

Unit 3: Maintaining Homeostasis



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Homeostasis in the Human Body

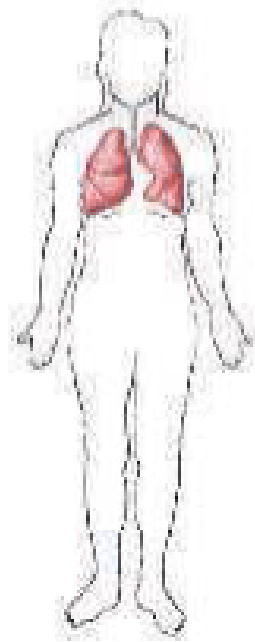
- Your body must maintain the proper internal conditions for all its cells. The ability of your body to maintain an internal balance is called **homeostasis**.
- The following are the list of body systems we will learn about in this unit.
- We will identify how they help to maintain homeostasis.





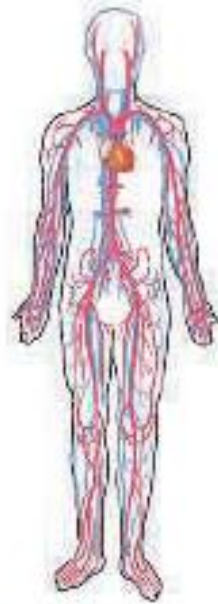
Digestive system

- breaks down food into chemical components that are small enough to enter circulation
- eliminates undigested food



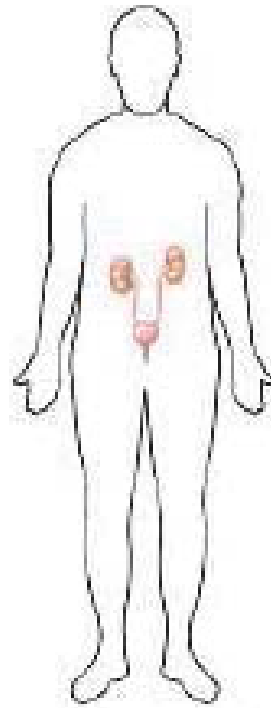
Respiratory system

- delivers oxygen to blood
- removes carbon dioxide from cells
- helps to control blood pH



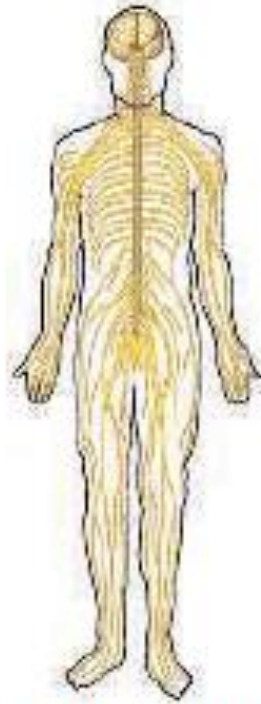
Circulatory system

- transports blood, nutrients, gases, and metabolic wastes
- defends body against disease
- helps to control temperature, fluid balance, and pH balance



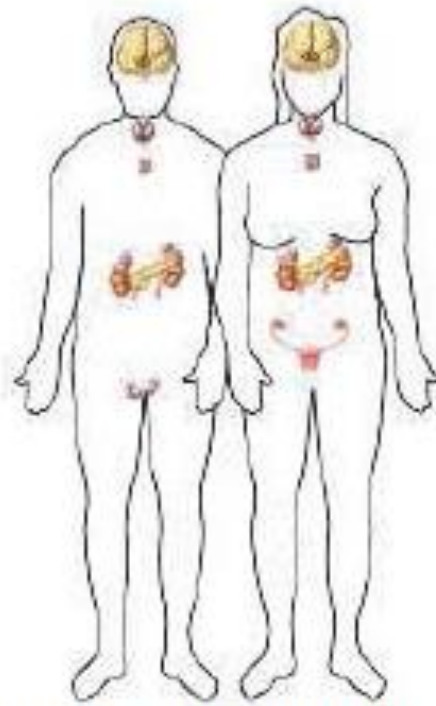
Excretory system

- removes metabolic wastes
- helps to control fluid balance
- helps to control pH balance



Nervous system

- detects, interprets, and responds to stimuli from outside and within body
- with endocrine system, coordinates all organ-system functions



Endocrine system

- produces hormones
- helps to coordinate organ systems
- responds to stress
- helps to regulate fluid and pH balance
- helps to regulate metabolism

Homeostasis and Negative Feedback

- **negative feedback mechanism** a feedback system that results in a variable being brought back to normal levels
- It returns the body to homeostasis
- In terms of negative feedback, a sensor detects a change that disrupts a balanced state and signals a control centre. The control centre then activates an effector, which reverses the change and restores the balanced state.



Homeostasis and Negative Feedback

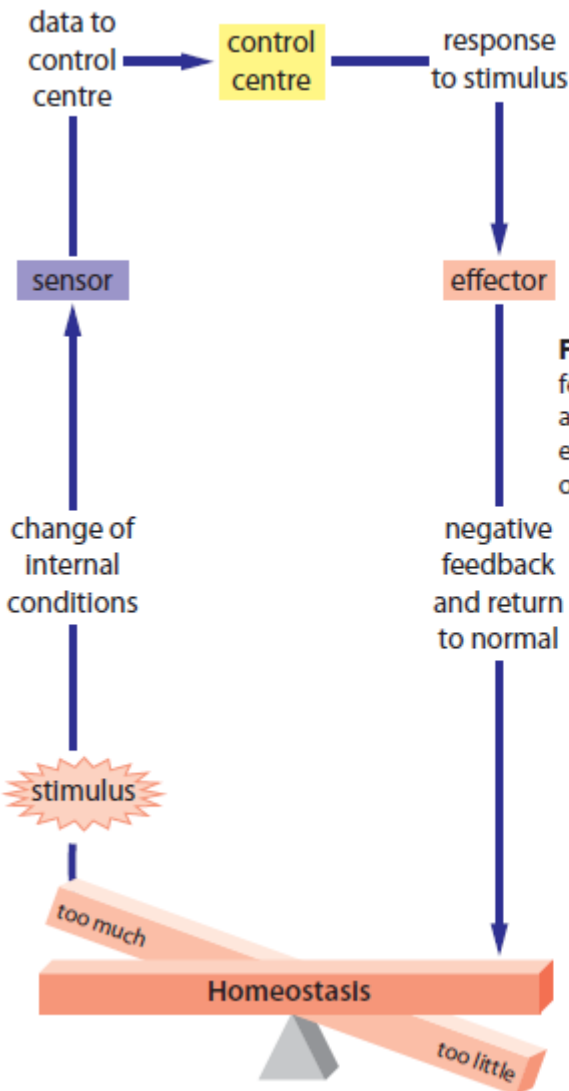
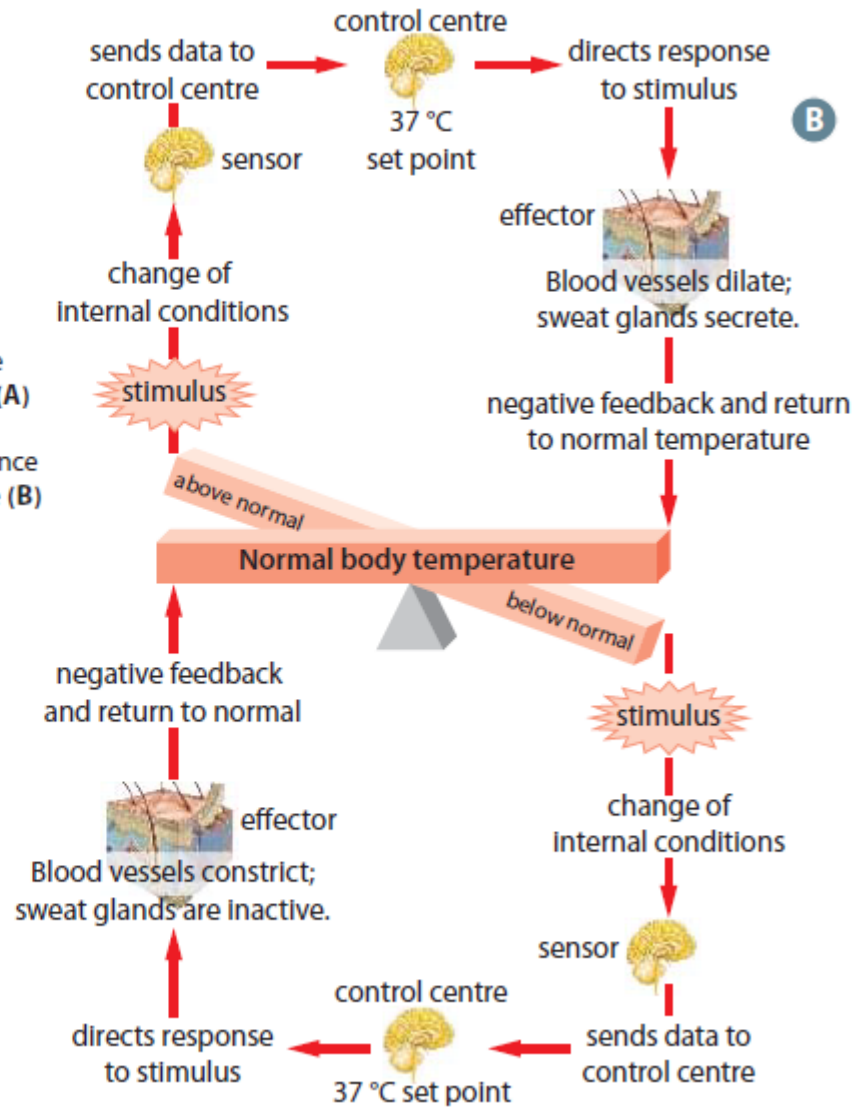
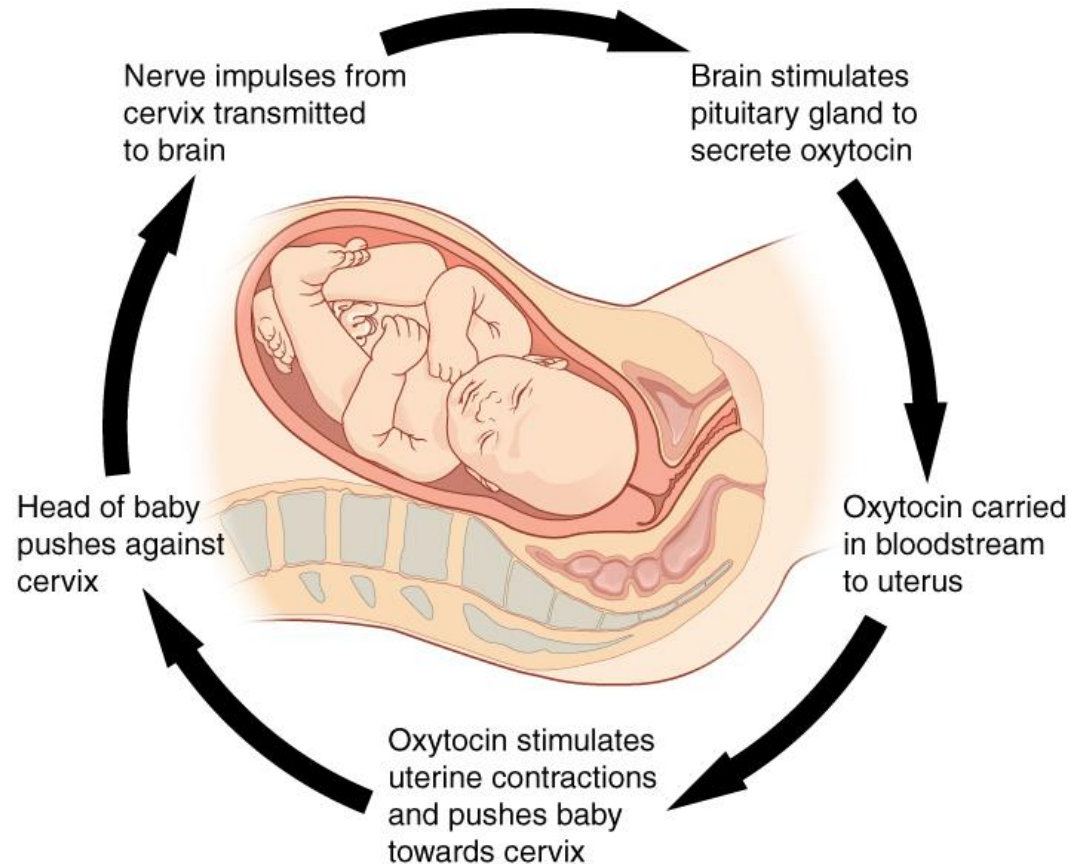


Figure 5.2 Negative feedback in general (A) and in a biological example—maintenance of body temperature (B)





- **positive feedback mechanism** a feedback system that results in a variable's level being continually increased





Human Homeostasis

Receptor

Control Center

Effector

Negative Feedback Maintains

- Blood Pressure
- Body Temperature

Positive Feedback Promotes

- Childbirth
- Ovulation