

Homeostasis

Nervous System

rapid response to stimuli via electrical signals

Endocrine System

long-term response using chemical signals (hormones)

Homeostatic Mechanisms

Sensor

detects environmental stimulus

Integrator

receives and processes signals

Effector

cells respond to regulatory signals

Feedback Mechanisms

Negative Feedback primary mechanism of homeostasis. Used to produce opposite effect of the change and bring back to homeostasis.

Positive Feedback increases the effects of change produced by environmental stimulus. Does not bring back to homeostasis.

Thermo-regulation Conduction, Convection, Radiation, Evaporation

Thermoregulation

Heat Stress

thermoreceptors of peripheral nervous system detect increased temp

2) Coordinate

hypothalamus signals CNS via motor nerves to sweat glands

3) Regulate

sweat glands initiate sweating, blood vessels dilate

Cold Stress

1) Monitor

thermoreceptors signal hypothalamus using sensory neurons

2) Coordinate

hypothalamus sends message via motor neurons

3) Regulate

arterioles and smooth muscle of skin contract, captures heat, skeletal muscles contract-shivering

Osmoregulation

Osmosis

water from high conc. to low conc.

Osmoregulation

regulating osmotic pressure of bodily fluids and cells, management of bodies water and solute content

Excretion

composition of bodily fluids. regulation of blood pH, volume, and pressure. Excretion of metabolic waste.

Nitrogenous Waste

Ammonia

released when liver breaks down proteins - by deamination. Very soluble and toxic. Must be diluted w/ H₂O

Urea

product of Ammonia and CO₂. Conversion occurs in liver. Low toxicity.

Uric Acid

product of nucleic acid breakdown. Released through liver metabolism. Non toxic and insoluble in H₂O

By [emilyaltmann](#)

Published 2nd June, 2019.

Last updated 2nd June, 2019.

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