22.5 Plant Hormones and Responses

KEY CONCEPT

Plant hormones guide plant growth and development.

22.5 Plant Hormones and Responses

Plant hormones regulate plant functions.

- Hormones are chemical messengers.
  - produced in one part of an organism
  - stimulates or suppresses activity in another part

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- Gibberellins are plant hormones that produce dramatic increases in size.
  - ending seed dormancy
  - rapid growth of young seedlings
  - rapid growth of some flower stalks

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- Ethylene causes the ripening of fruits.
  - some fruits picked before they are ripe
  - sprayed with ethylene to ripen when reach destination

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- Cytokinins stimulate cytokinesis.
  - final stage in cell division
  - produced in growing roots, seeds, and fruits
  - involved in growth of side branches

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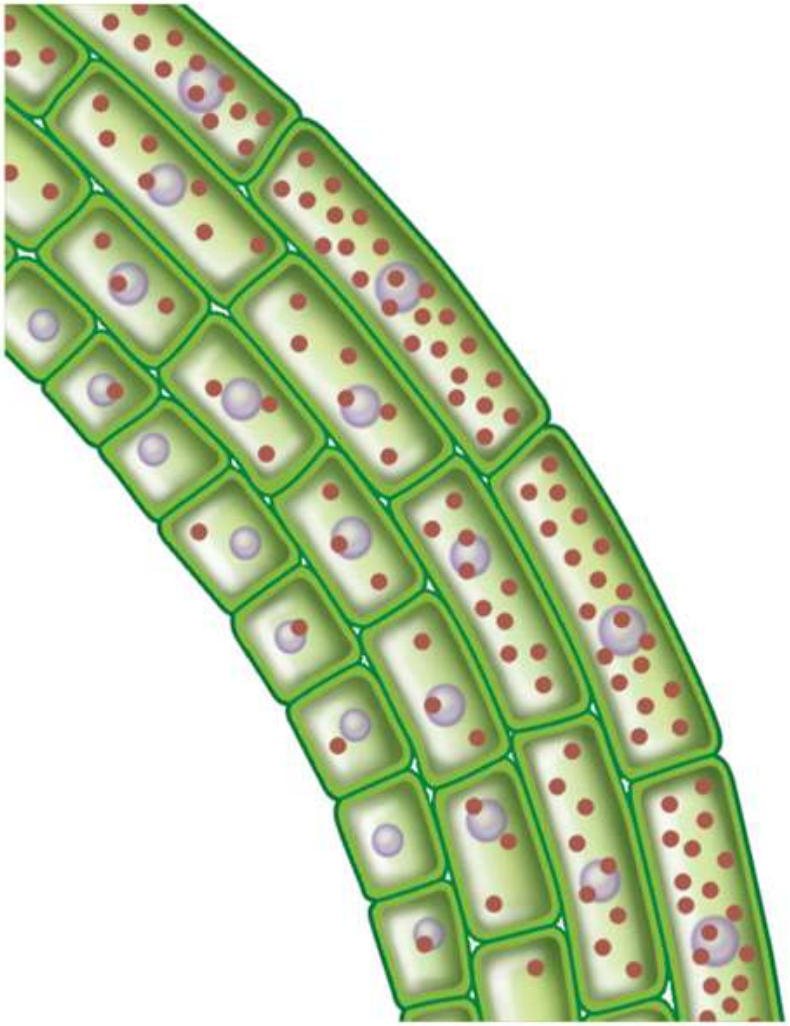
- Auxins lengthen plant cells in the growing tip.
  - stimulates growth of primary stem
  - controls some forms of tropism
- A tropism is the movement of plant in response to an environmental stimulus.



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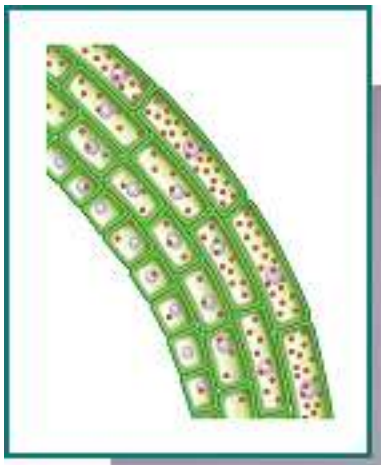
Plants can respond to light, touch, gravity, and seasonal changes.

- Phototropism is the tendency of a plant to grow toward light.
  - auxins build up on shaded side of stem
  - cells on shaded side lengthen
  - causes stem to bend toward light



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- Thigmotropism is a plant's response to touchlike stimuli.
  - climbing plants and vines
  - plants that grow in direction of constant wind

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- Gravitropism is a plant's response to Earth's gravitational pull.
  - positive gravitropism is downward growth (roots)
  - negative gravitropism is upward growth (shoots)

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- Some plants have rapid responses not involving growth.
  - Some responses protect plants from predators.
  - Some responses allow plants to capture food.

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- Photoperiodism is a response to the changing lengths of day and night.
  - triggers some plants to flower
  - triggers fall colors/winter dormancy of deciduous trees