

Responding to Changes in the Environment

All organisms respond to changes in their environment and this section explores some of the ways in which they do this. The human eye is studied as an example of a receptor organ. Stimuli: Changes in external or internal environment which cause a response Receptor: Cells in the body which detect stimuli Effector: Part of the body which responds to stimuli

Central Nervous System

Brain Spinal Chord Nerves: a bundle of nerve cells. A nerve cell is called a neurone.

Sensory Neurone: Carries impulses from the receptor to the central nervous system Motor Neurone: Carries impulses from the central nervous system to the effectors Relay neurone: connects the sensory neurone to the motor neurone.

Motor Neurone

Myelin Sheath: Is fatty and insulates electricity inside the axon. Dendrites: Receive nerve impulses from sensory cells.

Reflex Action, Involuntary/Voluntary

Reflex arc is the path taken by an impulse in a reflex arc Stimulus->Receptor->Sensory neurone->Relay neurone->Motor Neurone->Effector->Response Spinal Chord (Reflex arc only concerned with stimulus from the skin) Stimulus (sharp object) -> Sensory neurone (through dorsal route in white matter) -> (synaps in grey matter) -> relay neurone -> (synaps) -> motor neurone (in white matter) -> muscle effector (move hand)

The Eye Know the structure of the eye. Will put image here someday. How we see Light rays from objects are refracted by the cornea and focussed by the lens. This forms an upside down image on the retina. This upside down image is corrected by our brain so we see the correct way up.

Focussing on Distant objects ciliary muscles relax suspensory ligaments become tight lens get pulled thin and flat. (less convex) It is the first of the above images Focussing on near Objects ciliary muscles contract suspensory ligaments relax lens becomes fatter and rounder (more convex)

second of above images Rods and Cones: Contain light sensitive pigments which are bleached in light and generate an impulse Rods

Cones

120 million present

6 million present - mainly on fovea

sensitive to low light concentrations

sensitive to bright light concentrations

black and white image

colour image

fuzzy image

sharp and clear image

 Plant Response Phototropic response: growth in response to directional stimulus, light Top of the plant shoot is the receptor of light for growth Auxin is a chemical growth regulating substance, which is produced at the tip of shoots when exposed to light. Auxin diffuses down the shoot, on the side which is shaded it causes cells in zone of cell elongation to grow faster therefore one side is long/bigger than the other, so the plant bends towards the light.

About the Author

Source: <http://crampuppy.com>