

Hormones and the endocrine system

What is a hormone?

Hormones and the endocrine system

How are hormones transported around the body?

Hormones and the endocrine system

Name the six endocrine glands you need to know.

Hormones and the endocrine system

Which hormone is made by the thyroid gland?

Hormones and the endocrine system

Which hormone does the pancreas make to lower blood glucose?

Hormones and the endocrine system

Which hormones do the ovaries produce?

Hormones and the endocrine system

Where is the pituitary gland and what does it do?

Hormones and the endocrine system

Which hormone do the testes produce?

In the blood (plasma), from the endocrine gland to the target organs.

A chemical messenger made by an endocrine gland and carried in the blood to its target organs.

Thyroxine.

Pituitary gland, thyroid gland, pancreas, adrenal glands, ovaries and testes.

Oestrogen and progesterone.

Insulin.

Testosterone.

At the base of the brain. It releases hormones that control other glands and organs.

Hormones and the endocrine system **Higher tier**

Which gland makes adrenalin and what is it for?

Hormones and the endocrine system **Higher tier**

List the four effects of adrenalin.

Hormones and the endocrine system **Higher tier**

How does adrenalin raise blood sugar level?

Hormones and the endocrine system **Higher tier**

What does thyroxine control?

Hormones and the endocrine system **Higher tier**

Put in order: thyroxine low, TSH, TRH, thyroxine made.

Hormones and the endocrine system **Higher tier**

What happens when thyroxine levels are normal?

The menstrual cycle and fertility control

Describe menstruation in the menstrual cycle.

The menstrual cycle and fertility control

Around which day does ovulation happen, and what is it?

Increased heart rate, increased blood pressure, increased blood flow to the muscles, and raised blood sugar level.

The adrenal glands. Adrenalin prepares the body for fight or flight.

Metabolic rate, as an example of negative feedback.

It stimulates the liver to change glycogen into glucose.

Thyroxine inhibits the release of TRH and the production of TSH.

Low thyroxine, TRH from the hypothalamus, TSH from the pituitary, thyroid makes thyroxine.

Around day 14. An egg is released from an ovary.

Around days 1 to 5. The uterus lining breaks down and is lost through the vagina.

The menstrual cycle and fertility control

What is the role of oestrogen in the menstrual cycle?

The menstrual cycle and fertility control

What is the role of progesterone in the menstrual cycle?

The menstrual cycle and fertility control **Higher tier**

What does FSH do?

The menstrual cycle and fertility control **Higher tier**

What does LH do?

The menstrual cycle and fertility control **Higher tier**

How does high oestrogen affect FSH and LH?

The menstrual cycle and fertility control **Higher tier**

How does progesterone affect FSH and LH?

The menstrual cycle and fertility control **Higher tier**

Why does menstruation happen?

The menstrual cycle and fertility control

How does hormonal contraception prevent pregnancy?

It maintains the lining of the uterus.

It causes repair and growth of the uterus lining.

Causes ovulation.

Causes an egg to mature in the ovary and stimulates the ovaries to produce oestrogen.

It inhibits them, so no more eggs mature.

It inhibits FSH and stimulates the release of LH.

It stops eggs maturing, so no ovulation, and progesterone thickens cervical mucus so sperm cannot get through.

Progesterone falls, so the uterus lining is no longer maintained and it breaks down.

The menstrual cycle and fertility control

Which hormones can hormonal contraceptives contain?

The menstrual cycle and fertility control **Higher tier**

How does the oestrogen in the pill stop eggs maturing?

The menstrual cycle and fertility control

Give two disadvantages of hormonal contraception.

The menstrual cycle and fertility control

Give two advantages and one disadvantage of condoms.

The menstrual cycle and fertility control **Higher tier**

How are hormones used in IVF?

The menstrual cycle and fertility control **Higher tier**

What is clomifene therapy?

Homeostasis and temperature control

Define homeostasis.

Homeostasis and temperature control

Why must the body keep its internal environment constant?

It inhibits the release of FSH from the pituitary gland.

Oestrogen, progesterone, or both.

They protect against sexually transmitted infections and have no hormone side effects. They can split or slip.

It does not protect against sexually transmitted infections, and it can cause side effects.

A drug for women who do not ovulate. It stimulates the release of FSH and LH.

FSH and LH are given to make several eggs mature. The eggs are fertilised outside the body.

Enzymes and cells work best in a narrow range of conditions.

Maintaining a constant internal environment in response to internal and external change.

Homeostasis and temperature control **Triple only**

What is thermoregulation and what temperature is maintained?

Homeostasis and temperature control **Triple only**

What happens to enzymes if body temperature is too high?

Homeostasis and temperature control **Triple only**

What is osmoregulation?

Homeostasis and temperature control **Triple only**

What happens to animal cells if the blood is too dilute?

Homeostasis and temperature control **Triple only**

What happens to animal cells if the blood is too concentrated?

Homeostasis and temperature control **Triple only**

What is the role of the dermis in thermoregulation?

Homeostasis and temperature control **Triple only**

What is the role of the epidermis in thermoregulation?

Homeostasis and temperature control **Triple only**

What is the role of the hypothalamus in thermoregulation?

They are denatured. The active site changes shape and the reaction stops.

Control of body temperature, at about 37°C, the optimum for enzymes.

Water enters by osmosis. The cells swell and may burst.

Control of the water content of the blood.

It contains the sweat glands, blood vessels and temperature receptors that respond to temperature change.

Water leaves by osmosis and the cells shrink.

It monitors blood temperature and coordinates the response by sending nerve impulses to effectors.

The outer layer of skin. Sweat reaches the surface through pores in it, so heat is lost from the surface.

Homeostasis and temperature control **Triple only**

How does shivering help when the body is cold?

Homeostasis and temperature control

Triple only **Higher tier**

What is vasoconstriction and when does it happen?

Homeostasis and temperature control

Triple only **Higher tier**

What is vasodilation and when does it happen?

Homeostasis and temperature control **Triple only**

How does sweating cool the body?

Blood glucose and diabetes

How does insulin lower blood glucose?

Blood glucose and diabetes

Which organ detects high blood glucose and releases insulin?

Blood glucose and diabetes **Higher tier**

How does glucagon raise blood glucose?

Blood glucose and diabetes **Higher tier**

When is glucagon released?

Blood vessels supplying the skin narrow when cold, so less blood flows near the surface and less heat is lost.

Muscles contract rapidly. Respiration in the muscle cells transfers energy as heat.

Sweat evaporates from the skin and takes heat from it.

Blood vessels supplying the skin widen when hot, so more blood flows near the surface and more heat is lost.

The pancreas.

It makes cells take up glucose, and the liver converts glucose into glycogen for storage.

When blood glucose concentration is too low.

It acts on the liver, which changes glycogen into glucose and releases it into the blood.

Blood glucose and diabetes

What causes type 1 diabetes?

Blood glucose and diabetes

How is type 1 diabetes controlled?

Blood glucose and diabetes

What causes type 2 diabetes?

Blood glucose and diabetes

How is type 2 diabetes controlled?

Blood glucose and diabetes

How can you test simulated urine for sugar?

Blood glucose and diabetes

Write the BMI equation.

Blood glucose and diabetes

How do you calculate waist:hip ratio?

Blood glucose and diabetes

Does a correlation between BMI and type 2 diabetes prove cause?

Insulin injections, monitoring blood glucose, and controlling the carbohydrate in the diet.

The pancreas does not produce enough insulin.

Diet, regular exercise and losing weight.
Some people also need medication.

Body cells no longer respond to insulin.

$BMI = \text{mass (kg)} \div \text{height (m)}^2$

Add Benedict's solution and heat in a hot water bath. Blue turns green, yellow, orange or brick red if sugar is present.

No. Other factors may be involved, and BMI does not show fat compared with muscle.

$\text{Waist circumference} \div \text{hip circumference}$.

The urinary system and the kidneys **Triple only**

Name the parts of the urinary system.

The urinary system and the kidneys **Triple only**

Where is urea made and from what?

The urinary system and the kidneys **Triple only**

What happens in the glomerulus and Bowman's capsule?

The urinary system and the kidneys **Triple only**

What happens to glucose in the nephron?

The urinary system and the kidneys **Triple only**

What happens to water in the nephron, and what is left in urine?

The urinary system and the kidneys

Triple only **Higher tier**

What does ADH do to the collecting duct?

The urinary system and the kidneys

Triple only **Higher tier**

What happens to ADH and urine if blood water content is too high?

The urinary system and the kidneys **Triple only**

How does kidney dialysis work?

In the liver, from the breakdown of excess amino acids.

Kidneys, ureters, bladder and urethra, with the renal artery and renal vein supplying each kidney.

All of it is selectively reabsorbed into the blood, by active transport.

Filtration. High pressure forces small molecules into the capsule. Proteins and blood cells stay in the blood.

It makes it more permeable to water, so more water is reabsorbed into the blood.

Water is reabsorbed into the blood in the loop of Henle and collecting duct. Urine contains urea, excess ions and the remaining water.

Blood flows past a partially permeable membrane with dialysis fluid on the other side. Urea and excess ions pass out.

Less ADH is released, so less water is reabsorbed and a large volume of dilute urine is made.

What is needed for a successful kidney transplant?

A donor kidney with a good tissue match,
plus drugs so the immune system does not
reject it.