Chapter 4

- Body Organization and Homeostasis

The Organization of the Human Body Increases in Complexity from Cells to Organ Systems

- Tissues form organs that often work together in organ systems
- Organ systems: Groups of organs that work together to perform a common function

Skeletal system

- Attachment for muscles
- Encloses and protects organs
- Stores calcium and phosphorus
- Produces blood cells
- Stores fat

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Muscular system

- Moves body and maintains posture
- Internal transport of fluids
- Generation of heat

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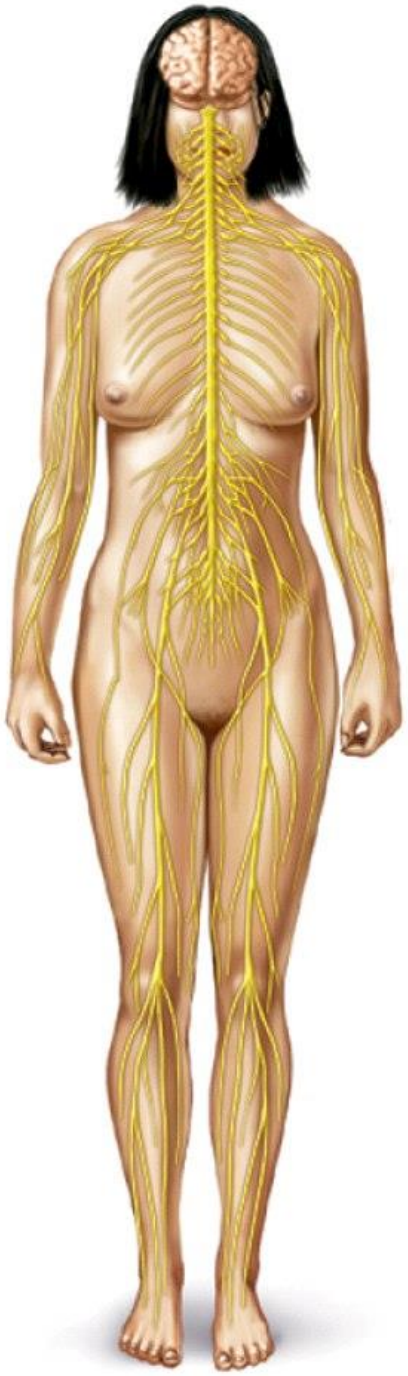

Nervous system

- Regulates and integrates body functions via neurons

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Endocrine system

- Regulates and integrates body functions via hormones

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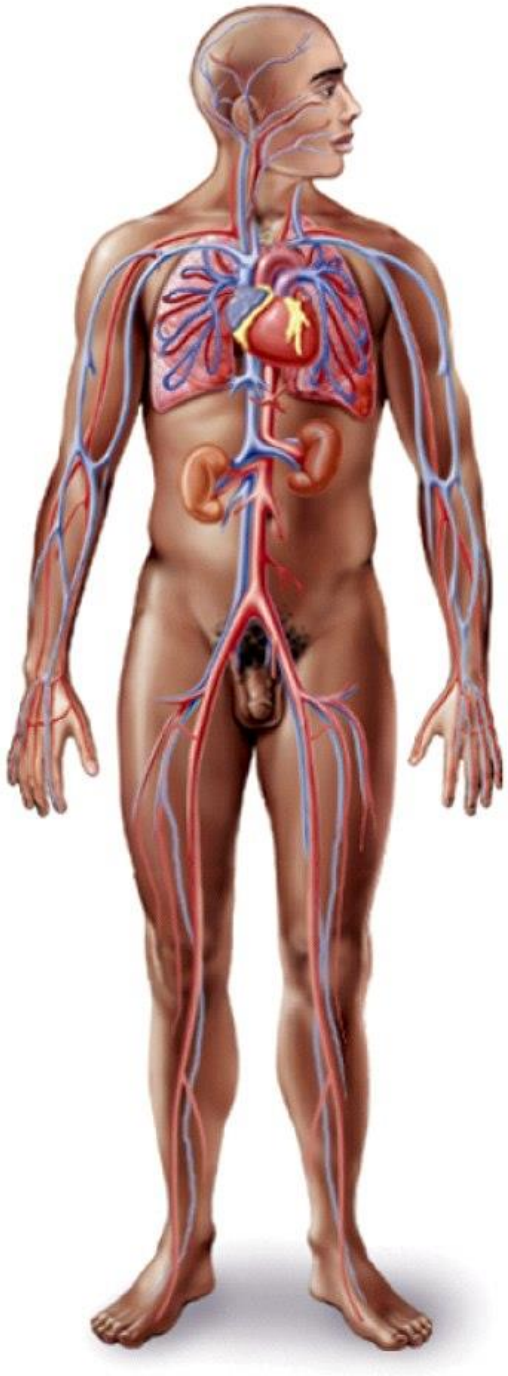

Circulatory system

- Transports nutrients, respiratory gases, wastes, and heat
- Transports cells and antibodies for immune response
- Transports hormones
- Regulates pH through buffers

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Respiratory system

- Exchanges respiratory gases with the environment

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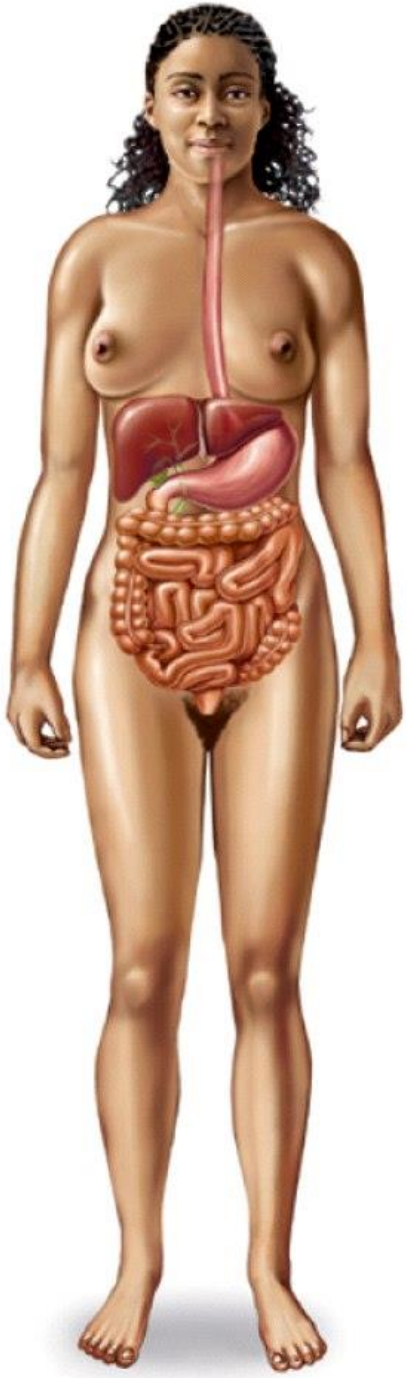

Digestive system

- Physical and chemical breakdown of food
- Absorbs, processes, stores, and controls release of digestive products

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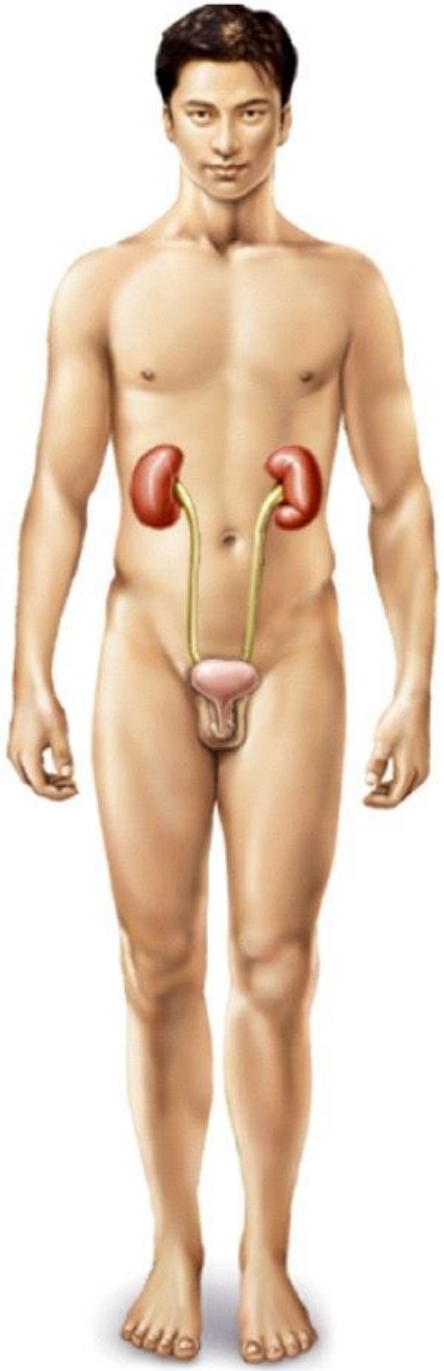

Urinary system

- Maintains constant internal environment through the excretion of nitrogenous waste

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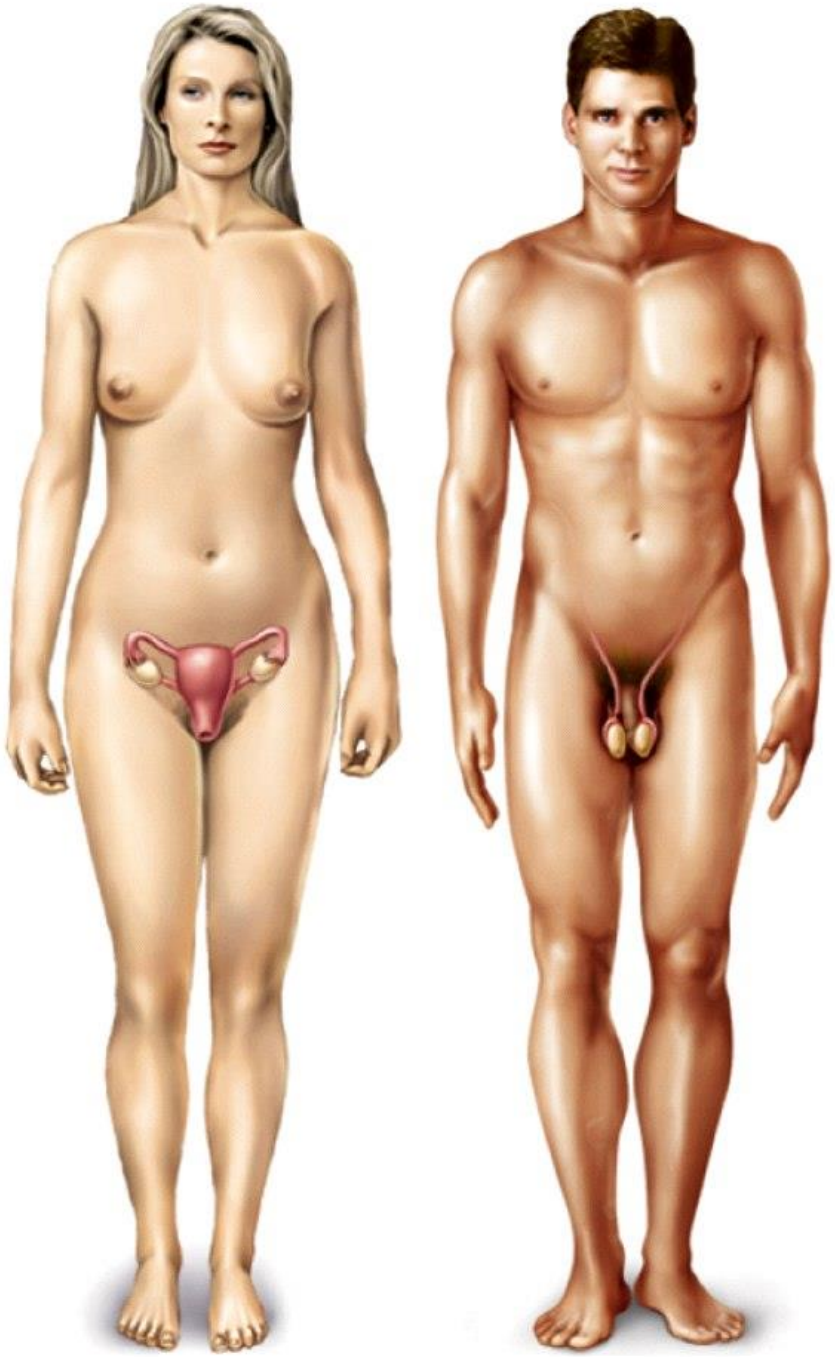

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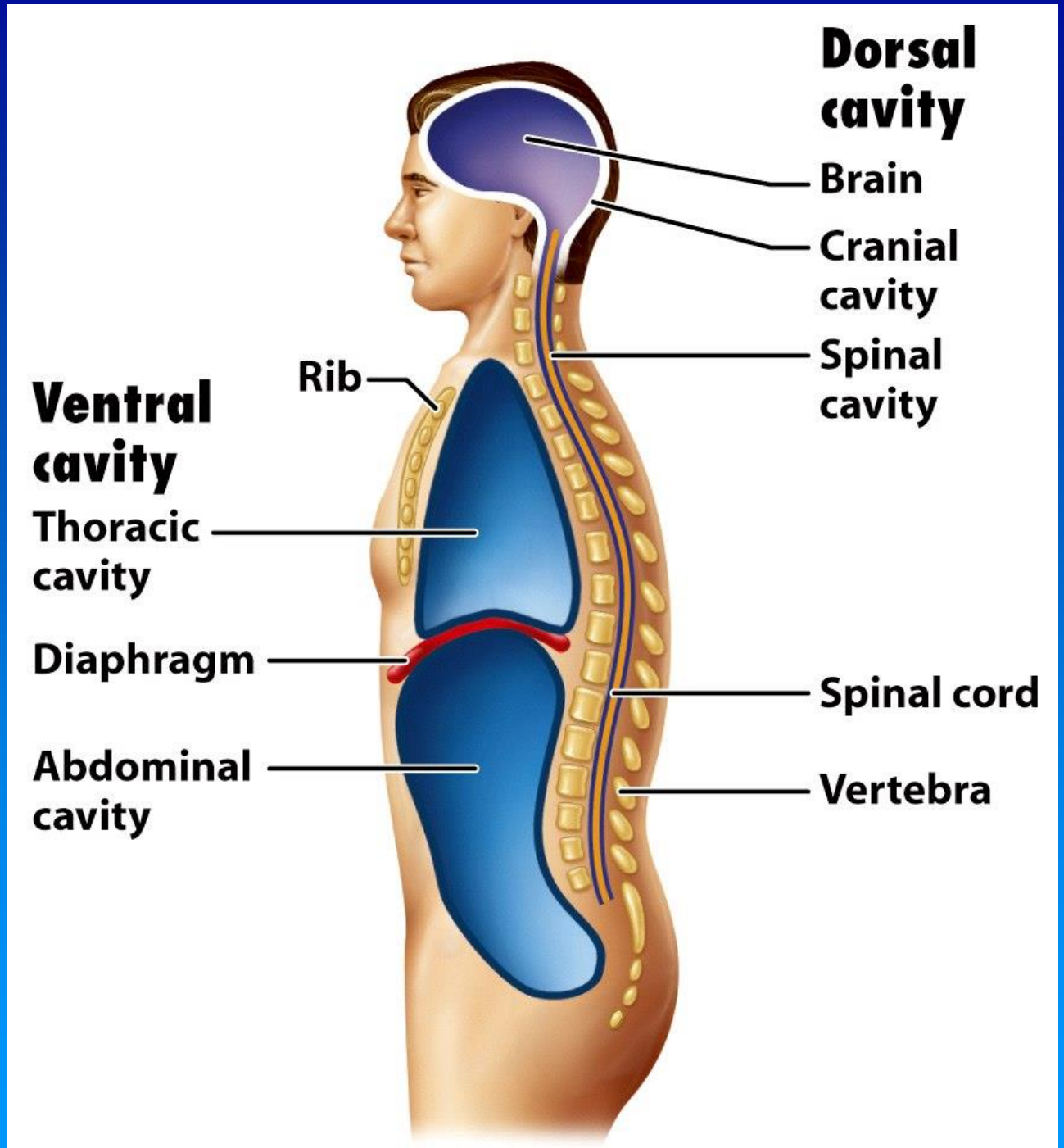
Reproductive system

- Produces and secretes hormones
- Produces and releases egg and sperm cells and accessory secretions
- Forms placental attachment with fetus (females only)



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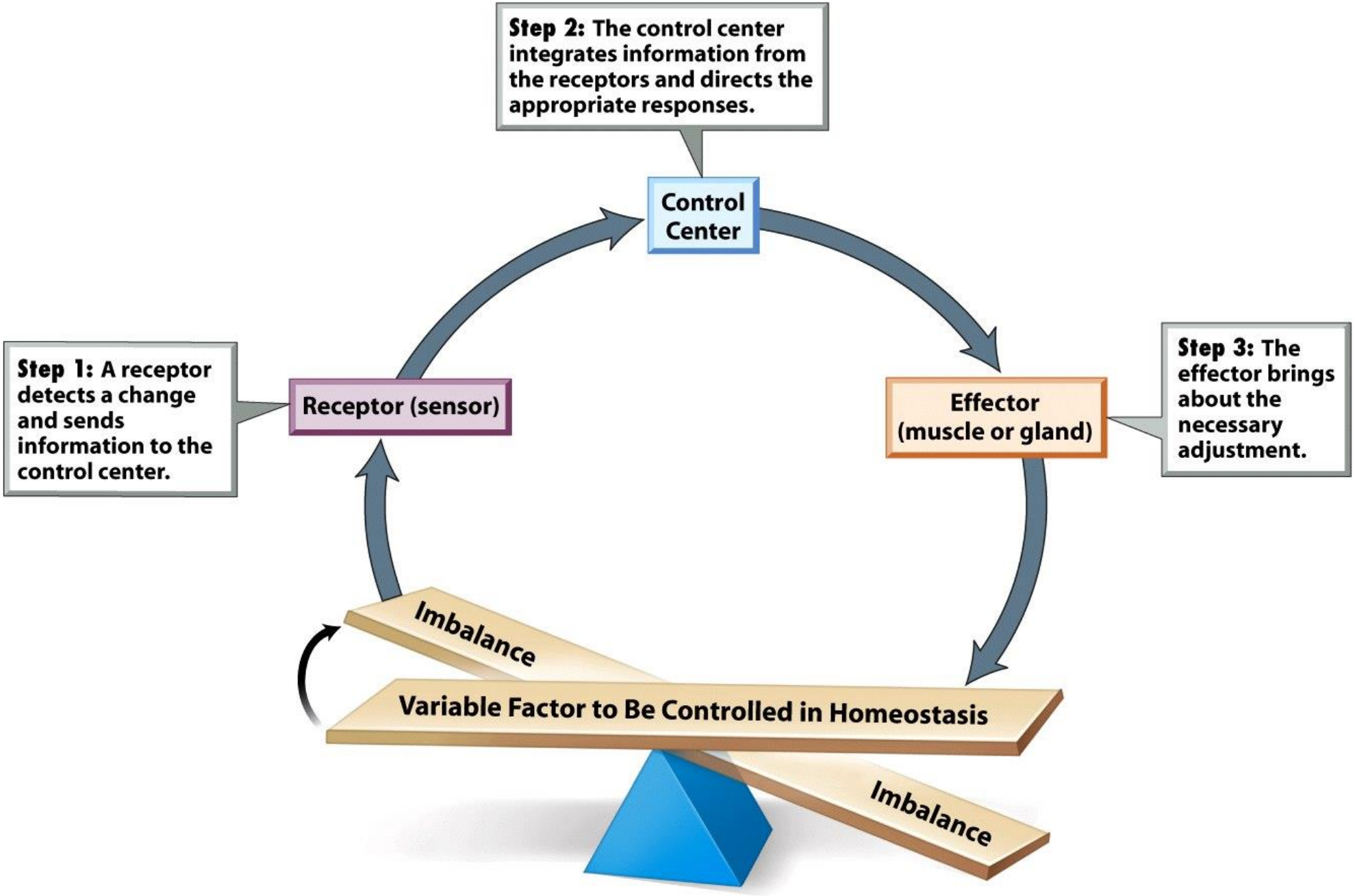
Homeostasis Maintains Relatively Constant Internal Environment

- Homeostasis is maintained by negative feedback mechanisms
- Example: The regulation of body temperature

Homeostasis

- A **negative feedback mechanism** receives information from a ***receptor*** that detects a change in the internal or external environment…



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Homeostasis

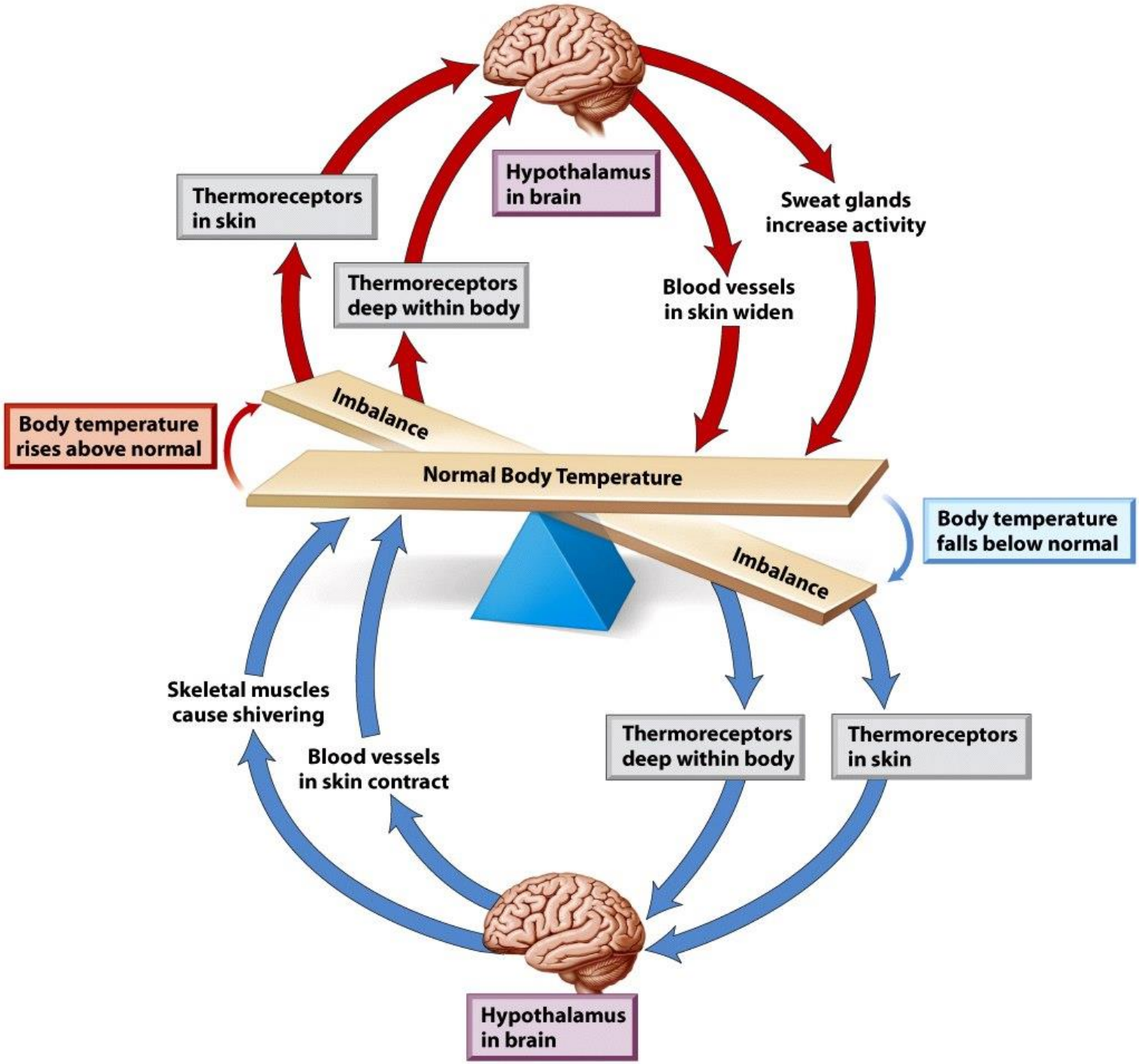
- Then a ***control center*** such as the brain sends out a response and the ***effector*** carries out the response returning the system to homeostasis again

Homeostasis

- The thermostat for the body is located in the **hypothalamus**

Homeostasis

- ***Hyperthermia***, abnormally elevated body temperature, and ***hypothermia***, abnormally low body temperature, are both life-threatening conditions that result when this mechanism fails.



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Homeostasis is usually maintained by:

A. Positive feedback mechanisms
B. Neutral forces
C. Negative feedback mechanisms
D. Magic
E. Witch doctors