

Hormonal coordination in humans

What is the endocrine system?

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Nervous system vs hormones: speed and duration?

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Why is the pituitary called the master gland?

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

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What does insulin do?

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Type 1 diabetes: cause and treatment?

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Type 2 diabetes: cause and treatment?

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What does glucagon do?

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.

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.

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How do insulin and glucagon form negative feedback?

Hormonal coordination in humans **Triple only**

How is water lost from the body, and what controls it?

Hormonal coordination in humans **Triple only**

What happens if cells gain or lose too much water by osmosis?

Hormonal coordination in humans **Triple only**

How do the kidneys make urine?

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Triple only **Higher tier**

Excess amino acids: what happens in the liver?

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Triple only **Higher tier**

What is ADH and what does it do?

Hormonal coordination in humans **Triple only**

Treatments for kidney failure, and basic principle of dialysis?

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What do reproductive hormones do at puberty?

Via lungs (exhaling), skin (sweat) and kidneys (urine). Lungs and skin loss is not controlled; the kidneys adjust.

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

Filtration of the blood, then selective reabsorption of useful substances such as glucose, some ions and water.

They do not function efficiently.

Hormone from the pituitary when blood is too concentrated. Makes kidney tubules more permeable, so more water is reabsorbed.

Deaminated to form ammonia, which is toxic, so it is immediately converted to urea.

They cause secondary sex characteristics to develop.

Transplant or dialysis. Urea and excess ions diffuse from blood across a partially permeable membrane into dialysis fluid.

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Oestrogen: where made and what does it do?

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Testosterone: where made and what does it do?

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

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How do FSH, oestrogen, LH and progesterone interact?

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How do oral contraceptives work?

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Hormonal contraception: injection, implant, skin patch?

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Name four non-hormonal contraception methods.

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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.

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What is a fertility drug?

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Describe IVF.

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Give disadvantages of fertility treatment.

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Adrenaline: where made and what does it do?

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Thyroxine: where made and what does it do?

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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.