

GCSE Biology (Separate Science)

Success Criteria: Endocrine system



<i>I can...</i>	
Understand that not all co-ordination and control of the body is carried out by the nervous system. There is a system of control that uses chemicals in its mechanism called the endocrine system.	
State that hormones are chemical messengers.	
Describe how, in animals, hormones are released by endocrine GLANDS, transported around the body in the BLOOD plasma and affect TARGET cells that have specific RECEPTORS on their cell surface membrane.	
Compare the effects of the endocrine system to the nervous system (hormones act more slowly, but are longer lasting and can affect a wider area-multiple targets)	
Identify the position of several glands on the a diagram of the human body including <ul style="list-style-type: none"> • pituitary gland • pancreas • thyroid • adrenal gland • ovary • testes. 	
Describe the pituitary gland in the brain is a 'master gland' which secretes several hormones into the blood to act on other glands to stimulate other hormones to be released to bring about effects.	
Explain the role of thyroxine in the body (including how the thyroid gland produces thyroxine that controls the speed at which oxygen and food products are burned up to produce ATP/energy [metabolism])	
Describe the basic principle of negative feedback. (change from the normal level is detected and corrected back to normal).	
Use thyroxine as an example of a negative feedback system. (low thyroxine levels) Pituitary gland detects and secretes TSH (thyroid stimulating hormone) that targets the thyroid causing more Thyroxine to be produced....normal level of thyroxine reached.	
Explain the role of adrenalin in the body (including adrenal glands release adrenaline many cells in the body contain receptors for adrenaline allowing the hormone to exert an effect on a wide variety of tissues, responsible for 'fight or flight' responses)	

<p>Describe the roles of the main sex hormones involved in human reproduction;</p> <p>Testosterone = main male reproductive hormone, produced by the Testes. Causes secondary sexual characteristics to develop at puberty and it stimulates sperm production.</p> <p>Oestrogen = main female reproductive hormone, produced in the ovary. Causes secondary sexual characteristics to develop at puberty and it starts the menstrual cycle.</p>	
<p>Describe the role of hormones in controlling the human menstrual cycle, including</p> <ul style="list-style-type: none"> • FSH (matures an egg + stimulates oestrogen secretion from ovaries) • Oestrogen (builds up the uterus lining, inhibits FSH secretion from pituitary+ stimulates LH release from pituitary) • LH (releases the egg from the ovary [ovulation]) • Progesterone (maintains the uterus lining during mid/end of cycle and into pregnancy) 	
<p>Analyse the relative hormones levels from raw data and graphically.</p>	
<p>Explain the artificial use of hormones in contraception including:</p> <p>Oestrogen -inhibits FSH so no eggs mature</p> <p>And</p> <p>Progesterone- increases the production of mucus around the cervix to make it harder for sperm to pass.</p>	
<p>Describe the various methods of contraception available (hormonal and non-hormonal) and evaluate their relative effectiveness and ethical use.</p>	
<p>Explain the use of hormones in modern reproductive technologies to treat infertility including</p> <p>FSH use to increase the number of mature eggs available</p> <p>And</p> <p>LH to cause ovulation</p>	
<p>Understand that sometime additional procedures maybe required to treat infertility including IVF (in vitro fertilisation) which involves</p> <ul style="list-style-type: none"> • giving the women lots of FSH to stimulate egg maturation • surgically removing mature eggs from the ovary • fertilising the eggs with sperm outside the body • allowing the fertilised eggs to grow into embryos in a dish • then inserting the embryos back into the mothers uterus to hopefully implant and grow into a baby. 	
<p>Understand that although fertility treatment gives a woman the chance to have a baby of her own:</p> <ul style="list-style-type: none"> • it is very emotionally and physically stressful • the success rates are not high • it can lead to multiple births which are a risk to both the babies and the mother. • It is very expensive and often not available on the NHS • It creates multiple embryos, many of which will not be used and will be discarded/disposed of. 	

Plant hormones (Separate Science ONLY)

Explain how plant hormones are important in the control and coordination of plant growth and development.	
Describe plant growth in response to environmental stimuli as tropisms <ul style="list-style-type: none">• Phototropism= growth of shoot towards light• Gravitropism=growth of shoot away from gravity AND growth of roots towards gravity• Hydrotropism = growth of roots towards water	
Identify Auxin as the hormone that controls plant growth in the growing tips of shoots and roots. Auxin causes cell elongation. Unequal distribution of auxin results in unequal growth (bending of shoots/roots)	
Identify Gibberellin as another plant hormone controlling growth of the stem and in initiating seed germination	
Identify Ethene a plant hormone that controls cell division and that is responsible for fruit ripening.	
Required practical activity 8: investigate the effect of light or gravity on the growth of newly germinated seedlings.	
Describe some of the different ways in which people use plant hormones to control plant growth (including selective herbicides, producing seedless fruit (parthenocarpic fruit development) and controlling seed dormancy.	
State that auxins are used: <ul style="list-style-type: none">• as weed killers• as rooting powders• for promoting growth in tissue culture.	
State that ethene is used in the food industry to control ripening of fruit during storage and transport.	
State that gibberellins can be used to: <ul style="list-style-type: none">• end seed dormancy• promote flowering• increase fruit size.	

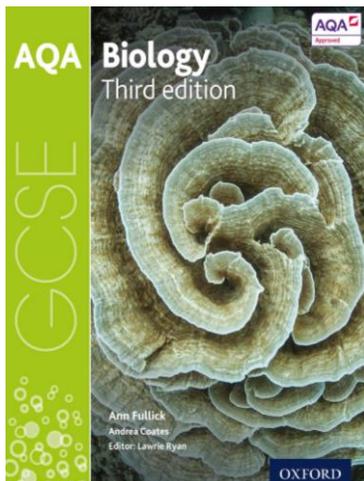
AQA exam specification:

- 4.5.3.1 Human Endocrine System
- 4.5.3.4 Hormones in reproduction
- 4.5.3.5 Contraception
- 4.5.3.6 Use of hormones to treat infertility
- 4.5.3.7 Negative feedback
- 4.5.4 Plant hormones

Additional support:



Access the GCSE Biology digital textbook by logging on to www.kerboodle.com (*you have your own login details...ask any science teacher if you are unsure*). Read the relevant pages (see below).



Separate Biology GCSE textbook

Endocrine system

pages 160-162, 166-176

Plant Hormones

pages 176-180

Write your own summary notes (bullet points of the key ideas /keywords list with definitions/ annotated diagrams/ mind-maps or flash cards) to go over the main content of the topic.

Attempt the textbook summary questions.



www.BBCbitesize.com has some great AQA GCSE revision resources too.

www.Senecalearning.com is a free online revision platform that is great for reviewing content too.



www.physicsandmathstutor.com has lots of practice exam style questions and mark schemes, grouped by topic, that you should try once you have revised the content.

Extension work/extra challenge:

Ask your teacher for extension task...

Pack 2 Topic 6- The Male Pill

Pack 2 Topic 7- IVF advances