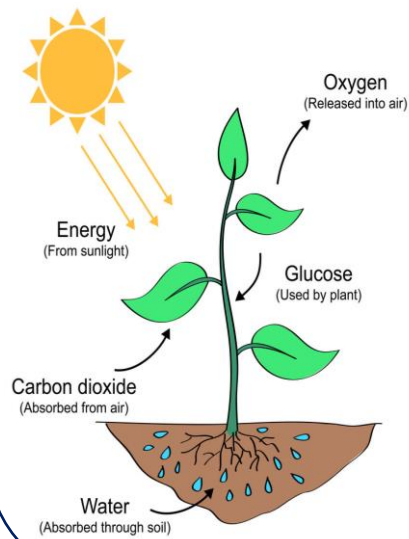
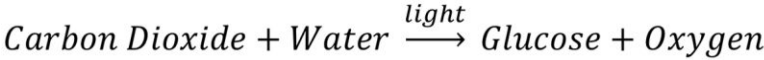




Year 8 Photosynthesis and respiration

Keyword	Definition
Photosynthesis	The process in which plants produce their own food, glucose.
Glucose	A small soluble sugar produced during photosynthesis.
Starch	A large insoluble molecule which is an essential store of energy for a plant
Chloroplast	Small disk-shaped structures found within plants where photosynthesis occurs.
Chlorophyll	A green chemical within chloroplasts which absorbs the light energy needed for photosynthesis.
Stomata pores (stoma singular)	Tiny holes on the underside of leaves where carbon dioxide enters, and oxygen and water vapour exits.
Root hair cell	Cells within the roots of plants which absorb water and minerals.
Breathing (ventilation)	The process in which air is moved into and out of the lungs.
Diaphragm	A large sheet of muscle which separates the lungs from the abdominal cavity.
Trachea (windpipe)	The tube that leads from the mouth to the lungs.
Bronchi (bronchus singular)	The two major air tubes within the lungs
Alveoli	Tiny air sacs within the lungs where gas (oxygen, carbon dioxide) is exchanged during breathing.
Aerobic respiration	A type of respiration which requires oxygen.
Anaerobic respiration	A type of respiration that occurs in the absence of oxygen.
Lactic acid	A toxic chemical produced during anaerobic respiration.
Nicotine	An addictive substance found within tobacco in cigarettes. It increases heart rate and blood pressure and makes blood vessels narrower.
Tar	A sticky substance found within tobacco smoke which can cause cancer. It coats the inside of the lungs, causing coughing.
Asthma	A disease that affects the respiratory system.
Passive smoking	The inhalation of someone else's cigarette smoke.
Carcinogen	Substances that cause cancer.

Photosynthesis



Plants produce glucose during photosynthesis. They need glucose to respire, to make proteins for growth and to reproduce.

Plants take in carbon dioxide from the air via stomata pores in their leaves and water from the soil via root hair cells.

Light energy is also needed which is absorbed by the chlorophyll chemical in the chloroplasts.

Adaptations of a leaf

Leaves are green because they contain lots of chlorophyll to absorb light energy.

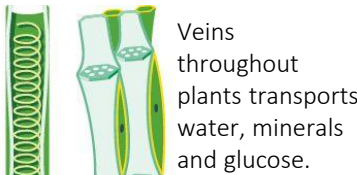
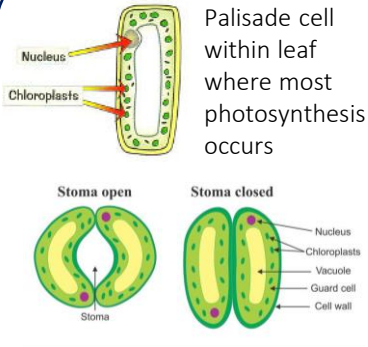


Large surface area to absorb lots of sunlight.

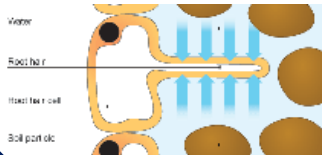
Thin to allow easy diffusion of gases in and out of the leaf.

They have veins to transport the water, mineral and glucose around the plant.

Specialised cells and tissue within a leaf

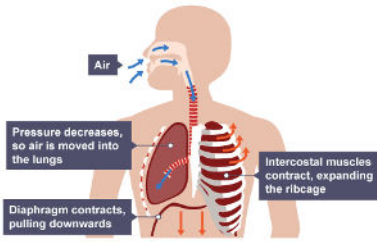


Stoma pore on the underside of the leaf where gases enter and exit.

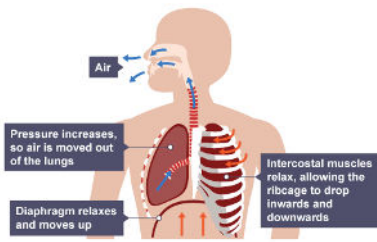


Root hair cells have a large surface area to absorb lots of water and minerals.

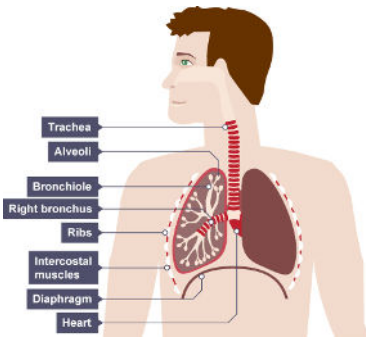
Inhaling



Exhaling



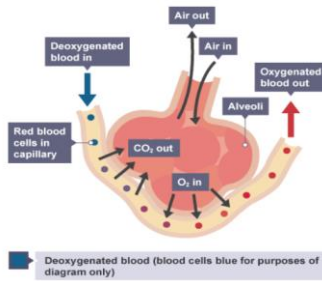
The respiratory system



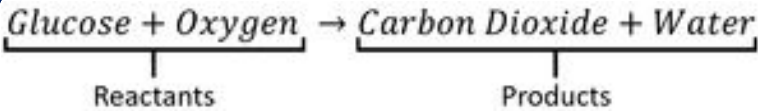
The respiratory system allows gases in and out of the body. Air flows via the trachea, bronchus, bronchioles and into the alveoli.

Oxygen diffuses from the alveoli into the blood and carbon dioxide diffuses from the blood in the the alveoli.

Alveoli are adapted to make gas exchange efficient. They give lungs a large surface area, have thin walls and have lots of tiny blood vessels called capillaries.

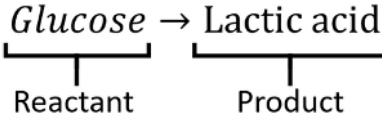


Aerobic respiration



Living organisms respire so they can release energy. Glucose from food and oxygen from the air react together in the mitochondria within cells to produce carbon dioxide and water.

Anaerobic respiration in humans



Anaerobic respiration occurs within the cytoplasm when there is not enough oxygen, usually during exercise. The lactic acid produced builds up in muscles and can cause cramps. This is only removed when you start to respire aerobically again.

Factors affecting the respiratory system

Exercise

Heart rate, breathing rate and breathing depth increases during exercise. You can measure this by measuring your pulse rate, count the number of breaths in per minute and by using a spirometer

Asthma

Asthma can cause your airways to become inflamed swollen and narrowed. This can result in wheezing, a tight chest and difficulty in breathing.

Useful YouTube links:



[Photosynthesis](#)



[Respiratory system](#)



[Aerobic respiration](#)

Skills:

Smoking



Smoke damages the cilia hairs inside the trachea and lungs leading to a build up of mucus and a smoker's cough.

Smoke damages the walls of the alveoli so less oxygen can diffuse into the blood.

Carbon monoxide is transported via red blood cells reducing the ability of the blood to carry oxygen.

Tobacco smoke contains carcinogens, including tar.

These factors can lead to lung disease, heart disease, lung cancer, emphysema, COPD, coronary heart disease, strokes, throat and mouth cancer.