

GENERAL BIOLOGY

Lec. 5

HUMAN ANATOMY

BY

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ANATOMY

Definition: anatome = (ana) up+ (tome) cutting

- **DISCIPLINES**
- Gross Anatomy: structures studied with the naked eye.
 - Systematic anatomy: organized by systems, e.g., digestive, nervous, endocrine, etc.
 - Regional anatomy: study of all structures in an area of the body, e.g., upper extremity bones, muscles, blood
- Microscopic anatomy (histology)

Cell biology

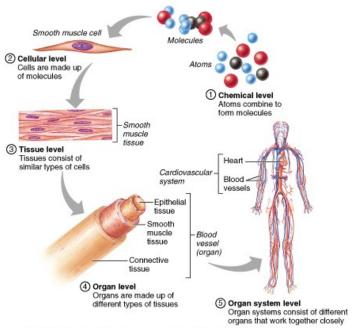
Developmental anatomy (embryology)

Pathological anatomy

- Radiologic anatomy (x-ray, CT, MRI)
- Other areas? (surgery)

Levels of Structural Organization

- Biochemical (atoms, molecules)
- Cellular
- Tissue
- Organ
- Organ system
- Organism

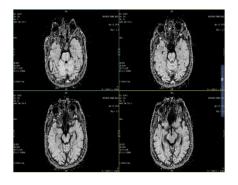


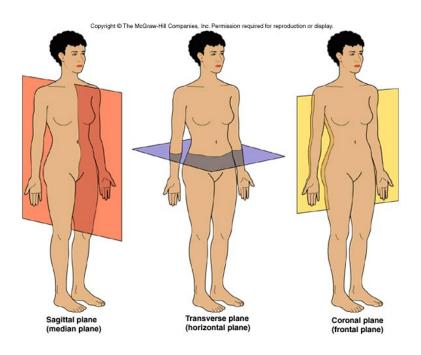
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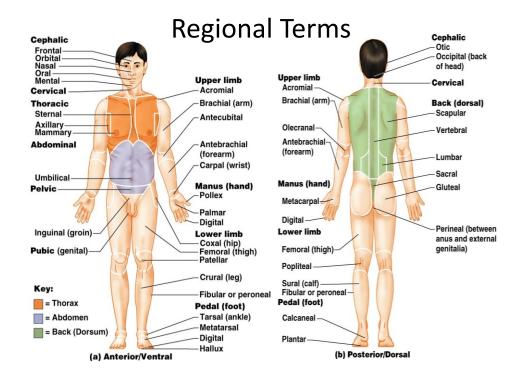
Medical Imaging Techniques

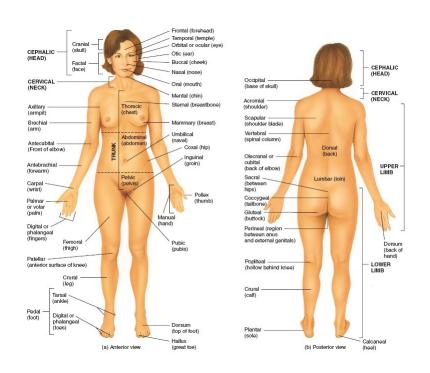
- X-rays
- CT Scan
- Ultrasound imaging
- MRI





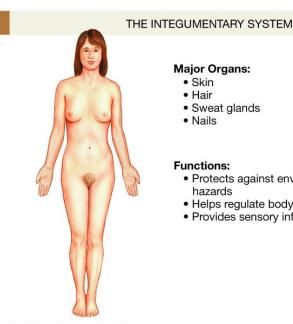






Systems Physiology

- Integumentary system
- Nervous system
- Skeletal system
- Endocrine system
- Muscular system
- Cardiovascular system
- Lymphatic system
- Urinary system
- · Respiratory system
- Digestive system
- Reproductive system





- Protects against environmental
- Helps regulate body temperature
- Provides sensory information

THE NERVOUS SYSTEM





- Major Organs:
 Brain
 Spinal cord
 Peripheral nerves
 - Sense organs

Functions:

- Directs immediate responses to stimuli
- · Coordinates or moderates activities of other organ systems
- Provides and interprets sensory information about external conditions

THE SKELETAL SYSTEM



Major Organs:

- Bones
- Cartilages
- Associated ligaments
- Bone marrow

- Provides support and protection for other tissues
- · Stores calcium and other minerals
- · Forms blood cells

THE ENDOCRINE SYSTEM





Major Organs:

- Pituitary gland
- Thyroid gland
- Pancreas
- Adrenal glands
- Gonads (testes and ovaries)
- Endocrine tissues in other systems

Functions:

- Directs long-term changes in the activities of other organ systems
- Adjusts metabolic activity and energy use by the body
 Controls many structural and
- Controls many structural and functional changes during development



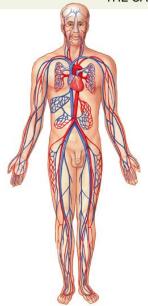
THE MUSCULAR SYSTEM

Major Organs:

 Skeletal muscles and associated tendons and aponeuroses (tendinous sheets)

- Provides movement
- Provides protection and support for other tissues
- Generates heat that maintains body temperature

THE CARDIOVASCULAR SYSTEM



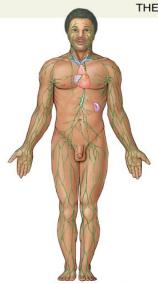


Major Organs:

- Heart
- Blood
- Blood vessels

Functions:

- · Distributes blood cells, water, and dissolved materials, including nutrients, waste products, oxygen, and carbon dioxide
- Distributes heat and assists in control of body temperature



THE LYMPHATIC SYSTEM

Major Organs:

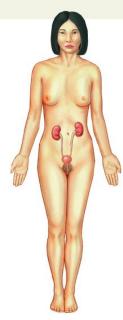
- Spleen
- ThymusLymphatic vesselsLymph nodes
- Tonsils

Functions:

- · Defends against infection and disease
- · Returns tissue fluids to the bloodstream

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THE URINARY SYSTEM





Major Organs:

- Kidneys
- Ureters
- Urinary bladder
- Urethra

Functions:

- Excretes waste products from the blood
- Controls water balance by regulating volume of urine produced
- Stores urine prior to voluntary elimination
- Regulates blood ion concentrations and pH

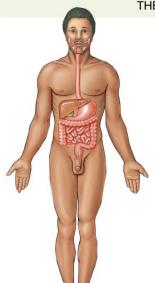




Major Organs:

- Nasal cavities
- Sinuses
- Larynx
- Trachea
- Bronchi
- Lungs
- Alveoli

- Delivers air to alveoli (sites in lungs where gas exchange occurs)
- Provides oxygen to bloodstream
- Removes carbon dioxide from bloodstream
- Produces sounds for communication



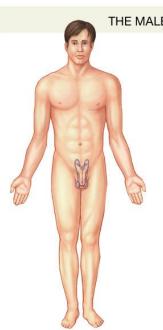
THE DIGESTIVE SYSTEM

Major Organs:

- Teeth
- Tongue
- Pharynx
- Esophagus
- Stomach
- Small intestine
- Large intestine
- Liver
- Gallbladder
- Pancreas

Functions:

- Processes and digests food
- Absorbs and conserves water
- Absorbs nutrients (ions, water, and the breakdown products of dietary sugars, proteins, and fats)
- Stores energy reserves



THE MALE REPRODUCTIVE SYSTEM

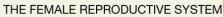
Major Organs:

- Testes
- Epididymis
- Ductus deferens
- Seminal vesicles
- Prostate gland
- Penis
- Scrotum

Functions:

 Produces male sex cells (sperm) and hormones







Major Organs:

- Ovaries
- Uterine tubes
- Uterus
- VaginaLabia
- Clitoris
- Mammary glands

- Produces female sex cells
- (oocytes) and hormones
 Supports developing embryo from conception to delivery
 Provides milk to nourish
- newborn infant

