

35–1 Human Body Systems





The levels of organization in a multicellular organism include:

- **cells**
- **tissues**
- **organs**
- **organ systems**

Cells

A cell is the basic unit of structure and function in living things.

Individual cells in multicellular organisms are specialized.

Specialized cells are suited to perform a particular function.

Tissues

Epithelial tissue includes glands and tissues that cover interior and exterior body surfaces.

Connective tissue supports the body and connects its parts.

Nervous tissue transmits nerve impulses through the body.

Muscle tissue, along with bones, enables the body to move.

Organs and Organ Systems

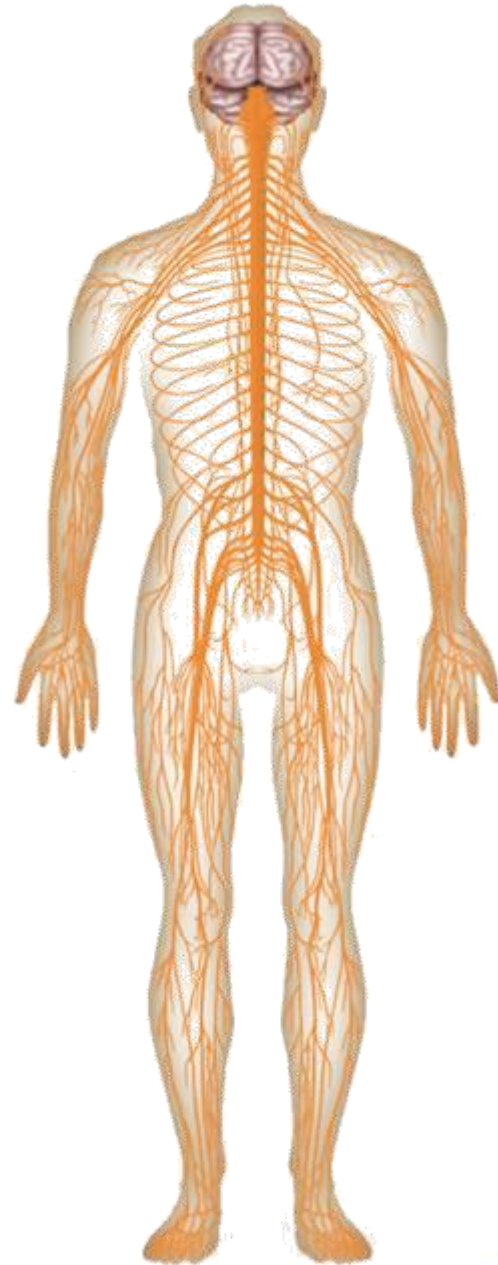
A group of different types of tissues that work together to perform a single function is called an organ.

A group of organs that perform closely related functions is an organ system.

There are eleven organ systems in the body.

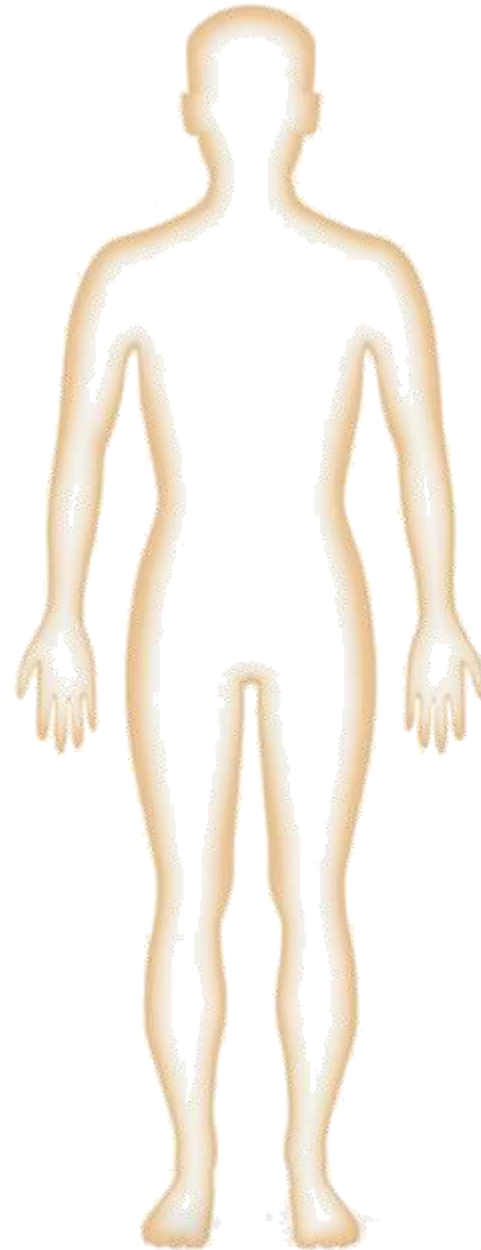
Nervous System

Structures: Brain, spinal cord, peripheral nerves



Integumentary System

Structures: Skin, hair, nails, sweat and oil glands



Skeletal System

Structures: Bones, cartilage, ligaments, tendons



Muscular System

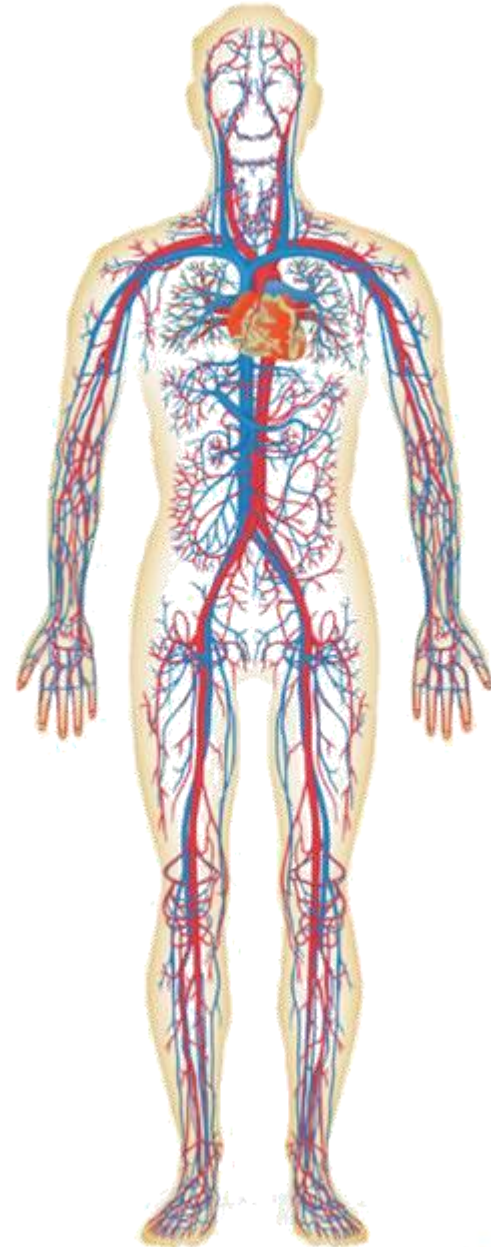
Structures: Skeletal muscle, smooth muscle, cardiac muscle



Circulatory System

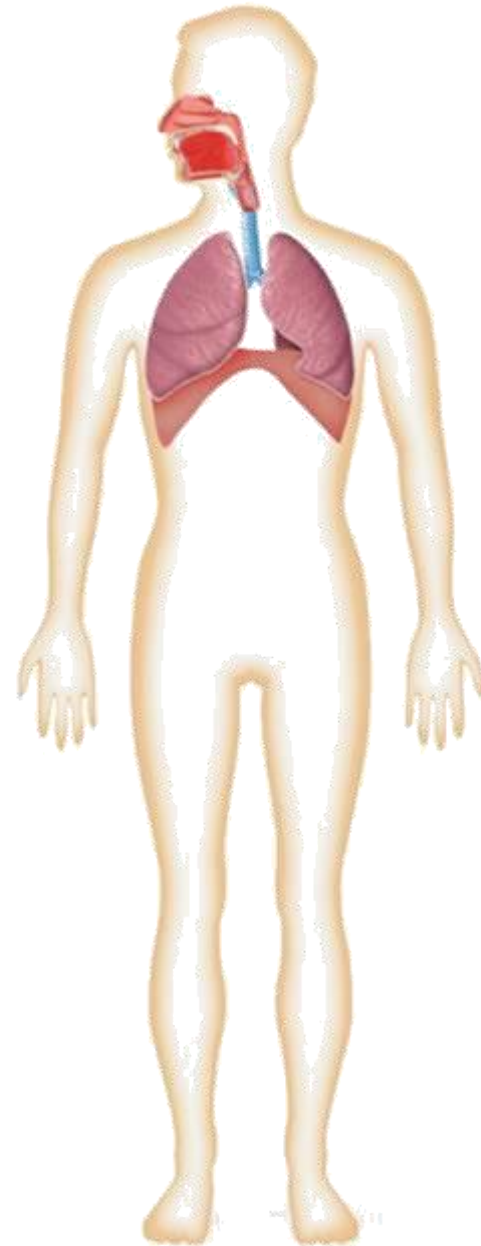
Structures: Heart, blood vessels, blood

Function: Brings oxygen, nutrients, and hormones to cells; fights infection; removes cell wastes; helps to regulate body temperature



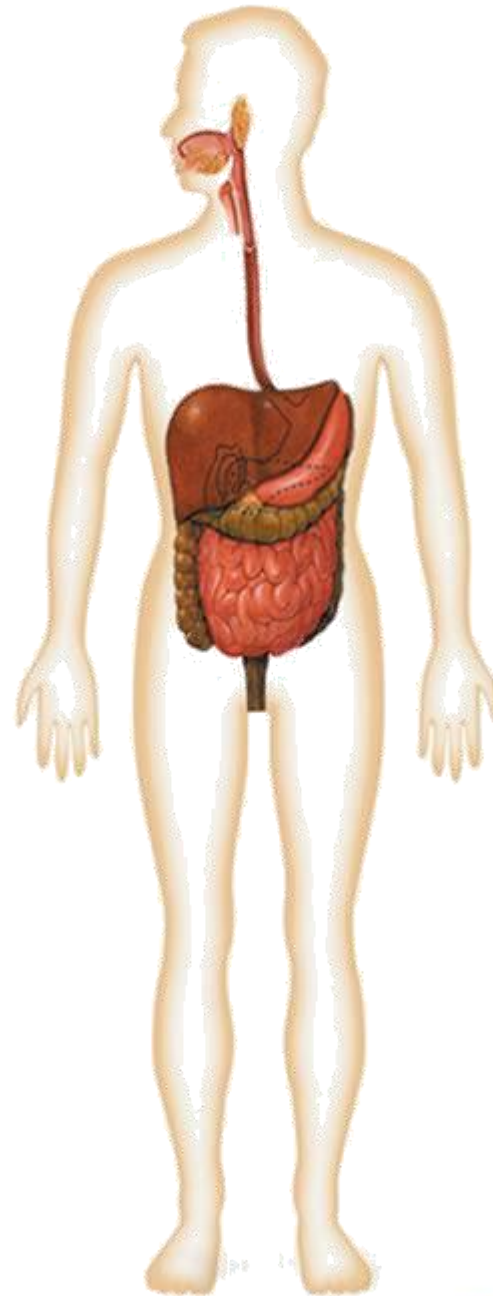
Respiratory System

Structures: Nose, pharynx, larynx, trachea, bronchi, bronchioles, lungs



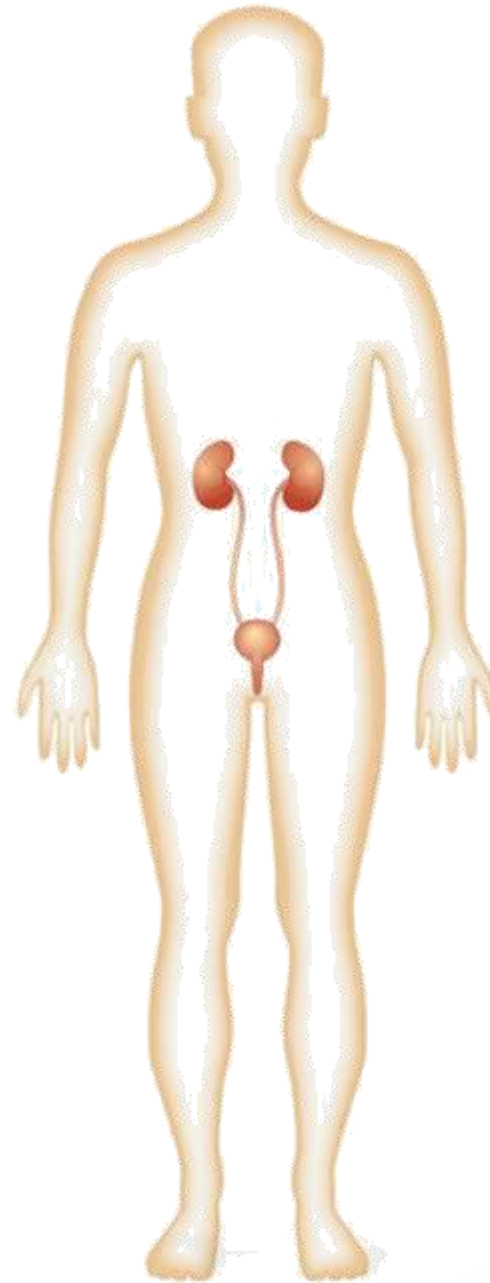
Digestive System

Structures: Mouth, pharynx, esophagus, stomach, small and large intestines, rectum



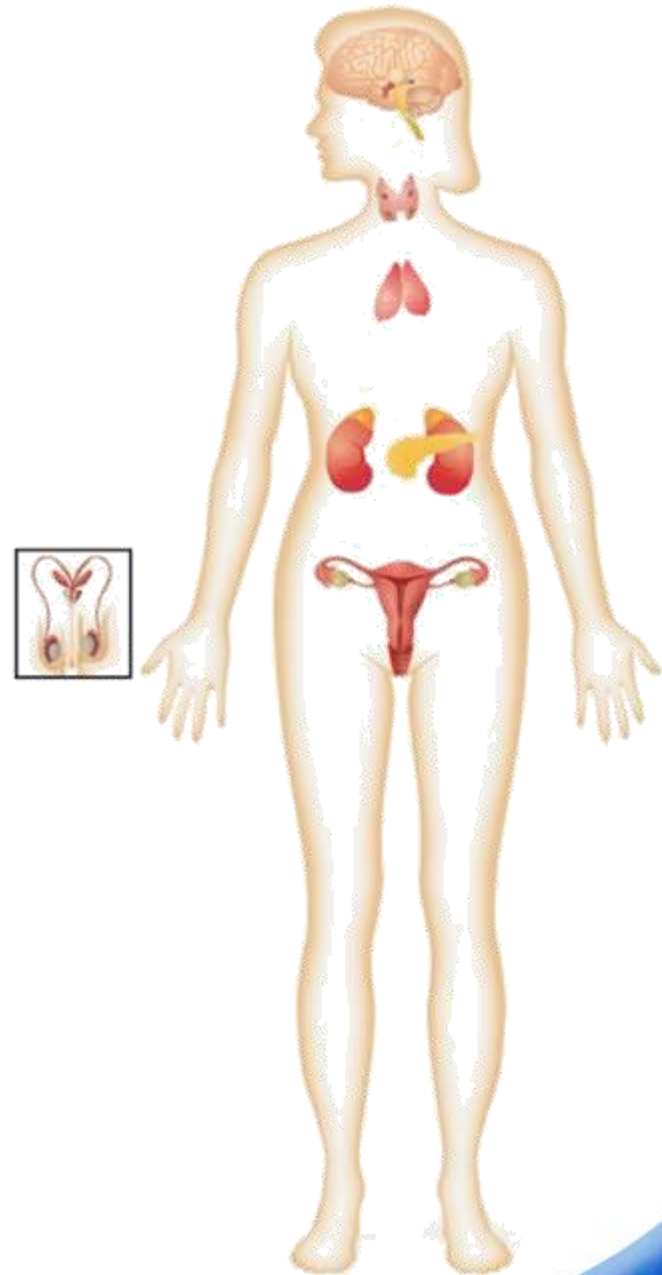
Excretory System

Structures: Skin, lungs, kidneys, ureters, urinary bladder, urethra



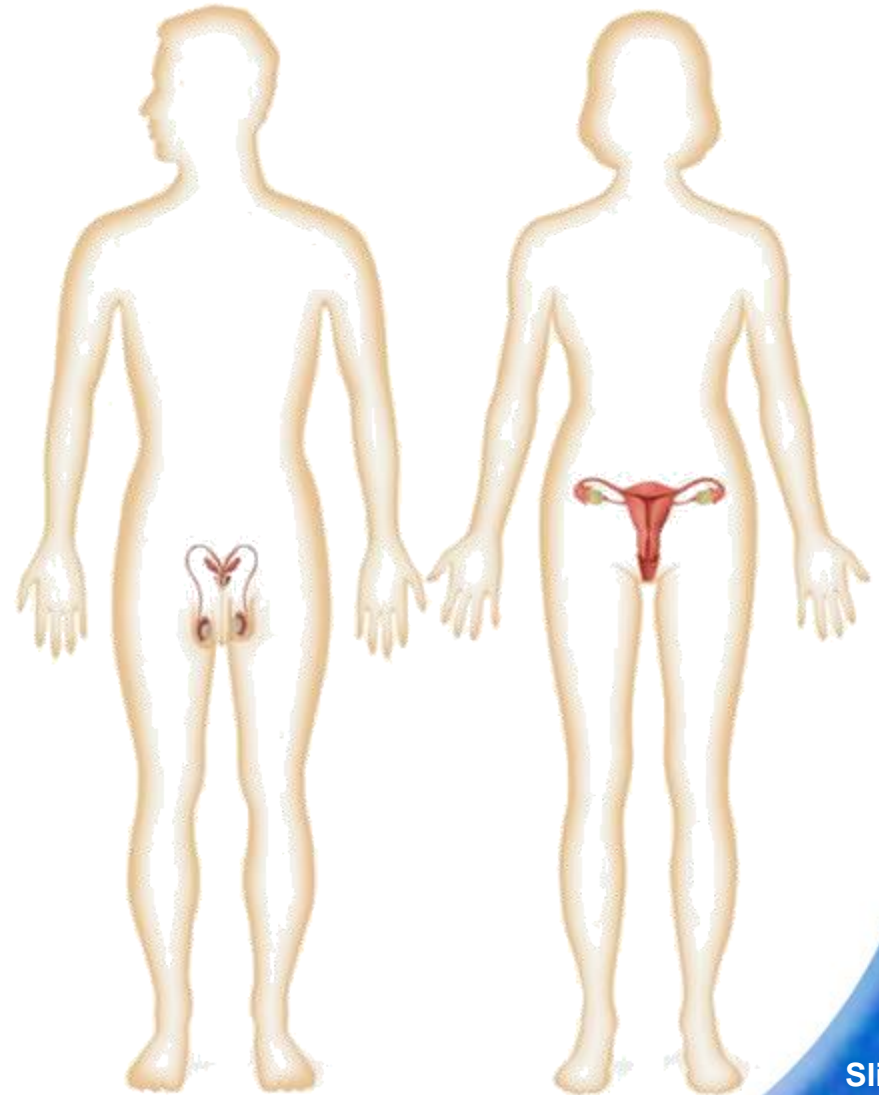
Endocrine System

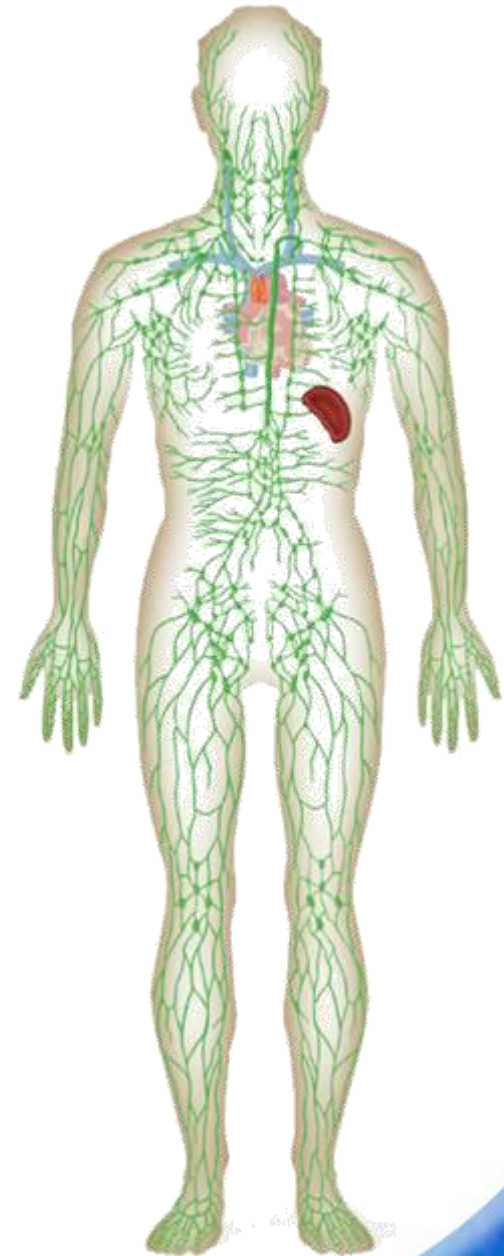
Structures: Hypothalamus, pituitary, thyroid, parathyroid, adrenals, pancreas, ovaries (in females), testes (in males)



Reproductive System

Structures: Testes, epididymis, vas deferens, urethra, and penis (in males), ovaries, Fallopian tubes, uterus, vagina (in females)





Lymphatic/Immune Systems

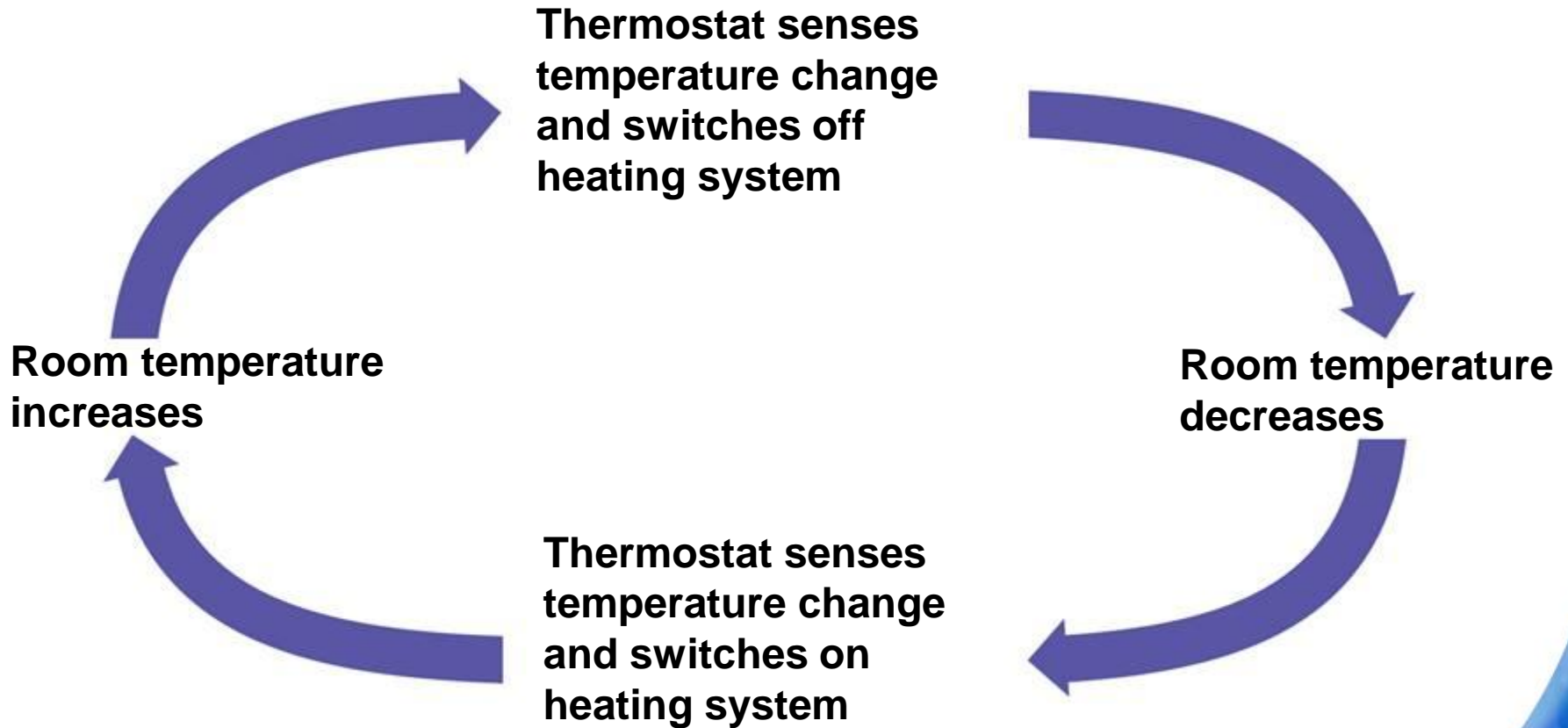
Structures: White blood cells, thymus, spleen, lymph nodes, lymph vessels



Homeostasis is the process by which organisms keep internal conditions relatively constant despite changes in external environments.

Homeostasis in the body is maintained by feedback inhibition.

An Example of Feedback Inhibition



The hypothalamus monitors the temperature of the skin and the temperature of organs.

If core body temperature drops, the hypothalamus:

- causes blood vessels in the skin to constrict reducing heat loss from skin.
- causes the skeletal muscles to contract involuntarily—to “shiver.”

This causes the body temperature to increase.

If the core body temperature increases, the hypothalamus:

- causes blood vessels in the skin to dilate so heat can escape from the skin.
- the body produces sweat, which cools the body by evaporation.

This causes the body temperature to decrease.

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35-1 Section QUIZ

1 Which of the following organ systems transports oxygen, nutrients, and hormones to cells?

A a. circulatory system

b. muscular system

c. excretory system

d. nervous system

2 The type of tissue that holds organs in place and binds different parts of the body together is called

- a. muscle tissue.
- b. epithelial tissue.

A c. connective tissue.

- d. skeletal tissue.

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3 One major function of the integumentary system is to

- A** a. help regulate body temperature.
- b. cause the body to move.
- c. provide a surface for gas exchange.
- d. control growth, development, and metabolism.

4 Which of the following is NOT an example of feedback inhibition?

- a. shivering to warm the body
- b. sweating to cool the body

A c. nervous tissue receiving messages

- d. turning on the heating system of a house

35-1 Section QUIZ

- 5** The process by which an organism keeps internal conditions relatively constant is called
- a. a feedback loop.
 - b. negative feedback.
 - A** c. homeostasis.
 - d. normal temperature.

END OF SECTION