

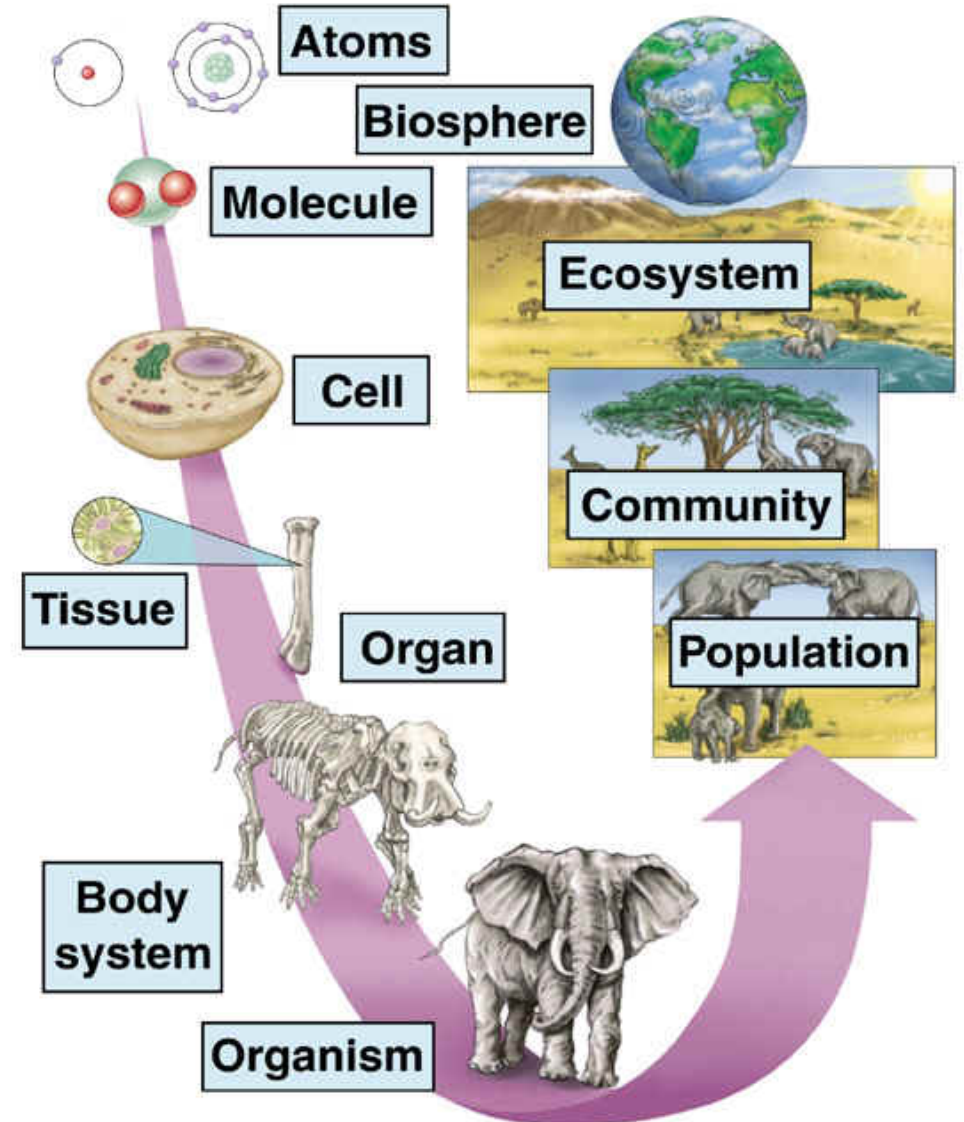
REPORTING CATEGORY 4

#35-LEVELS OF ORGANIZATION

FROM MICRO TO MACRO

Scientists organize particles, living structures and interactions that organisms experience into different levels according to **complexity**

Raven/Berg, Environment, 3/e
Figure 4.1



#22-BODY SYSTEMS

ORGAN SYSTEMS INTERACT



Skeletal System



Muscular System



Circulatory System



Digestive System



Urinary System



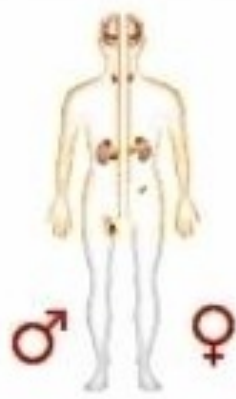
Nervous System



Reproductive System



Lymphatic System



Endocrine System



Respiratory System

Though organ systems are labeled and studied based on independent functions, all systems work together continually to maintain **homeostasis** in the body.

#17-FEEDBACK MECHANISMS

HOMEOSTASIS IN THE BODY

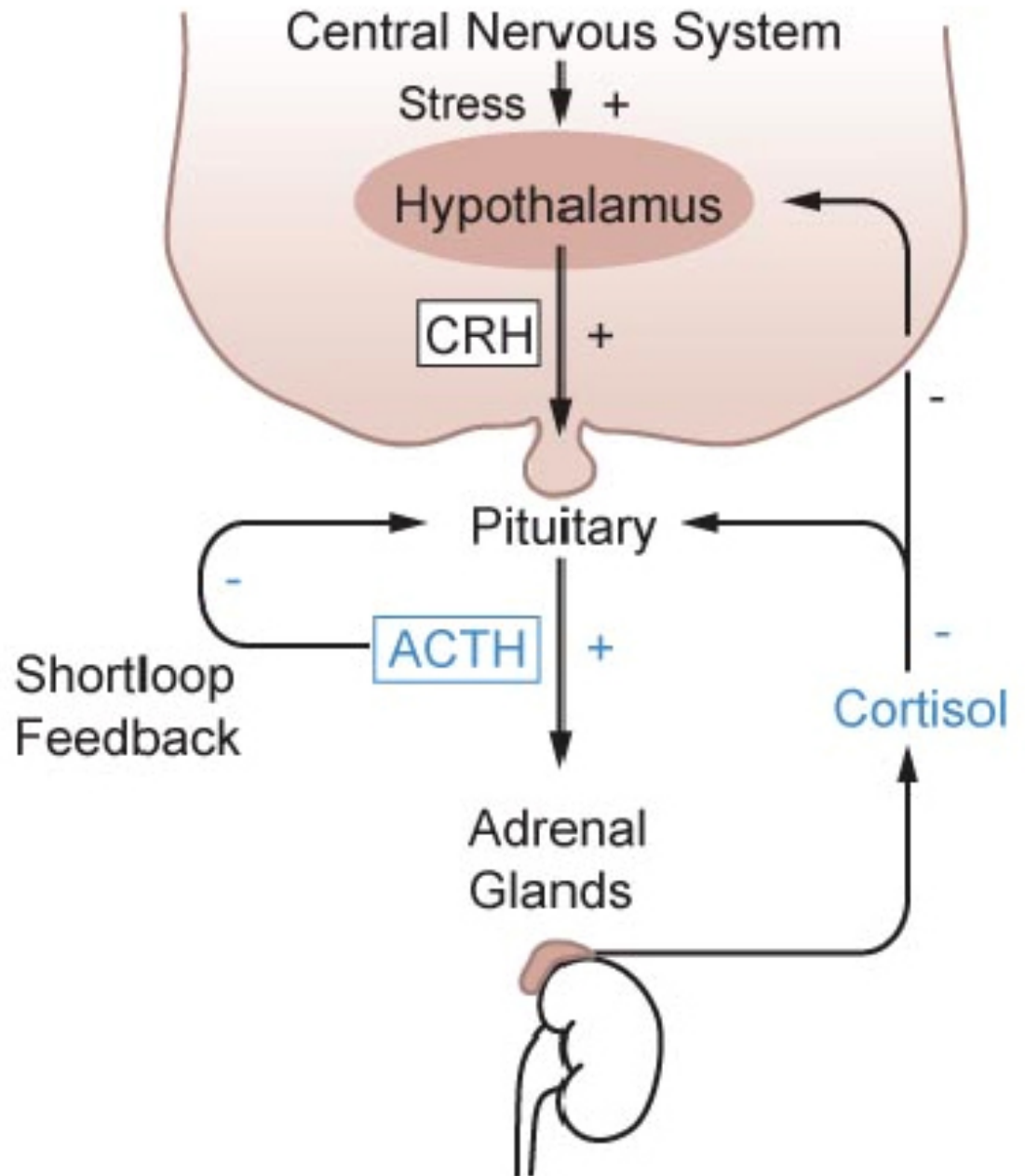
Feedback Mechanism:

-A loop system in which the system responds to disruption either in the same direction (positive feedback) or in the opposite direction (negative feedback).

-A process in which the level of one substance influences the level of another substance.

-A mechanism or a signal that tends to initiate (or accelerate) or to inhibit (or slow down) a process

Ex: contractions during childbirth and regulation of blood glucose levels



#5-BODY SYSTEMS



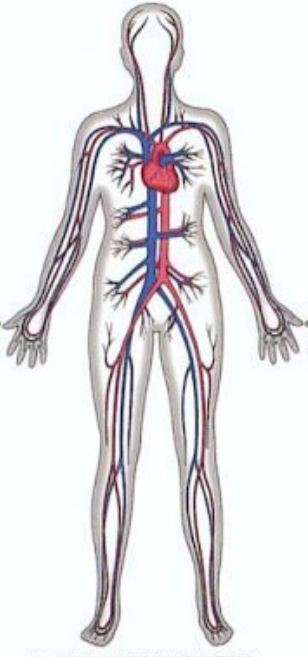
▲ MUSCULAR SYSTEM

The muscular system consists of layers of muscles that cover the bones of the skeleton, extend across joints, and can contract and relax to produce movement.



▲ SKELETAL SYSTEM

The skeleton is a strong yet flexible framework of bones and connective tissue. It provides support for the body and protection for many of its internal parts.



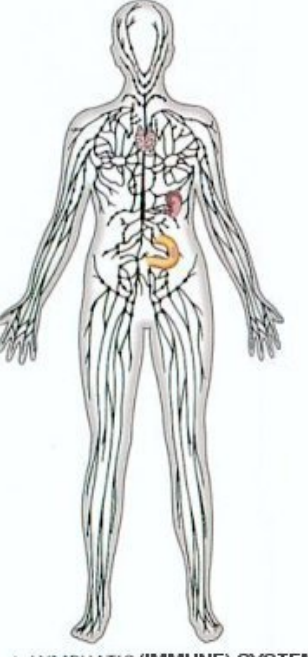
▲ CIRCULATORY SYSTEM

This system consists of the heart and a network of vessels that carry blood. It supplies oxygen and nutrients to the body's cells and removes waste products.



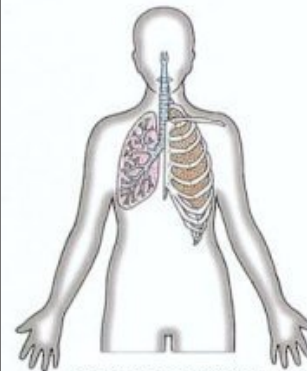
▲ NERVOUS SYSTEM

The nervous system is the body's main control system. It consists of the brain, the spinal cord, and a network of nerves that extend out to the rest of the body.



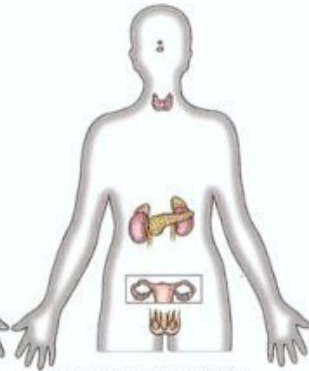
▲ LYMPHATIC (IMMUNE) SYSTEM

This system is a network of vessels that collects fluid from tissues and returns it to the blood. It also contains groups of cells that protect the body against infection.



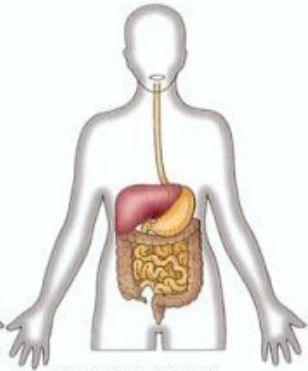
▲ RESPIRATORY SYSTEM

The respiratory system is centered on the lungs, which work to get life-giving oxygen into the blood. They also rid the body of a waste product, carbon dioxide.



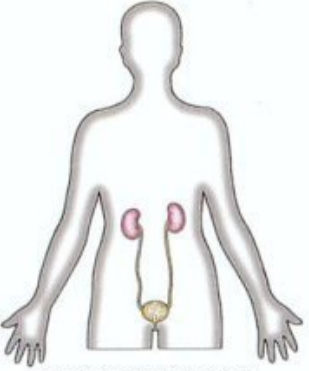
▲ ENDOCRINE SYSTEM

Many body processes, such as growth and energy production, are directed by hormones. These chemicals are released by the glands of the endocrine system.



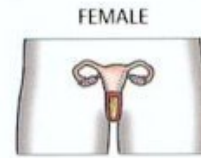
▲ DIGESTIVE SYSTEM

The digestive system takes in the food the body needs to fuel its activities. It breaks the food down into units called nutrients and absorbs the nutrients into the blood.

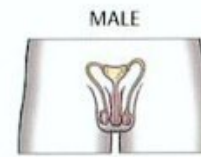


▲ EXCRETORY SYSTEM

The body's cells produce waste products, many of which are eliminated in urine. The job of the urinary system is to make urine and expel it from the body.



FEMALE



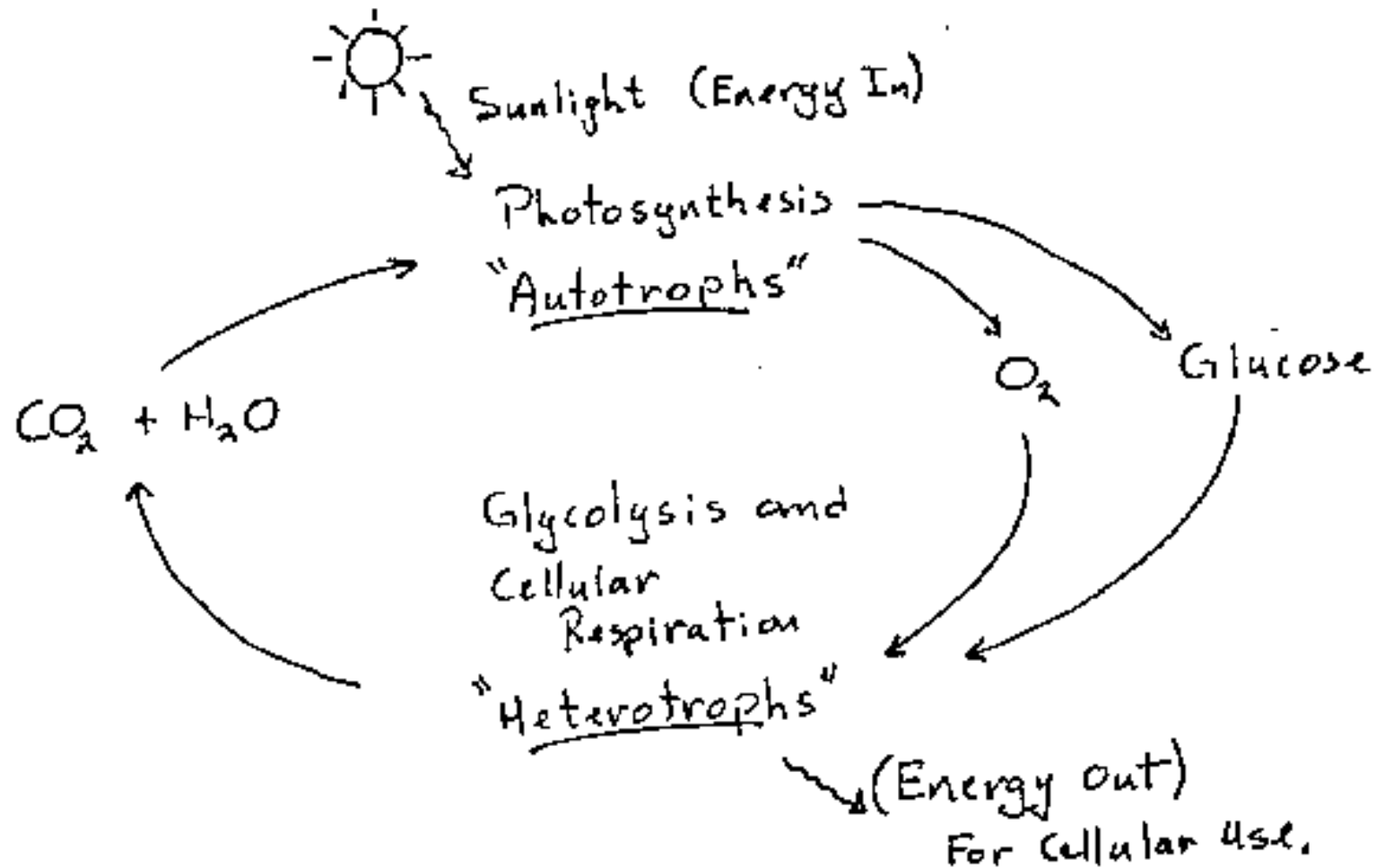
MALE

▲ REPRODUCTIVE SYSTEM

The male and female parts of the reproductive system produce the sperm and eggs needed to create a new person. They also bring these tiny cells together.

#12-ENERGY IN A CELL

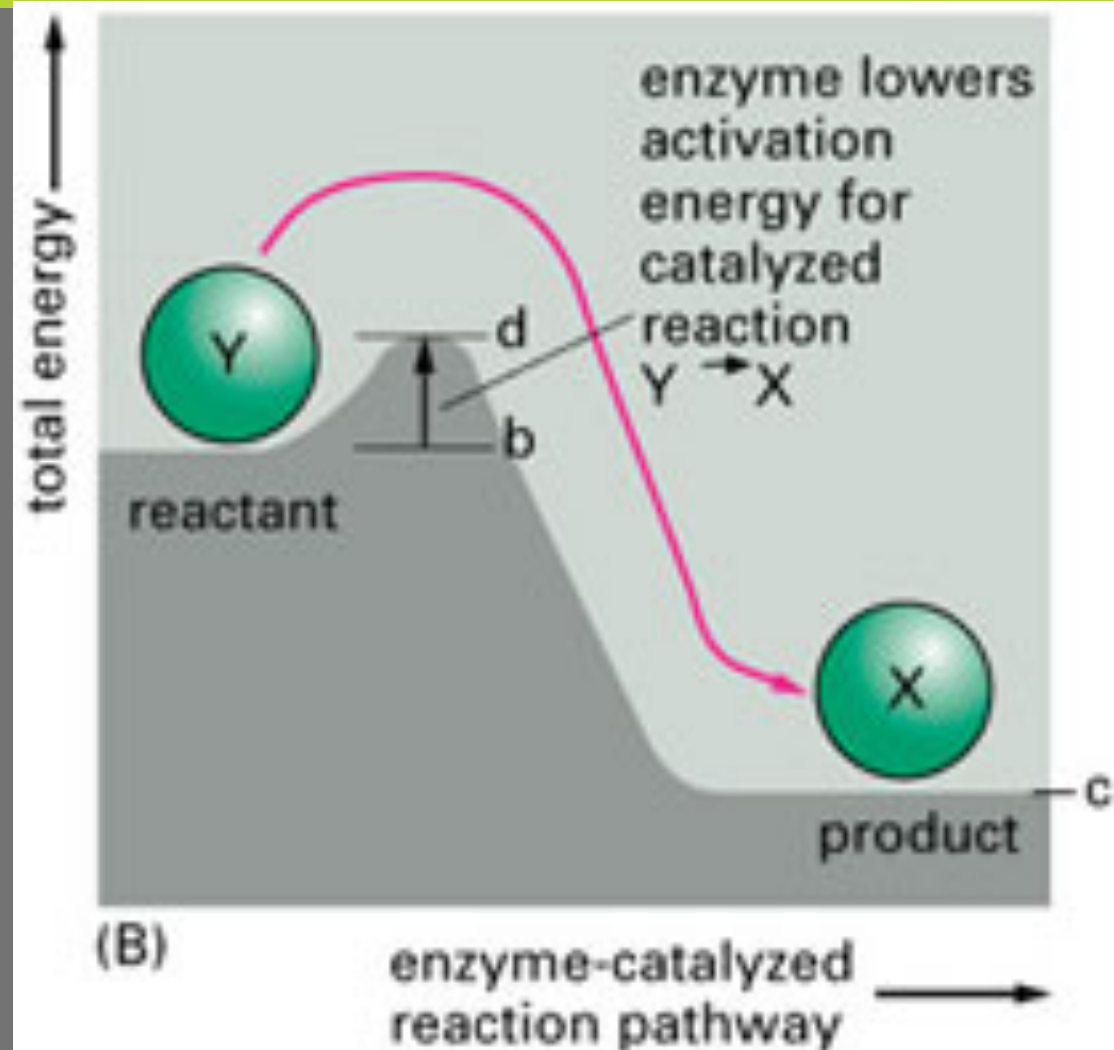
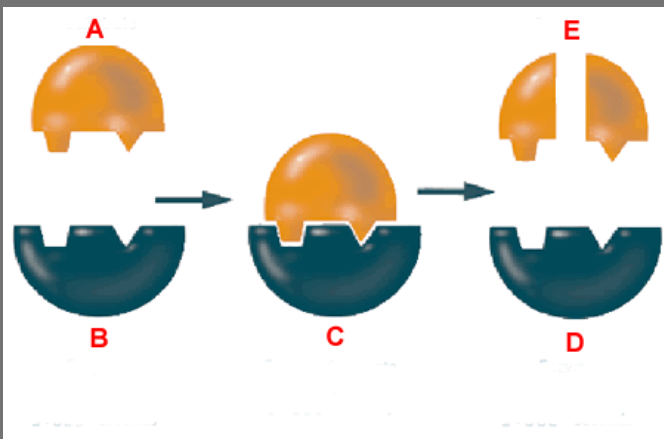
PHOTOSYNTHESIS VS. CELL RESPIRATION (WHAT GOES IN → WHAT GOES OUT)



#10-ENZYMES

CATALYSTS USED IN A REACTION

- Are **specific** for what they will catalyze
- Are reusable
- End in -ase (ex: lactase)
- Enzymes work by weakening bonds which **lowers activation energy**

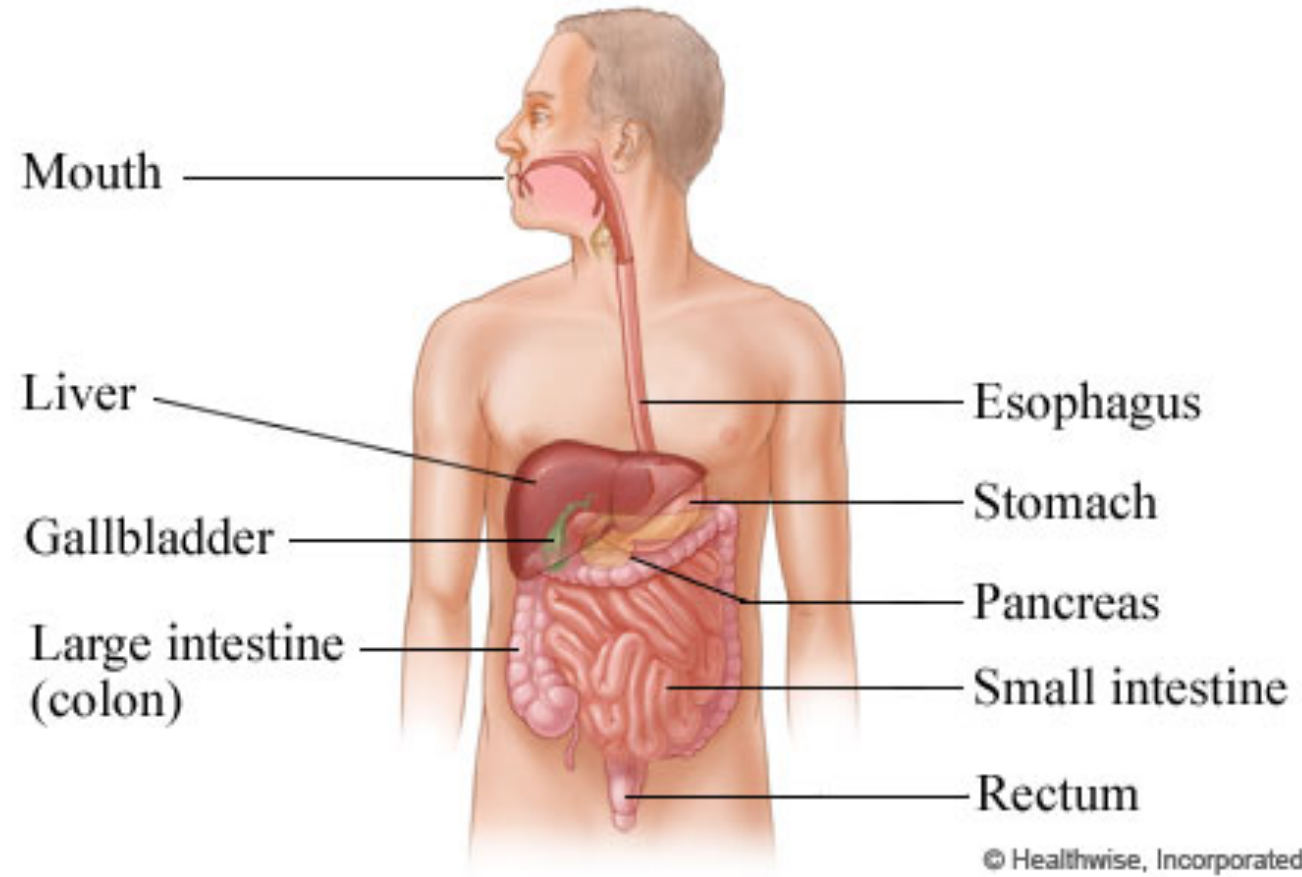
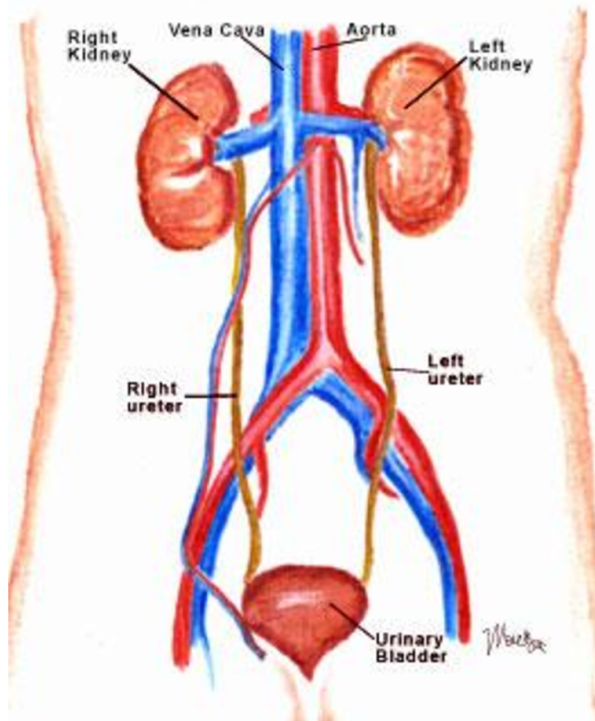


#9-BODY SYSTEMS

LIVER FUNCTION + REMOVAL OF WASTE

Excretory System

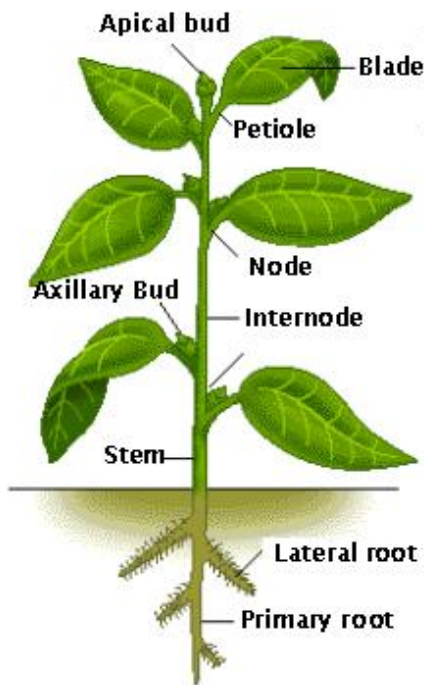
- Removal of waste from the body



#7-PLANT TISSUES

COMPLEXITY OF VASCULAR PLANTS

The Plant Body Consists of the Shoot System and the Root System



Shoot System - Functions

- Photosynthesis
- Reproduction
- Storage
- Transport
- Hormones

Root System - Function

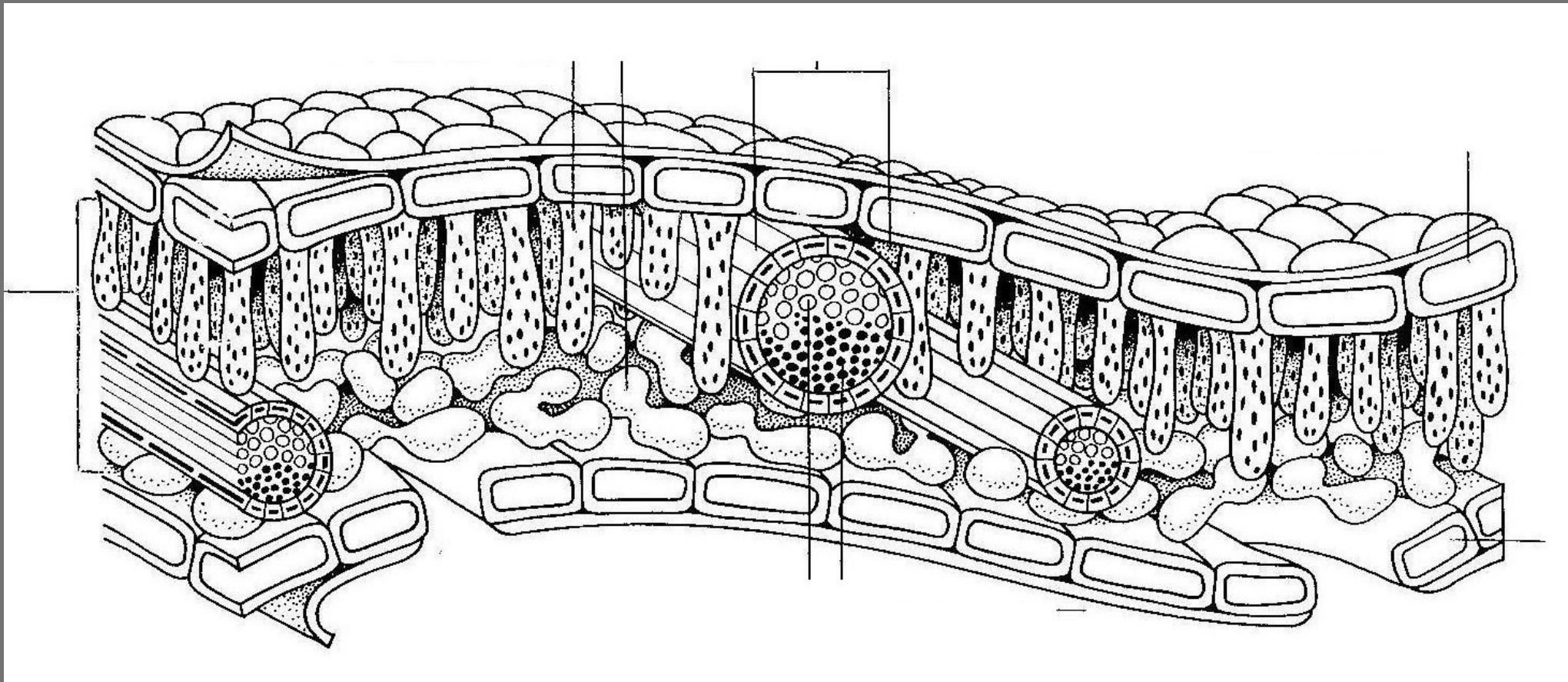
- Anchorage
- Absorption
- Storage
- Transport
- Hormones

-Vascular plants have elongated, tube-like cells that transport fluid and nutrients throughout plant

-**Xylem** tissue: water and minerals

-**Phloem** tissue: "phood" glucose and other sugars

#51-PLANT REGULATION



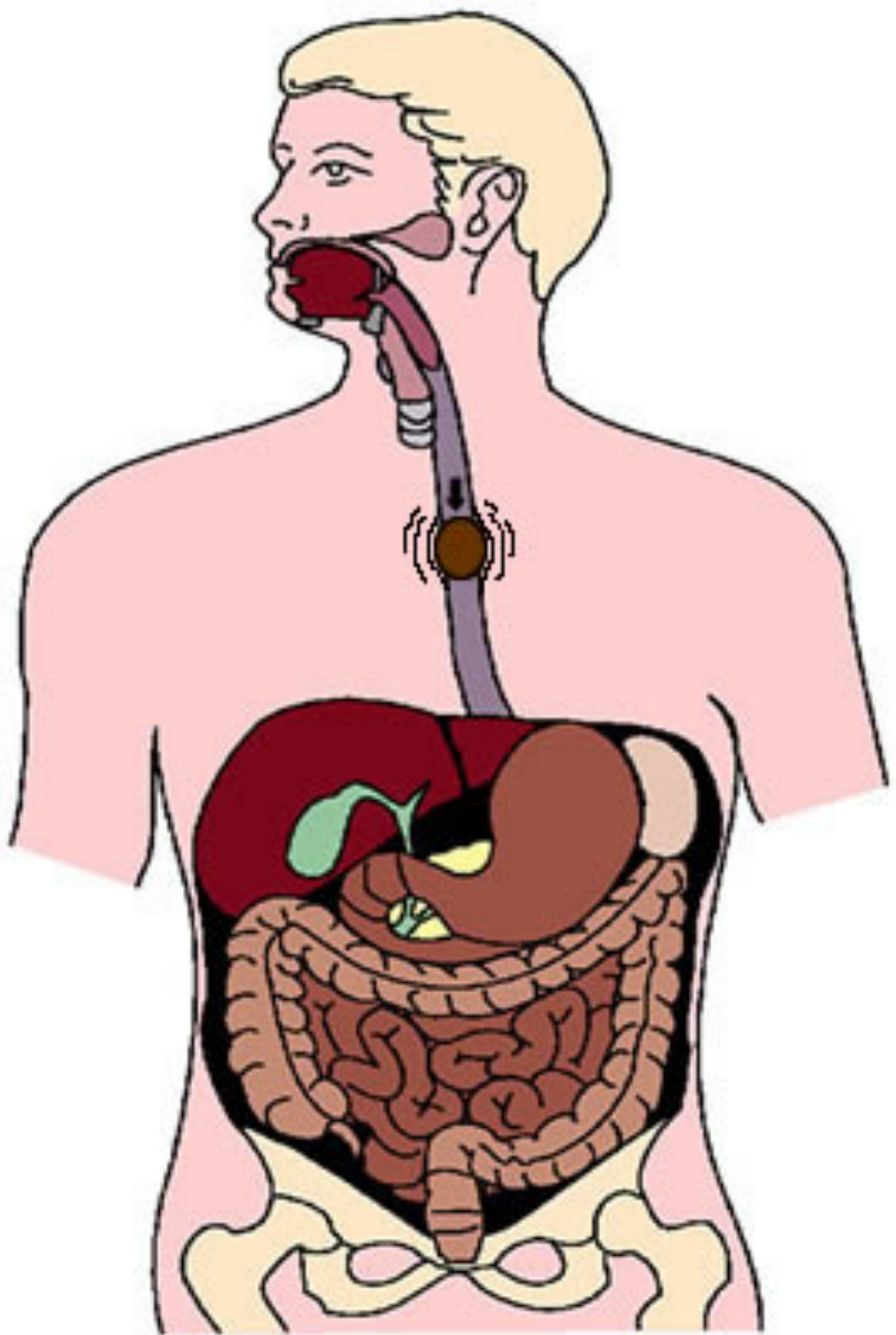
-**Stomata**: opening in the epidermis of leaves that regulate the passage of gases in and out of the plant, surrounded by **guard cells** which control the opening and closing of stomata.

-*Gases include O_2 , CO_2 , and H_2O vapor*

-**Homeostasis** needs to be maintained by plants due to photosynthesis.

-Plants adjust to times of day, presence of water, and the amount of nutrients available in the soil

#48-BODY SYSTEMS



DIGESTIVE SYSTEM

Purpose: to convert food particles into simpler macromolecules that can be absorbed into the bloodstream and used by the body

Peristalsis is often found in the contraction of smooth muscle tissue to propel food/chyme through a **digestive tract**

#44-PLANT TISSUES

ROOT AND SHOOT SYSTEMS

ORGANIC METAL PROPERTIES

I. Metal Contaminant

- **Uptake, Translocation, and Accumulation in Shoot**
- **What to Do with Plant Containing Contaminant**
 - Harvest the shoot and recover metal

metal contaminant



-Roots:

- anchor the plant
- absorb water and minerals from the soil
- store sugars produced by the plant

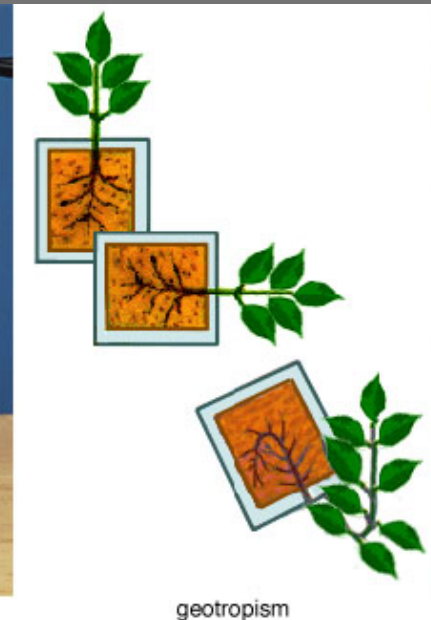
-Shoot:

- combination of stem, leaf and flower parts
- photosynthetic
- structural support for the plant
- allow for evaporation and growth of plant

#32-PLANT RESPONSES

TROPIC RESPONSES

- **Hormones** in plants regulate growth and development (auxins, cytokinins, ethylene, gibberellins)
- A **tropism** is a plant's response to an external stimulus.
- **Phototropism**-response to light
- **Gravitropism**-response to gravity
- **Thigmotropism**-response to touch



#10-FEEDBACK MECHANISMS

FEEDBACK LOOP

- Red blood cells are designed to pick up oxygen from the lungs and release it into the tissues of the body.
- A drop in oxygen levels in one's body **triggers** the release of erythropoietin.
- Erythropoietin is released from the kidneys and liver, and it triggers erythropoiesis to occur.
- A **negative feedback loop** controls erythropoiesis
- As oxygen levels return to normal, the kidneys (and liver) stop making erythropoietin.

