

Chapter 11: Hormonal coordination 1

Knowledge organiser

Human endocrine system

The **endocrine system** is composed of _____ that secrete chemicals called _____ into the bloodstream.

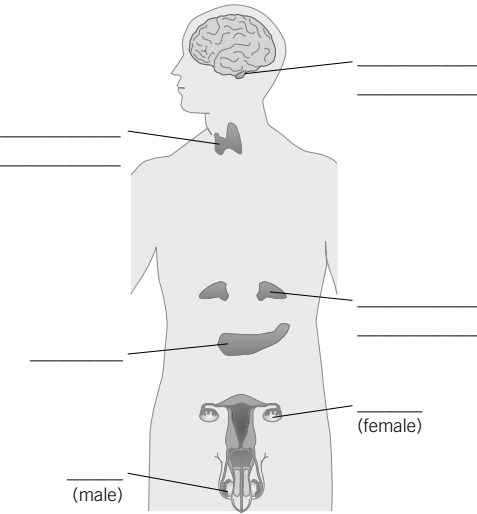
The _____ carries hormones to a target organ, where an effect is produced.

Compared to the nervous system, the effects caused by the endocrine system are _____ but act for longer.

The _____, located in the brain, is known as a 'master gland', because it secretes several hormones into the blood.

These hormones then act on other glands to _____ the release of other hormones, and bring about effects.

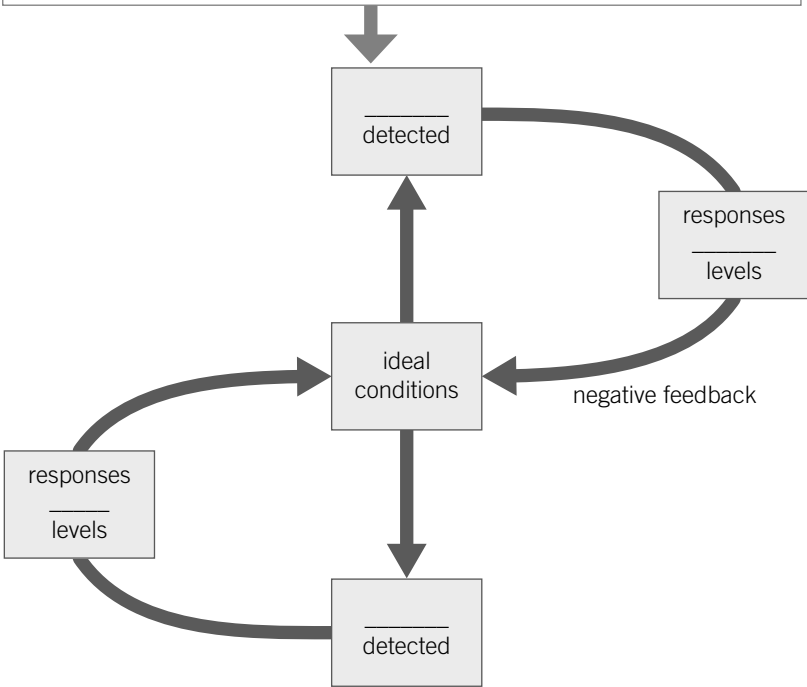
Label the diagram.



Endocrine gland	Role of the hormones
	<ul style="list-style-type: none">controls growth in childrenstimulates the thyroid gland to make _____ to control the rate of metabolismin females – stimulates the ovaries to produce and release eggs, and make _____in males – stimulates the testes to make sperm and _____
Thyroid	<ul style="list-style-type: none">
Pancreas	<ul style="list-style-type: none">
	<ul style="list-style-type: none">prepares the body for stressinvolved in the 'fight or flight' response
Ovaries	<ul style="list-style-type: none">
	<ul style="list-style-type: none">controls the development of male secondary sexual characteristicsinvolved in the production of sperm

Negative feedback (HT only)

Negative feedback systems work to maintain a steady state. For example, _____, _____, and _____ levels are all controlled in the body by negative feedback.



Adrenaline

- produced by _____ glands in times of fear or stress
- _____ heart rate
- boosts delivery of _____ and _____ to brain and muscles
- prepares the body for '_____ or _____' response
- does not involve _____ feedback, as adrenal glands stop producing **adrenaline**

Thyroxine

- produced by the _____ gland
- regulates how quickly your body uses _____ and makes _____ (**metabolic rate**)
- important for _____ and _____
- levels controlled by negative feedback

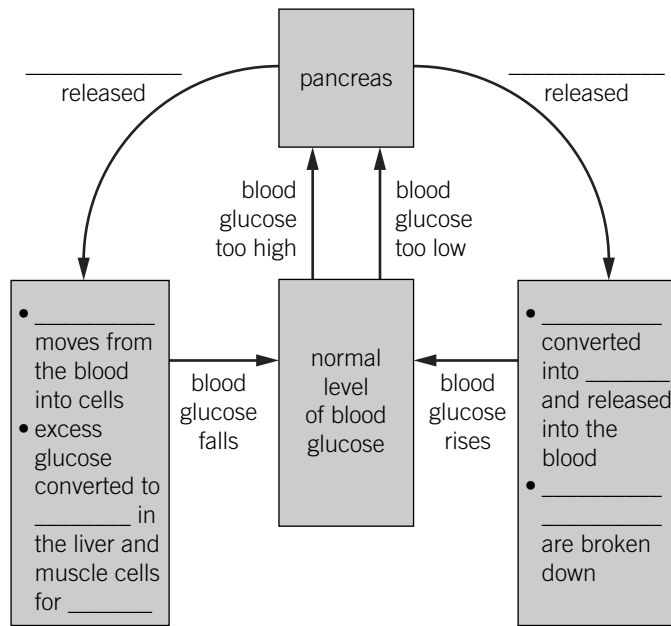
Control of blood glucose levels

Blood glucose (sugar) concentration is monitored and controlled by the _____.

This is an example of negative feedback control, as the pancreas switches production between the hormones _____ and _____ to control blood glucose levels.

Diabetes

Diabetes is a _____ - _____ disease where the body either cannot produce or cannot respond to _____, leading to uncontrolled blood glucose concentrations.



	Type 1 diabetes	Type 2 diabetes
Onset?		
Insulin function		
Treatment		

Key terms

Make sure you can write a definition for these key terms.

adrenal gland adrenaline diabetes endocrine system glucagon hormone insulin metabolic rate negative feedback pancreas pituitary gland thyroid gland thyroxine

Chapter 11: Hormonal coordination 2

Knowledge organiser

Hormones in human reproduction

During puberty, reproductive hormones cause the secondary sex characteristics to develop:

Oestrogen

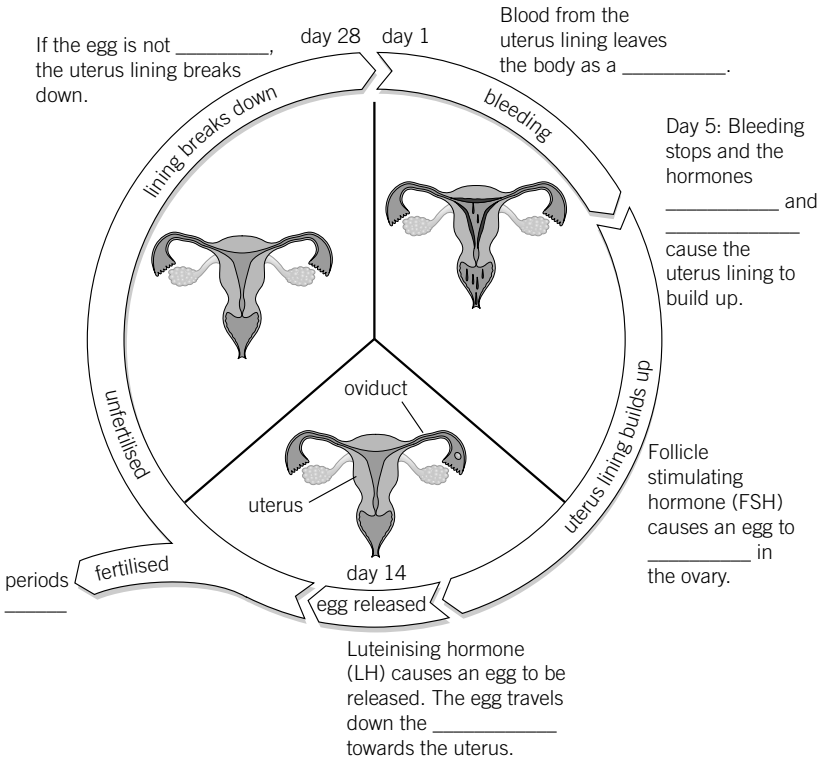
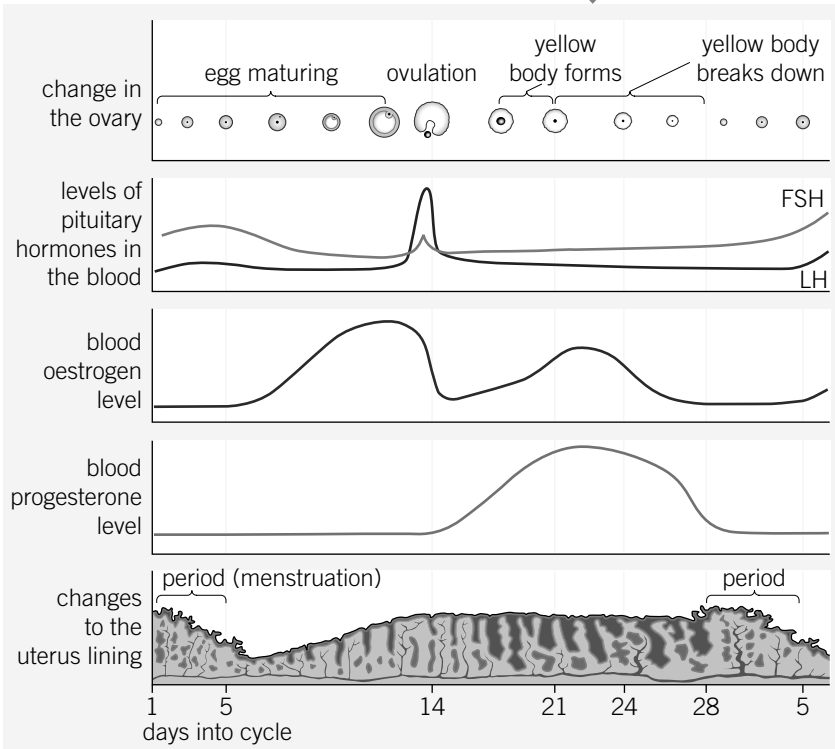
- main _____ reproductive hormone
- produced in the _____
- at puberty, _____ begin to mature and one is released every _____ days

Testosterone

- main _____ reproductive hormone
- produced by the _____
- stimulates _____ production

The menstrual cycle

Hormone	Released by	Function
follicle stimulating hormone (FSH)		<ul style="list-style-type: none">••
luteinising hormone (LH)		<ul style="list-style-type: none">•
oestrogen		<ul style="list-style-type: none">•••
progesterone		<ul style="list-style-type: none">••



Treating infertility with hormones (HT only)

Hormones are used in modern reproductive technologies to treat _____. _____ and _____ can be given as a drug to treat infertility, or _____ (IVF) treatment may be used.

IVF treatment

- 1 mother given FSH and LH to stimulate the _____ of several eggs
- 2 eggs collected from the mother and _____ by sperm from the father in a laboratory
- 3 fertilised eggs develop into _____
- 4 one or two embryos are inserted into the mother's _____ (womb) when the embryos are still tiny balls of _____

Fertility treatment has some disadvantages:

- it is emotionally and physically stressful
- it has a _____ success rate
- it can lead to multiple births, which are a _____ to both the babies and the mother.

Contraception

Fertility can be controlled by a variety of hormonal and non-hormonal methods of **contraception**.

Hormonal contraception

- _____ contraceptives – contain hormones to inhibit _____ production so no eggs mature
- injection, implant, skin patch, or intrauterine devices (IUD) – slowly release _____ to inhibit maturation and release of eggs; can last months or years

Non-hormonal contraception

- _____, for example, condoms and diaphragms – prevent _____ reaching the egg
- copper IUD – prevents the implantation of an _____
- surgical methods of male and female _____
- _____ – kill or disable sperm
- _____ from intercourse when an egg may be in the oviduct

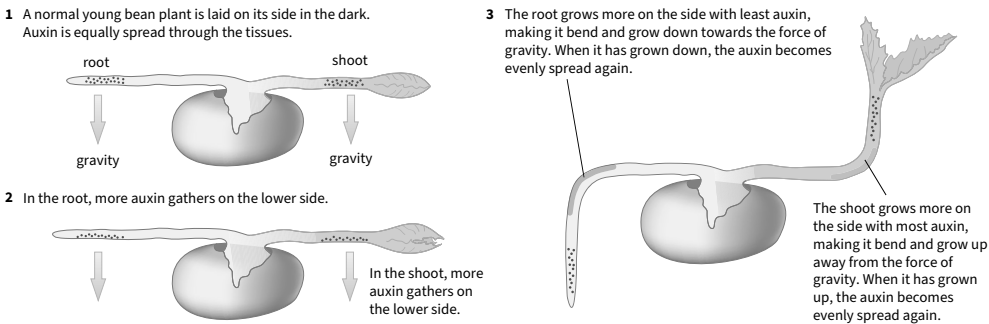
Plant hormones

A plant's response can be known as _____, when the shoots _____ towards light, and _____ when the root moves towards _____. The responses are controlled by the hormone _____. In phototropism, auxin moves from the side of the shoot with light to the _____ side, meaning the cells on that side will grow more. In gravitropism, high levels of auxin means that the growth of root cells is inhibited.

(HT only)

Gibberellins

are also plant hormones which begin the process of seed _____ by breaking down the food stores in the seeds and stimulate the growth of stems. _____ is another hormone which controls cell division.



Key terms

Make sure you can write a definition for these key terms.

auxin contraception follicle stimulating hormone gravitropism infertility in vitro fertilisation oestrogen ovary luteinising hormone menstrual cycle ovulation phototropism progesterone testes uterus

Chapter 11: Hormonal coordination

Retrieval questions

Answer the following questions using the information from the knowledge organiser.

B11 questions		Answers
1	What is the endocrine system?	
2	How do the effects of the endocrine system compare to those of the nervous system?	
3	Where is the pituitary gland located?	
4	Which organ monitors and controls blood glucose concentration?	
5	Which hormones interact to regulate blood glucose levels?	
6	What is the cause of Type 1 diabetes?	
7	What is the cause of Type 2 diabetes?	
8	What is the function of FSH?	
9	What is the function of LH?	
10	What is the function of oestrogen?	
11	What are the methods of hormonal contraception?	
12	What are the methods of non-hormonal contraception?	
13	State the disadvantages of IVF treatment.	<ul style="list-style-type: none">•••
14	What is the function of adrenaline in the body?	
15	What is the function of thyroxine in the body?	
16	Name one hormone controlled by negative feedback.	
17	Which endocrine glands control secondary sexual characteristics?	