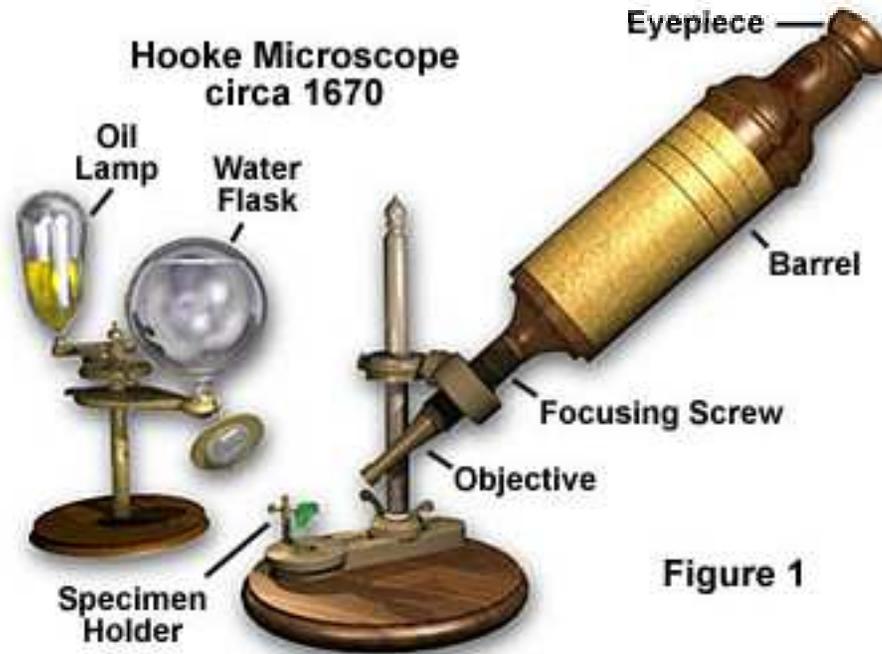
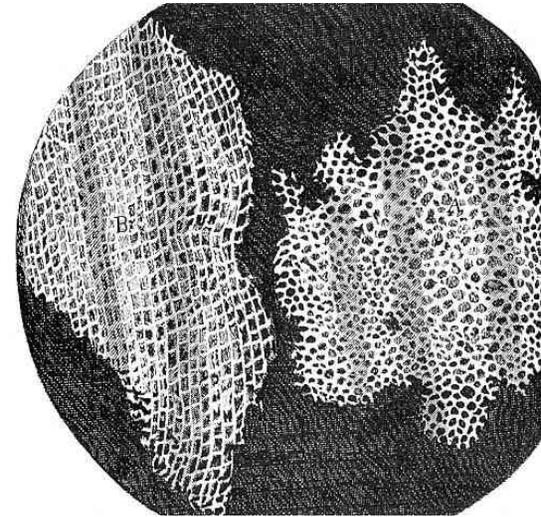


# Chapter 16

## Healthy Body Systems

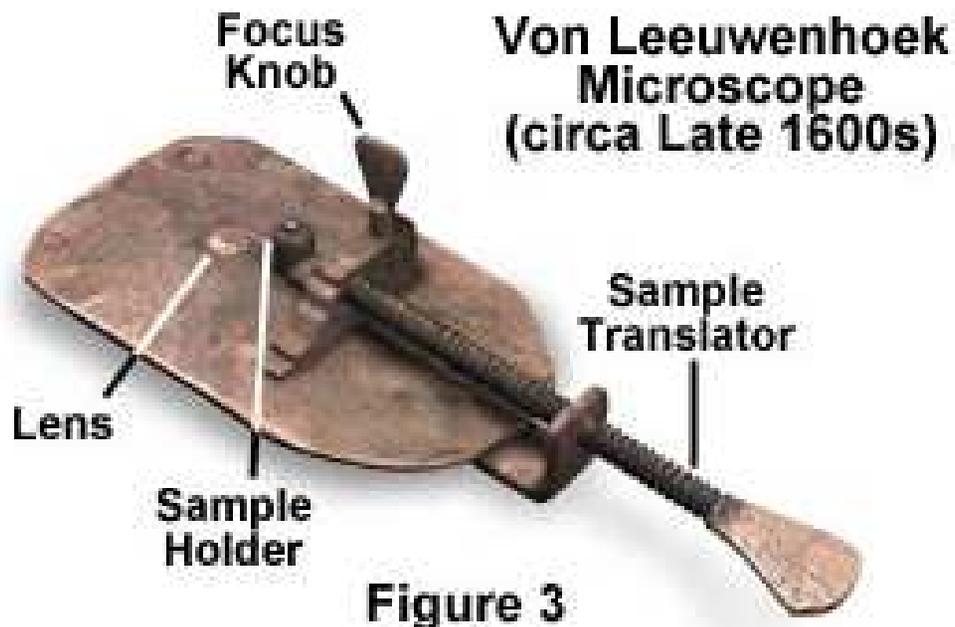
# The Cell

- The smallest unit of structure in a living organism
- **Robert Hooke** – Identified & coined the term “**Cell**” when he saw cork under the microscope
- He used a compound microscope



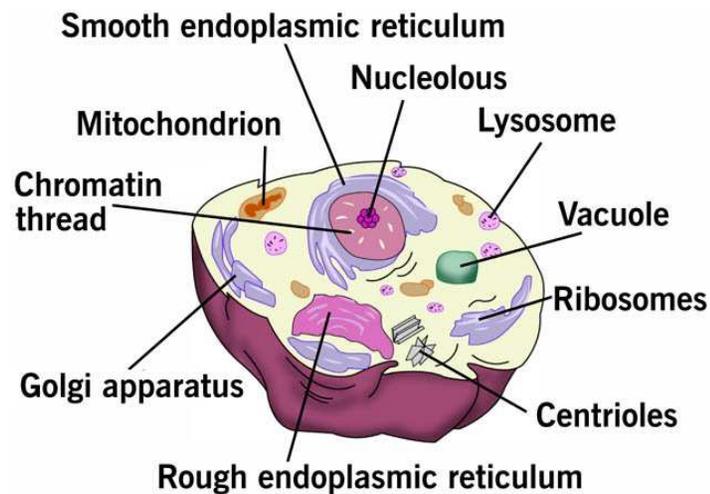
# Cells

- Leeuwenhoek used a simple microscope and looked at pond water
- He saw living creatures that swam and moved around – calling them “animicules”



# The Cell Theory

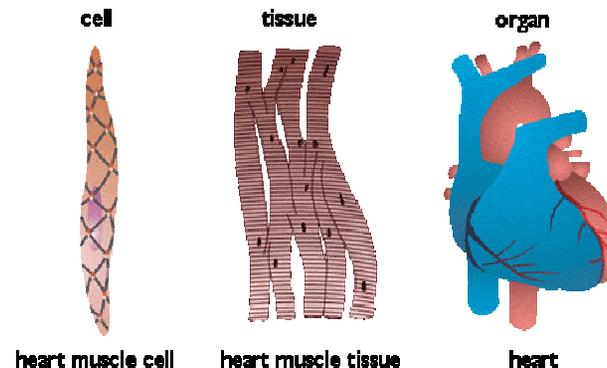
- The relationship between cells and living things
  - All living things are composed of cells
  - Cells are the basic unit of structure
  - All cells are produced from other cells



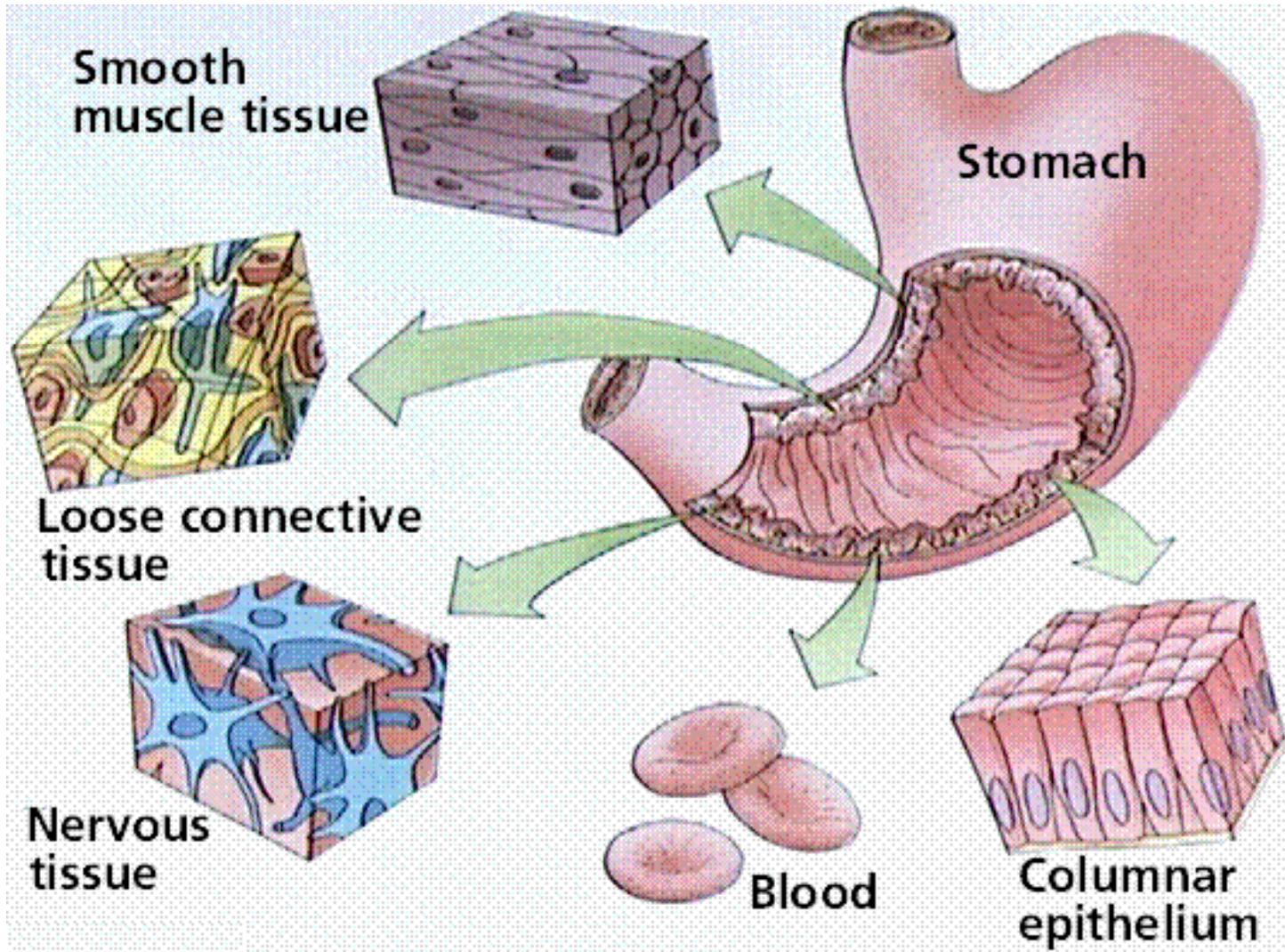
# Cellular Organization

**Cells → Tissue → Organs → Organ System → Organism**

- **Cells** – The basic unit of structure of all living things
  - Most cells contain cell membrane, cytoplasm, organelles & a nucleus.
- **Tissue** – a group of similar cells that perform a similar function
- **Organ** – Different tissues that all work together performing a specific job
  - Examples: Heart, liver, brain, lungs, femur, spleen, stomach, kidneys
- **Organ System** – a group of related organs working together to perform a major function
- **11 human systems** recognized include the digestive and respiratory

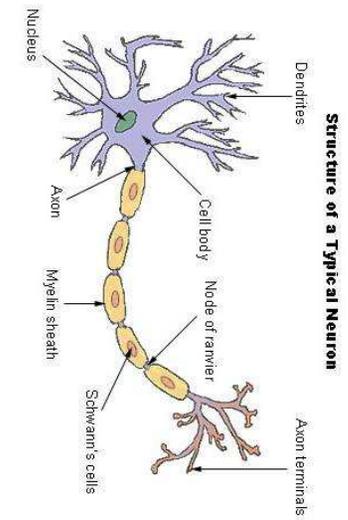
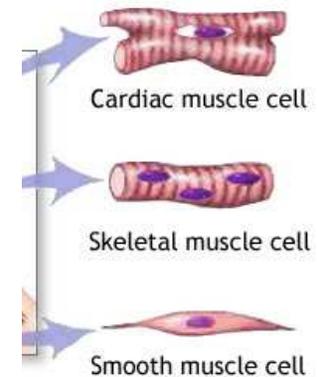


# An Organ – a collection of tissues



# 4 Main Types of Tissue

- **Muscle Tissue** – tissues w/ the ability to contract
  - Striated, Smooth & Cardiac
- **Nerve Tissue** – tissues w/ the ability to send & receive electrical impulses
  - Brain, spinal cord & nerve cells
- **Epithelial Tissue** – tissues that cover the surfaces of the body (inside & out)
  - Skin, linings of the mouth, stomach & intestinal linings
- **Connective Tissue** – tissues that provide support & structure to the body
  - Bones, ligaments, tendons, cartilage, fat, & blood



Four types of tissue

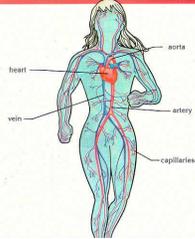


# Keeping the Body in Balance

- a. **Homeostasis** – the process that keeps the body's internal environment stable in spite of ever changing external environmental conditions
- b. Maintaining body temperature via sweating, hard breathing etc.
- c. Stress disturbs homeostasis and the body reacts to return to “normal”
  - “Fight or Flight Syndrome” - Adrenaline

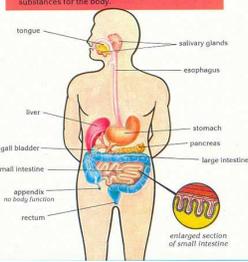
# 11 Human Organ Systems

**The Circulatory System**  
The circulatory system provides the force and channels for the distribution of the blood, which carries the food and oxygen to the cells and removes wastes.



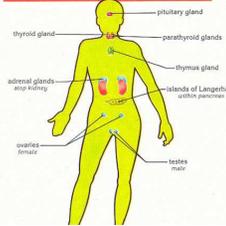
Circulatory

**The Digestive System**  
The digestive system changes food into usable substances for the body.

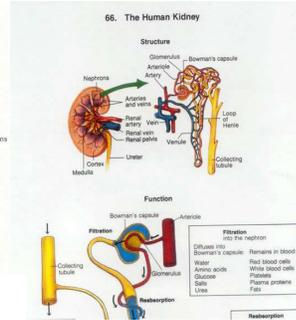


Digestive

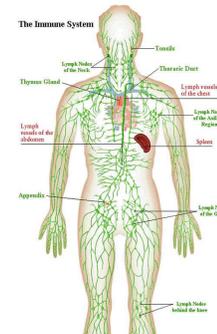
**The Endocrine System**  
The endocrine glands are glands that secrete hormones directly into the bloodstream.



Endocrine



Excretory

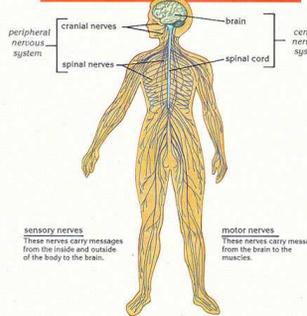


Immune



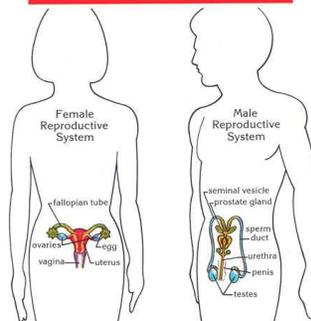
Musculature

**The Nervous System**  
The nervous system enables us to react to our environment.



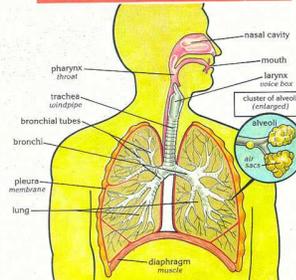
Nervous

**The Reproductive System**  
The reproductive system provides for the continuation of life.



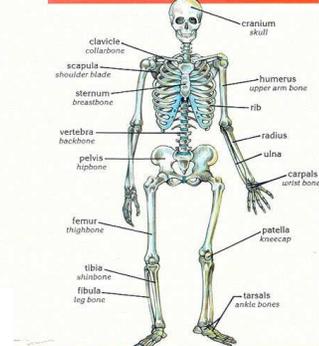
Reproductive

**The Respiratory System**  
The respiratory system brings oxygen into the body and removes carbon dioxide and other gases.



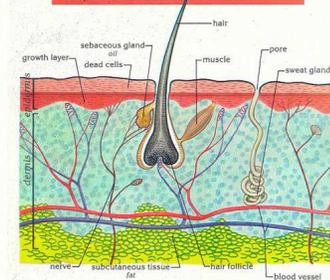
Respiratory

**The Skeletal System**  
The skeletal system supports the body and gives it a shape; protects organs, and serves as an attachment for muscles.



Skeletal

**The Skin**  
The skin provides the body with protection, sensory reception, and the regulation of temperature.



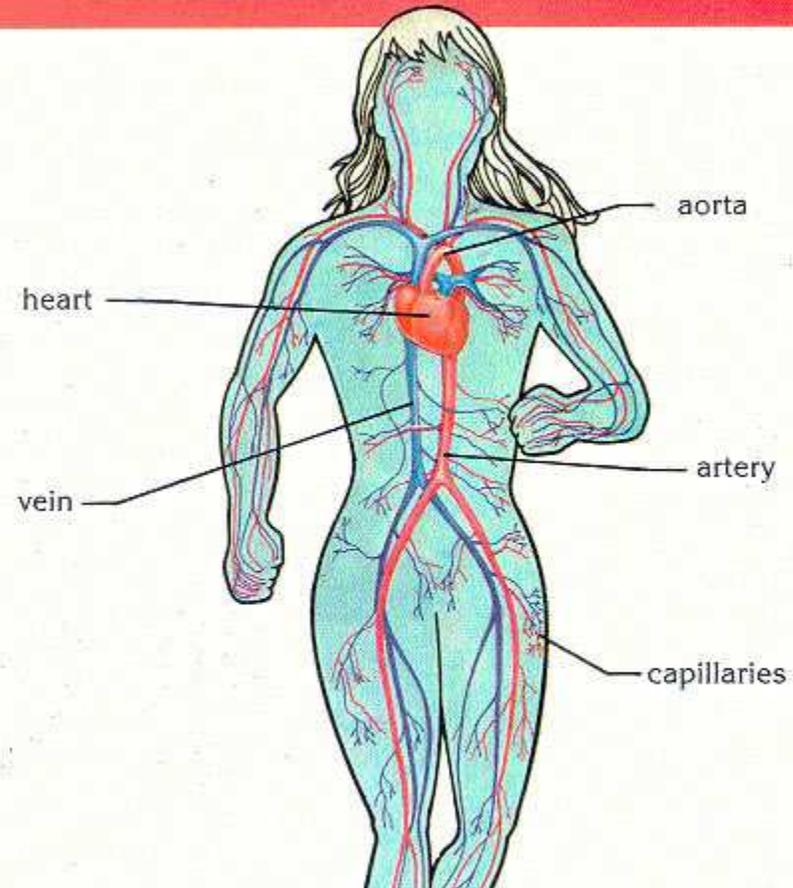
Integumentary

# The Circulatory System

- carries materials to and away from all body cells
- includes the heart (dual pump), arteries, veins, capillaries and blood

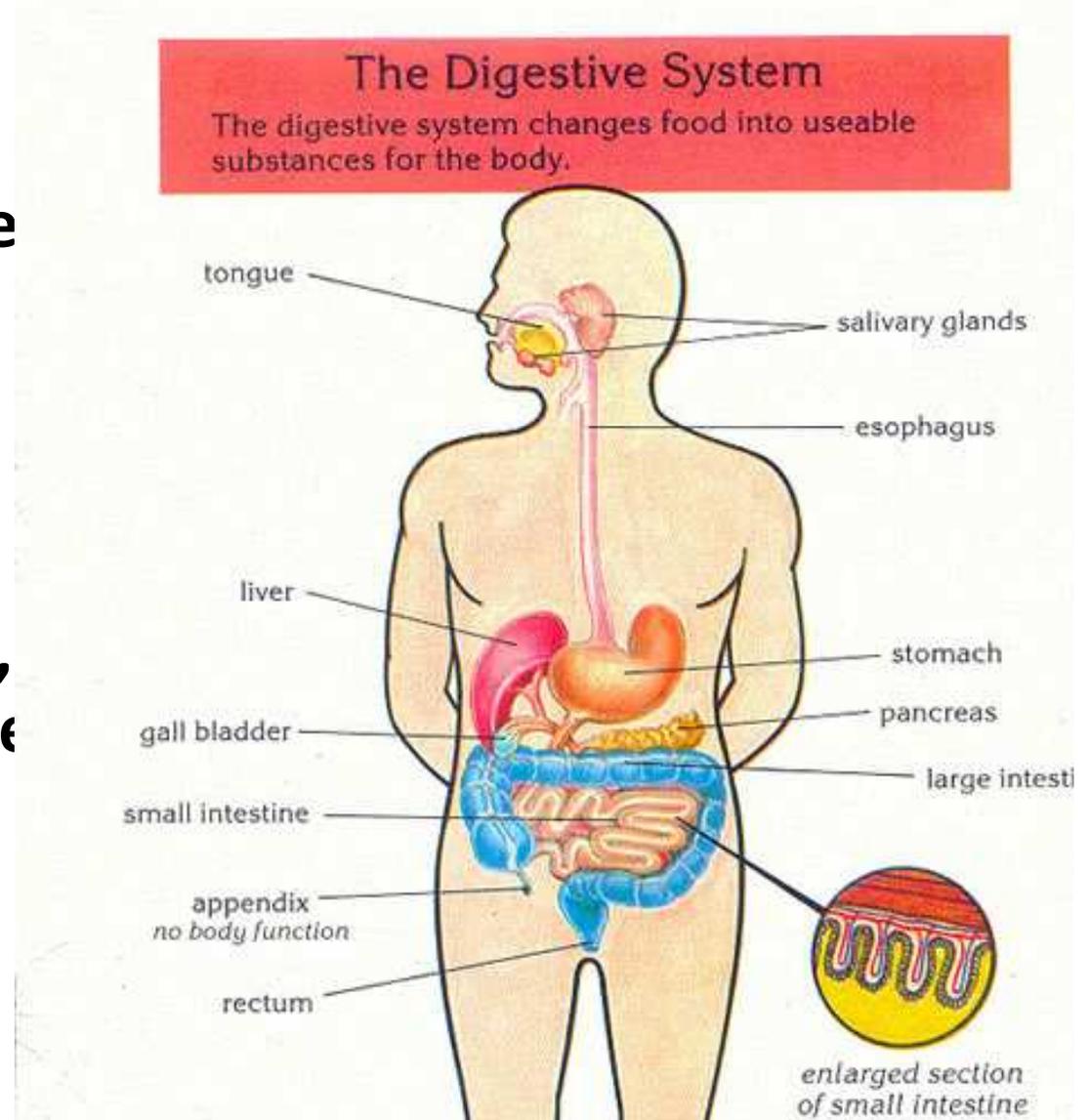
## The Circulatory System

The circulatory system provides the force and channels for the distribution of the blood, which carries the food and oxygen to the cells and removes wastes.



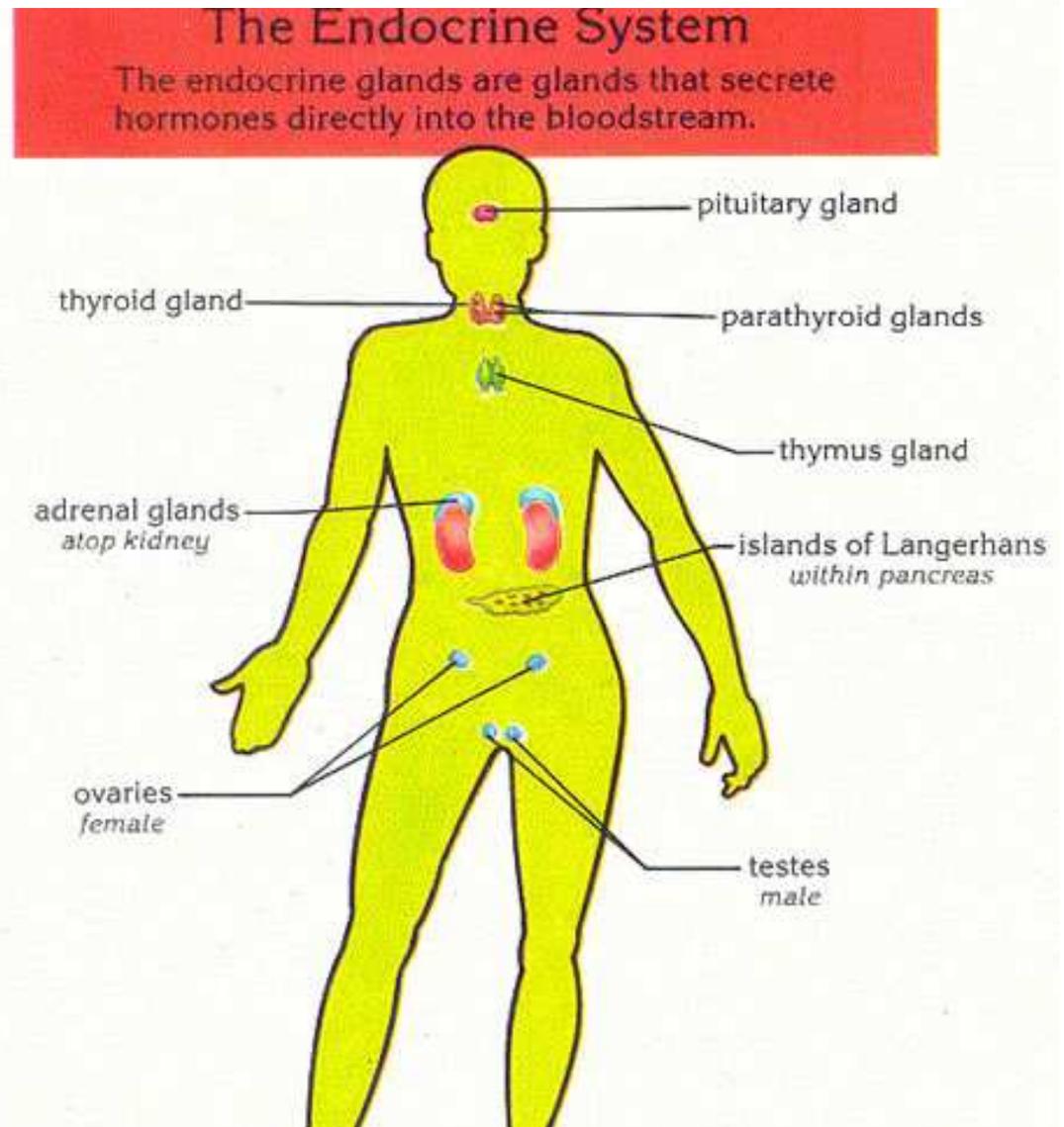
# The Digestive System

- takes food and converts it into materials that can be used at the cellular level
- includes the esophagus, stomach, small intestines, large intestines, etc.



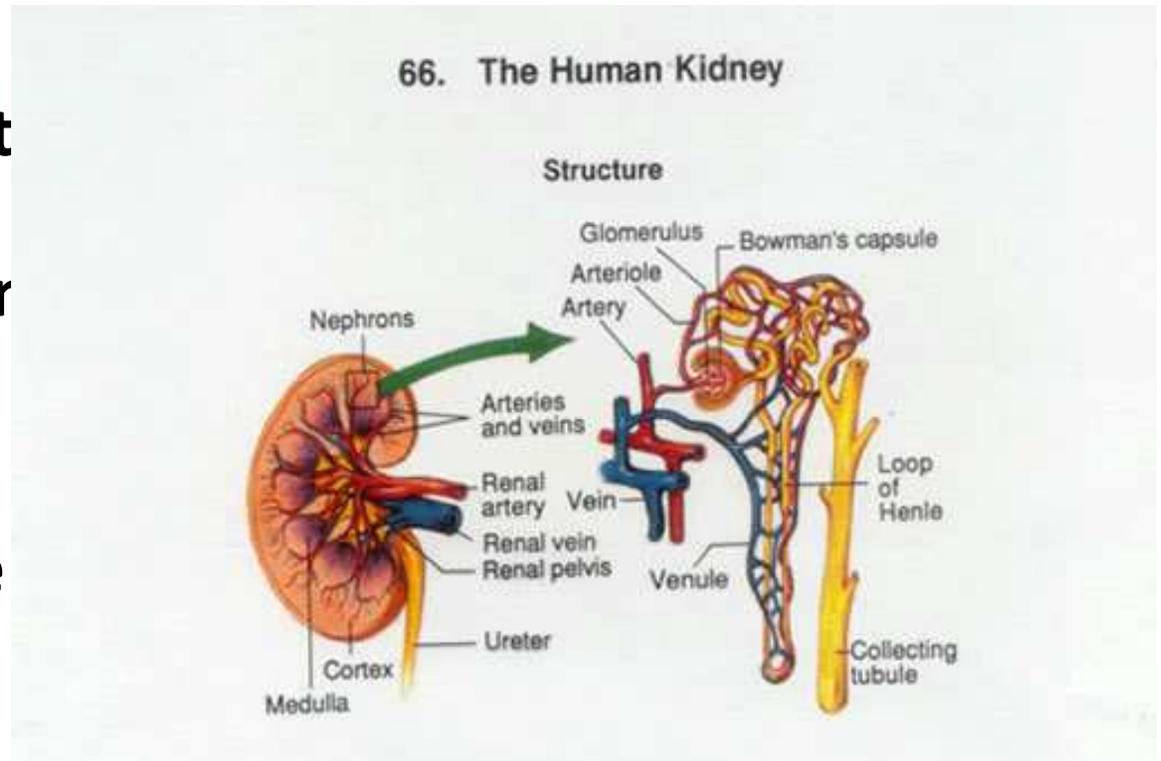
# The Endocrine System

- controls many of the body functions by the release of hormones that affect the other body systems
- include the adrenal glands, the thalamus, hypothalamus and thyroid glands



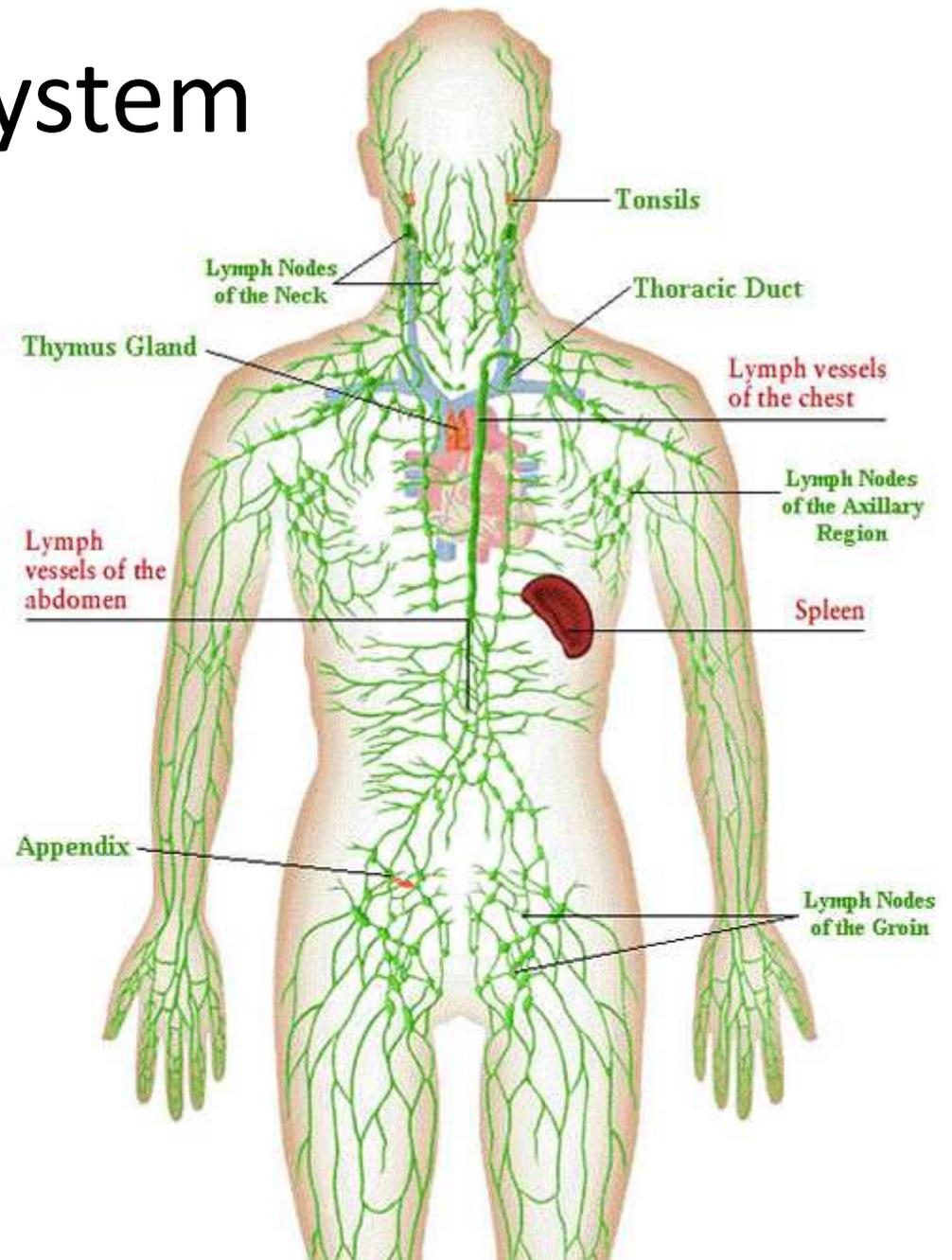
# The Excretory System

- **takes waste products made at the cellular level and removes them from the blood.**
- **Examples include kidneys, ureter, urethra and the bladder.**



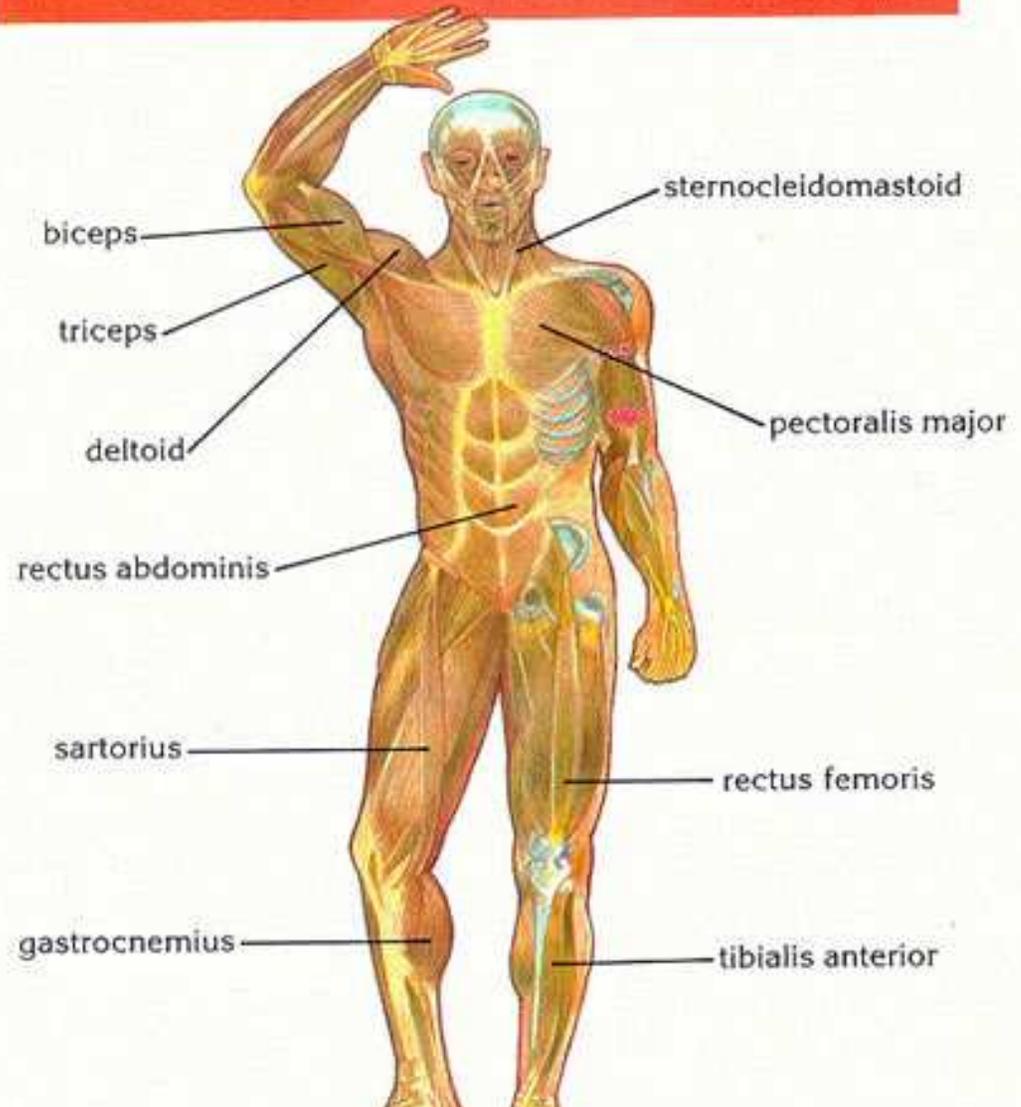
# The Immune System

- Used to fight off infections from bacteria & viruses (some include as part of circulatory system)
- includes the lymph vessels, nodes, T cells, B cells, lymphocytes & other antibodies



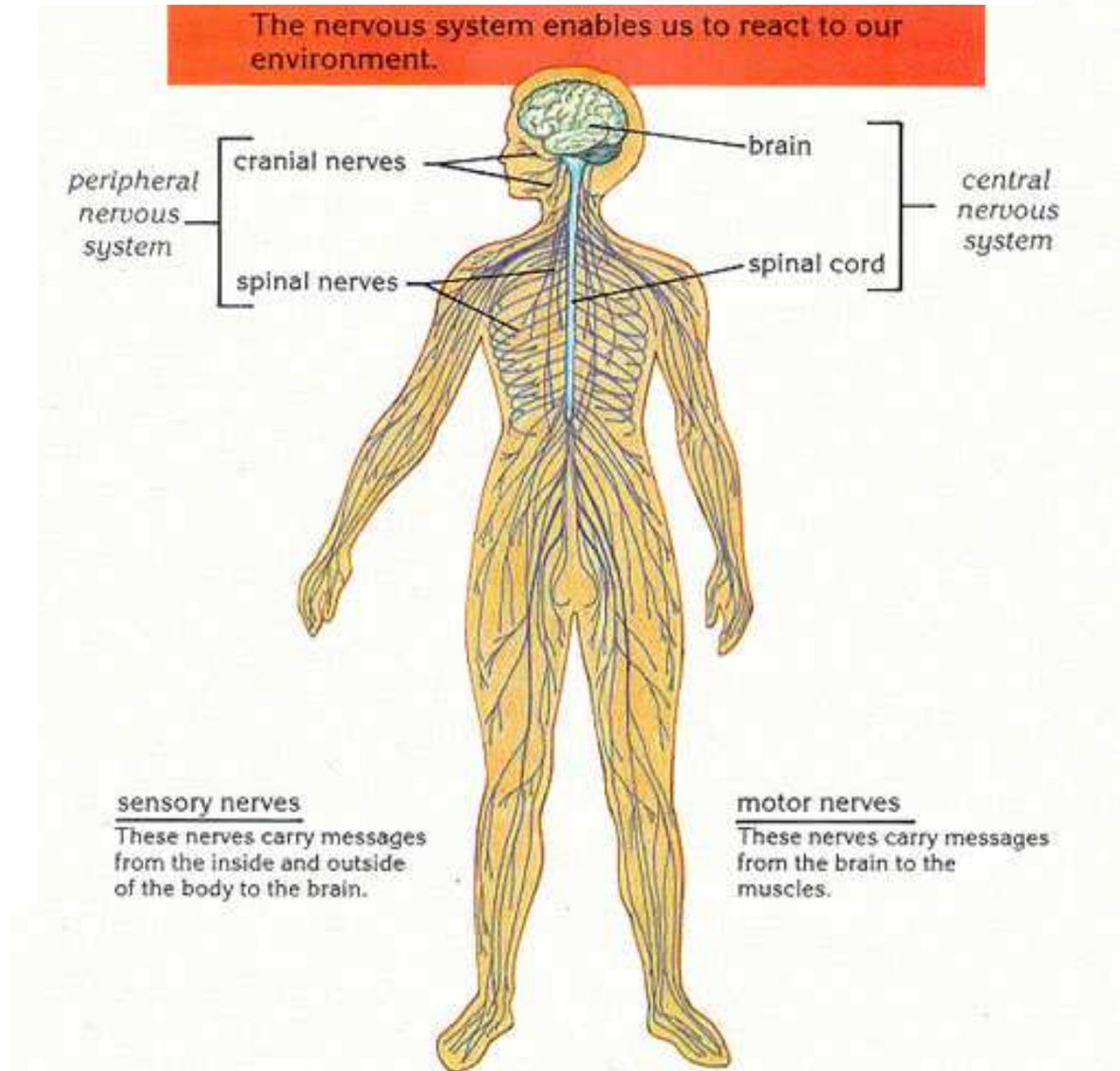
# The Musculature System

- enables the body to move, moves food thru the digestive system, keeps the heart beating
- include biceps, heart, smooth muscle, triceps and the Gluteus maximus.



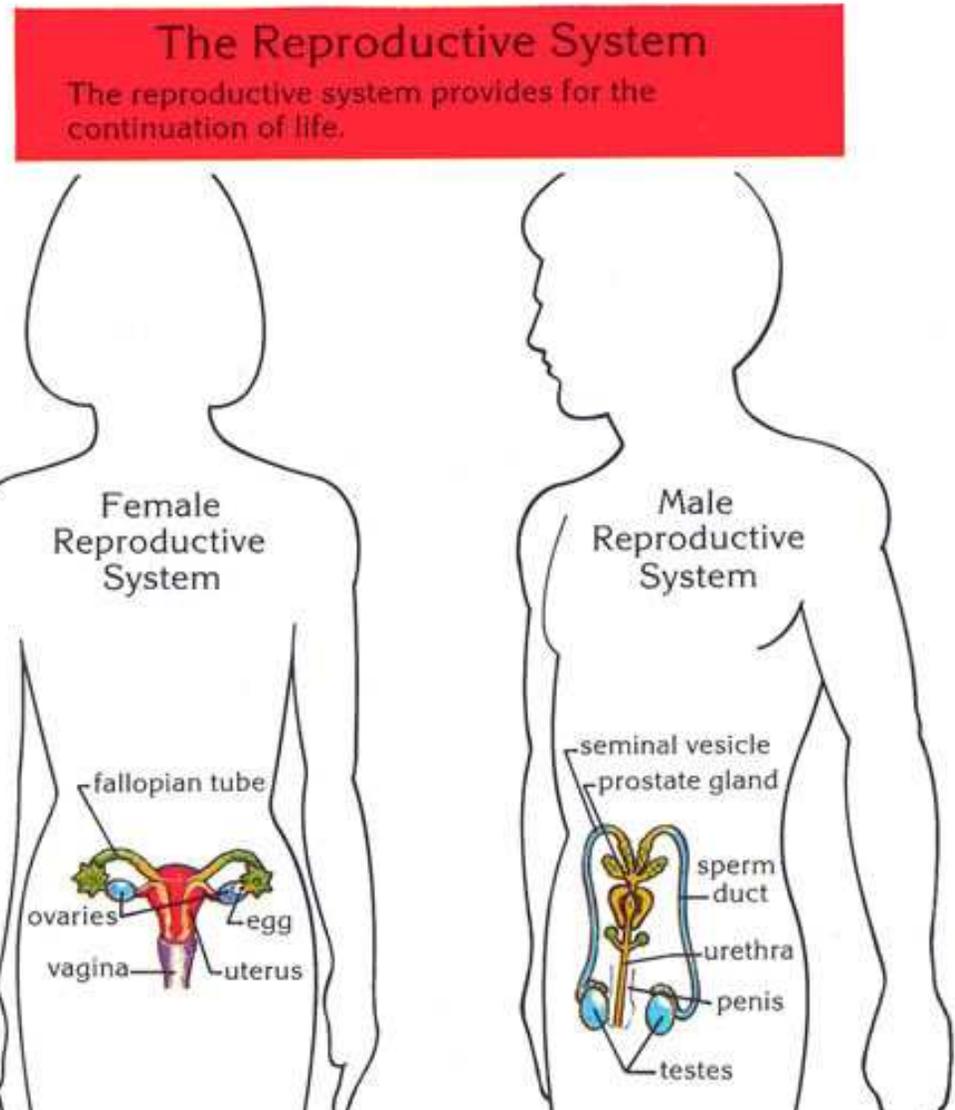
# The Nervous System

- detects and interprets information the body receives from the outside environment and allows the body to react accordingly
- Examples include the brain, spinal cord, and sensory organs



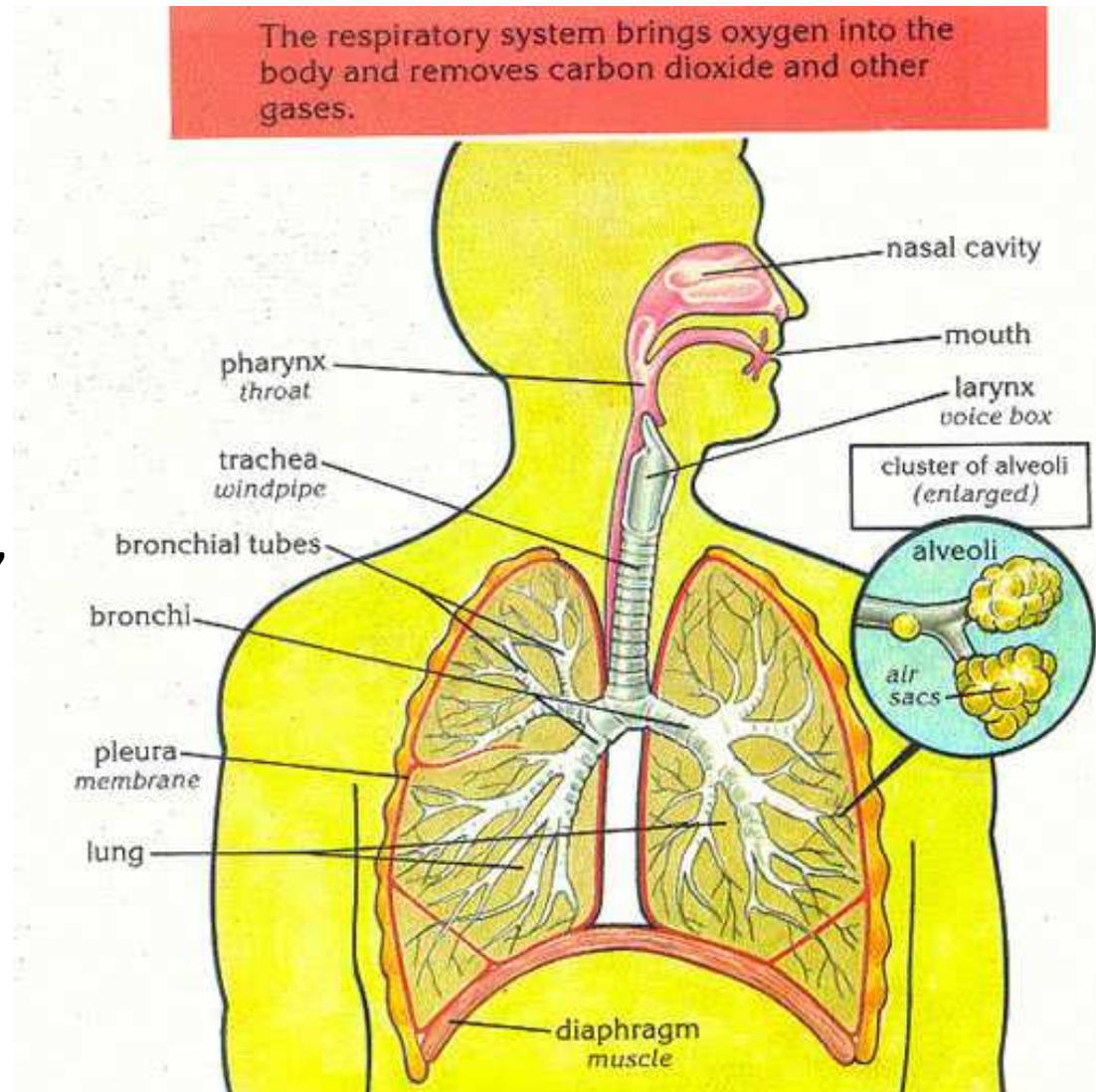
# The Reproductive System

- allows for the continuation of life, produces sex cells that allow for creation of offspring. Controls male and female characteristics.
- Include testes, uterus, ovaries, sperm, egg, etc.



# The Respiratory System

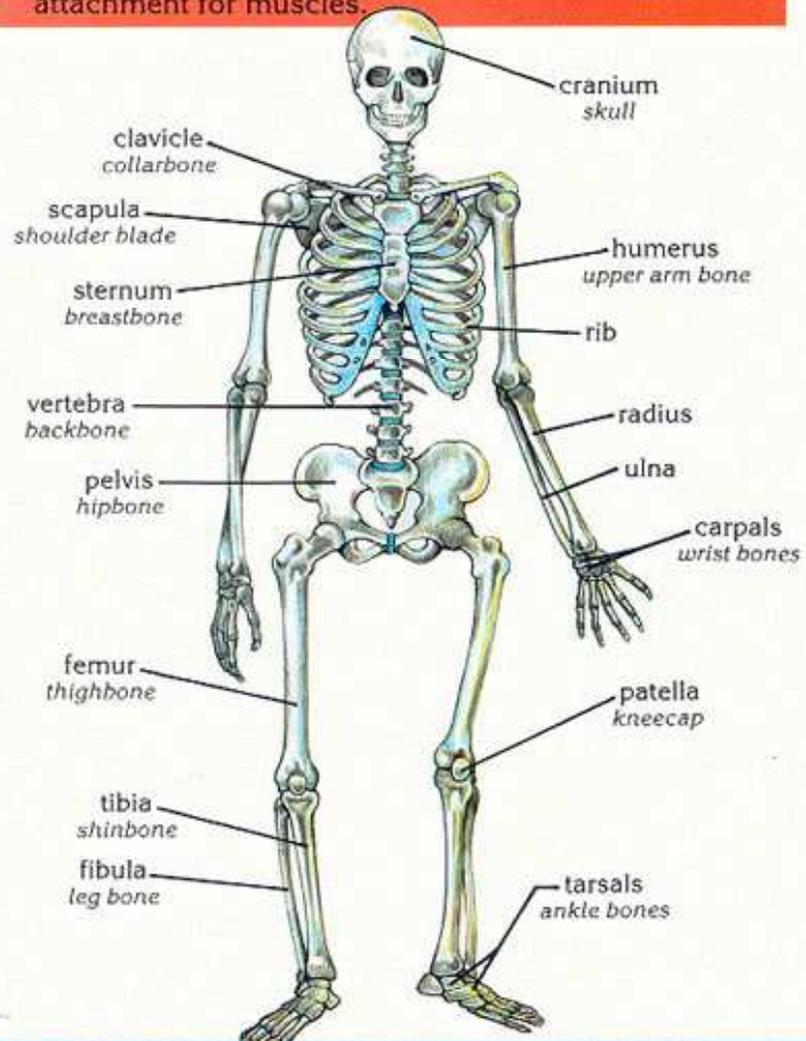
- supplies oxygen to the body while removing carbon dioxide
- include the lungs, trachea and bronchi, bronchioli, alveoli & diaphragm.



# The Skeletal System

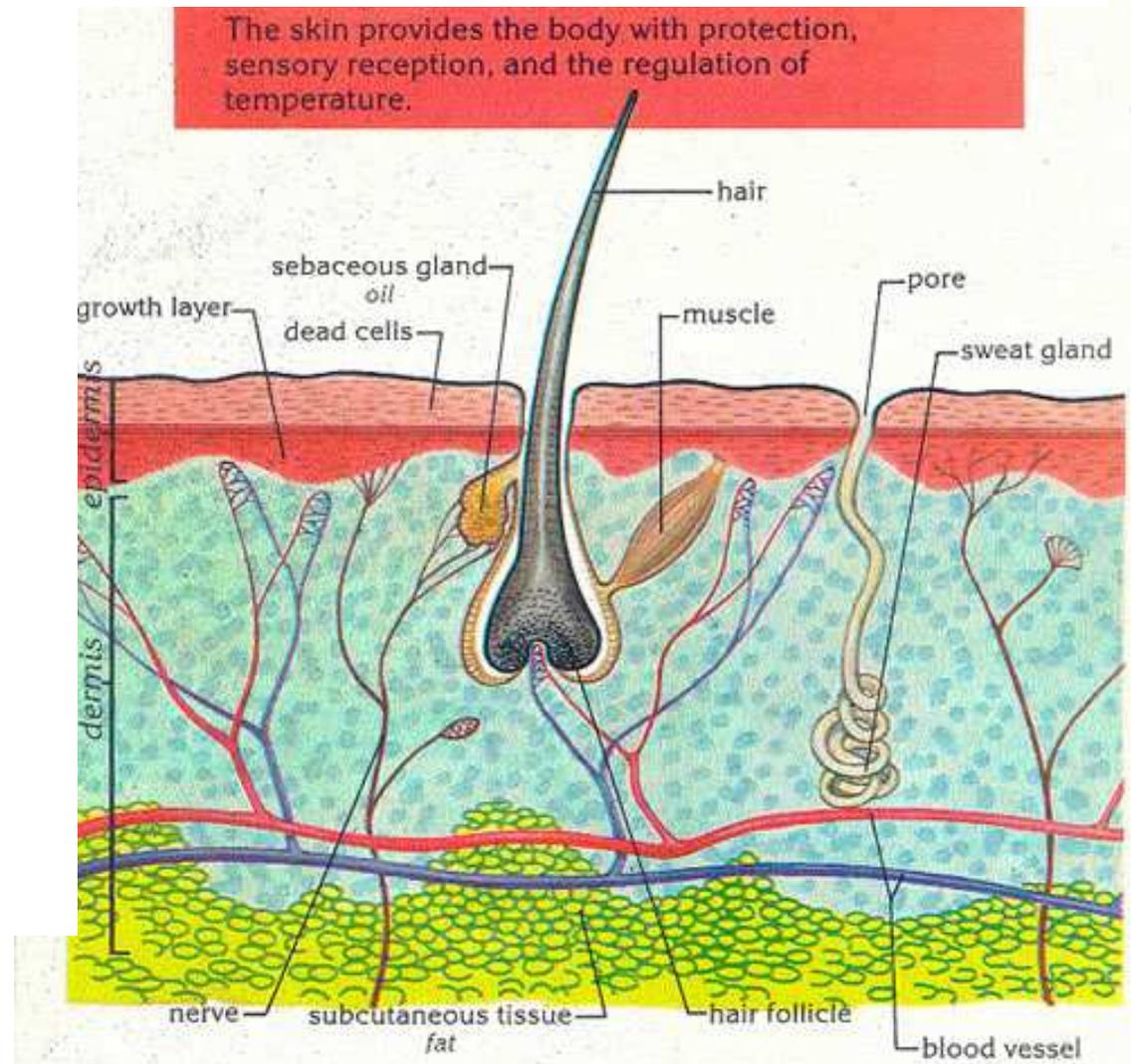
- supports, gives shape and protects the body. Serves as attachment for the muscles and produces new blood cells in its marrow.
- Examples include the ribs, femur, humerus and phalanges

**The Skeletal System**  
The skeletal system supports the body and gives it a shape, protects organs, and serves as an attachment for muscles.



# The Integumentary System

- the skin and its underlying materials protects the body, water regulation and maintains body temperature.
- includes the skin, oil glands, hair & subcutaneous fat



# Chapter 16

**That's All Folks!!**