Knowledge Organisers

Best Practice and the Beckfoot Approach

Beckfoot

Subject: Triple	Topic: Homeostasis and Response	Year Group: 10

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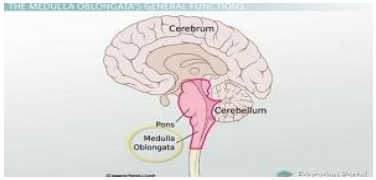
The Brain



1	Cerebral Cortex	**Responsible for intelligence, memory** and our ability to use **language**.
2	Cerebellum	controls and coordinates the **movement of your muscles**
3	Medulla	**Control involuntary** functions such as breathing, heart rate and heart rate

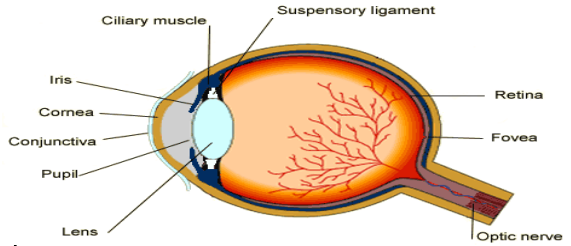
The Eye –structure and function		
1	Retina	senses light using light receptors
2	Optic Nerve	transmits impulses to the brain
3	Sclera	
4	Cornea	protects eye surface and focuses light rays
5	Iris	regulates amount of light entering eye
6	Ciliary Muscles	change shape of the lens
7	Suspensory ligaments	hold lens in place
8	Lens	focuses light on retina

Control of Body Temperature

1	If the temperature is too high, blood vessels dilate(vasodilation) and sweat is produced by sweat glands
2	If body temperature is too low blood vessels constrict (vasoconstriction) , sweating stops and skeletal muscles contract (shiver)

Accommodation and ways to correct sight

To focus on near objects	The Ciliary muscles contract The suspensory ligaments loosen The lens is thicker and refracts light rays strongly	
To focus on far objects	The Ciliary muscles relax The suspensory ligaments are pulled tight The lens is then pulled thin and only refracts light rays	
Corrective treatment of eyesight	Use of spectacle lenses which refract light to focus on the retina Hard and soft contact lens Laser surgery Replacement lens in the eye	



Additional Information

Key Vocabulary

1	Accommodation	To focus on near and far objects
2	Vasodilation	Blood vessels dilate
3	Vasoconstriction	Blood vessels constrict
4	Myopia	Short sightedness rays focus before the retina
5	Hyperopia	Long sightedness rays focus behind the retina
6	Refracts	Bends light rays
7	ADH (released by the pituitary gland)	Anti diuretic hormone causes the reabsorption of water back into the bloodstream via the kidney tubules
8	Phototropism	Growth and response to light
9	Geotropism	Growth and response to gravity
10	Auxin	Plant hormones found in shoots and roots

Plant Hormones (HT)

1	Gibberellins	Initiate seed germination. Promote flowering Increase fruit size
2	Ethene	Control cell division and ripening of fruits during storage and transport
3	Auxins	Used as weed killer As rooting powders To promote growth in tissue culture

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Order of cells in a reflex action

1	**S**timulus	eg, hot pan
2	**R**eceptor	Heat receptor in the skin
3	**S**ensory Neurone	
4	**R**elay neurone	
5	**M**otor Neurone	
6	**E**ffector	Eg, muscle or gland
7	**R**esponse	Eg muscle in arm contracts and you pull your arm away

Glands and the hormones they release and role

1	Pituitary gland: LH, FSH	Important in the menstrual cycle
2	Pancreas :Insulin and Glucagon-	controls blood sugar levels
3	Thyroid :Thyroxine	-Stimulates the Metabolic rate, important in growth and development
4	Adrenal Glands: Adrenaline	Released during fear and stress causes an increase in heart rate release more glucose and oxygen
5	Ovary: Oestrogen, Progesterone	Inhibits FSH and stimulates LH Maintains the lining of the womb
6	Testes	Testosterone

Control of blood sugar level by pancreas

1	If blood Glucose level is too high the pancreas produces insulin that causes glucose o move from the blood into the cells . In the liver and muscle cells the excess glucose is converted to glycogen for storage
2	HT If the blood glucose is too low the pancreas produces the hormone glucagon that causes the glycogen to be converted into glucose and released into the blood and how glucagon and insulin interact in a negative feedback cycle

Comparing type 1 and 2 Diabetes

	Type 1	Type 2
Cause	The pancreas fails to produce any or very little levels of insulin	The body cells no longer respond to the insulin produced by the pancreas
Treatment	It is treated with insulin injections or a fitted insulin pumps	A carbohydrate controlled diet and exercise

Key Vocabulary

1	Homeostasis	Regulation of the internal conditions in the body
2	Hormone	A chemical messenger released from a gland into the bloodstream
3	Reflex	An automatic rapid response to a stimulus
4	Stimulus	A change in the environment that stimulates a sense organ
5	Receptor	Cells which detect a stimulus
6	Neurone	A nerve cell
7	Pancreas	A gland that controls blood glucose levels releasing insulin and Glucagon
8	Liver	An organ that stores glucose as Glycogen
9	Glucose	A soluble sugar
10	Glycogen	An insoluble sugar stored in the liver
11	Insulin	A hormone released by the pancreas
12	Diabetes	A condition whereby your pancreas produces very little or no insulin

Additional Information (HT highlighted in red)

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Hormones in the Reproductive cycle and their role

1	Oestrogen	Produced in the Ovary and causes the release of an egg
2	Testosterone	Produced in the testes and stimulates sperm production
3	Follicle Stimulating Hormone (FSH)	Causes the egg to mature in the ovary
4	Luteinising Hormone (LH)	Causes the release of an egg
5	Oestrogen	Maintains the lining of the womb
6	Progesterone	Maintains the lining of the womb

Control of the menstrual cycle and the use of hormones

1	FSH	Stimulates the eggs to **mature** Stimulates **oestrogen** production
2	LH	Cause the gg to be released from the ovary
3	Oestrogen	Inhibits FSH and stimulates LH
4	Progesterone	Maintains the lining of the womb if an egg is fertilised

Different types of contraception

Hormonal Non Hormonal Both	How they work
Oral contraceptives (the pill)	Contain hormones to inhibit FSH production so no more eggs mature
Injection, skin patches Implants	Release progesterone into the blood to inhibit the maturation and release of eggs for months or years
Barrier method Condom (male) Diaphragm (female)	Prevents the egg and sperm from meeting each other
Intrauterine devices Eg Coil	Prevent the implantation of an embryo or release a hormone
Spermicidal Agents	Kill or disable sperm
Surgical Methods Sterilisation	In females the oviduct are tied to prevent the egg reaching the uterus In males the sperm ducts are cut to prevent the sperm being released
Abstain from sexual intercourse (don't do it)	Not having sexual intercourse when an egg may be in the oviduct

Key Vocabulary

1	Ovulation	Release of a mature egg from the ovary
2	Hormone	A chemical messenger released from a gland into the bloodstream
3	Implantation	When a fertilised egg attaches to the lining of the womb
4	Embryo	A fertilised egg that has divided into a ball of cells
5	IVF	In Vitro fertilisation
6	Zygote	A fertilised egg

Stages in IVF

1	Mother is given FSH and LH to stimulate the maturation of several eggs	
2	The eggs are collected from the mother and fertilised by the father in the laboratory	
3	The fertilised eggs develop into embryos	
4	At the stage when they are tiny balls of cells one or two embryos are inserted into the mothers uterus or womb	
	Disadvantage : very emotional, stressful, success rate is not high, lead to multiple births with high risk to mother and baby	

Additional Information (HT highlighted in red)