

### 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

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/ H<sub>2</sub>O

#### Urea

product of Ammonia and CO<sub>2</sub>. Conversion occurs in liver. Low toxicity.

#### Uric Acid

product of nucleic acid breakdown. Released through liver metabolism. Non toxic and insoluble in H<sub>2</sub>O



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