

Biology 5: Homeostasis and Response

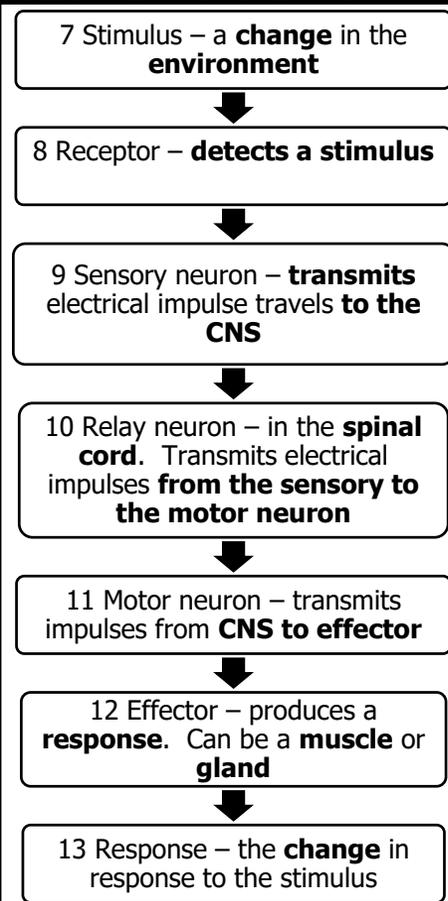
Section 1: Key Terms

1 Homeostasis	Regulating internal conditions to keep them at an optimum, despite internal and external changes . Maintains optimum conditions for enzymes .
2 Negative Feedback (HT)	Negative feedback ensures that changes are reversed and returned back to the optimum level .

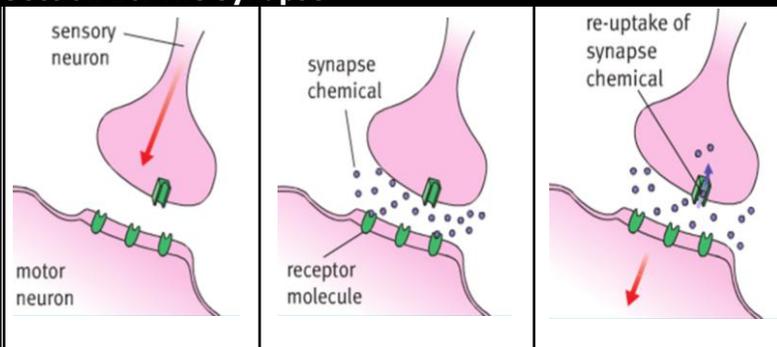
Section 2a: Nerve Reflexes Key Terms

2 Central nervous system (CNS)	The brain and spinal cord together. Co-ordinates the response of effectors .
3 Reflex action	A fast, automatic reaction. Does not involve thinking parts of the brain.
4 Coordination Centre	Receives and processes information from receptors e.g. CNS, pancreas.
5 Synapse	The gap between two neurons . Allows many different neurons to connect.
6 Myelin sheath	Some neurons are surrounded by myelin. Myelin insulates the neuron and speeds up the transmission of electrical impulses .

Section 2b: The Reflex Arc



Section 2c: The Synapse

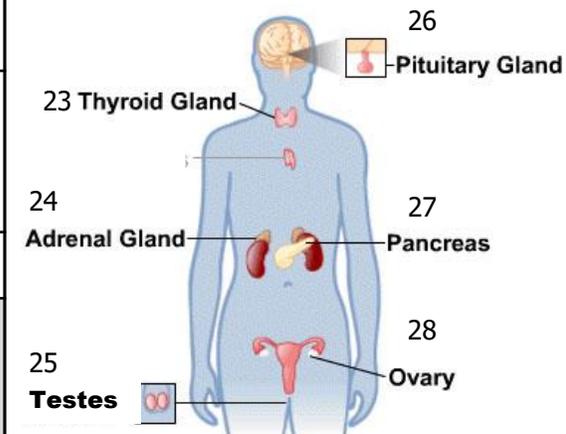


14	An electrical impulse arrives at the synapse.	15	Neurotransmitter molecules are released and diffuse across the synapse.	16	Neurotransmitter molecules fill receptors and cause an electrical impulse in the next neuron.
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Section 3: Hormonal Control Key Terms

17 Endocrine System	The system of glands that secrete hormones .
18 Hormone	A chemical secreted by a gland that travels in the blood and has an effect on a target organ . The effects are slower and longer-lasting than responses from the nervous system.
19 Pituitary Gland	A gland that secretes several hormones into the blood. These hormones in turn act on other glands to stimulate other hormones to be released to bring about effects.
20 Testosterone	Male hormone produced by testes . Stimulates sperm production .
21 Adrenaline (HT)	Hormone produced by the adrenal glands in times of fear/ stress . It increases the heart rate and boosts the delivery of oxygen and glucose to the brain and muscles , preparing the body for 'flight or fight'.
22 Thyroxin (HT)	Hormone produced by the thyroid gland . Thyroxine stimulates the metabolic rate . Important in growth and development .

Section 4: Location of Endocrine Glands



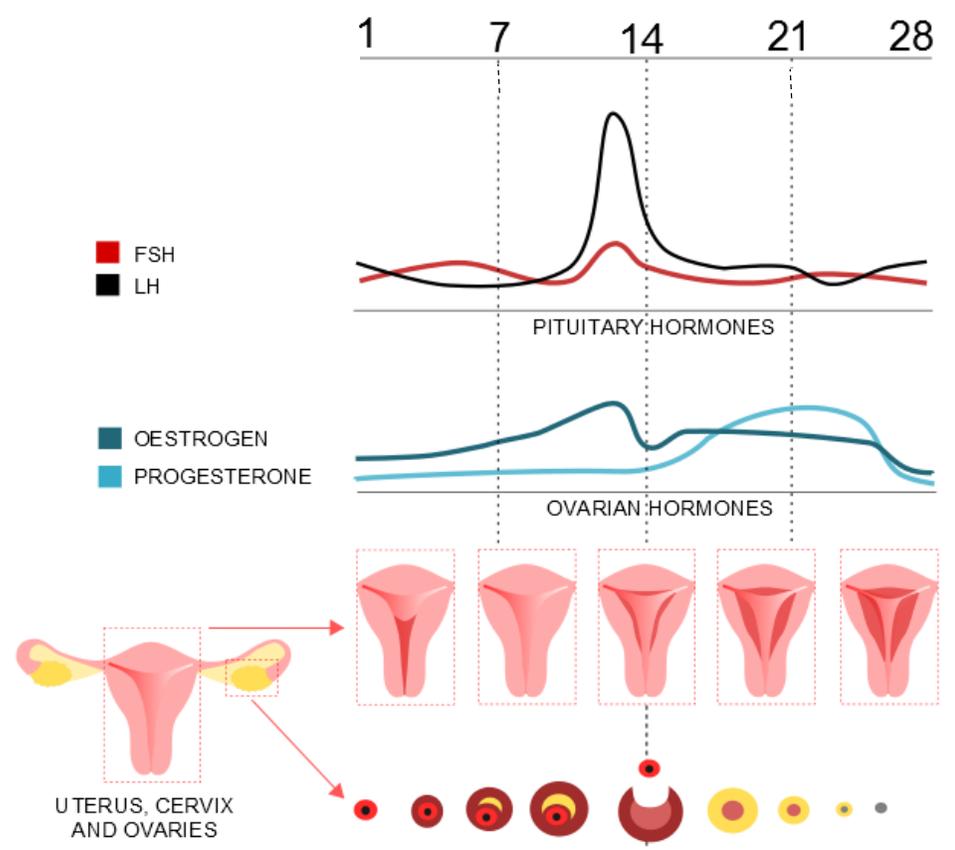
Section 5: Blood Glucose Control Key Terms

29 Pancreas	The gland that monitors and controls blood glucose concentration .
30 Insulin	A hormone produced when blood glucose concentration is too high . Causes glucose to move from the blood into the cells . In liver and muscle cells excess glucose is converted to glycogen .
31 Glucagon (HT)	A hormone produced when blood glucose concentration is too low . Causes glycogen to be converted into glucose and released into the blood .
32 Glycogen	A storage molecule made from many glucose molecules bonded together . Found in liver and muscle cells.
33 Type I Diabetes	Disorder in which the pancreas fails to produce enough insulin . Causes uncontrolled high blood glucose levels. Treated with insulin injections .
34 Type II Diabetes	Body cells no longer respond to insulin produced by the pancreas . A carbohydrate controlled diet and exercise are common treatments. Obesity is a risk factor .

Section 6: Menstrual Cycle (Some HT)

35 Ovulation	The release of an egg cell . Occurs approximately every 28 days .
36 FSH	Produced by the pituitary gland . A hormone that causes an egg to mature in the ovary . Causes oestrogen to be produced .
37 Oestrogen	Produced by the ovaries . Causes blood lining of uterus to develop . Stops FSH being produced . Stimulates release of LH .
38 LH	Produced by the pituitary gland . A hormone that causes ovulation .
39 Progesterone	Produced by the ovary . Maintains blood lining in uterus. Stops production of LH and FSH .

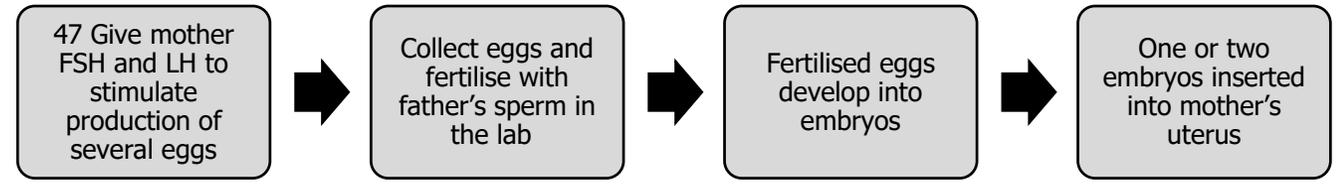
Section 7: Changes in the Menstrual Cycle (HT)



Section 8: Methods of Contraception

Method	How it works	Pros (+) and Cons (-)
40 Oral contraceptives	The contraceptive pill. Contain hormones to inhibit FSH production so eggs do not mature .	+ 99% effective + Reduces risk of some cancers - Can cause side effects e.g. nausea
41 Progesterone	Injection, implant or skin patch of slow-release progesterone to stop eggs maturing and being released .	+ Fewer side effects than pill. + Doesn't need to be taken daily so less likely to be forgotten - Less effective than pill
42 Barrier methods	Condom or diaphragm. Prevents sperm reaching the egg .	+ 98% effective (when used correctly) + Prevent STIs - Can break or be used incorrectly
43 Spermicide	Kills or disables sperm . Used with diaphragms to make them more effective.	+ Increases effectiveness of some barriers - Can't be used on its own
44 Avoiding intercourse	Avoiding intercourse when an egg might be in an oviduct.	- High risk of becoming pregnant
45 Sterilisation	Undergoing surgery to stop sperm or eggs being able to fertilise.	+ Permanently stops pregnancy - Risks from surgery - Expensive to reverse and may not work
46 Intra-uterine device (IUD)	An implant into the uterus that prevent fertilised eggs implanting into the wall of the uterus or release hormones .	+ Long lasting but can be reversed - Small risk of infection or uterus damage when IUD is implanted

Section 9: IVF (HT)



Section 9a: IVF Disadvantages

48 Emotionally and physically stressful.
49 Success rates are low.
50 Can lead to multiple births which are risky for mother and babies