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.

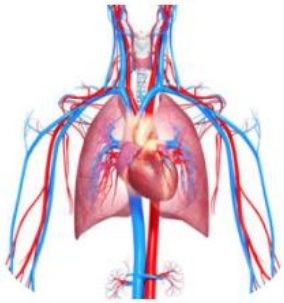
Prior Learning

- 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: Our body is made up of trillions of cells. Our cells need to respire – a chemical reaction that releases energy. The respiratory and circulatory systems are vitally important to this process.

Does the heart get tired?

- 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.
- Your heart is an involuntary muscle, which means it beats without you having to think about it. It beats 100,000 times a day, which adds up to more than 3 billion heartbeats in a lifetime.

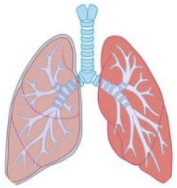


Key Individual: William Harvey

William Harvey was born 1st April 1578 and died 3rd June 1657. He was an English physician who was the first to recognize the full circulation of the blood in the human body.

Key Knowledge:

What happens when we breathe?



- Every cell in the body carries out a process called respiration in order to release the energy it needs to function
- Aerobic respiration requires oxygen and produces the waste gas carbon dioxide, so we need to breathe in and out in order to get the oxygen into our blood and the carbon dioxide out.
- The lungs provide an ideal exchange surface between the air and the blood, allowing gas exchange to occur as efficiently as possible.
- Inside the lungs, oxygen diffuses into the blood and carbon dioxide diffuses out.
- The process of breathing is called ventilation. The lungs are surrounded by the rib cage and a sheet of muscle called the diaphragm. When you breathe in, the diaphragm contracts and moves downwards.
- At the same time, the muscles between the ribs contract and pull the ribcage up and out. This creates a greater volume in the chest, and therefore a lower pressure, which causes air to rush in. We call this inhaling.
- Breathing out, or exhaling, involves reversing these actions. The diaphragm rises up, the ribs fall and the air is forced out of the lungs.

Key Vocabulary:

Aerobic respiration: The process by which energy is released in cells from food and oxygen. Respiration can also take place without oxygen. This is called anaerobic respiration.
Aorta: The biggest artery in the body.
Artery: A blood vessel that carries blood away from the heart.
Blood: A fluid that transports substances around the body.
Cartilage: A flexible connective tissue found in various parts of the body.
Circulatory System: The group of organs that transport essential nutrients, gases, chemicals and blood cells around the body.
Heart: A large muscular organ that pumps blood around the body.
Lungs: The main organs of the respiratory system, responsible for breathing.
Mitochondrion: An organelle found inside cells where respiration takes place.
Platelet: Irregular shaped cell fragments that help the blood to clot.
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.
Respiration: The chemical reaction that takes place in all living cells to release energy from glucose.
Respiratory System: The group of organs that work together to enable gas exchange to take place in animals.
Skeletal System: The supportive or protective structure of an animal.
Vein: A blood vessel that carries blood towards the heart.