Your notes

GCSE Biology: revision notes

Plant hormones

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Auxin and tropisms

- Plants produce hormones to coordinate and control growth, and their responses to light (**phototropism**) and gravity (**gravitropism**, or geotropism).
- **Auxin** is made at the tips of shoots and roots. An unequal distribution of **auxin** causes unequal growth.
- In shoots, light makes **auxin** collect on the shaded side. The cells there grow longer, so the shoot bends towards the light.
- In roots, **auxin** collects on the lower side and inhibits growth there, so the root bends downwards, towards gravity.

Other plant hormones

- **Gibberellins** are important in starting seed germination.
- **Ethene** controls cell division and the ripening of fruits.

Using plant hormones

- **Auxins** are used as weedkillers (selective ones kill broad-leaved weeds but not grasses), in **rooting powders** to help cuttings grow roots, and to promote growth in tissue culture.
- **Ethene** is used in the food industry to control the ripening of fruit during storage and transport.
- **Gibberellins** are used to end seed **dormancy**, promote flowering and increase fruit size.

Required practical: light and seedlings

- Plant cress seeds in several dishes and let them germinate.
- Put one dish in darkness, one in light from all around and one with light from one side only. Keep the temperature and water the same.

- After a few days, measure the height and observe the direction of growth. Seedlings lit from one side bend towards the light.

Key terms

Auxin	A plant hormone that controls growth in response to light and gravity.
Phototropism	Growth in response to light.
Gravitropism	Growth in response to gravity (also called geotropism).
Gibberellins	Plant hormones that start seed germination.
Ethene	A plant hormone that controls fruit ripening.
Rooting powder	A powder containing auxin that helps cuttings grow roots.
Selective weedkiller	A weedkiller containing auxins that kills broad-leaved weeds but not grasses.
Dormancy	A resting state in which a seed does not germinate.

Quick questions

Cover the answers and test yourself: remembering is what makes it stick.

1. What is phototropism?
2. Where does auxin collect in a shoot lit from one side?
3. What does auxin do to cells in a shoot?
4. Why do roots bend downwards?
5. Which hormone controls fruit ripening?
6. Which hormone starts seed germination?
7. What are rooting powders used for?
8. How do selective weedkillers work?

Answers

1. Growth in response to light
2. On the shaded side
3. Makes them grow longer
4. Auxin collects on the lower side and inhibits growth there
5. Ethene
6. Gibberellins
7. Helping cuttings grow roots
8. Auxins make broad-leaved weeds grow too fast and die

What to do next

Practise 10 questions on this topic

Try 7 exam questions, with mark schemes

Read the lesson, one step at a time

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