

### The Respiration System and Ventillation

#### The process of breathing out

1. Intercostal muscles and diaphragm relax.

2. Thorax volume decreases

3. Air is forced out

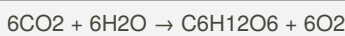
#### Disease caused by smoking

1. It can cause cancer

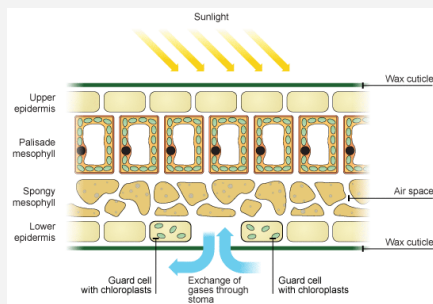
2. It can cause lung diseases by damaging your airways and the alvioli found in the lungs

3. It affects the heart and blod vessels

### Aerobic Respiration in plants



### Internal Structure of a Leaf



### Adaptation of leaves

1. Leaves are broad so there's large surface area exposed to light
2. Most of the chloroplasts are found in the palisade layer so it can get the most light
3. The upper epidemis is transparent so that light can pass through it to the palisade layer
4. Leaves have a network of vascular bundles which deliver water and it helps support the leaf structure
5. The waxy cuticle helps to reduce water loss by evaporation

### Rate of Photosynthesis

#### Light

Chlorophyll uses light energy to perform photosynthesis

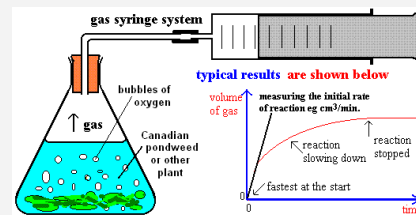
#### Carbon Dioxide

CO<sub>2</sub> is one of the raw materials needed for photosynthesis

#### Temperature

Temperature affects the rate of photosynthesis because it affects the enzymes involved

### Experiment to measure the rate of p/s



### Pathogens

Pathogens are microorganisms that cause disease *e.g certain types of bacteria and viruses*

### Plants, Animals and Bacteria

Plants	Animals	Bacteria
Multicellular	Multicellular	Single-celled and microscopic
Have chloroplasts which means they can photosynthesise	No chloroplast	Some can photosynthesise
They have cell walls made out of cellulose	No cell walls	No nucleus
Store carbohydrates as sucrose or starch	Store carbohydrates as glycogen	They feed off other organisms - both living and dead
	Most have nervous coordination and can move around.	They have circular chromosomes of DNA

### Osmosis

Osmosis is the **net movement of water molecules** across a partially permeable membrane from a region of higher **water** concentration to a region of lower **water** concentration

### Active Transport

Active Transport is the net movement of particles against a concentration gradient using energy released during respiration. Oxygen is essential because of respiration

### Test for Glucose and Starch

#### Benedict's test for Glucose

- Add Benedict's reagent (blue) to a sample and heat it. Make sure the solution doesn't boil.

■ If Glucose is present it will form a coloured precipitate

■ Blue -> Green -> Yellow -> Orange -> Brick Red

#### Iodine test for Starch

- Just add iodine solution to the test sample

■ If **starch** is present the same changes from brownish-yellow to **blue-black** colour

■ If there is no starch it stays brownish-yellow

### Mineral Ions

#### Nitrates

Contain nitrogen for making amino acids and proteins. These are needed for cell growth.

#### Potassium

To help the enzymes needed for photosynthesis and respiration.

### Variables

#### Independent

The variable you CHANGE

#### Dependent

The variable you MEASURE

### Factors

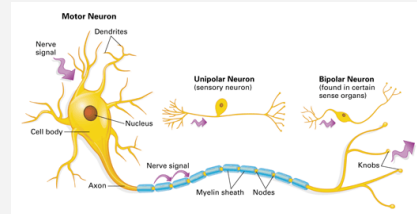
#### Biotic

Living

#### Abiotic

Non-Living

### Motor Neurone



### Stages of a Reflex Arc

#### Reflex Arc

- Reflexes are Automatic, involuntary responses to changes occurring inside or outside the body. Some involve the brain (such as blinking the eye), while others do not (such as moving your hand away from a hot object).
- Why does the brain not have to be involved? If it were, by the time the impulse traveled to the brain, the brain figured out what was happening, and sent a response to the body, serious damage might occur. So the body evolved a method of by passing the brain.

#### Stages of Reflex Arc

1. Receptor is stimulated and formulate message. ie. nerve impulse
  2. Sensory neuron takes the message to the Central Nervous System. (spinal cord)
  3. Interneuron passes the message to a motor neuron.
  4. Motor Neuron takes the message away from the C.N.S. to the effector (muscle/organ)
  5. The muscle receives the message and contracts.
- \*\*\*The brain finds out later what had happened\*\*\*

### CORMMSS

Change

Organism

Repeat

Measure x 2

Same x 2

