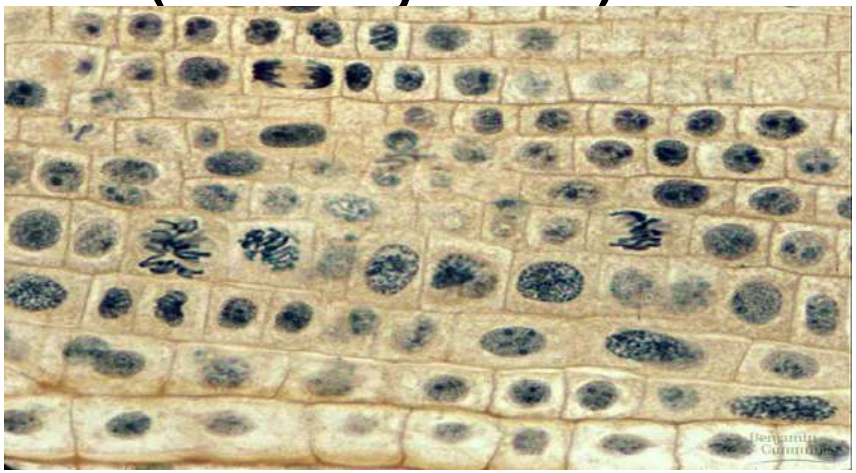
Chapter 7.4:
The Diversity of Cellular Life

Diversity of Cellular Life

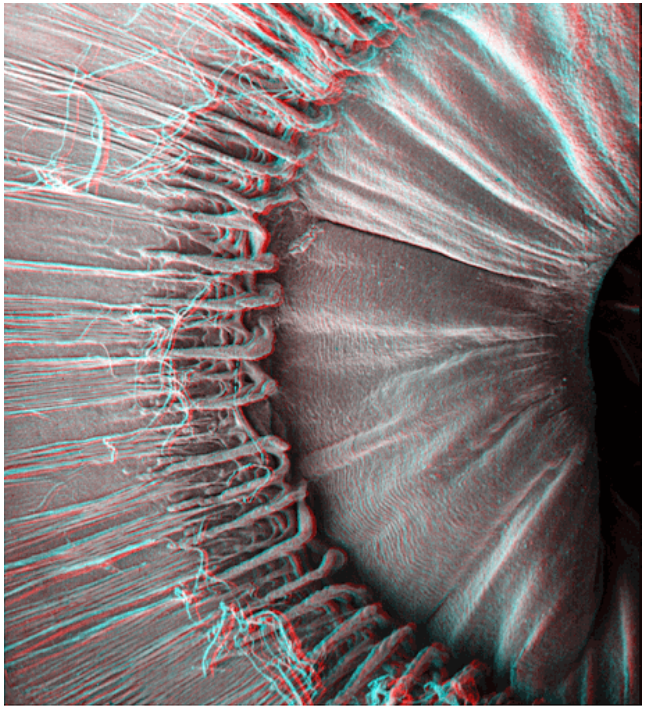
All living things (organisms) are made of cells that:

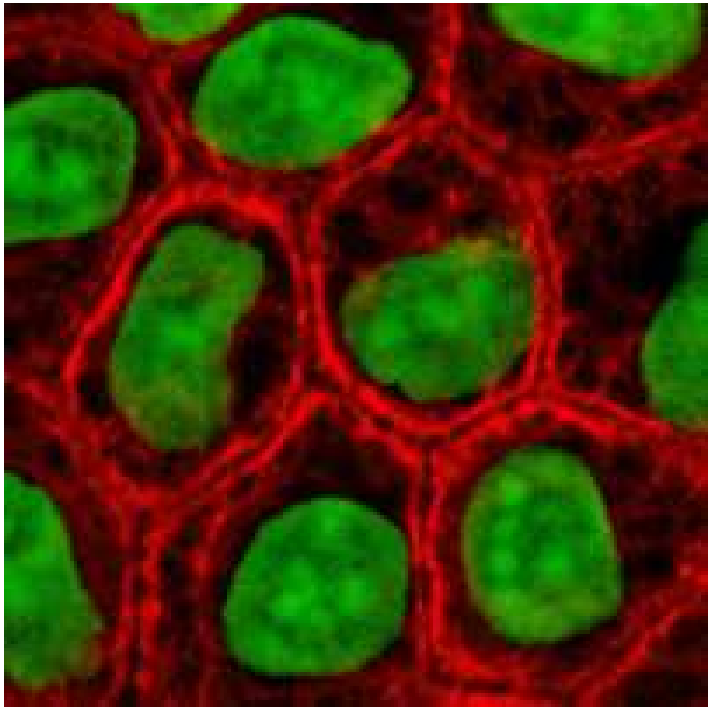
1. use the same basic chemistry and genetic code
2. contain same kinds of organelles (eukaryotes)



Cells

- Basic unit of structure and function of all living things



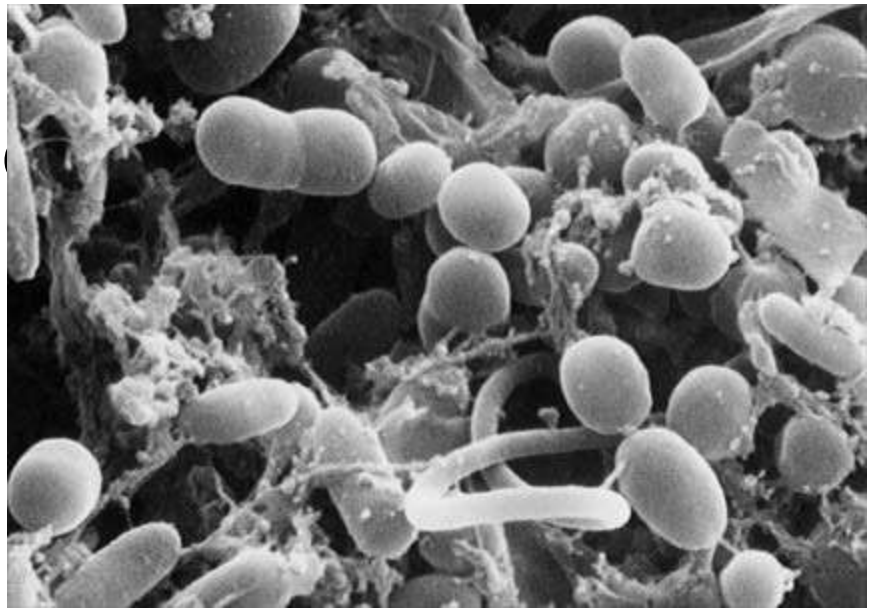


Types of Organisms

Unicellular organisms

1. Single-celled organism
2. Self-sufficient (can grow, respond to environment, use energy, reproduce)
3. Most numerous types of organisms on Earth

Example: Ba

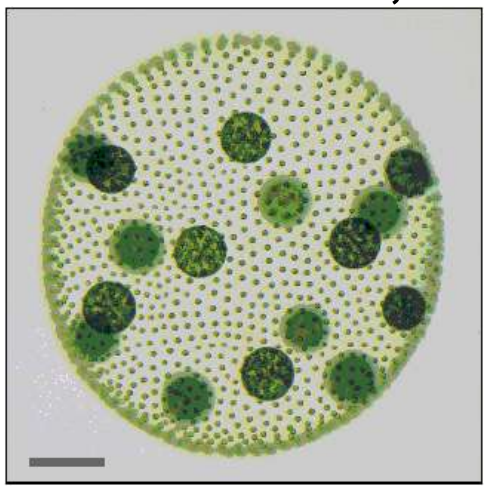


Types of Organisms

Multicellular organisms

1. Made of many cells
2. Cells must communicate with each other
3. Cells throughout an organism can develop in different ways to perform different tasks
4. Large variety of organisms;

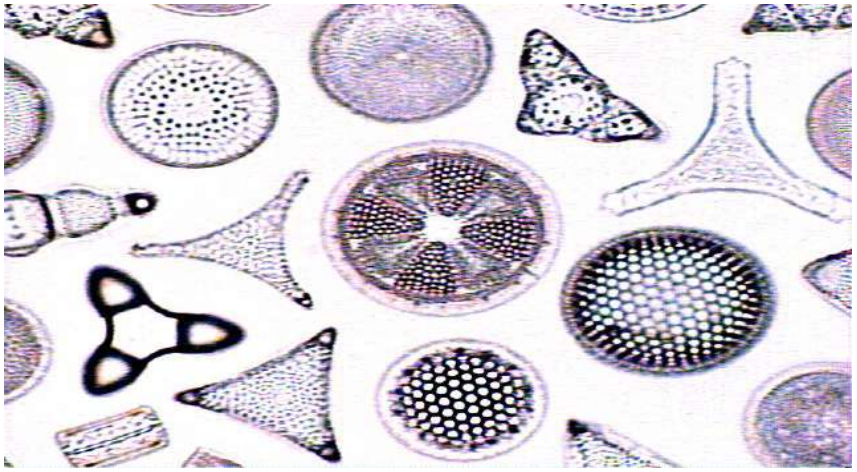
such as flies, humans, cats



Diversity of Cellular Life

Differences between organisms due to cellular differences:

1. Cells have specialized functions
2. Cells interact with one another



Structure and Function of Cells

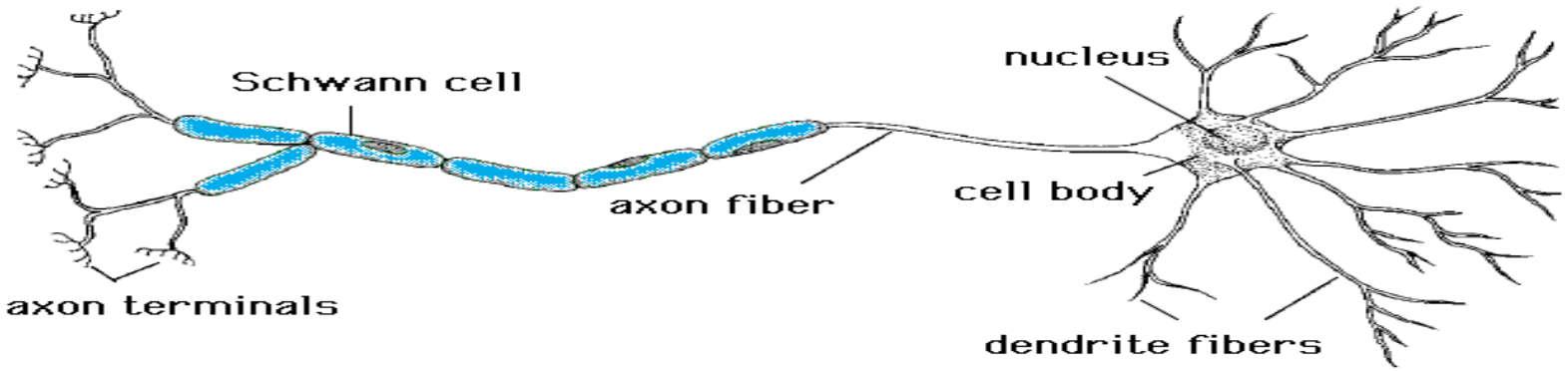
- The way a cell is shaped will help it do a certain job.

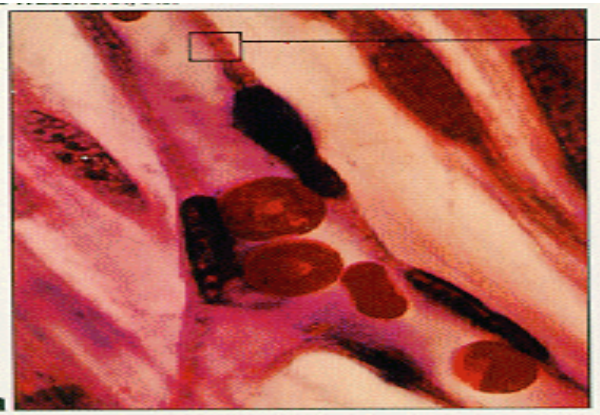
Blood Cells

- The thin flexible shape help them squeeze through blood vessels to carry oxygen to the body

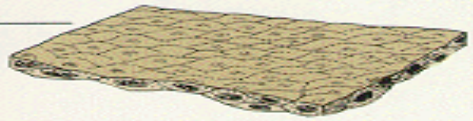
Nerve cells

- Long and skinny, the nerve cell carry electrical messages from the brain throughout the body





a

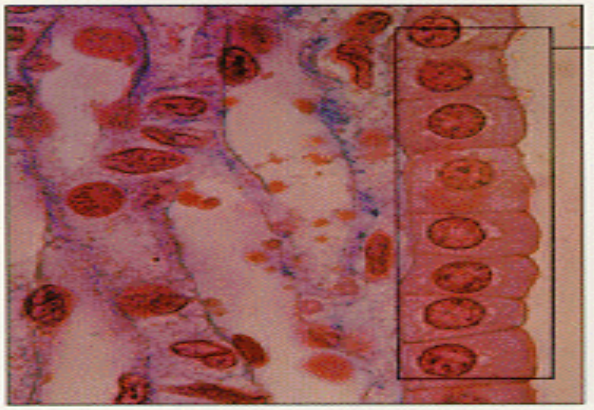


TYPE: Simple squamous

DESCRIPTION: Single layer flattened cells

COMMON LOCATIONS: Blood vessel walls; air sacs of lungs

FUNCTION: Diffusion



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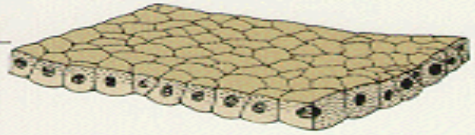
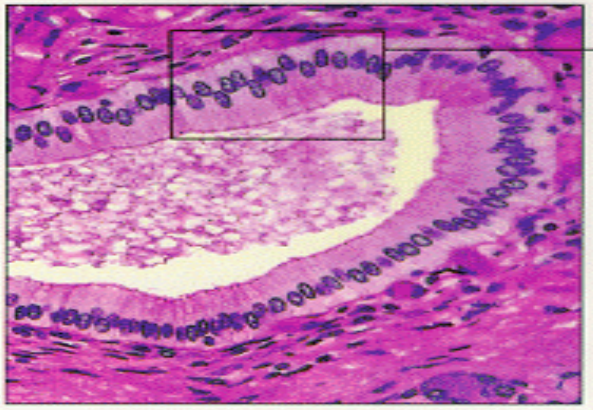


TYPE: Simple cuboidal

DESCRIPTION: Single layer cubelike cells; may have microvilli at its free surface

COMMON LOCATIONS: Part of gut lining, part of respiratory tract lining

FUNCTION: Secretion, absorption



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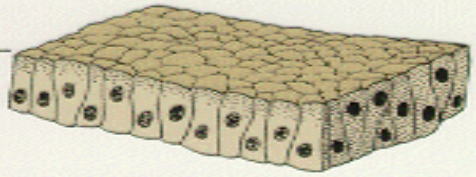


TYPE: Simple columnar

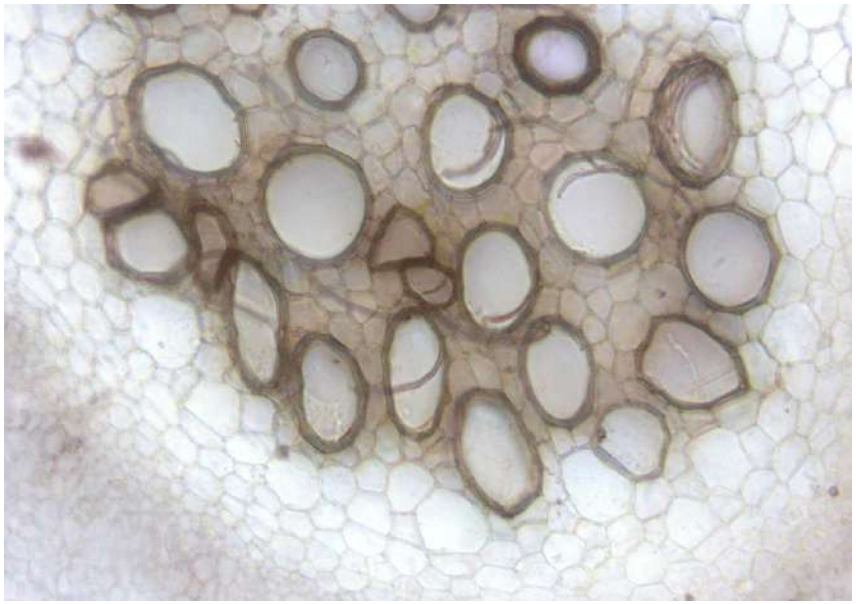
DESCRIPTION: Single layer of tall, slender cells; may have microvilli at its free surface

COMMON LOCATIONS: Part of gut lining, part of respiratory tract lining

FUNCTION: Secretion, absorption

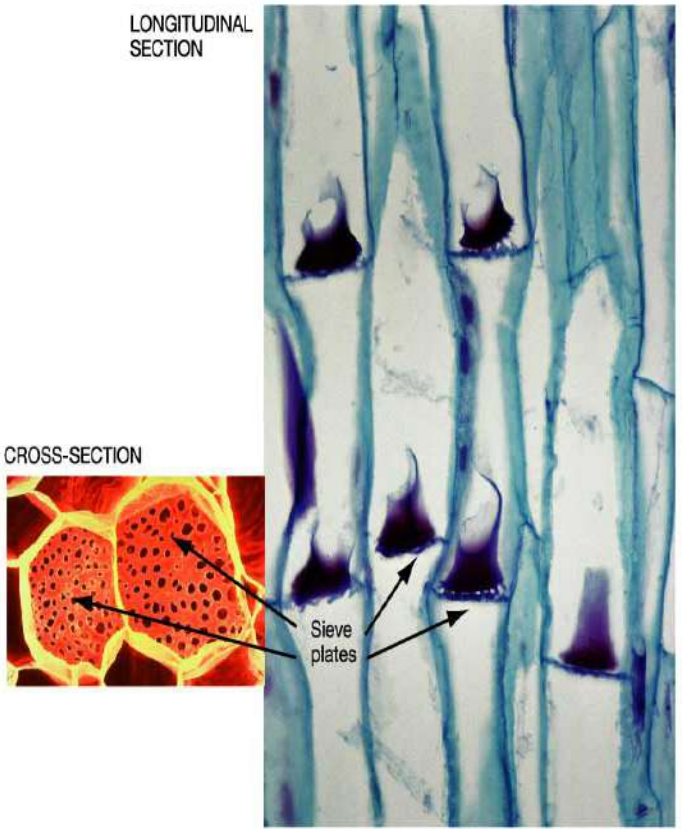
Xylem

- Xylem cells carry water from the roots to the rest of the plant



Phloem

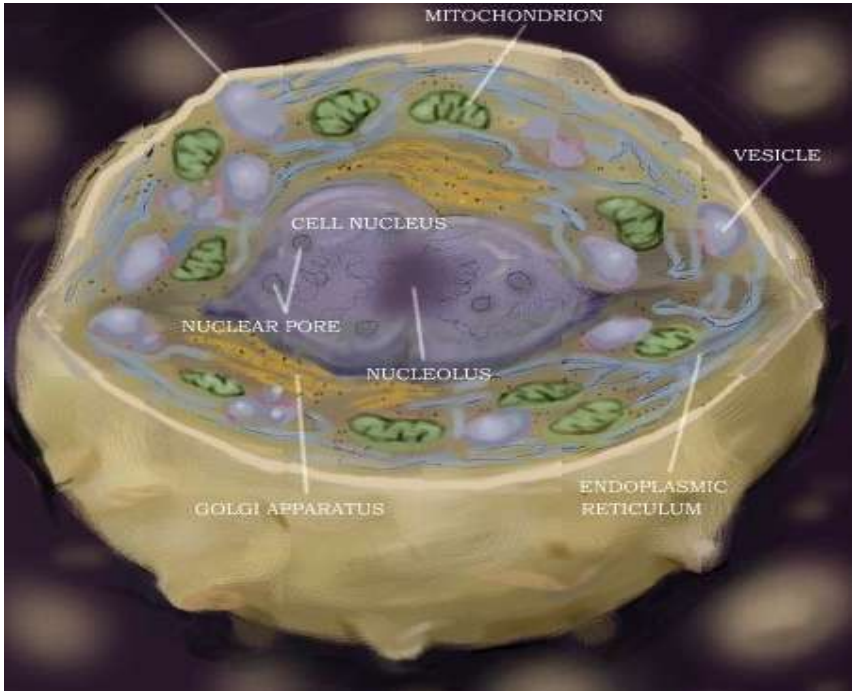
- Phloem cells carry food stuff from the roots to the rest of the plant



The 4 Levels of Organization of an Organism

- **Cell:**

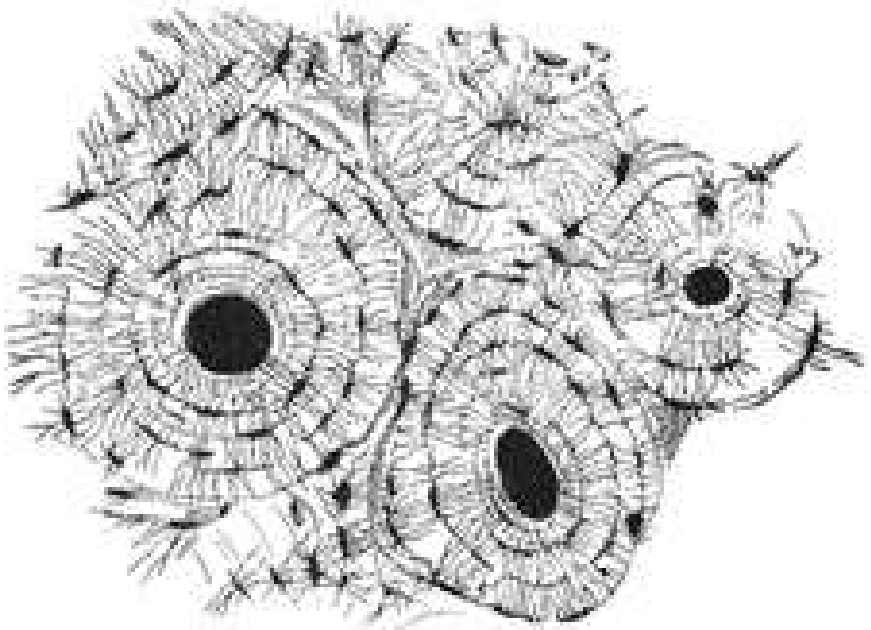
The basic unit of structure and function



The 4 Levels of Organization of an Organism

- **Tissue**

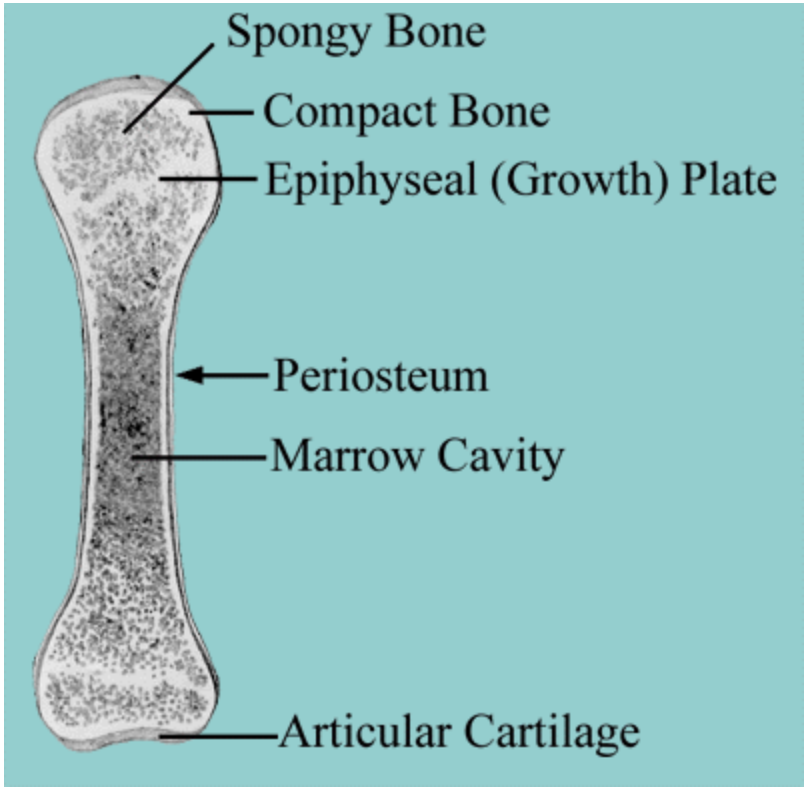
A group of cells working together to perform a particular function



The 4 Levels of Organization of an Organism

- **Organ:**

A group of tissues working together to perform a particular function



The 4 Levels of Organization of an organism

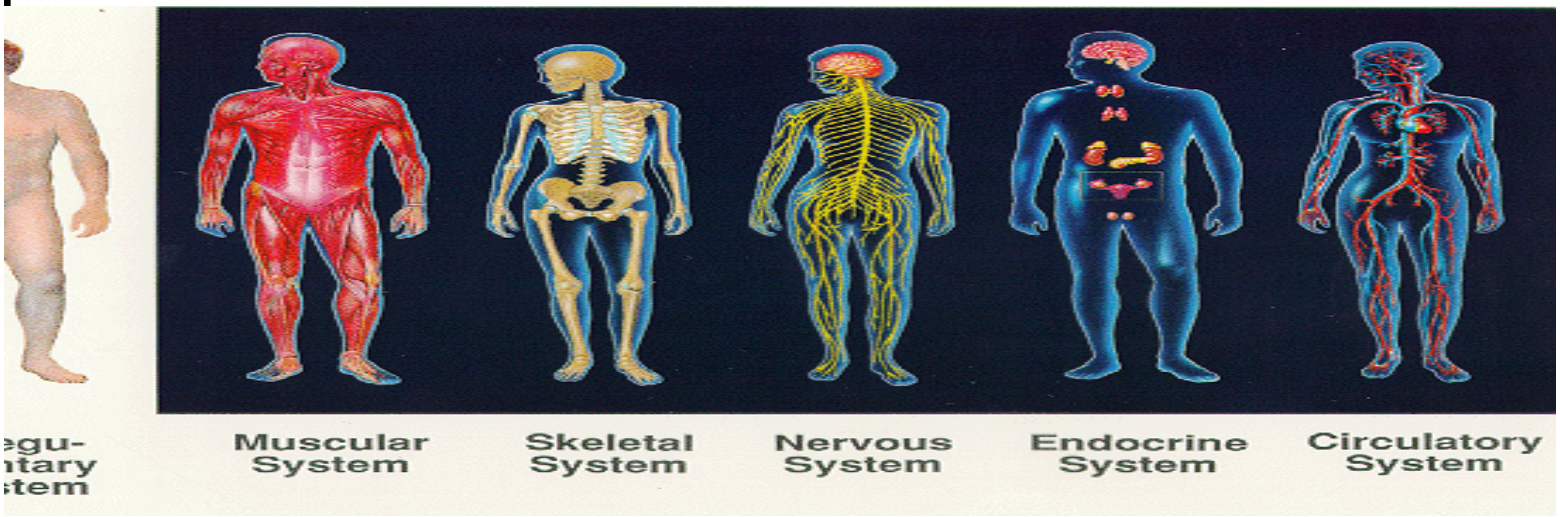
- **Organ System**

A group of organs working together to perform a particular function

The 4 Levels of Organization of an organism

–Organism

A group of organ systems working together to perform a function



Levels of organization (smallest to largest)

1. Cells
2. Tissues:group of similar cells with specific function
   - Four types: muscle, epithelial, nervous, connective tissue
3. Organs: groups of tissues working together
   - Each tissue in an organ has an essential task for the organ to function properly
   - Example: Each muscle is an organ with muscle tissue, nerve tissue, and connective tissue
4. Organ systems: a group of organs that work together to perform a specific function
   - Examples: Nervous system, digestive system