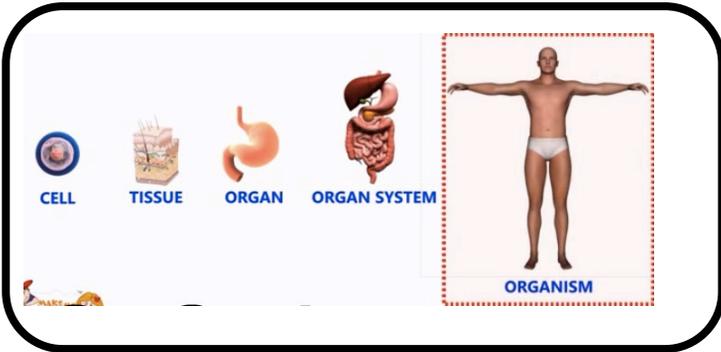


# Organisation

## CORE KNOWLEDGE

name:



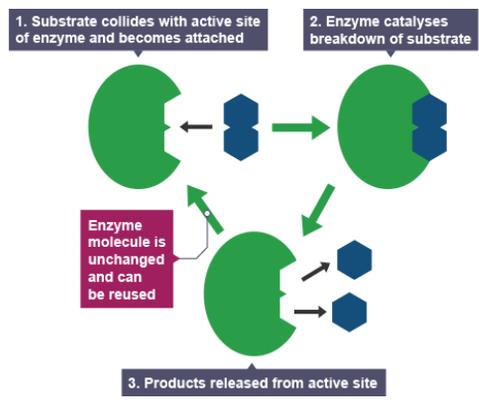
**What is bile?**  
 Bile is produced in the liver.  
 Bile has two main functions.  
 1) It emulsifies fat (makes it into smaller droplets) to increase enzyme activity.  
 2) It neutralises stomach acid to give the right pH for enzymes in the intestine.

### Enzymes

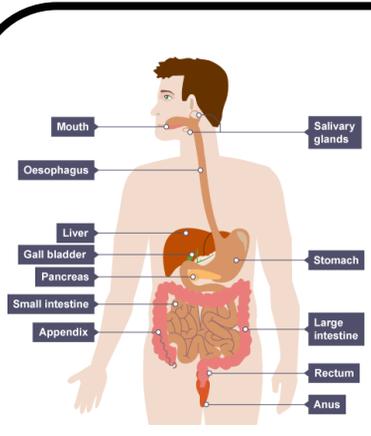
Enzymes are biological catalysts. They speed up chemical reactions in the body.

They are important in digestion to break down large molecules into small soluble molecules that can be absorbed into the bloodstream.

#### Mechanism of action

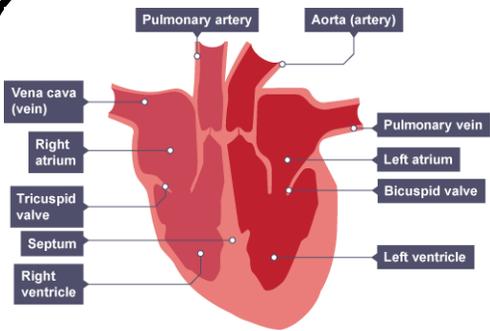


**Denaturing** is a change in the active site. This prevents the enzyme working. This can be caused by changes in pH and temperature.



Enzyme	Substrate	Products	Produced in	Works in
Amylase	Starch	Glucose	Salivary Gland; Pancreas; Small Intestine	Mouth; Small Intestine
Protease	Proteins	Amino Acids	Stomach; Pancreas; Small Intestine	Stomach; Small Intestine
Lipase	Fats	Glycerol Fatty Acids	Pancreas; Small Intestine	Small Intestine

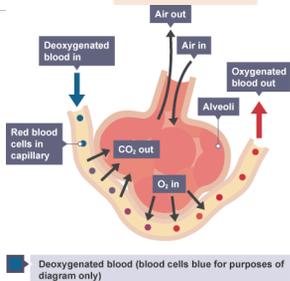
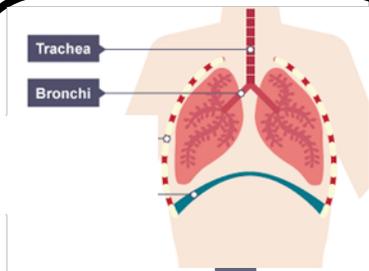
**Food Tests:**  
 Starch turns Iodine BLACK  
 Protein turns Biuret's PURPLE  
 Glucose turns Benedict's ORANGE



**Note: valve names are not needed.**

The heart is an organ that pumps blood around the body in a double circulatory system. The right ventricle pumps blood to the lungs where gas exchange takes place. The left ventricle pumps blood around the rest of the body.

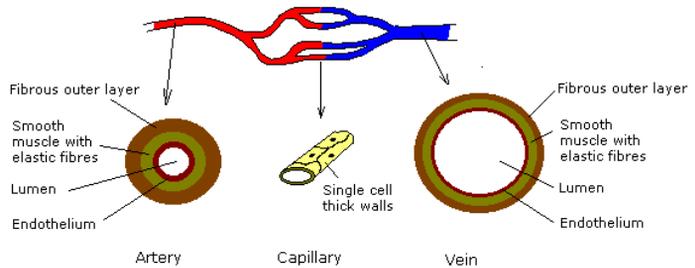
The natural resting heart rate is controlled by a group of cells located in the right atrium that act as a pacemaker



Lungs are adapted for gas exchange by:

- Cells one layer thick
- Large surface area.
- Moist

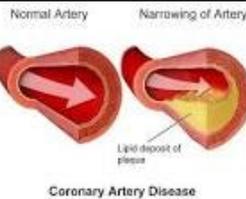
**Blood vessels**



**Arteries** have thick elastic walls to keep the blood under high pressure.

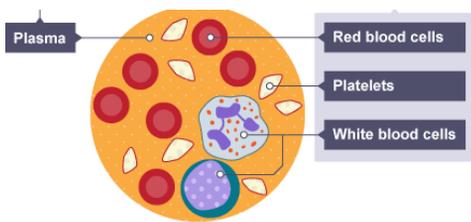
**Veins** have valves to prevent the back flow of blood.

**Capillaries** are one cell thick so exchange of materials can occur by diffusion.



**Coronary heart disease**

Fat build-up narrows the coronary artery. This leads to less blood flow. This leads to less oxygen being delivered. This can lead to a heart attack



Red Blood Cells	Carry oxygen
White Blood Cells	Produce antibodies; fight infection
Platelets	Blood clotting (scabs)
Plasma	Transport CO <sub>2</sub> , glucose, urea

**Treating coronary heart disease**

**Stents** open the artery and allow blood to flow. **Statins** lower blood cholesterol so lead to less fat deposits.

**Treating other heart issues**

**Leaky valves** means some blood goes the wrong way. They can be replaced by **Mechanical** or **Biological** valves.

**Poor heart rhythm** can be corrected using an **artificial pacemaker**

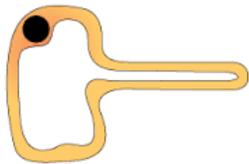
**Heart failure** can be treated using transplant or an artificial heart.

## Transport in plants

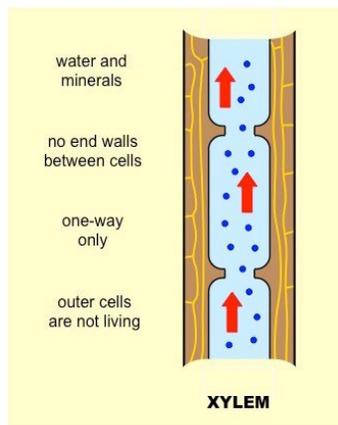
The transport system is composed of **ROOTS, STEM and LEAVES**.

**Transpiration** – the movement of water through a plant and its loss from the leaves.

**Translocation** – the movement of sugars through a plant.



Root hair cells are adapted for the efficient uptake of water by osmosis (they have a large surface area), and mineral ions by active transport (lots of mitochondria)



Xylem tissue transports water and mineral ions from the roots to the stems and leaves.

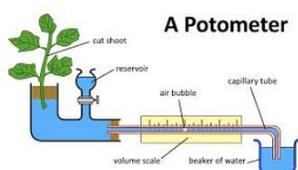
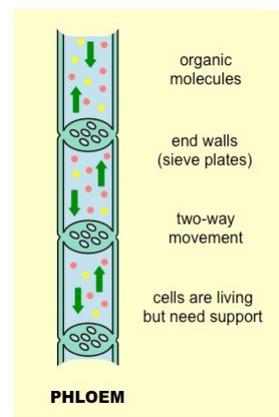
It is composed of hollow tubes strengthened by lignin adapted for the transport of water in the transpiration stream.



The role of stomata and guard cells are to control gas exchange and water loss.

Phloem tissue transports dissolved sugars from the leaves to the rest of the plant for immediate use or storage. The movement of food molecules through phloem tissue is called translocation.

Phloem is composed of tubes of elongated cells. Cell sap can move from one phloem cell to the next through pores in the end walls



### Measuring Transpiration:

Transpiration can be measured by using a photometer to measure the amount of water lost by the leaf.

Factor	How increasing it affects transpiration?	Explanation
Temperature	Increases	Particles move faster
Light	Increases	More stomata open
Humidity	Decreases	Decreases concentration gradient
Air movement	Increases	Increases concentration gradient