



Key Vocabulary

Tier 1

Body	The whole organism
Cell	The basic building blocks of life
Water	Essential liquid needed for life processes
Blood	Fluid circulating in animals carrying oxygen and nutrients
Air	Mixture of gases used in respiration

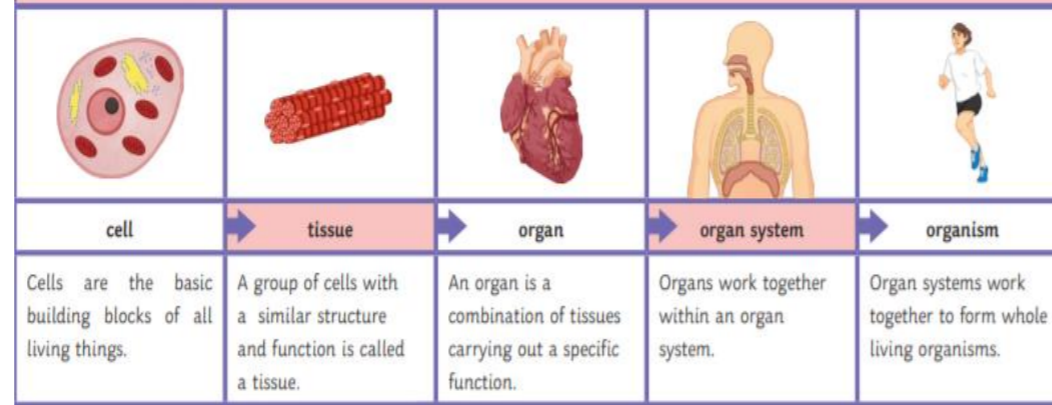
Tier 2

Tissue	A group of similar cells working together to perform a function
Organ	A group of tissues working together to perform a function
System	A group of organs that work together to perform a specific function
Transport	The movement of substances such as gases, nutrients or waste
Enzyme	A protein that speeds up chemical reactions

Tier 3

Organism	An individual living thing
Multicellular	Made up of more than one cell
Specialisation	The process by which a cell becomes adapted to perform a specific function
Differentiation	The process by which cells develop into a specialised type
Circulatory System	The system of heart, blood and vessels that transports substances around the body

Principles of Organisation



	Artery	Vein
direction of blood flow	away from the heart	towards the heart
oxygenated or deoxygenated blood?	oxygenated (except the pulmonary artery)	deoxygenated (except the pulmonary vein)
pressure	high	low (negative)
wall structure	thick, elastic, muscular, connective tissue for strength	thin, less muscular, less connective tissue
lumen (channel inside the vessel)	narrow	wide (with valves)

Enzymes

An enzyme is a biological catalyst; enzymes speed up chemical reactions without being changed or used up.

Enzyme	Reactant	Product
amylase	starch	sugars (glucose)
protease	protein	amino acids
lipase	lipid	glycerol and fatty acids

The Heart as a Double Pump

The heart works as a **double pump** for two circulatory systems; the **pulmonary** circulation and the **systemic** circulation.

The pulmonary circulation serves the lungs and bring deoxygenated blood to exchange waste carbon dioxide gas for oxygen at the **alveoli**.

The systemic circulation serves the rest of the body and transports oxygen and nutrients from digestion to the cells of the body, whilst carrying carbon dioxide and other waste away from the cells.

The systemic circulation flows through the whole body. This means the blood is flowing at a much higher pressure than in the pulmonary circuit.

Career Links

Doctor, Nurse, Surgeon, Physiotherapist, Cardiologist, Respiratory therapist, Nutritionist, Medical lab technician, Paramedic, Botanist, Agricultural scientist, Horticulturist, Forestry officer, Sports scientist, Tissue engineer, Geneticist.

Homework

Insert sparkx codes for the unit

- ### Key Knowledge
- All living organisms are made of cells
 - Similar cells form tissues, which work together to perform a function
 - Different tissues combine to form organs
 - Organs work together in organ systems to carry out complex functions
 - The digestive system breaks down food into molecules that can be absorbed.
 - The circulatory system transports oxygen, nutrients, hormones and waste products around the body
 - The respiratory system allows gas exchange: oxygen in, carbon dioxide out
 - The musculoskeletal system enables movement.

