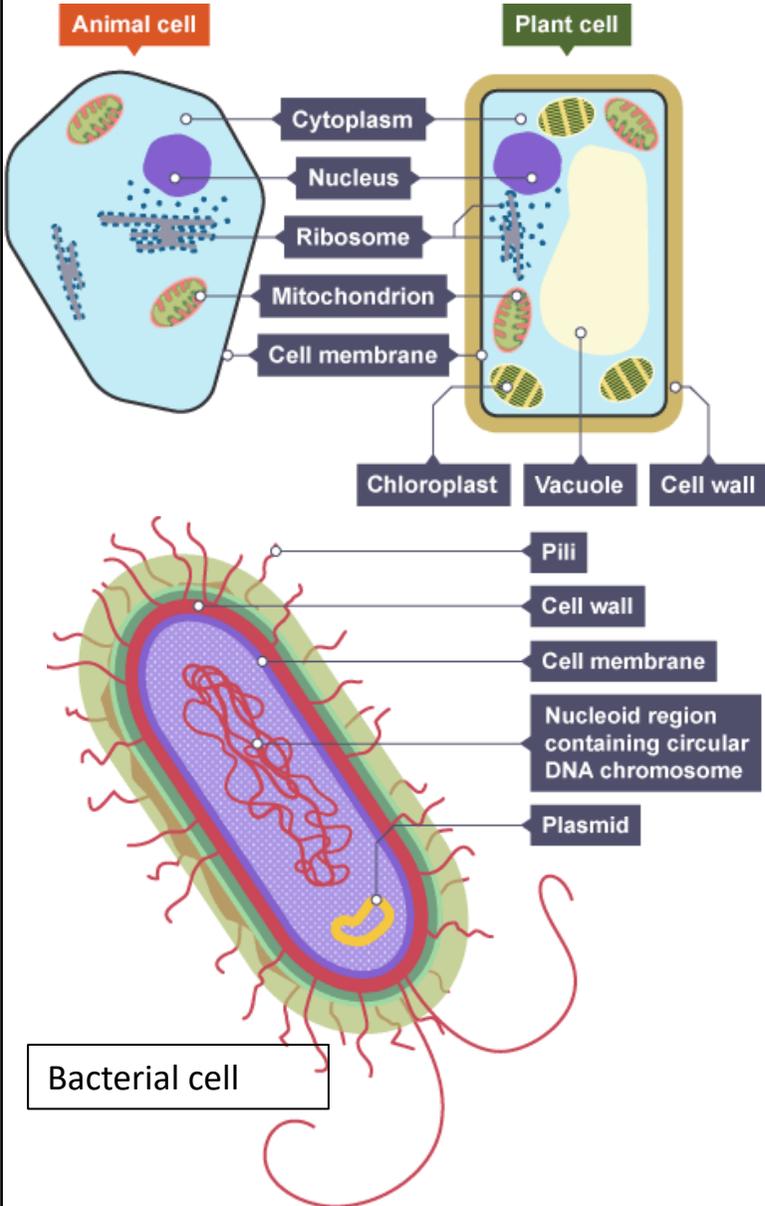


# Biology Topic B1: Cell Structure and Cell Transport

## 1. Cell structure



### Keywords

<b>1. Eukaryotic</b>	A complex cell with a nucleus
<b>2. Prokaryotic</b>	A smaller cell without a nucleus
<b>3. Nucleus</b>	Contains genetic material.
<b>4. Cytoplasm</b>	Where chemical reactions happen.
<b>5. Cell membrane</b>	Controls what goes into and out.
<b>6. Ribosome</b>	Where proteins are made.
<b>7. Mitochondria</b>	Aerobic respiration takes place here.
<b>8. Cell wall</b>	Made of cellulose and supports the cell.
<b>9. Vacuole</b>	Contains cell sap.
<b>10. Chloroplasts</b>	Photosynthesis takes place here.
<b>11. Plasmid</b>	A small loop of DNA.
<b>12. Genetic material</b>	Long strands of genes

## 2. Specialised cells

### Keywords

Differentiation	A stem cell turning into a specialised cell.
Stem cell	A cell which can turn into other specialised cells.
Adult stem cells	Can only produce certain types of cell.
Embryonic stem cells	Can produce all types of cells – controversial.
Meristems	Where plant stem cells are found.
<b>Type of cell</b>	<b>Specialism</b>
Sperm cells	<ul style="list-style-type: none"> <li>• Tail and lots of mitochondria for energy</li> </ul>
Nerve cells	<ul style="list-style-type: none"> <li>• Long and branched to connect to other cells</li> </ul>
Muscle Cells	<ul style="list-style-type: none"> <li>• Lots of mitochondria for energy</li> </ul>
Root hair cells	<ul style="list-style-type: none"> <li>• Long hair like structures give a large surface area for absorption</li> </ul>
Phloem Cells	<ul style="list-style-type: none"> <li>• Long tube joined end to end</li> </ul>
Xylem cells	<ul style="list-style-type: none"> <li>• Long tubes joined end to end</li> <li>• Hollow so water can flow through</li> </ul>

### 3. Comparing types of microscope

Type of microscope	Advantages	Disadvantages
<b>Light microscope</b>	<ol style="list-style-type: none"> <li>Cheaper</li> <li>Can see colours</li> <li>Can see live specimen</li> </ol>	<ol style="list-style-type: none"> <li>Lower <b>magnification</b></li> <li>Lower <b>resolution</b></li> </ol>
<b>Electron microscope</b>	<ol style="list-style-type: none"> <li>Expensive</li> <li>Higher magnification (x1000 more)</li> </ol>	<ol style="list-style-type: none"> <li>Can only see dead specimen</li> <li>No colour</li> </ol>

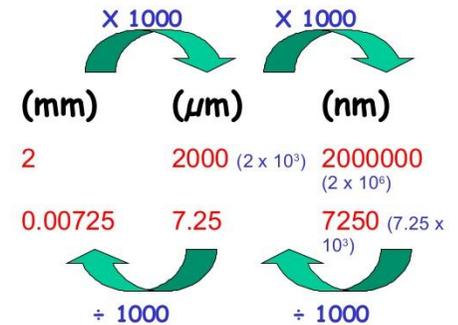
### 4. Calculating magnification

$$\text{magnification} = \frac{\text{size of image}}{\text{size of real object}}$$



2mm

7.25µm



### 5. Factors that effect the rate of diffusion/osmosis

Speed up	Slow down
High concentration gradient	Low concentration gradient
High temperature	Low temperature
High surface area of membrane	Low surface area of membrane

### 6. Transport in cells

Keywords	Definition	Examples
<b>Diffusion</b>	The passive movement of a substance from an areas of high concentration to an area of low concentration	<ul style="list-style-type: none"> <li>Oxygen and carbon dioxide in the lungs</li> <li>Perfume in a room</li> </ul>
<b>Osmosis</b>	The movement of <b>water</b> molecules across a partially permeable membrane from a dilute to a more concentrated solution.	<ul style="list-style-type: none"> <li>Water uptake in plants</li> <li>Water absorption in the intestine</li> </ul>
<b>Active transport</b>	Movement of a substance against the concentration <b>gradient</b> . <b>Uses energy.</b>	<ul style="list-style-type: none"> <li>Mineral absorption by roots</li> </ul>