

Exercise walk-through

Tropic responses ■ 14.5

eXercise

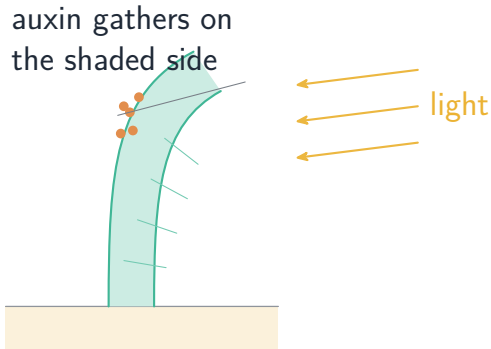
You must be able to

- define phototropism and gravitropism
- describe how auxin controls a shoot's response to light
- predict the direction of growth

Method — Phototropism and auxin

- **phototropism:** growth towards light (shoots positive). **gravitropism:** roots down, shoots up.
- auxin made in the shoot tip; it makes cells elongate.

Method — Phototropism and auxin



cells on the shaded side grow longer, so the shoot bends towards the light

Auxin gathering on the shaded side, bending the shoot to the light

Practice 2.1 ■ 1 mark

Define phototropism.

Solution 2.1

Worked steps

a plant's growth response towards (or away from) the direction of light **B1**.

Practice 2.2 ■ 1 mark

State the direction a root grows in response to gravity.

Solution 2.2

Worked steps

downwards (towards gravity) **B1**.

Exam-style 3.1 ■ 1 mark

A shoot lit from one side bends towards the light because auxin:

- A** is destroyed by light
- B** gathers on the shaded side and makes those cells grow longer
- C** stops the shoot growing
- D** gathers on the lit side

Solution 3.1

Method: Phototropism and auxin

- A** is destroyed by light
- B** gathers on the shaded side and makes those cells grow longer 
- C** stops the shoot growing
- D** gathers on the lit side

Worked steps

B. Auxin gathers on the shaded side and makes those cells grow longer.

Exam-style 3.2 ■ 1 mark

Auxin controls phototropism.

- (a) State where auxin is made.
- (b) Explain how unequal auxin makes a shoot bend towards the light.

Solution 3.2

Method: Phototropism and auxin

Worked steps

(a) in the shoot tip **B1**.

(b) light makes auxin spread to the shaded side **M1**; auxin makes those cells elongate (grow longer) **M1**; so the shaded side grows faster and the shoot bends towards the light **A1**.