. Mitochondria	Where aerobic respiration takes place.
8. Cell wall	Only found in plant cells. Made of cellulose and supports the cell.
9. Vacuole	Only found in plant cells. Contains cell sap.
10. Chloroplasts	Only found in plant cells. Where photosynthesis takes place.
11. Plasmid	Only found in bacterial cells. A small loop of DNA.

16. Sperm cells		Take male DNA to the egg <ul style="list-style-type: none"> <li>Tail to help it swim</li> <li>Lots of mitochondria for energy</li> </ul>
17. Nerve cells		Carry electrical signals around the body <ul style="list-style-type: none"> <li>Long to cover long distances</li> <li>Branches to connect to other cells</li> </ul>
18. Muscle Cells		Muscle cells contract <ul style="list-style-type: none"> <li>Long so have space to contract</li> <li>Lots of mitochondria for energy</li> </ul>
19. Root hair cells		Root hair cells absorb water and minerals <ul style="list-style-type: none"> <li>Long hairs</li> <li>Big surface area for absorption</li> </ul>
20. Phloem Cells		Phloem cells transport sugars (plants) <ul style="list-style-type: none"> <li>Long tube joined end to end</li> </ul>
21. Xylem cells		Xylem cells transport water (plants) <ul style="list-style-type: none"> <li>Long tubes joined end to end</li> <li>Hollow so water can flow through</li> </ul>

## 28. Investigating osmosis in potatoes

- Cut potatoes into cylinders with the same length and width. Measure their mass.
- Put 1 in pure water and the other concentrated sugar solution and leave them for 30 mins.
- Take out the potato cylinders and dry them carefully with a paper towel.
- Measure the mass again.
- If the mass has increased, water has moved in because of osmosis. If the mass has decreased, water has moved out because of osmosis.

## 29. The cell cycle

