Organism Response and Behaviour Cheat Sheet

by Bendash13 (Bendash13) via cheatography.com/24992/cs/12029/

Types of Receptors

Photoreceptors	Detects light, colour not important. detection of movement and shapes essential
Thermoreceptors	Infra-red detected, receptors not in eyes
Mechanoreceptors	Detects: touch, pressure, movement, gravity, stretch. important for co-ordination
Proprioreceptors	responds to tension in muscles and joints
Chemoreceptors	Smell (olfaction), taste(gustation)
Auditory Receptors	Detects sound waves
Electrical Fields	Fish use to detect disturbances nearby
Magnetic Fields	Homing in pigeons

Tropism

Tropisms are a plant growth response to stimuli. This response can be positive (towards) or negative (away from).

Types of Tropism

Stimulus	Root	Shoot	Advantage
Phototropism	-	+	More light for shoot. Better anchorage+water+minerals for root
Geotropism	+	-	Same as above

5 Major Plant Hormones

Name	Stimulus	Produced	Effect
Auxin	Light in shoot, Gravity in roots	Apical Meristem	Cell elongation promoted in shoots and inhibited in roots
Gibberellins		Apical Meristem	Breaks dormancy, elongation of stems
Ethylene		Senesing leaf	Stimulates sugar production from starch
Cytokinins		Apical Meristem	Cell division in presence of auxin.
Abscisic Acid (ABA)	Response to water stress	Leaves, Fruit, Stem, Root cap	Controls dormancy, promotes abscission, inhibits seed growth

Phototropism

What causes Phototropism?

> Auxin (IAA)

Where is it produced?

> Apical meristem

What does it do?

> Promotes cell elongation in shoot, inhibits in root

Where does it go?

> Moves down plant from shoot to root

Why does it only affect one side?

> Moves laterally across to the shaded side

What is the result of elongation?

> Shoot grows towards light, root grows away.

What is the benefit?

> More light for photosynthesis in shoots. roots grow away into soil where there is more minerals and water for photosynthesis.

Geotropism

What is it?

> Plant growth response to gravity

How is it detected?

> Starch grains called Statoliths settle at bottom of root cap cells

What is th response?

> Leads to redistribution of auxin at roots causing the root to grow towards gravity.

Does it affect shoots?

> Yes, in the absence of light shoots exhibit negative geotropism, they grow away from gravity

Nastic Responses

What is it?

> Movement of a plant **part** in response to stimuli

How fast does it occur?

> Slow, but faster than tropisms

How responded?

> Uniform response, regardless of direction of stimuli

Examples of responses

> Venus flytrap responding to chemicals.

By **Bendash13** (Bendash13)
cheatography.com/bendash13/

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