

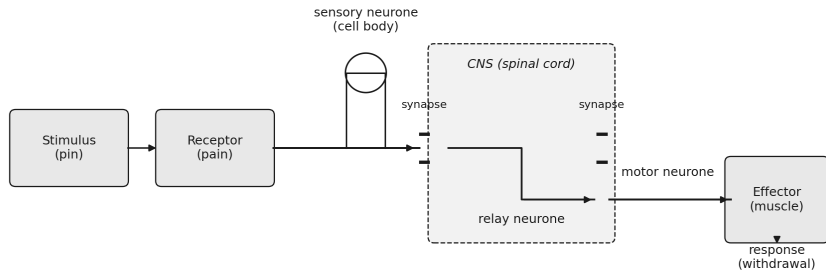
Exercise walk-through

5.4

Plant hormones – biology only (4.5.4)

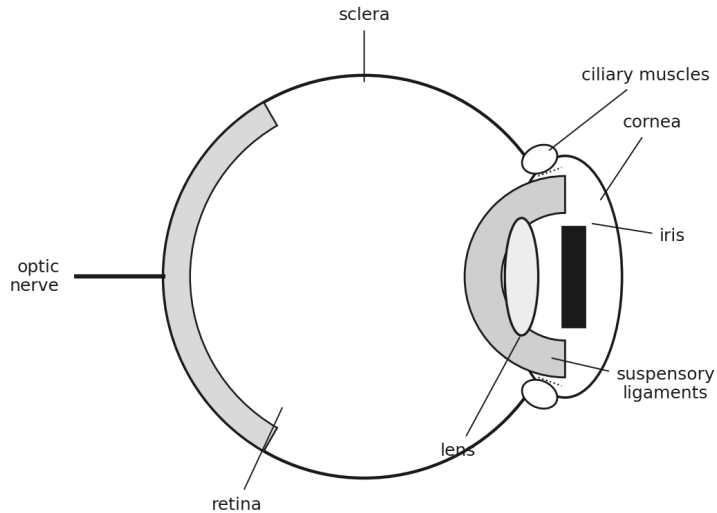
AQA · GCSE · Biology

The reflex arc



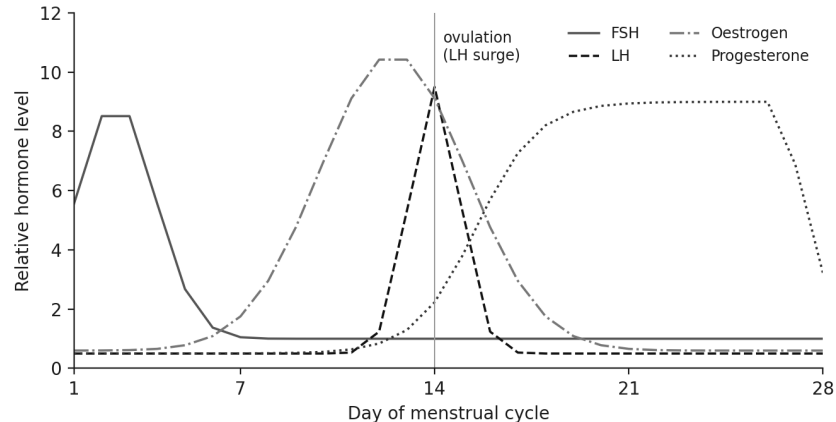
- Automatic and rapid — no conscious brain involved.
- Sensory neurone, synapse, relay neurone, motor neurone.
- At a synapse a chemical diffuses across the gap.

The eye and accommodation



- Named parts: retina, optic nerve, sclera, cornea, iris, ciliary muscles, suspensory ligaments.
- Near: ciliary muscles contract, ligaments loosen, lens thick.
- Distant: muscles relax, ligaments tight, lens thin.

The menstrual cycle



- FSH matures the egg; LH surge releases it — ovulation, about day 14.
- Oestrogen builds the lining; progesterone maintains it.
- (HT) read the four-hormone graph.

Exercises 2.1·2.3

2.1 Define phototropism.

[1]

2.2 In which direction do roots grow in response to gravity, and what is this response called?

[2]

2.3 (HT) Name the plant hormone used to control fruit ripening in storage and transport.

[1]

Exercises 2.1·2.3

2.1 Define phototropism. [1]

2.1 The growth of a plant shoot towards light.

2.2 In which direction do roots grow in response to gravity, and what is this response called? [2]

2.2 Downwards; gravitropism/geotropism.

2.3 (HT) Name the plant hormone used to control fruit ripening in storage and transport. [1]

2.3 Ethene.

Exercises 3.1·3.2

3.1 Explain how auxin causes a shoot to bend towards light shining from one side. [3]

3.2 A student germinates cress seedlings and places them in a box with a hole cut in one side. Describe how she should investigate the effect of light on growth, including how she records her results. [5]

Exercises 3.1·3.2

3.1 Explain how auxin causes a shoot to bend towards light shining from one side. [3]

3.1 Auxin moves/accumulates on the shaded side of the shoot; auxin stimulates cell elongation, so cells on the shaded side elongate more than on the lit side; the shoot bends towards the light source.

3.2 A student germinates cress seedlings and places them in a box with a hole cut in one side. Describe how she should investigate the effect of light on growth, including how she records her results. [5]

3.2 Put germinated seedlings of the same age/length in a box with a hole on one side, so light enters only from one direction; keep a control batch in uniform light/darkness and the same moisture/temperature; leave for a set time, e.g. 2–3 days; record the direction of growth and measure shoot length with a ruler; make careful, labelled biological drawings of the seedlings showing the bend towards the light.

Exercise 3.3

3.3 (*HT*) A gardener takes cuttings and dips the cut ends in rooting powder before planting. Explain how rooting powder works, and give two other uses of plant hormones in agriculture or horticulture.

[4]

Exercise 3.3

3.3 (*HT*) A gardener takes cuttings and dips the cut ends in rooting powder before planting. Explain how rooting powder works, and give two other uses of plant hormones in agriculture or horticulture. [4]

3.3 Rooting powder contains auxin, which stimulates cell elongation/division and root growth at the cut stem, so cuttings root and grow into clones of the parent plant. Other uses: auxin weed killers – spraying broad-leaved weeds makes them grow too fast and die; auxin in tissue culture to promote growth of mass-produced plants; gibberellins to end seed dormancy, promote flowering or increase fruit size; ethene to control fruit ripening in storage and transport (any one, B1).