

Key Terms

physiology

**Engage: HIT OR MYTH?**

Which of these amazing statements about human biology are fact, and which are fiction? Record your opinion and state why you think it is fact or fiction.

- 1) There is fat on the bottom of your feet.

- 2) Your jaws move.

- 3) You “see” the world upside down.

- 4) If all the blood vessels in your body were laid end to end they would wrap around the Earth’s equator four times.

- 5) Newborns are protected from disease.

- 6) Goosebumps help keep you warm.

- 7) A bird can swallow upside down, but a human cannot.

**Explore: LEVELS OF ORGANIZATION FOLDABLE**

You are one person, one organism. But the body you have is made of billions of individual cells. Although each cell performs basic life functions, such as using energy and excreting wastes, it is only a small part of the highly organized structure that is your body.

Groups of cells with similar structure and function are called tissues. The cells in a tissue are held together by a nonliving matrix or sticky coating on the outside of the cells. Most animals have four main types of tissues: connective, muscle, epithelial, and nervous tissue.

- Connective tissue joins together body structure, providing connection and support. Bones, tendons, cartilage, fat and blood are examples of connective tissue.
- Muscle tissue is made of cells that contract in response to signals from the brain. All body movements, including that of internal organs, are carried out by muscle tissue.
- Epithelial tissue covers the body and its organs. The skin is an organ that contains epithelial tissue. Inside the body, epithelial tissue lines organs and blood vessels.
- Nervous tissue is composed of two types of cells that carry information throughout the body. One type of cell is called a neuron. It conducts signals in the form of electrical impulses throughout the body. The other type of cell is a glial cell. It supports, protects, and coordinates the neurons.

In most animals tissues are organized into functional units called organs. Groups of organs that work together to perform specific functions for the organism comprise organ systems. There are twelve different organ systems that work together to respond to the internal and external environment in order to maintain homeostasis.

You will now fold your papers as per your teachers directions.

As a class you will take notes on ‘Levels of Organization’

You will then read about each of the twelve body systems and answer the following prompts.

Skeletal

- 1) What is the purpose of the skeletal system?

- 2) What parts of the body make up the skeletal system?
- 3) List and describe the three skeletal types.

Muscular

- 1) What is the purpose of the muscular system?
- 2) List and describe the three types of muscles.

Integumentary

- 1) What is the purpose of the integumentary system?
- 2) What parts of the body make up the integumentary system?

Digestive

- 1) What is the purpose of the digestive system?
- 2) What parts of the body make up the digestive system?
- 3) You just ate a bite of your energy bar. List the path that the food traveled from tongue to anus! At EACH location explain what process occurs.
- 4) Where do each macromolecule gets broken done?
 - Proteins
 - Lipids
 - Carbohydrates

Excretory

- 1) What is the purpose of the excretory system?
- 2) What parts of the body make up the excretory system?
- 3) What is a nephron AND what three processes occur in the nephron.

Respiratory

- 1) What is the purpose of the respiratory system?
- 2) What parts of the body make up the respiratory system?
- 3) List the pathway from your nose to alveoli.
- 4) During inhalation air rushes in and the diaphragm _____ during exhalation air is pushed out and the diaphragm _____.

Circulatory

- 1) What is the purpose of the circulatory system?

- 2) What parts of the body make up the circulatory system?
- 3) What is the role of the:
 - Artery-
 - Vein-
 - Capillary-
- 4) In the _____ system the deoxygenated blood travels away from the heart to the lungs and then brings the oxygenated blood back to the _____. In the _____ system the oxygenated blood travels away from the heart to the body and then returns the deoxygenated blood back to the _____.

Immune

- 1) What is the purpose of the immune system?
- 2) What parts of the body make up the immune system?
- 3) List and explain the three lines of defense.
- 4) **Circle the correct answer** (humoral, cell mediated) creates cytotoxic T-cells and (humoral, cell mediated) creates antibodies.

Lymphatic

- 1) What is the purpose of the lymphatic system?
- 2) What parts of the body make up the lymphatic system?
- 3) What is the role of white blood cells in the body?

Endocrine

- 1) What is the purpose of the endocrine system?
- 2) What parts of the body make up the endocrine system?
- 3) Match the following:

A) hypothalamus	_____ Lowers the amount of blood sugar
B) pineal gland	_____ Maintains reproductive systems
C) parathyroid gland	_____ Makes ADH, oxytocin, and pituitary gland
D) thyroid gland	_____ Fight or flight response
E) thymus	_____ Stimulates the development of T-cells
F) pancreas	_____ Regulates blood calcium
G) adrenal	_____ Secretes melatonin
H) ovaries and testis	_____ Speeds up metabolism

Reproductive

- 1) What is the purpose of the reproductive system?
- 2) What parts of the body make up the reproductive system?

- 3) List that path a sperm travels from testis to penis.
- 4) List the path the egg travels from ovaries to vagina.

Nervous

- 1) What is the purpose of the nervous system?
- 2) What parts of the body make up the nervous system?
- 3) _____ makes up a network of nerves that travel through the body.
_____ makes up a network of nerves that travel through the brain and spinal cord.
- 4) Explain the two types of nerve cells.



Explain: Practice your understanding by answering the following questions.

8. Skeletal- An internal hard skeleton is called
(a) exoskeleton (b) hydrostatic skeleton (c) cardiac muscle (d) endoskeleton.
9. Digestion- Fats are digested in the
(a) stomach (b) small intestine (c) large intestine (d) mouth.
10. Respiratory- Air rushes into the lungs when the diaphragm
(a) relaxes (b) contracts (c) is still (d) pulses.
11. Immune- Which of the following is part of a nonspecific immune response?
(a) antibody (b) macrophage (c) vaccine (d) T-cell.
12. Endocrine- Which gland regulates blood sugar levels?
(a) pancreas (b) thyroid (c) testes (d) pineal
13. Reproductive- What muscle connects the uterus and the vagina?
(a) prostate (b) thymus (c) cervix (d) adrenal gland
14. Lymphatic- When you are sick large numbers of white blood cells are produced and stored in your
(a) uterus (b) thyroid (c) lymph nodes (d) nephron.
15. Circulatory- Gases, nutrients, and wastes are exchanged in your
(a) nerve cells (b) arteries (c) capillaries (d) veins.
16. Excretory- The functional unit of the kidney is the
(a) exoskeleton (b) neuron (c) nephron (d) pancreas
17. Nervous- What part of the nervous system processes information and sends instructions to other parts of the body?
(a) glial cells (b) CNS (c) PNS (d) thymus.
18. Select any two systems. In your own words describe how they effect each other.
19. What is a hormone? Give an example of one hormone and describe its effects on your body.
21. You just learned the main systems involved in human physiology. In your own words, explain what physiology is.