Edexcel Biology IGCSE

2.j - Coordination and Response

Flashcards

Define homeostasis

Define homeostasis

Maintaining a constant internal environment despite external change.

State 3 conditions which need to be controlled within the body

State 3 conditions which need to be controlled within the body

- Temperature
- Water levels
- Blood glucose concentration

What are the 3 main parts to a coordinated response?

What are the 3 main parts to a coordinated response?

- A stimulus (e.g. temperature change)
- A receptor (to detect the change)
- An effector (to carry out the response)

What does auxin trigger?

What does auxin trigger?

Auxin triggers growth of the main stem of the plant (and it inhibits the growth of side shoots).

What is phototropism and which part of a plant is positively phototropic?

What is phototropism and which part of a plant is positively phototropic?

Phototropism is the growth of a plant towards a light source. The shoots are positively phototropic (they grow towards the light source).

What is geotropism and which part of a plant is positively geotropic?

What is geotropism and which part of a plant is positively geotropic?

Geotropism is the growth of a plant towards the pull of gravity. The roots are positively geotropic (they grow down in the same direction as the pull of gravity).

How does auxin cause the shoots to grow towards the light source?

How does auxin cause the shoots to grow towards the light source?

- Auxin collects on the shaded side
- Auxin promotes cell growth
- The shoot curves towards the light

Give 3 differences between nervous and hormonal communication

Give 3 differences between nervous and hormonal communication

- Nervous communication uses nerve cells and impulses whereas hormones are secreted by glands and travel in the blood
- Nervous communication is generally much faster than hormonal communication
- Hormonal communication usually brings about longer lasting responses than nervous communication

What is the difference between the central nervous system and the peripheral nervous system?

What is the difference between the central nervous system and the peripheral nervous system?

The central nervous system is the brain and the spinal cord. The peripheral nervous system is every other part of the nervous system.

How is an impulse transmitted between two neurones?

How is an impulse transmitted between two neurones?

- The impulse reaches the end of one neurone
- A neurotransmitter is released and it diffuses across the gap
- A new impulse is triggered in the next neurone

What is a stimulus?

What is a stimulus?

A stimulus is a change in the environment

What type of neurone connects a receptor to the CNS?

What type of neurone connects a receptor to the CNS?

A sensory neurone

What is an effector?

What is an effector?

A part of the body that brings about the response to a stimulus like a muscle or a gland.

What type of neurone connects the CNS to an effector?

What type of neurone connects the CNS to an effector?

A motor neurone

Describe the reflex arc

Describe the reflex arc

Stimulus detected by a receptor

Impulse passed along sensory neurone to CNS

Impulse passed along motor neurone to effector

Effector brings about the response

Describe the sequence of events involved in removing a hand away from a hot flame

Describe the sequence of events involved in removing a hand away from a hot flame

- Thermoreceptors in the hand detect the heat of the flame
- An impulse is sent along a sensory neurone
- The impulse passes through relay neurones in the CNS
- The impulse then passes along a motor neurone and triggers the muscles in the arm to move the hand away

What is the cornea and what is its function?

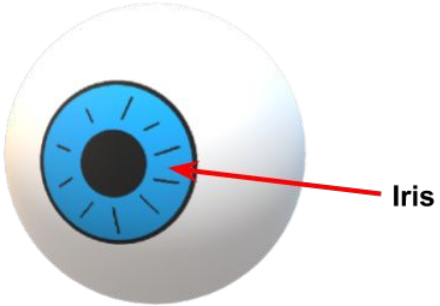
What is the cornea and what is its function?

The transparent layer in front of the eye that protects the eye from damage

What is the iris and what is its function?

What is the iris and what is its function?

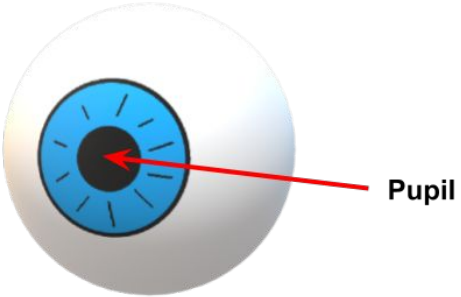
The coloured ring around the pupil that controls its diameter



What is the pupil and what is its function?

What is the pupil and what is its function?

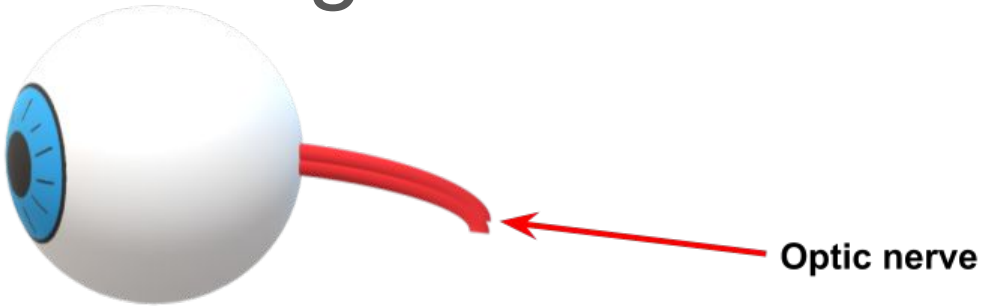
The pupil is the hole in the middle of the iris that lets light into the eye



What is the optic nerve and what is its function?

What is the optic nerve and what is its function?

The nerve coming out the back of the eye that sends signals to the brain



What is the function of the lens?

What is the function of the lens?

The lens focuses the light rays onto the retina

What is the retina and what is its function?

What is the retina and what is its function?

The retina is the back part of the eye and it converts visual stimuli into electrical impulses

What do the ciliary body and suspensory ligaments do?

What do the ciliary body and suspensory ligaments do?

They control the shape of the lens (accomodation)

How does the eye focus on near objects?

How does the eye focus on near objects?

- Ciliary muscles contract and suspensory ligaments relax, causing the lens to thicken
- Thicker lens causes the light to refract more

How does the eye focus on far away objects?

How does the eye focus on far away objects?

- Ciliary muscles relax and suspensory ligaments stretch, which makes the lens thinner
- Thinner lens causes the light to refract less

How does the eye respond to bright light?

How does the eye respond to bright light?

The iris contracts, making the pupil smaller and letting in less light

How does the eye respond to a lack of light?

How does the eye respond to a lack of light?

The iris relaxes which makes the pupil larger and lets in more light.

Why does the temperature need to be controlled?

Why does the temperature need to be controlled?

To provide a suitable environment for enzymes so that they can work fastest at their optimum temperature

Give 2 processes involving the skin that cool the body down

Give 2 processes involving the skin that cool the body down

Sweating - Cools the body by evaporation

Vasodilation - Allows blood to flow closer to the surface of the skin where it can cool

Describe the process of vasodilation

Describe the process of vasodilation

- The body detects a rise in temperature
- Blood vessels supplying the capillaries at the skin surface dilate (the muscles in the vessels relax)
- More blood flows closer to the skin where it can cool

Give 3 processes that work to keep the body warm

Give 3 processes that work to keep the body warm

- Vasoconstriction
- Shivering
- Erection of hairs on the skin

Describe the process of vasoconstriction

Describe the process of vasoconstriction

- The body detects a drop in temperature
- Blood vessels supplying the capillaries at the skin surface constrict (the muscles in the vessels contract)
- Less blood flows closer to the skin surface so less heat is lost to the surroundings

What are hormones?

What are hormones?

Hormones are chemical messengers that are secreted by glands of the endocrine system into the bloodstream.

What does insulin do in the body?

What does insulin do in the body?

Insulin decreases blood glucose concentration

Where is insulin secreted from?

Where is insulin secreted from?

The β cells of the pancreas

What does testosterone do?

What does testosterone do?

- Main male sex hormone
- Involved in growth of testes and penis
- Triggers many changes in males during puberty (hair growth, deeper voice, increased muscle mass)

Where is testosterone secreted from?

Where is testosterone secreted from?

The testes

When is adrenaline secreted?

When is adrenaline secreted?

During times of anxiety, fear or stress

Where is adrenaline released from?

Where is adrenaline released from?

The adrenal glands

Give 3 effects of adrenaline in the body

Give 3 effects of adrenaline in the body

- Increases heart and breathing rate
- Increases blood glucose concentration
- Dilates the pupils

What does oestrogen do?

What does oestrogen do?

Oestrogen causes the uterus lining to thicken

Where is oestrogen secreted from?

Where is oestrogen secreted from?

The ovaries

What hormone does oestrogen inhibit?

What hormone does oestrogen inhibit?

Oestrogen inhibits follicle stimulating hormone (FSH)

What does progesterone do?

What does progesterone do?

Progesterone maintains the womb lining

Where is progesterone secreted from?

Where is progesterone secreted from?

The ovaries

What hormone does progesterone inhibit?

What hormone does progesterone inhibit?

Progesterone inhibits follicle stimulating hormone (FSH)

What does follicle stimulating hormone (FSH) do?
(Higher)

What does follicle stimulating hormone (FSH) do? (Higher)

FSH stimulates the follicle to mature and release oestrogen.

What does luteinising hormone (LH) do? (Higher)

What does luteinising hormone (LH) do? (Higher)

A surge in LH causes the release of an egg from a follicle (ovulation).

Where is FSH secreted from? (Higher)

Where is FSH secreted from? (Higher)

The anterior pituitary gland

Where is LH secreted from? (Higher)

Where is LH secreted from? (Higher)

The anterior pituitary gland

Where is ADH secreted from? (Higher)

Where is ADH secreted from? (Higher)

The posterior pituitary gland