



Firrhill High School



Summary Files B2: The Human Body



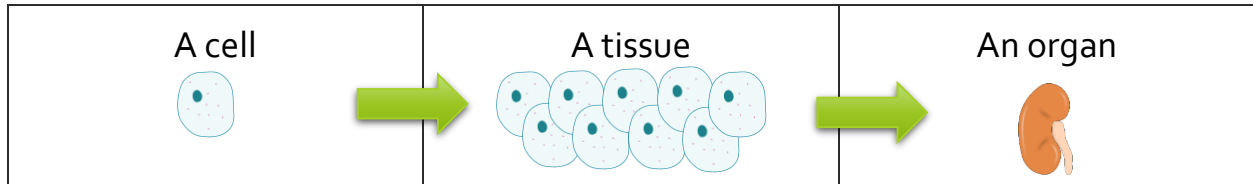
WHAT SHOULD I KNOW?

Success Criteria	Before reading	After reading	Before my test
I can identify and locate the major organs of the human body.			
I can identify the main structure and function of the main parts of the digestive system.			
I can describe the function of peristalsis.			
I can identify the major food groups using food tests.			
I can understand the structure and function of red blood cells, white blood cells, platelets and plasma.			
I can describe the roles of the three types of blood vessel .			
I can understand that the Human heart is a 'double-pump' moving blood to the lungs and the body.			
I can state the left side of the heart pumps blood to the body.			
I can state the right side of the heart pumps blood to the lungs.			
I can explain the function of the heart's valves.			
I can describe the basic structure of the lungs.			
I can explain the role of the air sacs in gas exchange.			
I can understand the role of cilia and mucus.			
I can state and understand the basic word equation for respiration.			
I can explain why we need energy.			
I can measure aspects of my health.			
I can explain why measuring health can improve quality of life.			
I can name the different parts of the brain.			
I can the list four requirements for optimum brain development.			

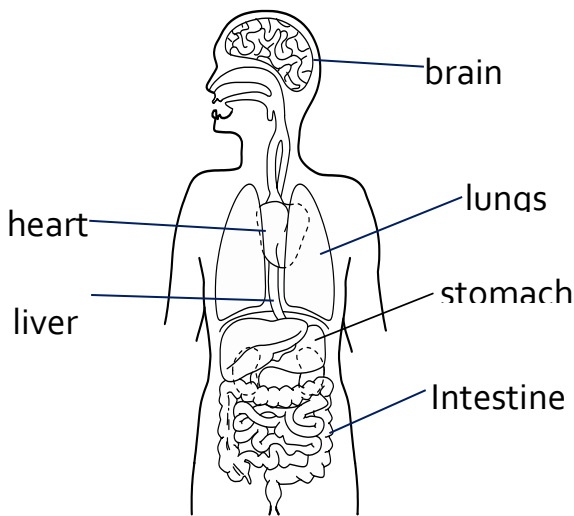
THE HUMAN BODY

Cells, tissues and organs

Cells are the building blocks of life. Many cells working together form **tissues**. Lots of tissues working together form **organs**.



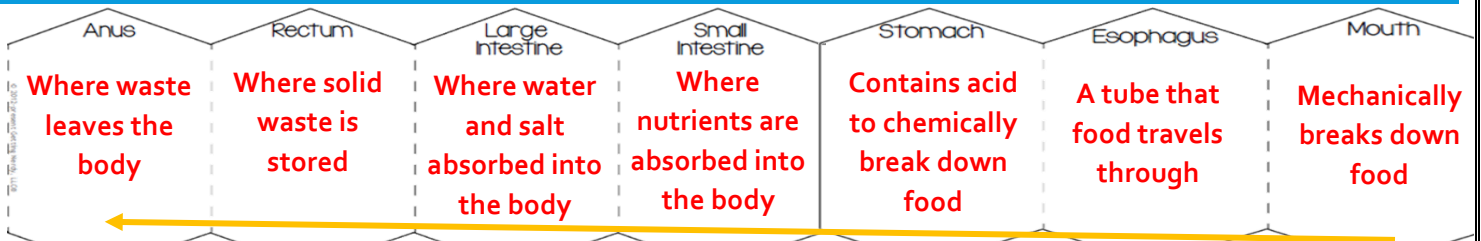
Organs of the human body



Organ	Role (Job)
Brain	For thought, controls the body
Lungs	
Heart	Pumps blood around the body
Stomach	Contains acid to break down food
Liver	Removes toxins from blood
Intestine (small)	Removes nutrients from food
Intestine (large)	Removes water from waste

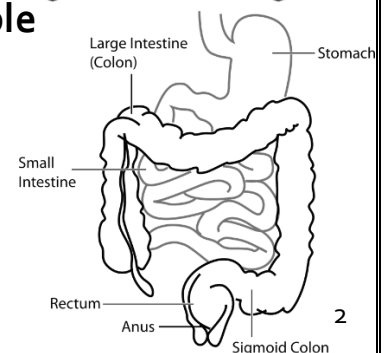
THE DIGESTIVE SYSTEM

How do we get energy from our food?

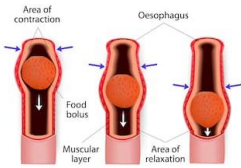


The digestive system breaks down food. It turns **large, insoluble** particles into **small, soluble** particles.

The word soluble means 'can dissolve' this is important so that nutrients can absorb into the blood stream.



How does food move through the body?









Food moves through the body due to a muscle movement called peristalsis.

This involved the muscles above a ball of food contracting (tightening), pushing the food ball down to the next part of the digestive system.

FOOD TESTS

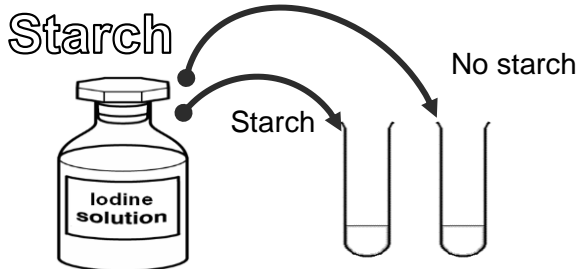
How can we test to see what our food contains?

The four main food groups are:

 Carbohydrates (for energy)	 Fats (for energy and warmth) 
 Proteins (for growth and repair) 	Vitamins and Minerals (for health) 

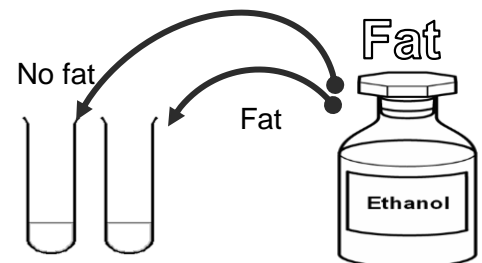
Food tests are used to find out what our food contains.

Four of the most common food tests are shown below:



Starch is found in **potatoes, pasta & vegetables**.

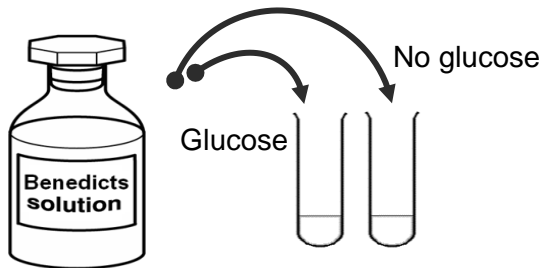
Starch turns iodine solution **black**.



Fat is found in **meat & dairy**.

Fat turns ethanol **cloudy**.

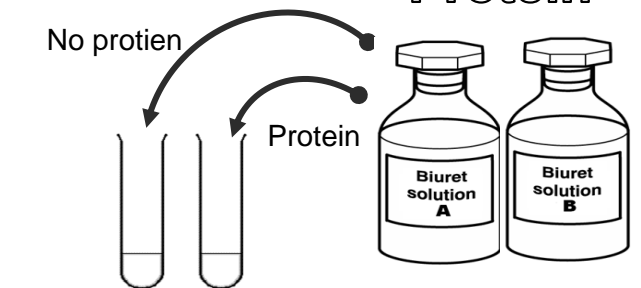
(Sugar) Glucose



Glucose is found in **honey, fruit & sweets**.

Glucose turns blue Benedict's solution **orange**.

Protein



Protein is found in **meat, dairy, nuts and soya**.




Protein blue biuret solution **purple**.

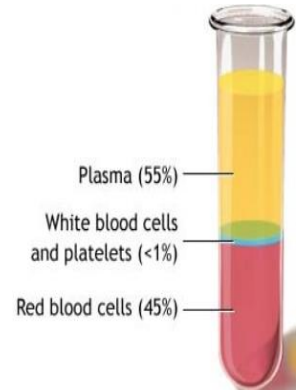
THE CIRCULATORY SYSTEM

How does oxygen travel to every cell?

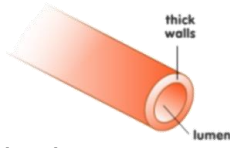
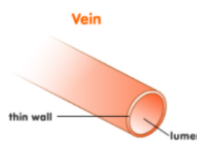
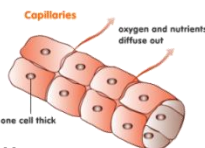
The heart pumps **blood** around the body.

What is inside our blood?

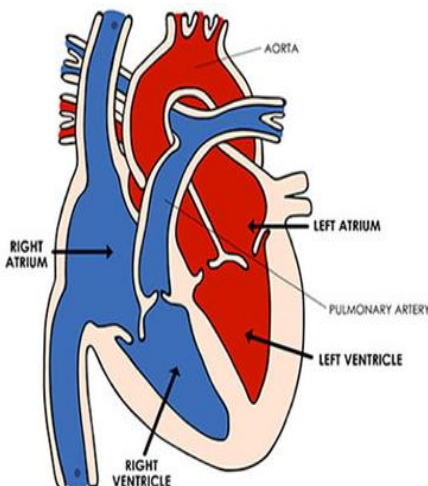
<u>Platelets</u>	<u>Plasma</u>	<u>Red Blood Cells</u>	<u>White Blood Cells</u>
Help to clot blood if there has been damage.	The liquid that cells travel through, also carries nutrients to cells and moves waste (like carbon dioxide) away.	Carry oxygen around the body. Have a haemoglobin to help carry oxygen.	Protect against disease
			



What does our blood travel through?

<u>Arteries</u>	<u>Veins</u>	<u>Capillaries</u>
 <p>thick walls lumen</p> <p>Carry blood at high pressure Carry oxygenated blood</p>	 <p>thin wall lumen</p> <p>Carry blood at low pressure Carry deoxygenated blood Has valves so the blood doesn't flow backwards</p>	 <p>Capillaries oxygen and nutrients diffuse out one cell thick</p> <p>Thin enough to allow small molecules to diffuse (pass) in and out of them.</p>

The heart is a muscle that pumps blood around the body.



The heart has a 'double-pump' pumping blood around the body. You can hear this when you listen to your pulse.

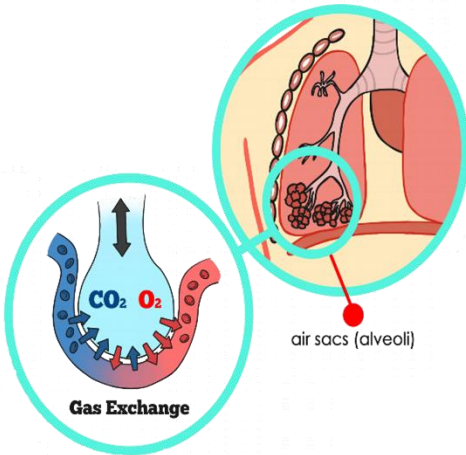
The left side of the heart pumps blood to the body, this blood is oxygenated (carries oxygen).

The right side of the heart pumps blood to the lungs where blood cells collect more oxygen.

The heart contains valves to stop blood from flowing in the wrong direction.

RESPIRATION

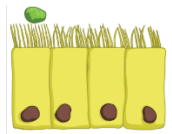
How does oxygen enter the blood system?



The lungs are used for breathing. The diaphragm is a muscle below the lungs that tightens to bring air into the lungs. The diaphragm then relaxes to push air out of the lungs.

Air enters through the nose and mouth, travels down the **trachea**, this then splits into **bronchi**, these split into smaller bronchioles. Finally, air reaches the **air sacs**. At the air sac blood travels close enough to the surface that oxygen can enter the blood stream and carbon dioxide can leave the blood stream.

The trachea is lined with **cilia** and **mucus**. These are tiny hairs that 'sweep' mucus up to the mouth where it can be swallowed.



Respiration is how energy is released from the food we eat. We need energy to do everything – to run, jump or even just to live! This is the word equation for respiration:



MEASURING HEALTH

How do we know if we are healthy?



Thermometers measure body temperature



Heart rate monitors measure how quickly the heart beats



Oxygen saturation monitors measure how much oxygen is carried in your blood



Peak flow meters are used to measure how much air your lungs can hold



A sphygmomanometer is used to measure blood pressure

How to measure health

THE BRAIN

How does our brain work?

Different parts of the brain are used for different functions.

The brain uses around 30% of the oxygen that the body needs!

The frontal lobe is where your personality is developed, it controls language and memory.

The parietal lobe is for sensing.

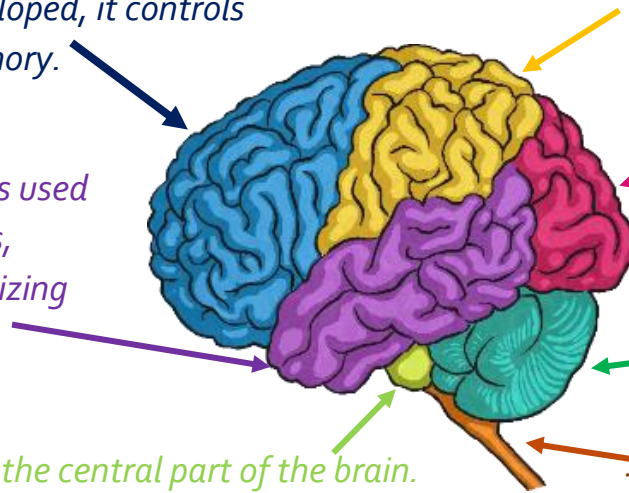
The occipital lobe is for processing sight.

The temporal lobe is used for linking thoughts, hearing and recognizing objects.

The cerebellum is for co-ordination and balance.

The brain stem is the central part of the brain.

The spinal cord is how the brain connects with the rest of the body.



How to keep your brain healthy

For the brain to work its very best we need:



Fuel (A healthy, varied diet)

Sleep (At least 8 hours a night)



Exercise (At least 30 minutes a day)

Challenge (Keep learning new things!)

