

Organization of Life

The Building Blocks of Life!!!!

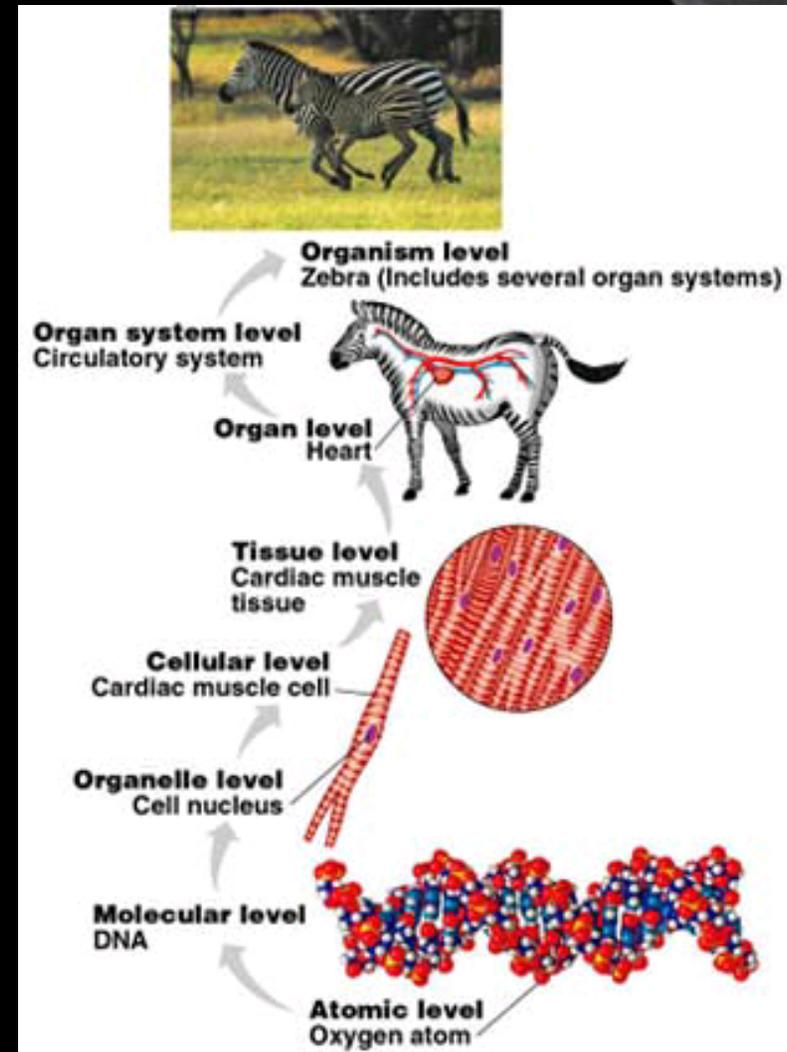
- Life is Organized on Several Levels

- **Cells** - life starts here
- Tissues
- Organs
- Organ Systems
- Organism
- Populations
- Communities
- Ecosystems



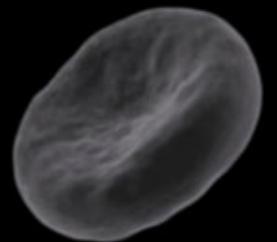
Levels of organization

- Cells are **grouped together** and work as a whole to perform **special functions**



Tissues

- A **tissue** is a group of cells that perform a particular function.
- Also **includes the material between and around your cells**
- (Fat cells, blood cells, and muscle cells)



What are some ways you use your muscles?

- It's not just by riding your bike, walking, riding, swimming, or even throwing or kicking a ball.
- You are using your muscles (tissue) even when you:
 - Swallow your food (**tongue**)
 - Digest your food (**stomach**)
 - Blink your eyes (**eyelid**) and even so much as breathe!!! (**diaphragm**)

Did you know....

- An elephant's trunk is constructed of **300lbs** of hair, skin, connective tissue, nerves, and muscles. Its muscle tissue is composed of 150,000 subunits that allow the elephant to drink, breathe, grab and greet friends.



Organs

- **Organs** consist of at least 2 different types of tissue functioning together for a common purpose.
- **Examples:** stomach, intestines, heart, lungs, skin, liver, kidneys



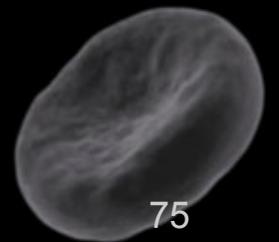
Organs Depend On Each Other



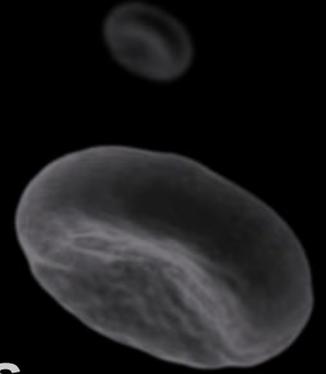
- The organs in an organ system depend on each other
 - **If one fails, other organs are affected**
 - Failure of one organ system can affect other organ systems
 - If your digestive system stopped converting food to energy, then none of the other systems would have energy to function
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What is the largest organ of the human body?

- Your skin is the largest organ of the human body.
- In your life time, you will shed about **40lbs** of dead skin cells.
- **The Bad news:** You'll spend a lot of time washing the ring from around the tub! Ha! Ha!
- **The good news!** Cells are constantly being formed and replacing dead cells.



More about your skin...



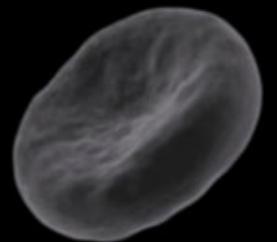
Hair and fingernails...

- Are composed of specialized “skin cells”. Even though they grow continuously, both are composed of dead cells along with a protein called keratin. If they were alive and contained nerves: haircuts and manicures would be quite painful.



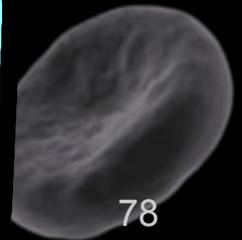
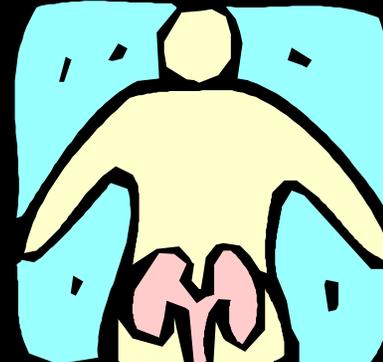
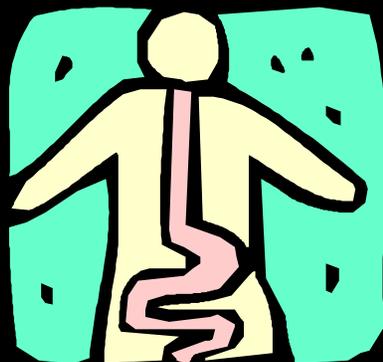
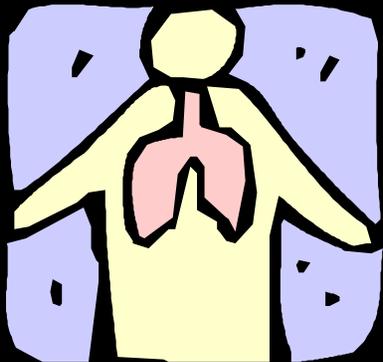
Organ Systems

- Are composed of two or more different organs that work together to provide a common function
- **Examples: Digestive, nervous, circulatory, respiratory**

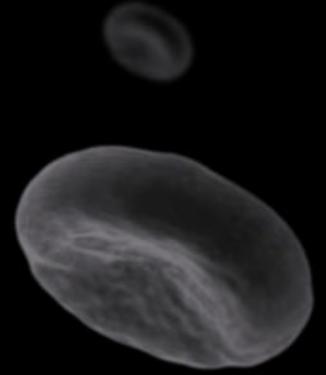


System

- Several organs and tissues work together to carry out a particular set of functions in a co-ordinated way
 - Human : **digestive, respiratory, excretory, circulatory and reproductive systems**
 - Plant : **root and shoot systems**

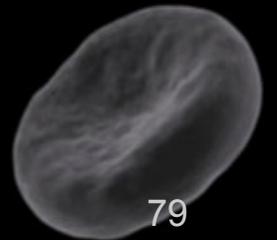


Human Body Systems



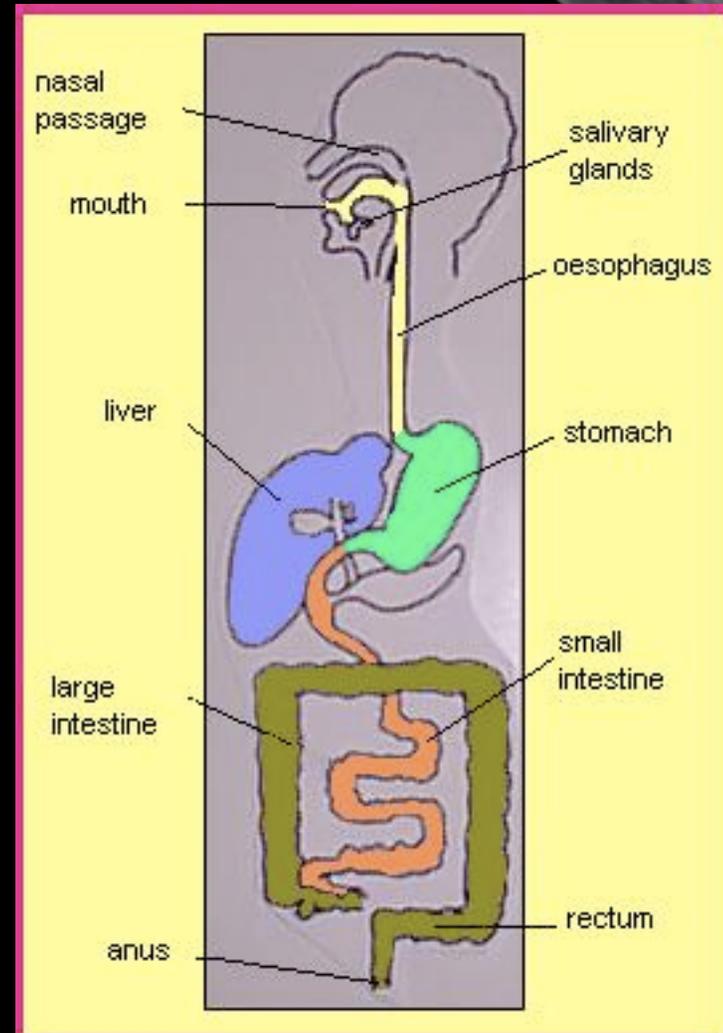
Examples of systems :

- ◆ Digestive System
- ◆ Respiratory System
- ◆ Circulatory System
- ◆ Nervous System
- ◆ Reproductive System



Digestive System

- Job: Breakdown and absorb nutrients that are necessary for growth and maintenance
- Major Organs: Mouth, esophagus, stomach, small and large intestines.



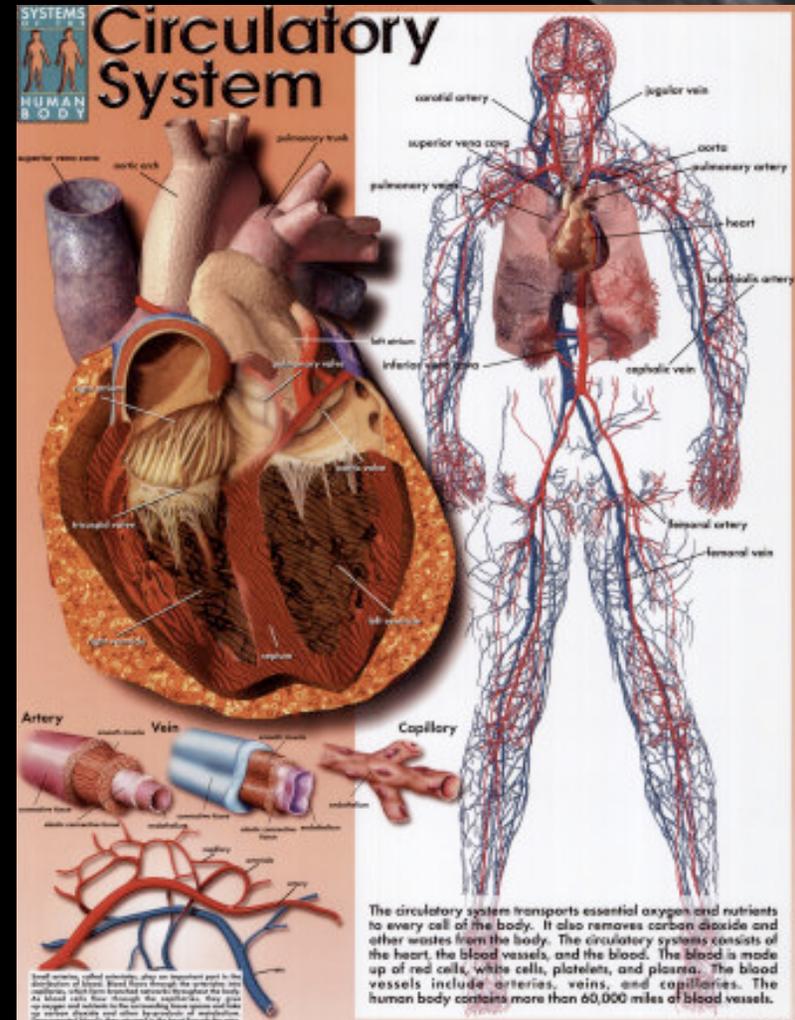
Nervous

- Job: directs behavior and movement and, along with the endocrine system, controls physiological processes such as digestion, circulation, etc.
- Major Organs: Brain, spinal cord and peripheral nerves



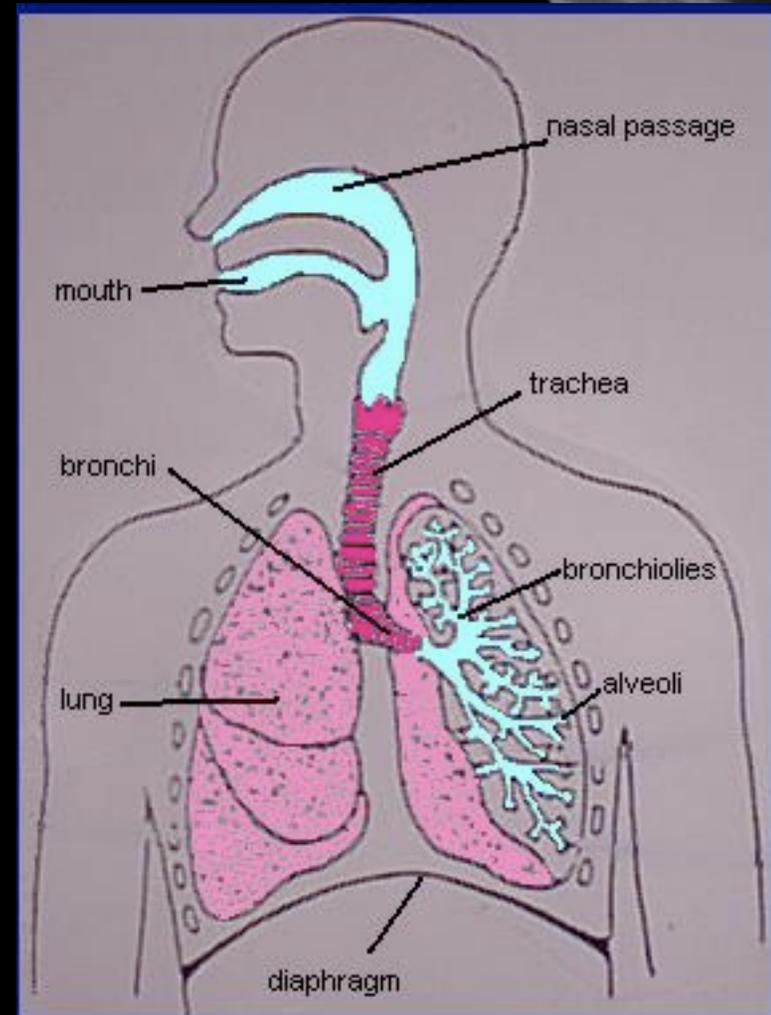
Circulatory

- Job: transport nutrients, gases (such as oxygen and CO₂), hormones and wastes through the body
- Major Organs: Heart, blood vessels and blood



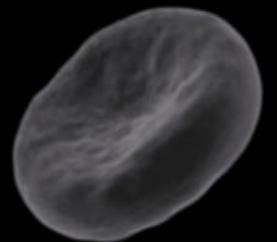
Respiratory

- Job: provide gas exchange between the blood and the environment
- Major Organs: Nose, trachea and lungs



Small Size

- Remember:
- Almost all cells are too small to be seen without a microscope.
- It would take 50 of your cells to cover up this period .
- An electron microscope is used when things are too small to be viewed with other microscopes.



Levels of Organization



- ✧ **CELLS** (muscle cells, nerve cells)
 - ✧ **TISSUES** (muscle, epithelium)
 - ✧ **ORGANS** (heart, lungs, stomach)
 - ✧ **SYSTEMS** (circulatory system)
 - ✧ **ORGANISM** (human)
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