

Module 1

Introduction to the Human Body

Dr. Lisa Brinn

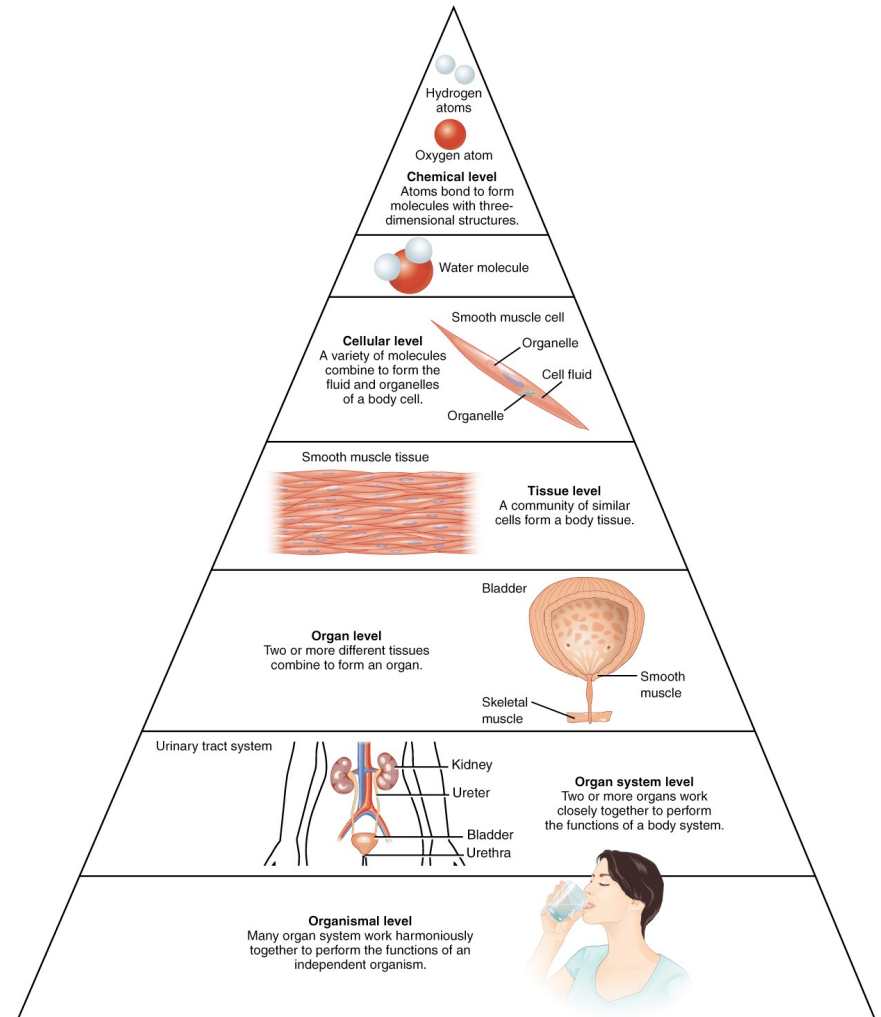
lbrinn@fiu.edu

Learning Outcomes

1. Define and differentiate anatomy and physiology
2. Levels of body organization
3. Life processes
4. Anatomical terminology and body planes
5. Body cavities and cavity membranes
6. Abdominopelvic regions and quadrants
7. Homeostasis

2. Levels of Body Organization

- Chemical level
- Cellular level
- Tissue level
- Organ level
- System level
- Organismal level

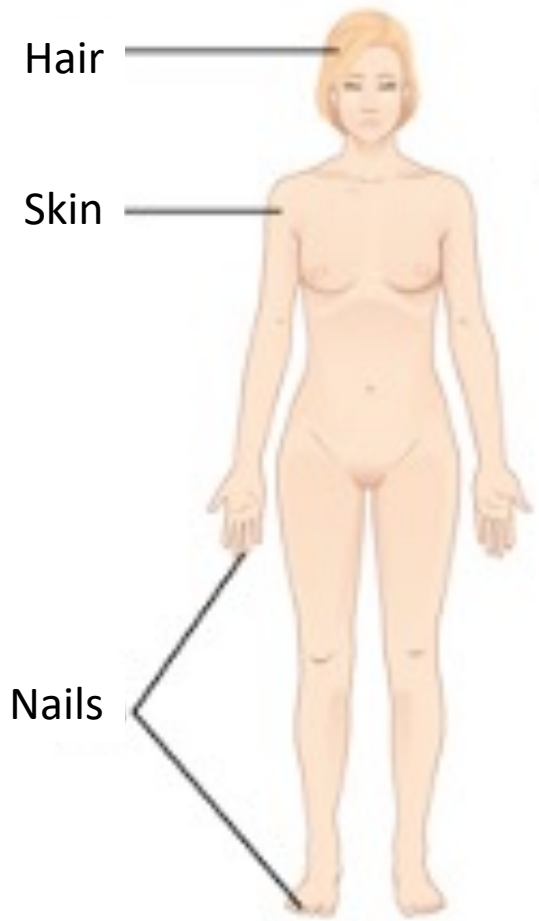


Organ Systems

Organs that work together are grouped together

- a. Integumentary
- b. Skeletal
- c. Muscular
- d. Cardiovascular
- e. Lymphatic and Immunity
- f. Nervous
- g. Endocrine
- h. Respiratory
- i. Digestive
- j. Urinary
- k. Reproductive

a. Integumentary System



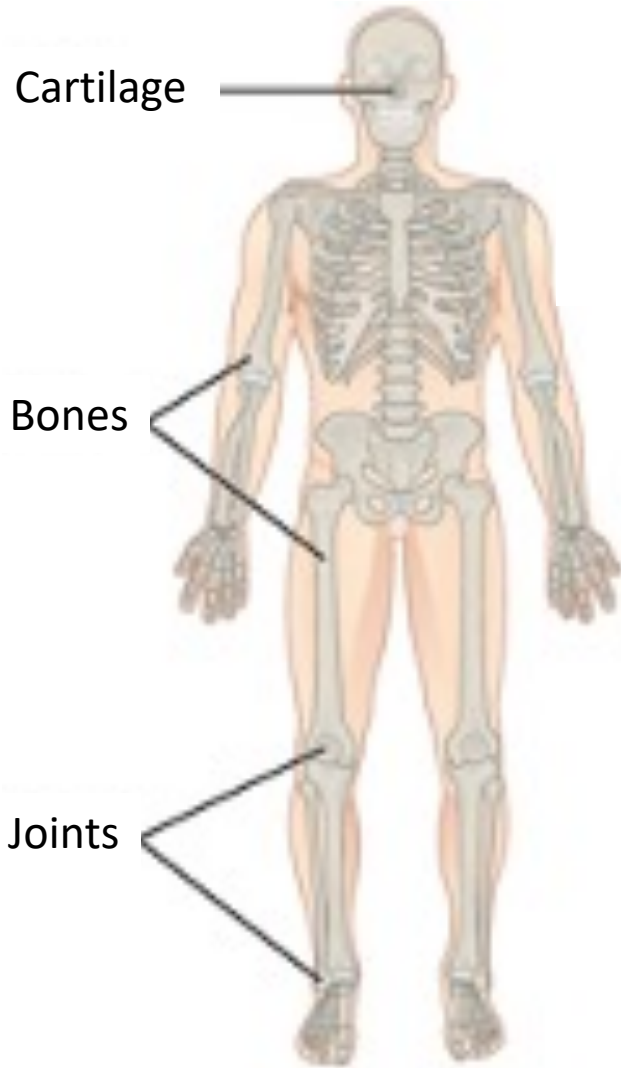
Components:

- Hair
- Skin
- Nails
- Sweat glands

Functions:

- Encloses internal body structures
- Site of many sensory receptors
- Provides protection
- Regulates temperature
- Prevents water loss
- Helps produce vitamin D

b. Skeletal System



Components:

- Bones
- Joints
- Associated cartilages

Functions:

- Supports and protects the body
- Provides a surface area for muscle attachment
- Aids body movements
- Houses cells that produce blood cells
- Stores minerals and lipids

c. Muscular System



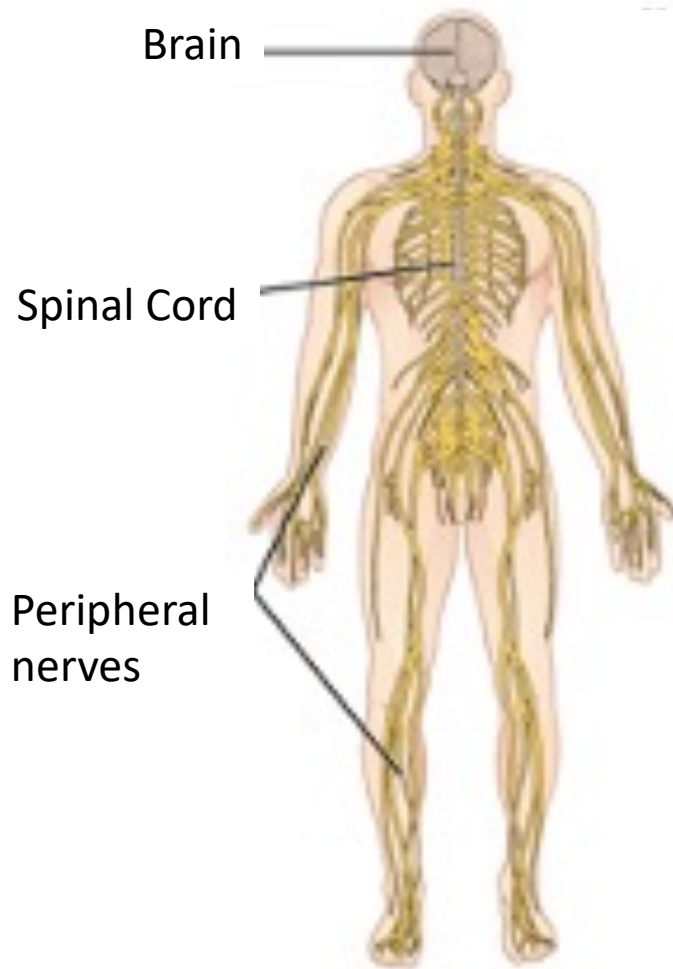
Components:

- Skeletal muscle tissue
- Tendons

Functions:

- Produces body movement
- Maintains posture
- Produces body heat

d. Nervous System



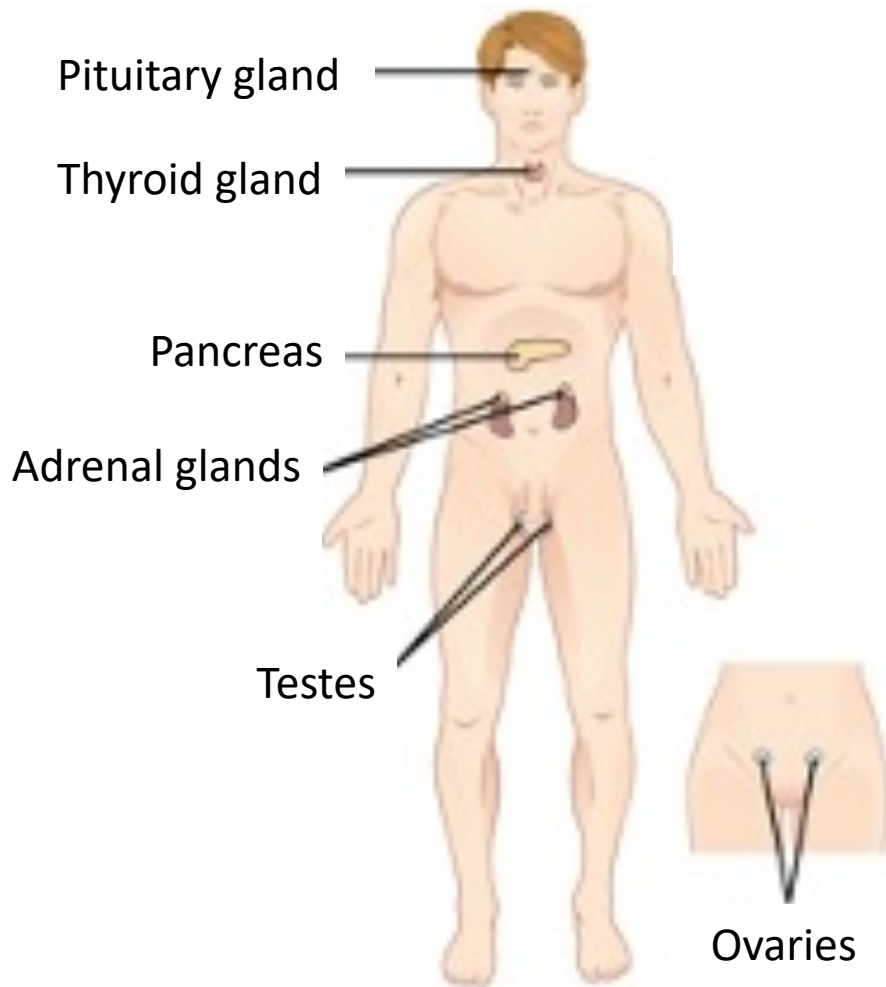
Components:

- Brain
- Spinal cord
- Spinal nerves
- Special senses organs
 - Eyes
 - Ears
 - Tongue
 - Olfactory

Functions:

- Detects sensations and generates action potentials
- Detects changes in body's internal and external environments, interprets the changes, and responds by causing:
 - Muscular contraction
 - Glandular secretion
- Intellectual functions

e. Endocrine System



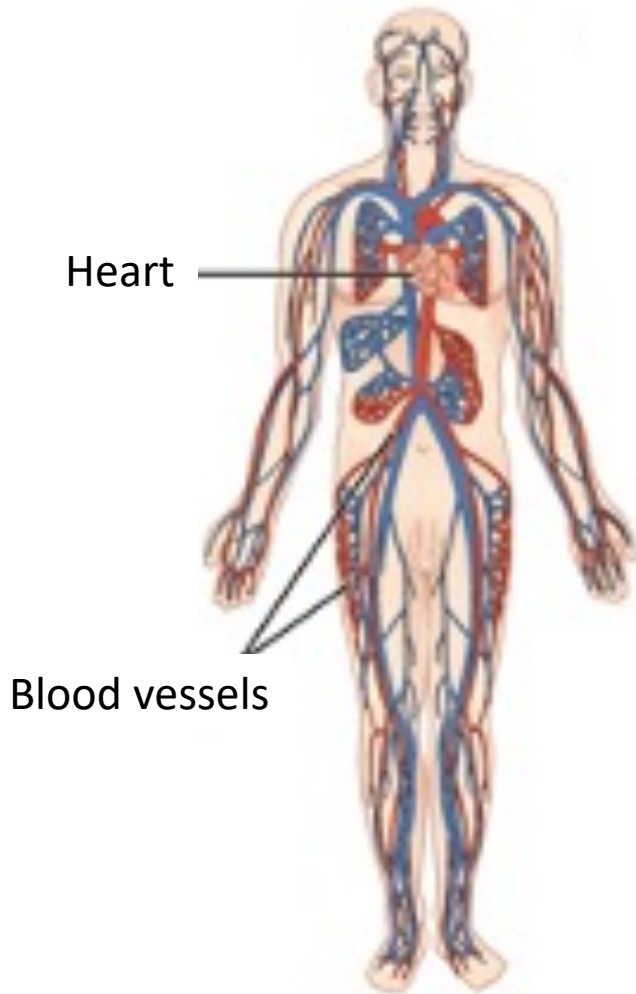
Components:

- Hormone-producing glands
 - Pineal gland
 - Hypothalamus
 - Pituitary gland
 - Thymus
 - Thyroid gland
 - Parathyroid glands
 - Adrenal glands
 - Pancreas
 - Gonads (ovaries and testes)

Functions:

- Regulates body activities by releasing hormones
 - Hormones are chemical messengers transported in blood from an endocrine gland or tissue to a target organ

f. Cardiovascular System



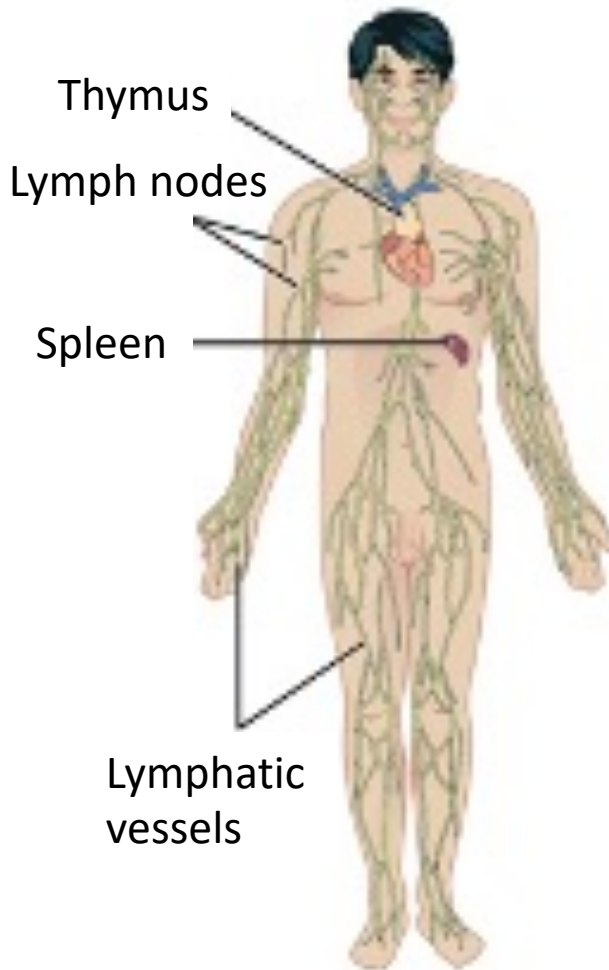
Components:

- Blood
- Heart
- Blood vessels

Functions:

- Transports nutrients, waste products, gases, and hormones throughout the body
- Plays role in immune response
- Regulates body temperature

g. Lymphatic System



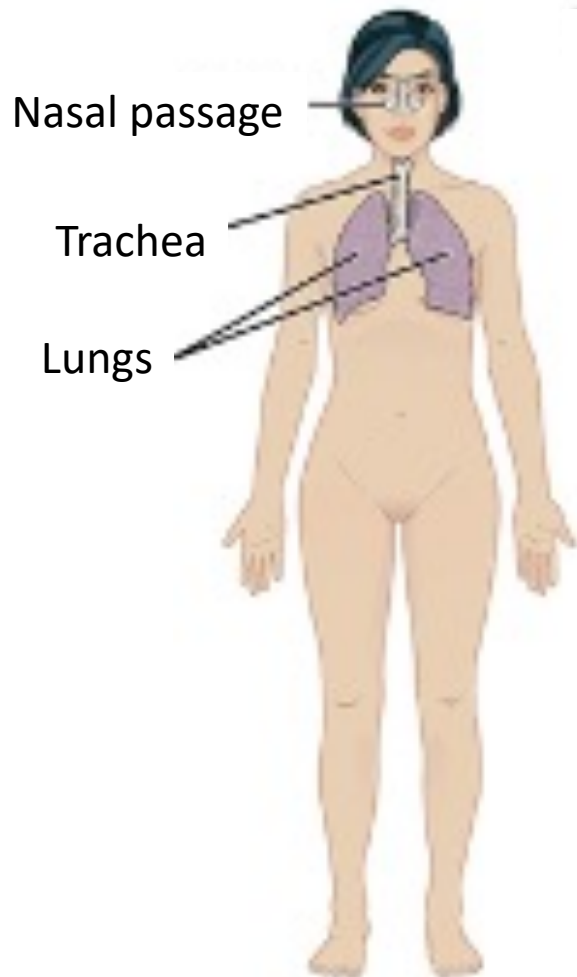
Components:

- Lymphatic fluid
- Lymphatic vessels
- Spleen
- Thymus
- Lymph nodes
- Tonsils
- Cells that carry out immune responses

Functions:

- Maintains tissue fluid balance
- Carries lipids from GI tract to blood
- Combats diseases
- Removes foreign substances from blood and lymph

h. Respiratory System



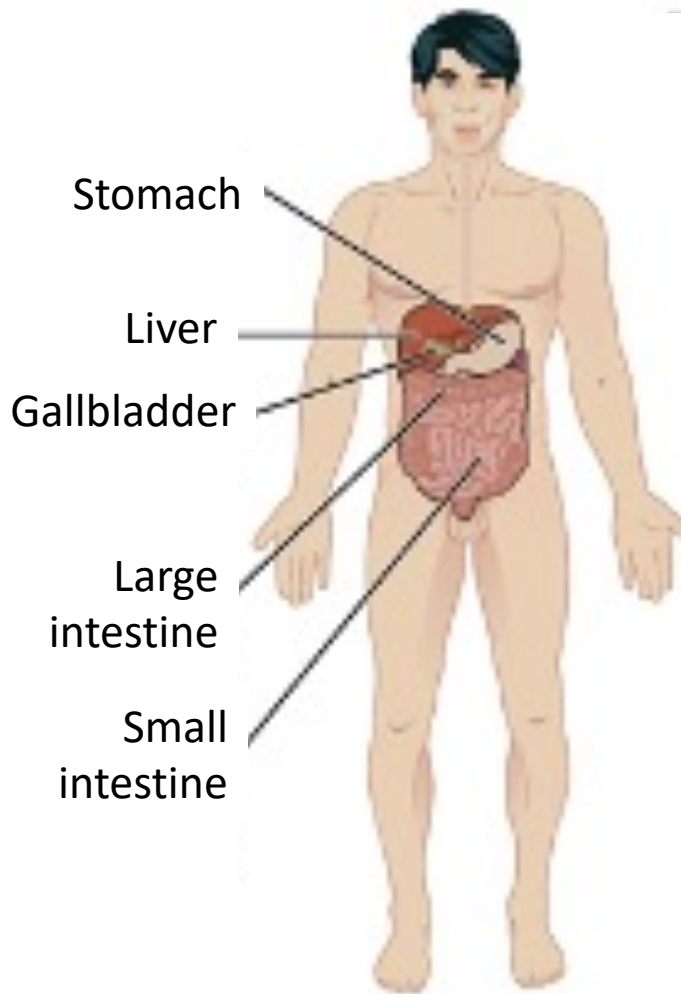
Components:

- Lungs
- Air passages
 - Pharynx
 - Trachea
 - Bronchial tubes

Functions:

- Transfers oxygen from inhaled air to blood and carbon dioxide from blood to exhaled air
- Helps regulate acid-base balance of body fluids
- Production of sound from air passage through glottis

i. Digestive System



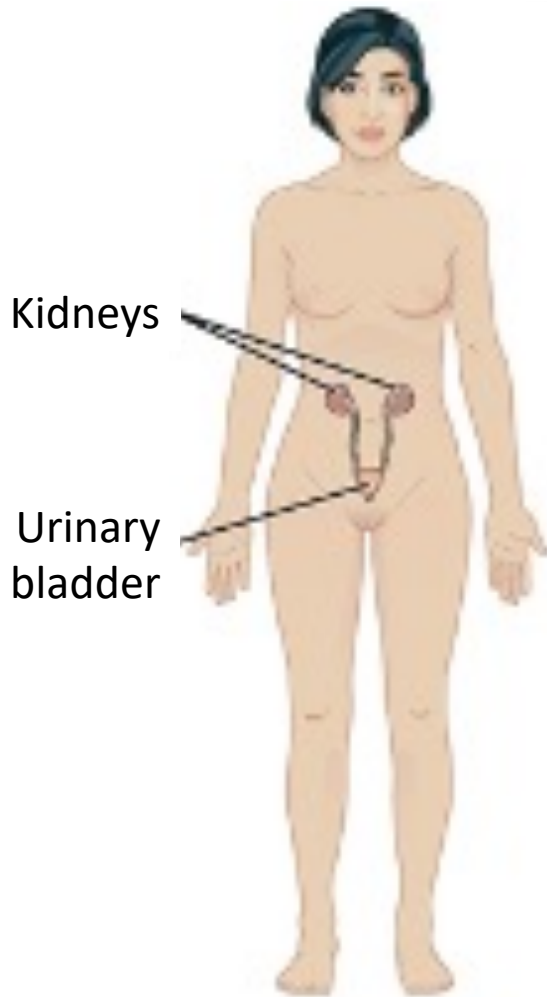
Components:

- Organs of gastrointestinal tract
 - Mouth
 - Pharynx
 - Esophagus
 - Stomach
 - Small intestine
 - Large intestine
 - Anus
- Accessory organs
 - Salivary glands
 - Liver
 - Gallbladder
 - Pancreas

Functions:

- Mechanical and chemical breakdown of food
- Absorbs nutrients
- Eliminates waste products

j. Urinary System



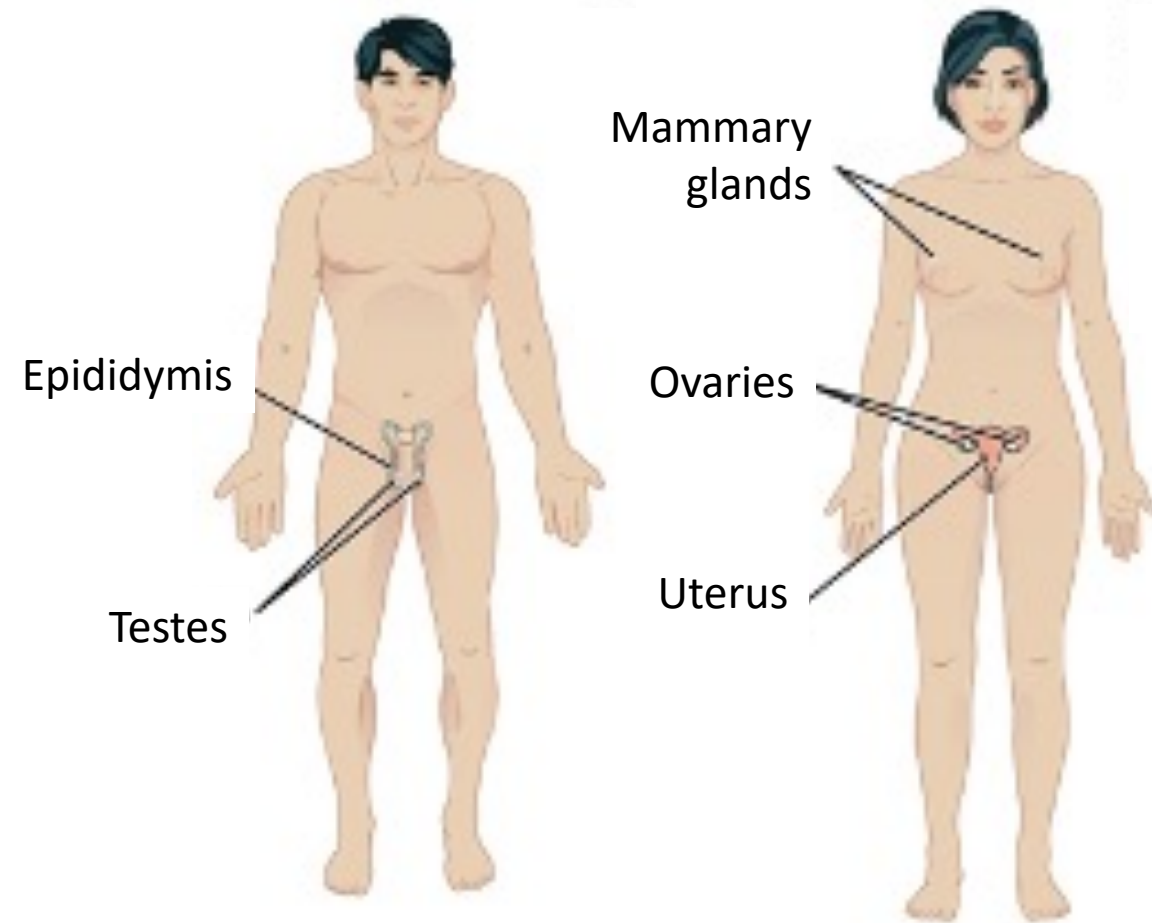
Components:

- Kidneys
- Ureters
- Urinary bladder
- Urethra

Functions:

- Produces, stores and eliminates urine
- Eliminates wastes and regulates volume and chemical composition of blood
- Helps maintain acid-base balance of body fluids
- Maintains body's mineral balance
- Helps regulate production of red blood cells

k. Reproductive Systems






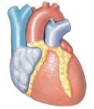



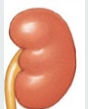



Components:

- Gonads (testes in males and ovaries in females)
- Associated organs
 - Males: epididymis, seminal vesicle, prostate, penis and ductus deferens
 - Females: uterine tubes, vagina, uterus

Functions:

- Gonads:
 - Produce gametes (sperm for males and oocytes for females) that unite to form a new organism
 - Release hormones that regulate reproduction and other body processes
- Associated organs – transport and store gametes
- Mammary glands produce milk

Organ System		Major Functions
	Integumentary	Protection from environmental hazards; temperature control
	Skeletal	Support, protection of soft tissues, mineral storage; blood formation
	Muscular	Locomotion, support, heat production
	Nervous	Directing immediate responses to stimuli, usually by coordinating the activities of other organ systems
	Endocrine	Directing long-term changes in the activities of other organ systems
	Cardiovascular	Internal transport of cells and dissolved materials, including nutrients, wastes and gases
	Lymphatic	Defense against infection and disease
	Respiratory	Delivery of air to sites where gas exchange can occur between the air and circulating blood
	Digestive	Processing of food and absorption of organic nutrients, minerals, vitamins and water
	Urinary	Elimination of excess water, salts, and waste products; control of pH
	Reproductive	Production of sex cells and hormones