



Levels of Organization

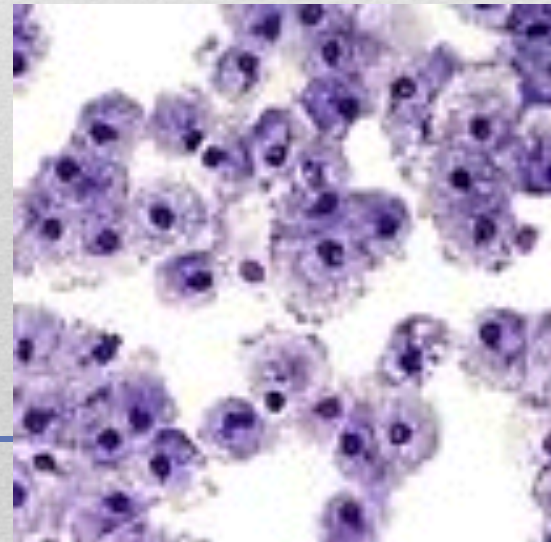
Lesson #7

- Identify an activity you were involved in recently. What systems of your body cooperated to make the activity possible?
- In this lesson, you will learn how the parts of a complex organism are organized, and how they work together.
- There are four levels of organization.

Discussion Question

- The first level of organization is the cell.
- <http://learn.genetics.utah.edu/content/begin/cells/scale/>
- The cell is the basic unit of structure and function in all living things. Every living thing is made up of one or more cells.
- In complex organisms, like humans, cells are specialized for certain tasks. For example, muscle cells help the body move.

Cells



- Cells do not work alone. Each type of cell depends on other cells to function.
- For example, muscle cells make a body part move when they get a signal from the nerve cells.
- Nerve cells send signals throughout the body.
- Red blood cells supply oxygen.
- Bone cells, muscle cells, and fat cells also help the body.

Cells Work Together

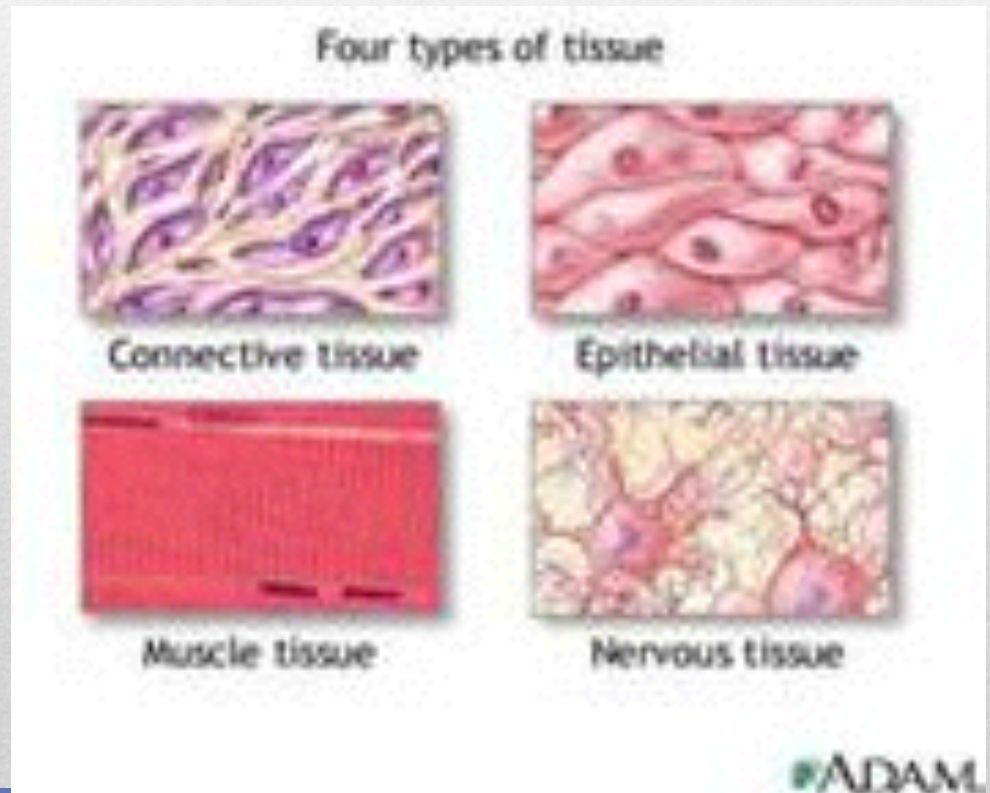
There are over 7 trillion nerves in the human body and you have succeeded in getting on every single one of them.



your  cards
someecards.com

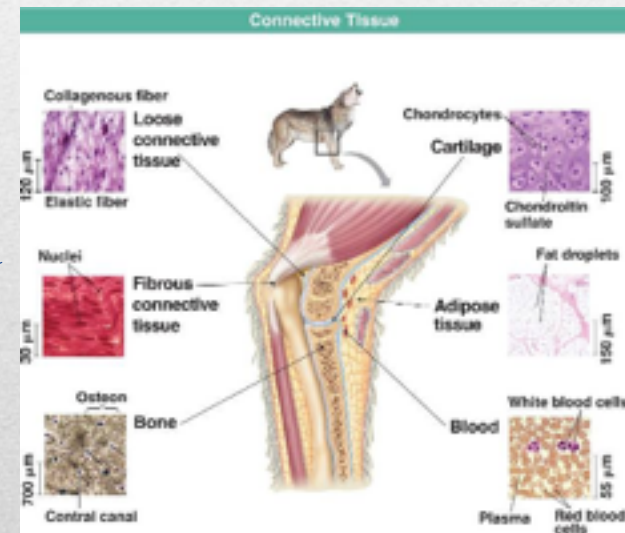
Contrary to what you parents and teachers say, everyone does have more than one nerve.

- The next level of organization is the tissue.
- A tissue is a group of similar cells working together to perform a specific function. For example, nerve cells form together to form nervous tissue.



Tissues

- Epithelial-
- Covers the body surfaces and lines internal structures
- Examples-skin and blood vessels
- Connective-
- Has many different forms and functions
- Examples-bone, fat, cartilage, and blood

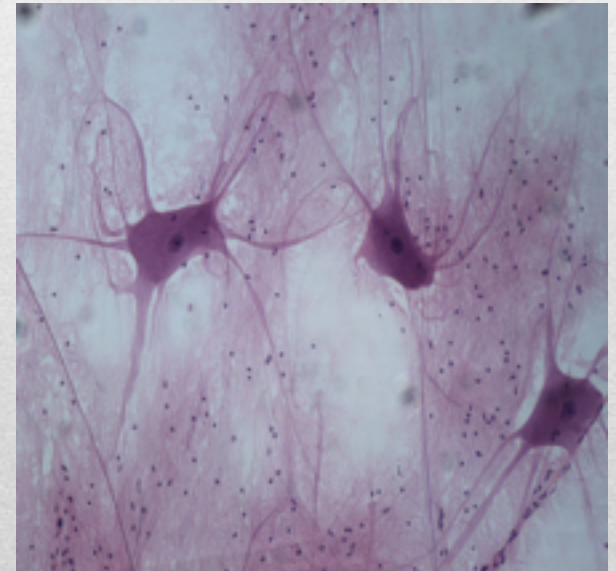


Four Major Types of Tissues in Animals

- Muscle-
- Contracts to produce movement
- Examples-heart, biceps, tongue



- Nervous-
- Transmits and processes information
- Examples-spinal cords, brain, nerves



- The third level of organization is the organ.
- An organ is a group of different tissues that work together to perform a task.
- An example is the stomach. The stomach is made up of several different tissues including epithelial, connective, and muscle tissue. They work together to digest the food.
- Other organs are your heart, brain, liver, ears, and skin.

Organs

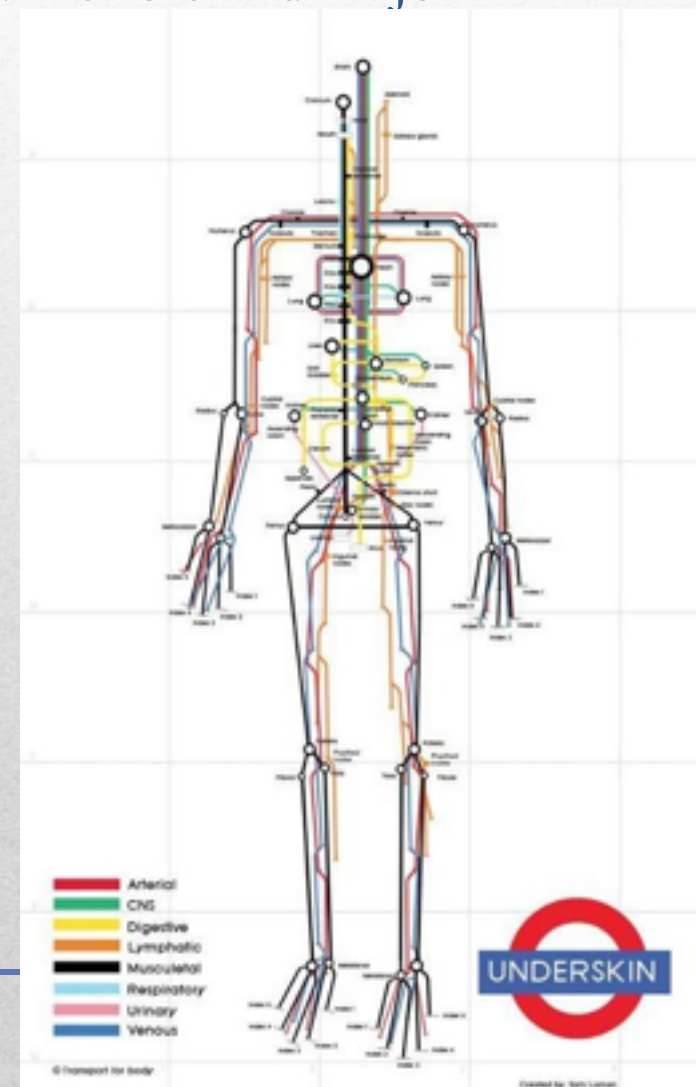
- The fourth level of organization is the organ system.
- An organ system is a group of organs that work together to perform a complex function. Humans have eleven organ systems.

Organ Systems

1. Circulatory
2. Digestive
3. Endocrine
4. Immune
5. Integumentary
6. Muscular
7. Nervous
8. Reproductive
9. Respiratory
10. Skeletal
11. Urinary or Excretory

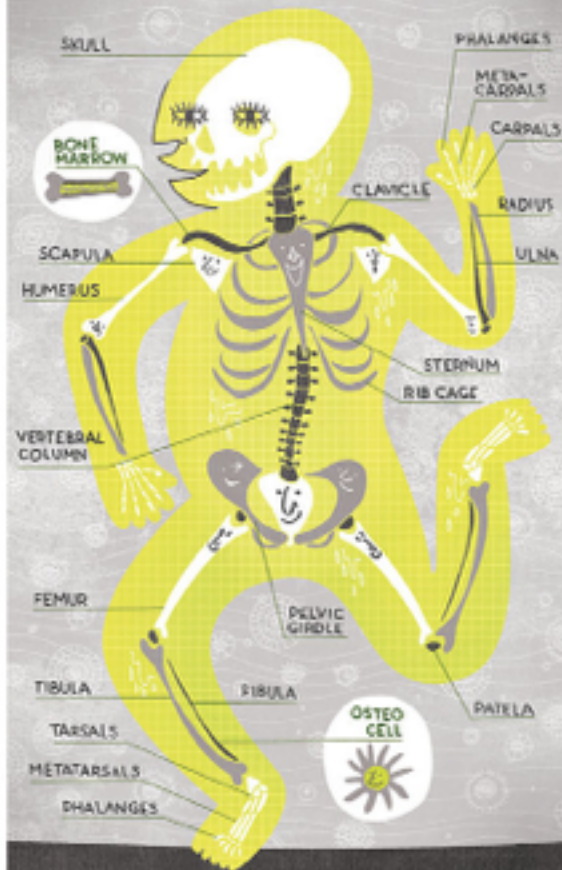
For each of these, find the role and major organs.

The Eleven Human Organ Systems



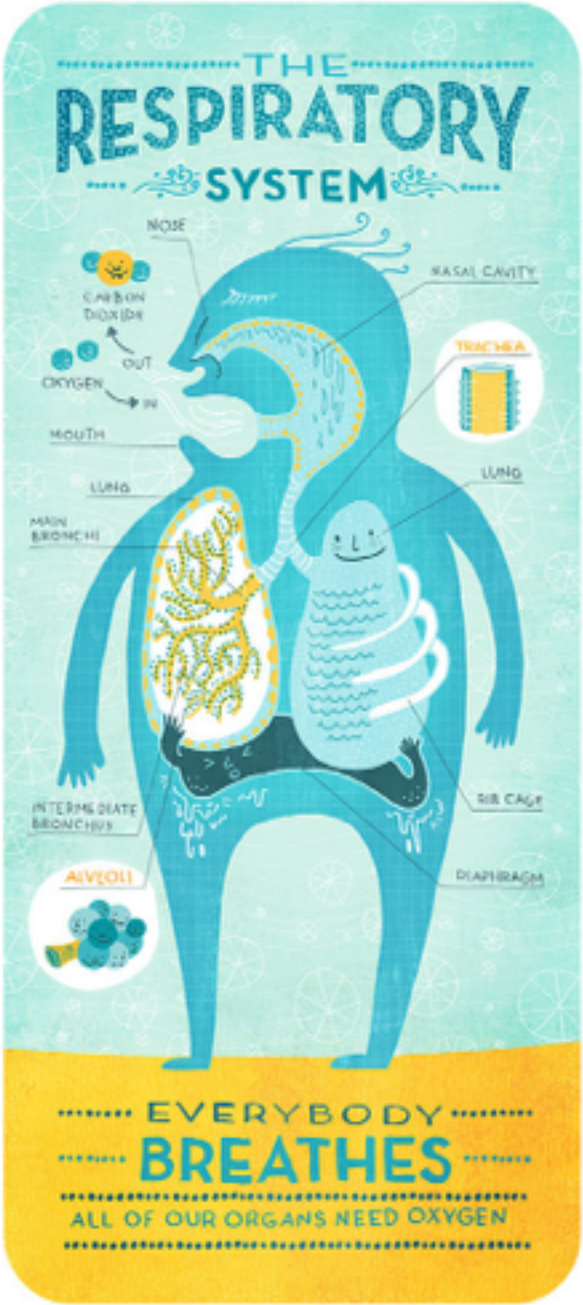
- Organ systems work together. When you chase a soccer ball, what does your skeletal system do? Your respiratory system? Nervous system?
- Many of the organ systems in your body can also be found in other animals. However, their systems are often simpler or missing. For example, a worm does not have a skeletal system.
- <https://www.youtube.com/watch?v=0yjLJfz6saU>
- http://www.bbc.co.uk/bitesize/ks3/science/organisms_behaviour_health/cells_systems/activity/

THE SKELETAL SYSTEM

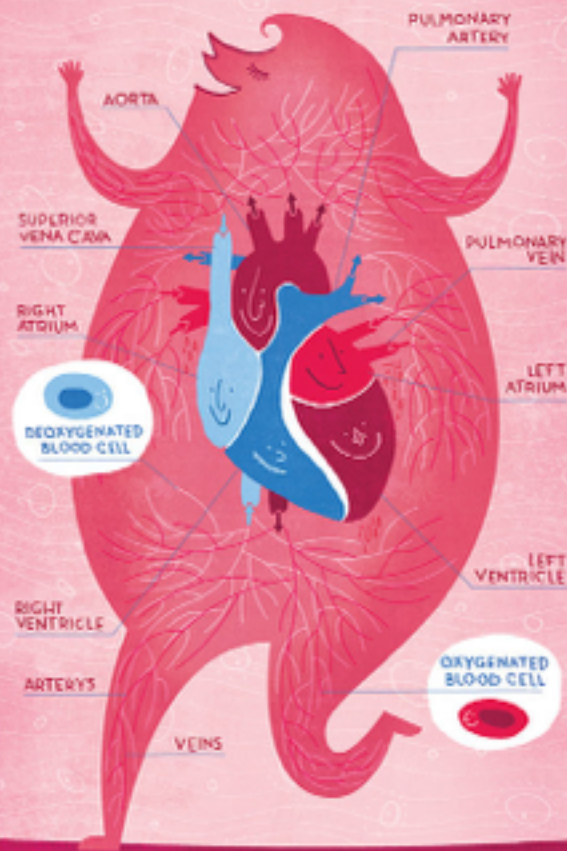


EVERYBODY
MOVES

WITHOUT OUR BONES WE WOULD BE A PILE OF MUSH



THE CARDIOVASCULAR SYSTEM



EVERYBODY
HAS HEART

OUR HEART PUMPS BLOOD TO OUR WHOLE BODY



- The final level of organization is the organism itself.
- All living things from fungus to animals are organisms.
- A complex organism such as a cow, alligator, or human is made up of organ systems, which are made up of organs, which are made up of tissues, which are made up of specialized cells. In this way, cells are the building blocks of all living things.

Organisms

- The heart is involved in the circulatory system and the respiratory system.
- Your heart is about the size of your fist, and it works 24/7. The heart of the average person pumps about seventy times a minute.
- Let's test it. You will need a timer.

The Strongest Muscle in the Body-A Quick Lab

1. Pick up the tennis ball and squeeze it. The force required for you to squeeze the ball is very similar to the force needed to squeeze blood out of the heart.
2. Using a timer, count how many times each of you can squeeze the tennis ball in a period of sixty seconds.
3. How many of you got close to seventy times?
4. How did your hand feel?
5. Imagine that you had to squeeze this tennis ball 24/7 without a break.

You will make a poster.

It will illustrate the relationship among cells, tissues, organs, organ systems, and organisms.

Answer these questions:

How are they related?

What are they made of?

What do they do?

What are some examples?

Let's Make a Poster

- List the levels of organization from smallest to largest.
- Answer Cells-tissues-organs-organ systems-organisms

Now, let's review!

- An organism is made up of what?
- Answer-a group of organ systems

- What system is responsible for moving the body?
- Answer-the muscular system
- What system is responsible for protecting your internal organs?
- Answer-the skeletal system
- What system is responsible for producing offspring?
- Answer-the reproductive system

The Organ Systems

- What does the respiratory system do?
- Answer-Breathing
- What are two parts of the circulatory system?
- Answer-heart or blood or blood vessels
- What are the parts of the nervous system?
- Answer-brain, spinal cord, and nerves
- What does the immune system do?
- Protects against disease

More on the Organ Systems
