

CONTROLLING CHANGE

Animals

Nervous System

Know that humans have two major systems of response (nervous and hormonal) to external stimuli

Know that neurons are specialist cells that carry nerve impulses

Know that the body is controlled by the brain, which responds to nerve impulses

Understand the importance of reflex actions

Understand that reaction time vary and may be affected by tiredness, alcohol and drugs.

- Be able to analyse a reflex arc using sensory, relaying and motor neurons

Cells

Know the difference between plant and animal cells using mesophyll cells and cheek cells as examples

Know how cells, tissues, organs and organ systems are related to ensure the viable function of living organisms

Enzymes

Know that enzymes are biological catalysts which control the rate of reactions in living tissues

Know that enzymes are very specific in the reactions they catalyse

- Understand enzyme specificity using a lock and key model
- Know that enzymes are usually proteins
- Be able to use the lock and key model to explain pH and temperature sensitivity of enzymes

Digestion

Know the structure and function of the main organs of the digestive system (limited to the stomach, pancreas, gall bladder, small and large intestine, rectum and anus)

Understand the role enzymes in digestion (limited to amylase, protease and lipase)

Know the tests to detect sugar, starch and protein

- Understand the role of bile in emulsifying fat

Hormones

Know the difference between hormonal and nervous responses

Know that hormones are chemical messages

Understand the hormonal (limited to oestrogen and progesterone) and other changes associated with the menstrual cycle

Know the role of insulin and glucagon in the control of blood sugar

Know how diabetes is treated

- Know how hormones are used to control fertility

Homeostasis

Know the importance of maintaining a constant internal environment in humans (homeostasis)

Understand the mechanisms by which humans respond to changes in external temperature

Plants

Transport in plants

Understand the role of the root hairs in the intake of water by the plant

Understand the role of stomata in transpiration

Know that cell membranes are selectively permeable, allowing diffusion and osmosis

- Know that cell membranes are selectively permeable, allowing active transport
- Understand that osmosis is a special type of diffusion and involves the movement of water across semi-permeable membranes
- Understand the simple effect of osmosis
- Know the role of the xylem in transpiration and support in plants
- Know the importance of water in transport of substances within plants
- Understand the importance of phloem in the transport of products of photosynthesis

Plant Hormones

Understand that plants have an ability to respond to their environment

Understand the role of plant hormones in plant growth

Know the general effects of geotropism and phototropism

- Understand how phototropic responses are brought about

Know the commercial application of plant hormones in propagation of cuttings