

Homeostasis

Define homeostasis.

Homeostasis

Why is homeostasis important for enzymes?

Homeostasis

Name three conditions controlled by homeostasis in the human body.

Homeostasis

What is the job of a receptor?

Homeostasis

What is a coordination centre? Give examples.

Homeostasis

What is an effector?

The human nervous system

What is the CNS?

The human nervous system

Put in order: effector, receptor, coordinator, stimulus, response.

It maintains the optimal conditions for enzyme action and for all cell functions.

The regulation of the internal conditions of a cell or organism to maintain optimum conditions for function, in response to internal and external changes.

Cells that detect stimuli (changes in the environment).

Blood glucose concentration, body temperature and water levels.

A muscle or gland that brings about a response which restores optimum levels.

It receives and processes information from receptors. Examples: the brain, spinal cord and pancreas.

Stimulus, receptor, coordinator, effector, response.

The central nervous system: the brain and spinal cord. It coordinates the response of effectors.

The human nervous system

What does a sensory neurone do?

The human nervous system

What does a relay neurone do?

The human nervous system

What does a motor neurone do?

The human nervous system

What is a synapse and how does it work?

The human nervous system

Describe a reflex action and why it is important.

The human nervous system

Ruler drop test: how is reaction time measured?

Hormonal coordination in humans

What is the endocrine system?

Hormonal coordination in humans

Nervous system vs hormones: speed and duration?

Carries impulses within the CNS, from the sensory neurone to the motor neurone.

Carries electrical impulses from a receptor to the CNS.

A gap between two neurones. A chemical diffuses across the gap and starts an impulse in the next neurone.

Carries impulses from the CNS to an effector (a muscle or a gland).

Partner drops a ruler without warning; the person catches it. The distance it falls shows reaction time. Repeat and take a mean.

Automatic and rapid, not involving the conscious part of the brain. It protects the body from harm.

Hormone effects are slower but act for longer than nervous responses.

Glands that secrete hormones directly into the bloodstream. The blood carries them to a target organ.

Hormonal coordination in humans

Why is the pituitary called the master gland?

Hormonal coordination in humans

Where are the pituitary, thyroid, adrenal glands and pancreas?

Hormonal coordination in humans

What does insulin do?

Hormonal coordination in humans

Type 1 diabetes: cause and treatment?

Hormonal coordination in humans

Type 2 diabetes: cause and treatment?

Hormonal coordination in humans **Higher tier**

What does glucagon do?

Hormonal coordination in humans **Higher tier**

How do insulin and glucagon form negative feedback?

Hormonal coordination in humans

What do reproductive hormones do at puberty?

Pituitary: base of the brain. Thyroid: neck.
Adrenal glands: on top of each kidney.
Pancreas: abdomen, just below the
stomach.

It secretes several hormones that act on
other glands to stimulate other hormones to
be released.

The pancreas fails to produce sufficient
insulin. Normally treated with insulin
injections.

Released by the pancreas when blood
glucose is too high. Causes glucose to
move from the blood into cells; in liver and
muscle cells excess glucose becomes
glycogen.

When blood glucose is too low, it causes
glycogen to be converted into glucose and
released into the blood.

Body cells no longer respond to insulin.
Carbohydrate controlled diet and exercise.
Obesity is a risk factor.

They cause secondary sex characteristics
to develop.

Each reverses a change in blood glucose,
bringing the level back to normal, so the
level stays near constant.

Hormonal coordination in humans

Oestrogen: where made and what does it do?

Hormonal coordination in humans

Testosterone: where made and what does it do?

Hormonal coordination in humans

FSH, LH, and oestrogen with progesterone: roles in the menstrual cycle?

Hormonal coordination in humans **Higher tier**

How do FSH, oestrogen, LH and progesterone interact?

Hormonal coordination in humans

How do oral contraceptives work?

Hormonal coordination in humans

Hormonal contraception: injection, implant, skin patch?

Hormonal coordination in humans

Name four non-hormonal contraception methods.

Hormonal coordination in humans

How do intrauterine devices work?

Main male reproductive hormone, made by the testes. Stimulates sperm production.

The main female reproductive hormone, made in the ovary. With progesterone, it is involved in maintaining the uterus lining.

FSH causes an egg to mature and oestrogen release; oestrogen inhibits FSH and stimulates LH; progesterone maintains the lining and inhibits FSH and LH.

FSH: egg maturation. LH: release of the egg. Oestrogen and progesterone: maintaining the uterus lining.

Slow release of progesterone, inhibiting maturation and release of eggs for months or years.

They contain hormones which inhibit FSH production, so no eggs mature.

They prevent the implantation of an embryo, or release a hormone.

Barrier methods (condoms, diaphragms), spermicides, abstaining when an egg may be in the oviduct, surgical sterilisation.

Hormonal coordination in humans **Higher tier**

What is a fertility drug?

Hormonal coordination in humans **Higher tier**

Describe IVF.

Hormonal coordination in humans **Higher tier**

Give disadvantages of fertility treatment.

Hormonal coordination in humans **Higher tier**

Adrenaline: where made and what does it do?

Hormonal coordination in humans **Higher tier**

Thyroxine: where made and what does it do?

Hormonal coordination in humans **Higher tier**

What is negative feedback?

FSH and LH mature several eggs; eggs collected and fertilised in the lab; embryos develop; one or two are inserted into the uterus.

It contains FSH and LH, given to a woman. She may then become pregnant in the normal way.

Made by the adrenal glands in fear or stress. Increases heart rate and boosts oxygen and glucose delivery to brain and muscles.

Stressful emotionally and physically, success rates not high, and multiple births risk babies and mother.

A change is reversed to bring the level back to normal. Thyroxine levels are controlled this way.

From the thyroid gland. Stimulates the basal metabolic rate and is important in growth and development.