



Year 6 Science Knowledge Organiser: (Animals Including Humans)



Subject Specific Skills

- I can identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood
- I can recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function
- I can describe the ways in which nutrients and water are transported within animals, including humans.

Prior Learning

- Describe the changes as humans develop to old age.
- Describe the simple functions of the basic parts of the digestive system in humans
- Identify the different types of teeth in humans and their simple functions
- Construct and interpret a variety of food chains, identifying producers, predators and prey

Key Knowledge:

- Pupils should build on their learning from years 3 and 4 about the main body parts and internal organs (skeletal, muscular and digestive system) to explore and answer questions that help them to understand how the circulatory system enables the body to function. Pupils should learn how to keep their bodies healthy and how their bodies might be damaged – including how some drugs and other substances can be harmful to the human body
- Our cells need to respire – a chemical reaction that releases energy. During aerobic respiration, cells need a constant supply of oxygen and glucose, as well as the ability to get rid of waste products such as carbon dioxide. The respiratory and circulatory systems are vitally important to this process. Respiration can also occur in the absence of oxygen. This is called anaerobic respiration, and occurs in the human body during exercise, when oxygen does not reach cells quickly enough. Anaerobic respiration is less efficient than aerobic respiration, and can only be used for short periods at a time.
- Long-term smoking can lead to a condition called emphysema, in which the alveoli – the lungs' tiny air sacs – break down and fuse together. This dramatically reduces the surface area of the lungs, slowing the rate of gas exchange, causing breathlessness.

Key Vocabulary

Respiratory System: The group of organs that work together to enable gas exchange to take place in animals.

Aorta: The biggest artery in the body.

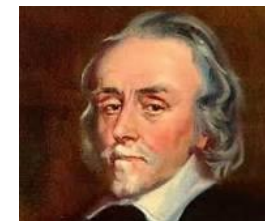
Artery: A blood vessel that carries blood away from the heart.

Circulatory System: The group of organs that transport essential nutrients, gases, chemicals and blood cells around the body.

Vein: A blood vessel that carries blood towards the heart.

Nutrient: Any chemical that is needed by an organism in order to survive and grow. Nutrients are used for energy, to build and repair tissues, and to control body functions.

Key Individual: William Harvey



Key Knowledge:

- The heart is a muscle, whose one and only function is to pump blood. The heart has two sides, and each side has two hollow chambers: the atrium and ventricle. The blood enters the heart via the atria and is pumped out from the ventricles.
- The right side of the heart receives blood from the body and pumps it to the lungs, where it picks up oxygen. It is the job of the left side to receive oxygen-rich blood from the lungs, and pump it out to the body. The blood vessels that carry blood away from the heart are called arteries. The blood vessels that carry blood back to the heart are called veins.
- Bones are living tissue. When we grow taller and our bones getting bigger. Milk is good for their bones and teeth because it contains lots of calcium.
- Our bodies need a variety of nutrients in order to function properly, including fats, proteins, vitamins and minerals.
- Food enters the body, it is chewed by the teeth and mixed with **saliva** (containing enzymes), which begin to break down starch and fat. Saliva also makes the food wet and soft enough to swallow easily. The food moves to the back of the throat where muscle contractions push it into the **oesophagus**. The oesophagus is a long tube that connects the pharynx to the **stomach**. As the muscular walls of the oesophagus contract and relax, the food is pushed downwards. The stomach stores the ingested food and uses gastric juices to continue the digestive process. The walls of the stomach are wrinkled and folded, allowing it to expand. When full, an adult's stomach has a capacity of approximately 1.5 litres. The stomach is lined with mucus to protect it from the strong digestive acids. Food can stay in the stomach for up to several hours before being pushed into the small intestine. **Enzymes** are secreted into the **small intestine** by the intestine walls and slowly the food is broken down. The products of digestion can then be absorbed through the lining of the small intestine into the bloodstream, and transported around the circulatory system to all the body's tissues.
- Food that cannot be digested easily passes into the **large intestine**. Here, bacteria feed off it, creating useful substances like vitamin K (important for blood clotting, amongst other things). The walls of the large intestine absorb these vitamins as well as much of the water.
- Anything that can't be absorbed, such as fibre and dead bacteria, is eventually passed out of the body as **faeces**. This process is called egestion or defecation.