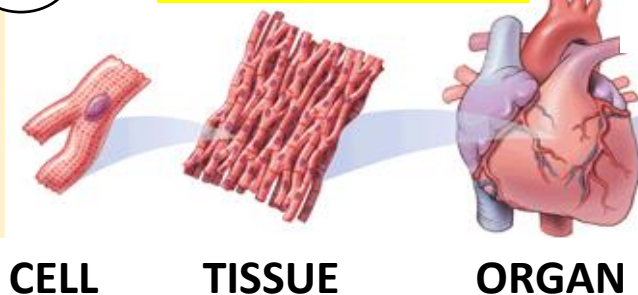
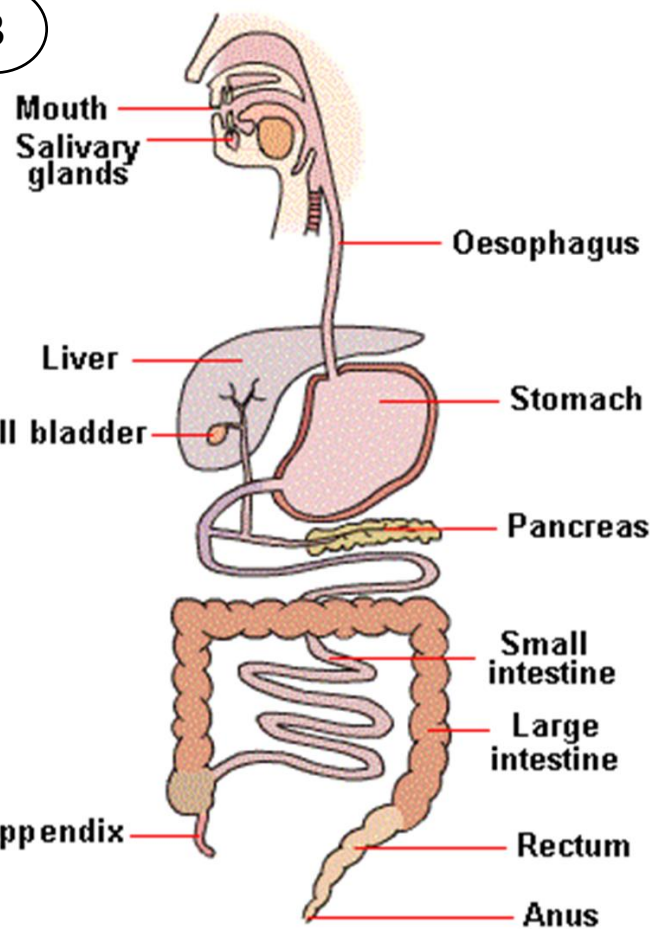


1

B2: Organisation**ORGAN SYSTEM**

3

**ORGANISM**

Digestive Organ

2

Function

Chemicals Produced (inc. enzymes)

Mouth

Chew and breakdown food

Amylase

Pharynx / Oesophagus

Carries food to stomach through muscular contractions - peristalsis

/

Stomach

Muscular walls churn food, breaking it down to a useful form

HCl acid and Pepsin (protease enzyme)

Liver

Produces bile that neutralises HCl acid and emulsifies fats

Bile (an alkaline substance)

Gall Bladder

Stores excess bile

/

Pancreas

Produces digestive enzymes and releases them into small intestine.

Protease, Lipase, Carbohydrase (amylase)

Small Intestine

Produces digestive enzymes and where food is absorbed into blood

Protease
Amylase
Lipase

Large Intestine

Excess water is absorbed from food-no chemical/enzyme production

Rectum & anus

Where faeces is stored-no chemical/enzyme production

4

Enzyme
AmylaseSubstrate
Starch/
carbohydratesProduct
MaltoseSecretion location
Mouth, small intestine, Pancreas

Protease

Proteins

Amino acids

Stomach, pancreas

Lipase

Lipids/fats

Fatty acid and glycerol

Pancreas

Bile salts (not an enzyme)

Lipids/fats

Fats are emulsified, increasing the surface area and stomach acid is neutralised

By the liver, stored in the gall bladder, released into the small intestine

Term

5

Meaning

Digest/
Digestion

The process of breaking down food by mechanical and enzyme action.

Ingestion

Taking food into the alimentary canal i.e. eating

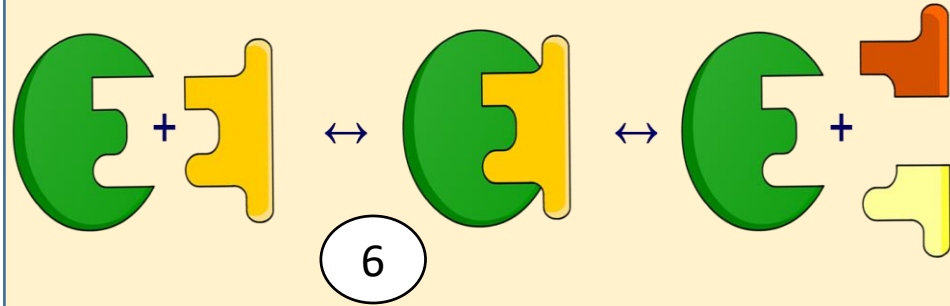
Egestion

Removal of food from the body that cannot be digested i.e. solids

Excretion

The separation and removal metabolic waste from the body e.g. urea/ carbon dioxide

Lock and key mechanism: In the same way that a key fits into a lock, so a substrate is thought to fit into an enzyme's active site. The enzyme is the **lock**, and the reactant is the **key**.

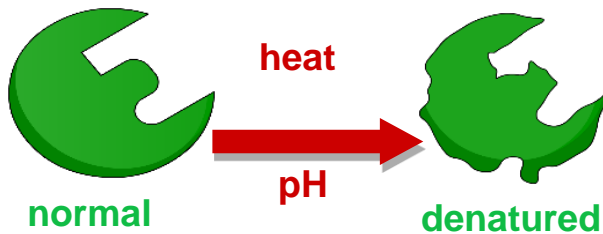


enzyme + reactant \leftrightarrow enzyme-reactant complex \leftrightarrow enzyme + products

7

Factors that affect the rate of a reaction include:





Concentration, substrate concentration, surface area, pressure,



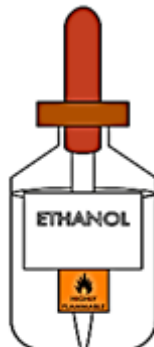
Temperature, pH, enzyme cause enzymes to denature if not perfect. When this happen the active site changes shape and will no longer fit the substrate, causing the lock and key mechanism to stop working

8

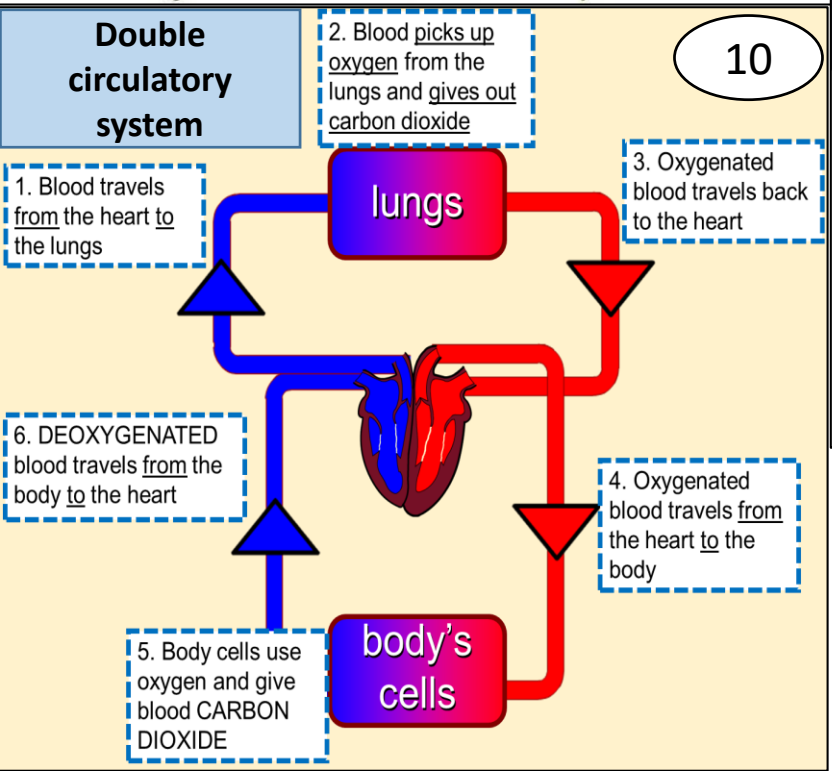
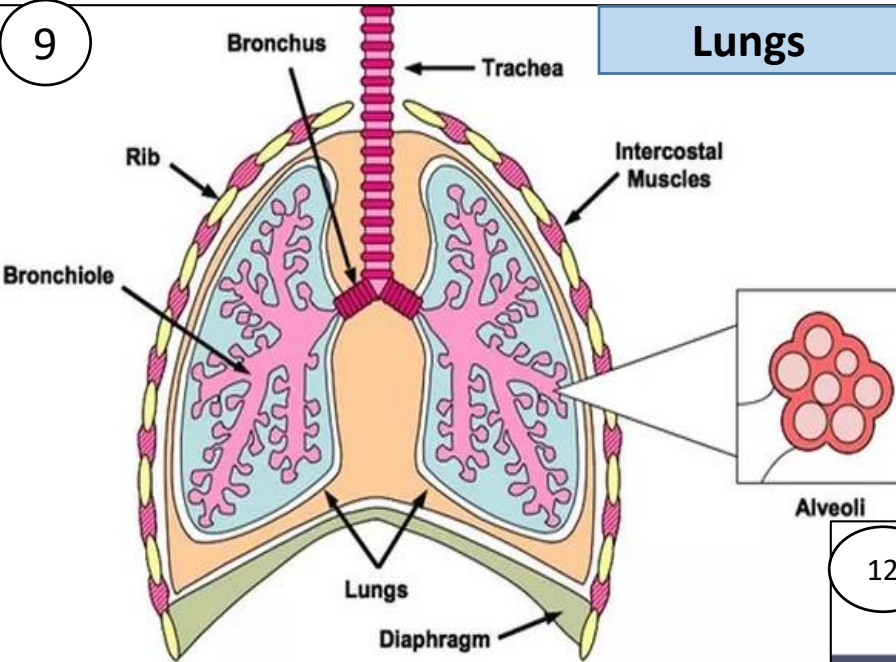
BIOCHEMICAL (FOOD) TESTS

CHEMICAL	TESTS FOR ...?	HOW TO CARRY OUT THE TEST	RESULT	CHEMICAL	TESTS FOR ...?	HOW TO CARRY OUT THE TEST	RESULT
	Starch	1.) Add the iodine solution directly to the substance to be tested (in solid or liquid form) and look for a colour change.	Turns blue black with starch		Protein	1.) Add Biuret's to the solution/suspension to be tested and look for a colour change.	Turns purple with protein
	Reducing Sugar	1.) Add Benedict's to the solution/suspension to be tested. 2.) Heat for 2 mins in a water bath at boiling point and look for a colour change.	Turns brick red with reducing sugars (green/yellow/orange if less sugar present)				
				Test	Test for	Positive test	Negative test
				Sudan (III)	Lipid	2 layers One is red	No layer formed

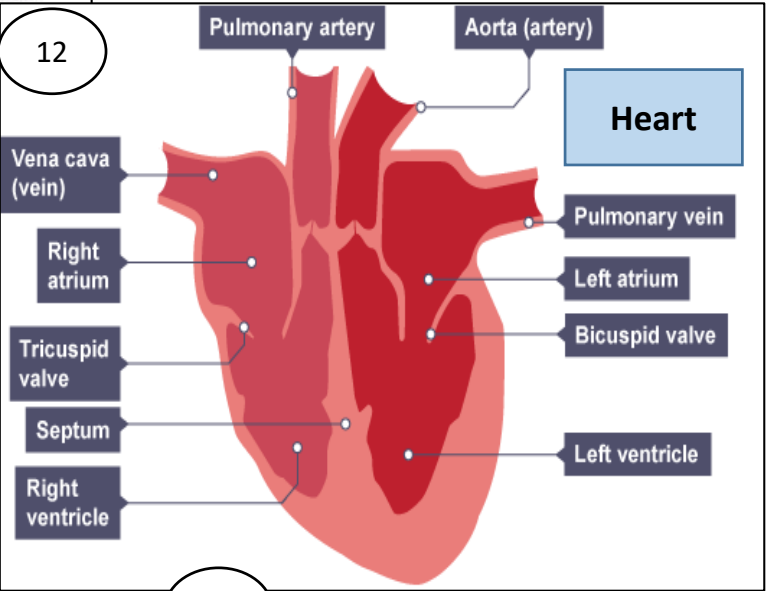
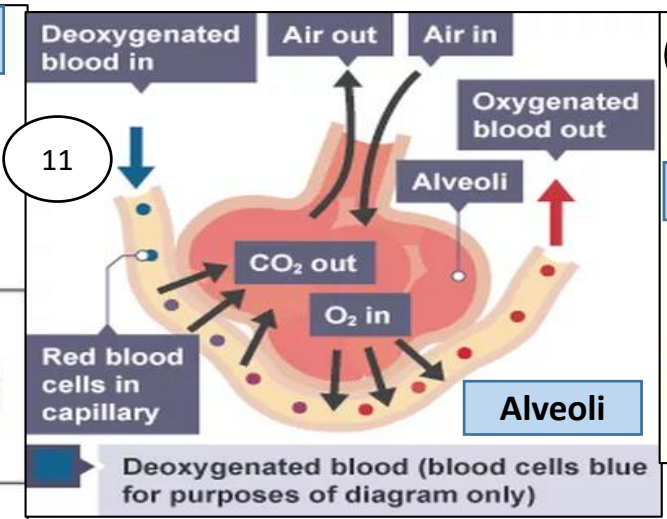
Note: Students should primarily refer to the Sudan (III) test as the test for lipids but may also be required to explain the emulsion test

	Lipid (known as the Emulsion test)	1.) Add ethanol to the solution/suspension to be tested and shake thoroughly. 2.) Then add water and look for a colour change.	Turns cloudy/milky with lipid
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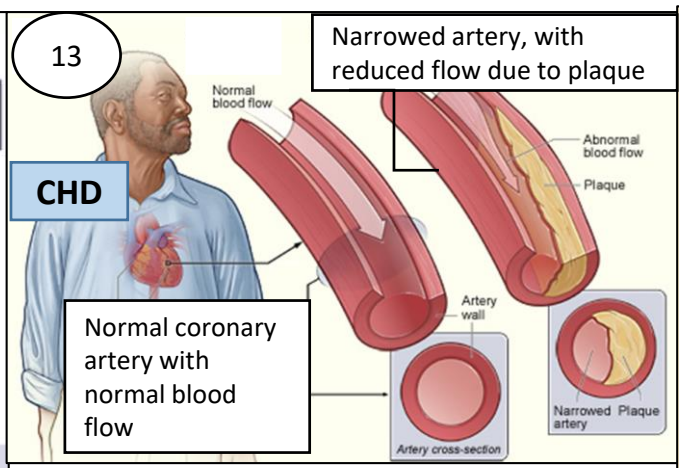
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Lungs

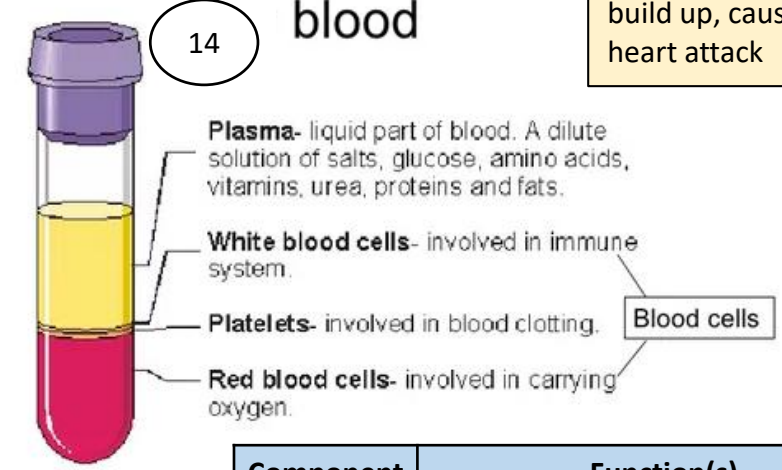


Vessel	15	Features
Artery		Thick walls, withstand high pressure, carry blood away from heart
Vein		Thin walls, large lumen, carry blood at low pressure, contain valves to prevent backflow
Capillary		Walls one cell thick, to aid diffusion



Coronary heart disease: is caused when a build up of plaque/fatty material on the side of the coronary artery. This reduces the amount of blood and oxygen reaching the cardiac muscle. This increases the anaerobic respiration in the cardiac muscle, causing lactic acid to build up, causing a heart attack

Four main components in blood



Component	Function(s)	16
Plasma	Transporting carbon dioxide, digested food, urea, hormones and heat	
Red blood cells	Transporting oxygen	
White blood cells	Ingesting pathogens and producing antibodies	
Platelets	Involved in blood clotting	

Disease Types:

Communicable diseases can be transferred from one person to another, or from one organism to another. In humans, these include measles, food poisoning and malaria

Non-communicable diseases are not transferred between people or other organisms these may include; cancer, diabetes, genetic diseases and conditions, heart disease or asthma

Health is a state of **PHYSICAL** and **MENTAL** well-being. Diseases, both **COMMUNICABLE** and **NON-COMMUNICABLE** are major causes of ill health.

Disease interactions:

There are many other factors which can lead to ill health.

Different types of disease may

INTERACT

Ill health can be caused by interacting conditions.

Often one factor will lead to a related cause of ill health eg:

Viruses living in cells can be the trigger for cancer

Immune reactions initially caused by a pathogen can trigger allergies such as skin rashes and asthma.

Severe **physical ill health** can lead to depression and other **mental illness**.

Other factors that can have major effects on physical and mental health include: diet, lifestyle factors such as alcohol and other drugs or stress

Cancer

Cancer is caused by mutations in the DNA of cells that cause uncontrolled cell growth and division
Cells divide by mitosis as part of growth and repair of old or damaged cells. However, when a cell grows and divides uncontrollably (new cells are produced – even if the body does not need them) it is called cancerous.

Different **lifestyle choices** can lead to an **increased risk of developing a disease**, these are called **risk factors**:

Viruses linked with cancer, such as the human papilloma virus (HPV), being spread from person to person through sexual intercourse

the **chemical carcinogens (cancer causing chemicals)** in cigarette smoke increasing the risk of lung cancer alcohol intake is linked with certain cancers (as well liver disease)

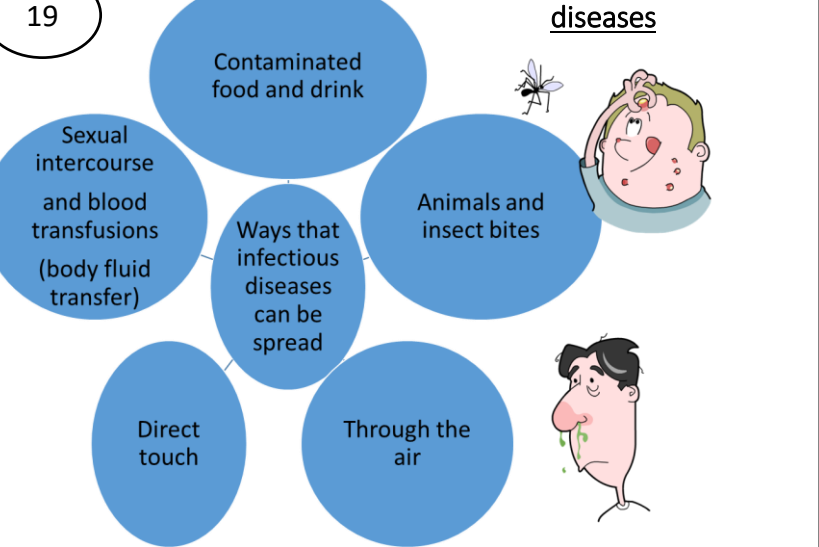
exposure to ultraviolet radiation, part of which is ionising, during sunbathing or outdoor activities, leading to the development of skin cancers

diet, including fat and salt intake, increases the risk of cancer (as well as CHD and diabetes)

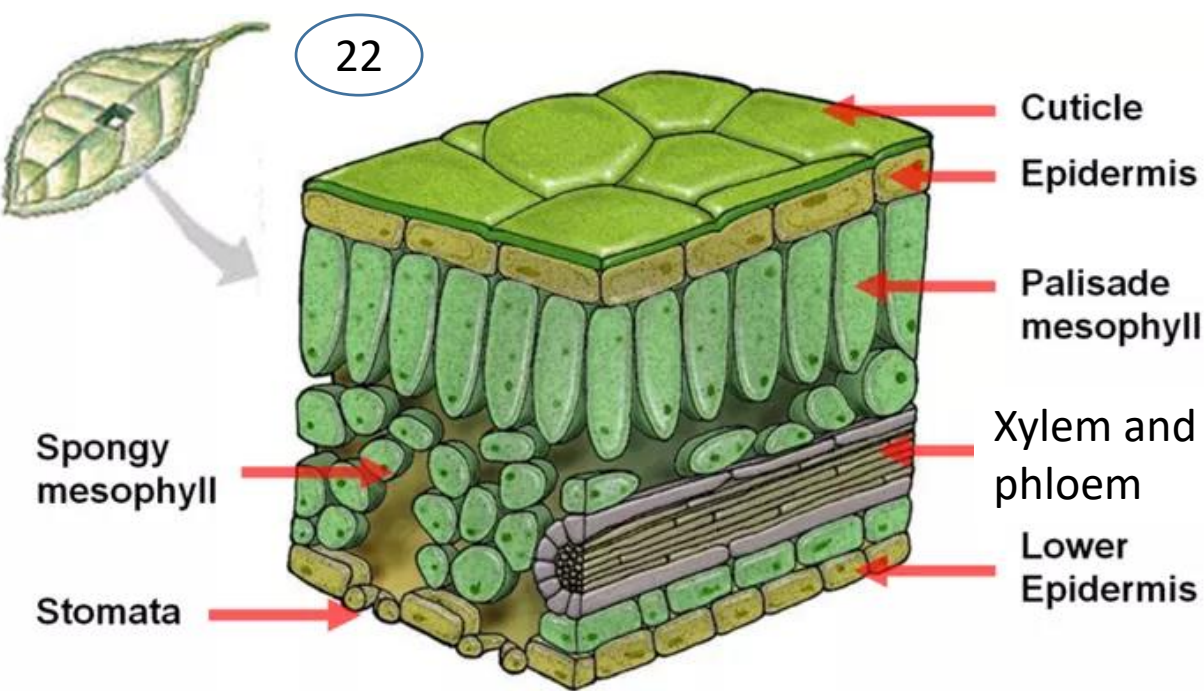
Industrial and environmental factors at work:
exposure to ionising radiation increases the risk factor
exposure to chemical carcinogens

Tumour type	Characteristics
Benign	Grows slowly; usually grow within a membrane, so can easily be removed; does not invade other parts of the body
Malignant	Grows quickly; invades neighbouring tissues and can spread to other parts of the body in the bloodstream; as the tumour grows, cancer cells detach and can form secondary tumours in other parts of the body - this is called metastasis.

Methods of transmitting infectious diseases



Structure	Function
Epidermis	Top thin layer (protective). Prevents water loss and over heating of leaf
Cuticle	Waxy layer of the epidermis- Prevents water loss and over heating of leaf
Spongy Mesophyll / Palisade cells	Photosynthesis – there are more chloroplast in the palisade cells than the mesophyll cells are- this is where the majority of photosynthesis happens. Palisades are long – to maximize surface area. Spongy cells are round and few – allows for air to travel to the palisade cells (gas exchange)
stomata	Allows air to come in and out of leaf (gas exchange)
Guard cells	Control the opening and closing of stomata
Vascular bundle	Has the xylem and phloem running through the leaf
xylem	Transports water into the leaf / structural support
phloem	Takes substance away (sugar) that the leaf has made to other parts of the cell / structurally support



Meristem Tissue

Plant **stem cells** are found **ONLY** in the **meristem** tissue, which is found at the growing **tips of shoots and roots**. Here cells will **differentiate** into different plant cells.

