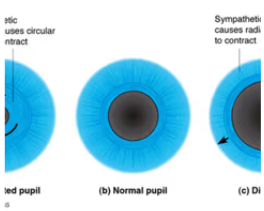
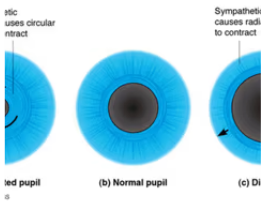
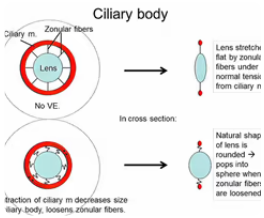
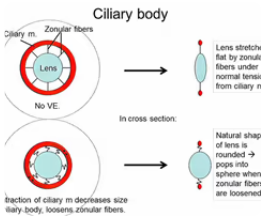
Biology G10U1

Terms in this set (35)

conjunctiva	A thin sheet of protective layer that lubricates the surface of the eye.
Sclera	The tough outer wall/layer that protects the eye (the white and opaque layer). Keeps the eye in shape, and provides a place for the eye muscles to attach.
Cornea	A transparent layer in the front of the eye that refracts light into the eye. It has no blood vessels to provide oxygen (the oxygen diffuses from the outside).
Iris	A ring of muscle tissue that forms the colored portion of the eye around the pupil and controls the size/diameter of the pupil (controls the amount of light that enters the eye).
Pupil	A hole in the middle of the iris.
Lens	A transparent structure behind the pupil that changes shape to help focus images/light on the retina. Can change shape, and is suspended by ligaments attached to a ring of muscles called the ciliary body (ciliary muscles).

Retina	the light-sensitive inner surface of the eye, containing the receptor rods and cones plus layers of neurons that begin the processing of visual information.
Fovea	A region in the retina that contains densely packed cones - eyes can see in very good detail and colour.
Optic Nerve	The nerve that carries neural impulses from the receptors in the eye to the brain.
aqueous humor	A watery fluid in the eye, found between the cornea and the lens (less dense than the lens).
Vitreous humor	A jelly like fluid that fills up the rest of the eye, and keeps the eye in shape.
Choroid	A pigment layer of cells that prevent reflection of light rays off internal walls of the eye.
Blind Spot	The region at which the optic nerve leaves the eye and no receptor cells are located there.
Iris Reflex - Bright light levels	- Circular Muscles contract - Radial Muscles relax - Pupil constricts (smaller) - less light enters the eye. 

Iris Reflex - Low light levels	- Radial Muscles contract - Circular Muscles relax - Pupil dilates (larger) -more light enters the eye. 
Focusing on Distant Objects (Accommodation)	- Ciliary Muscles relax - Tension on suspensory ligaments increase - Lens becomes thinner and flatter 
Focusing on Close Objects (Accommodation)	- Ciliary Muscles contract (ring has smaller diameter) - Suspensory ligaments slack - Lens becomes/returns more spherical 
What do tears contain? Where does it come from?	Tears contain a natural anti-septic (prevent growth of disease-causing microorganisms) enzyme called lysozyme which breaks down bacterial cell walls. Tear Glands are found under the upper lid of the eye and oozes tears onto the eyeball.

What are the two types of Eye receptor cells? What are their roles?	Rods - detect in black and white (often in low light conditions) Cones - detect colours (stimulated in light intensity higher than needed for rods)
What are the differences between the Hormonal and Nervous System?	Hormonal System: - Travels through the blood (in plasma) - Affects multiple cells or organs (target cells) - Slow response time - Long term effect Nervous System: - Travel through neurones - Affect single cells or organs - Immediate response time - Short term effect
What are receptors? What are their roles?	Receptors are group of cells that detect external stimuli (light, sound, smell, etc) - found in sense organs
What is a stimulus	Any change in the internal or external environment
What are Effectors? What are their roles?	Cells that bring about a response (from stimuli) - Muscle cells, cells found in glands (pancreas, etc) - Muscles contract - Glands secrete hormones
What does the CNS consist of? What is its role?	- The CNS consists of the brain and the spinal cord only. - Its role is to coordinate the responses (of stimuli)

What are the three parts that a coordinated response needs?	Coordinated responses need: - Stimulus - Receptor - Effector
What is the role of a reflex	Reflexes are rapid and automatic - Reduce the changes of injury and damage - The route of a reflex is called a reflex arc
Explain how a reflex is processed (through the reflex arc)	- Receptors detect the stimulus and sends an electrical impulse to the sensory neurone. - The impulse is then sent to the relay neurone in the CNS from the sensory neuron. - The relay neurone then relay the impulse out the CNS to the motor neurone. - The impulse travels along the motor neurone to the effector (muscle or gland) - The effector then carries out the response. (The response is automatic and doesn't need thinking and therefore is quick)
How are impulses processed through synapses?	Synapses are small gaps between two neurones - Impulses trigger release of chemicals called Neurotransmitters. - Neurotransmitters diffuse across synapse from one neurone to another. - Receptors detect the neurotransmitters and trigger another electrical impulse.

Structure of neurones	Neurones are specialized cells - Have regions called the cell body which contains the nucleus. - Have long extensions of cytoplasm called axons (very long and carry electrical impulses rapidly along) - Dendrites located at the end of axons make connections with other cells at synapses. - Neurones are bundled up and create a nerve fibre of long axons. (a small part of the sensory and motor neurone is located in the CNS)
What is Homeostasis?	Homeostasis is the maintenance of a constant internal environment. - Conditions in the body need to be kept balanced/steady (balancing inputs)
Different ways in which water is lost from the body:	Water is lost by: - Skin as sweat - Lungs in breath - kidneys as urine
Balance between sweat and urine	Hot day: - Sweat a lot (when exercising). - Produce less urine, but more concentrated. - Lose more water through breath when breathing more from exercising more. Cold day: - Sweat less (less exercise) - Produce more urine (more diluted)

Why is temperature regulation (homeostasis) needed?	Enzymes work best at an optimum temperature of 37°C (hence the body temperature of 37°c) - If the body temperature is too low, the enzymes work slower. - If the temperature is too high, the enzymes work slower, and can denature causing body functions to slow down or stop - The brain acts as a thermostat, and is sensitive to the blood temperature. - The brain receives messages from the temperature receptors in the skin (information about skin temp.) - Signals are sent from these receptors to the CNS and activate effectors to keep the body temp. balanced.
Skin in maintaining body temperature	In hot temperatures: - Lots of sweat is produced - energy is transfered from the skin to the environment when sweat evaporates (cools the body down) - Vasodilation - blood vessels near the surface of skin widen. More energy from the blood is transfered to the environment, cooling the body down. In cold temperatures: - Little sweat produced - Vasoconstriction - less blood flows near the skin surface, and less energy is transfered to the environment. - Shivering increases the rate of respiration, transferring more energy to warm the body (exercise has the same effect) - Hair on skin stands to create an insulating layer of air, keeping the body warmer.

Smaller Organisms	- Smaller organisms cool down quicker as a result of a bigger surface are to volume ratio. - Larger organisms can gain or lose heat faster due to more surface area for energy transfer. - Small organisms lose body heat easier in hot climates - lower change of overheating (but vulnerable to cold environments) - Smaller organisms gain or lose heat slower due to less surface area for energy transfer. - Cold environment animals are more compact to have less surface area to reduce heat loss.