

**PowerPoint Presentation to Accompany**

*Fundamentals of*  
**& ANATOMY**  
**& PHYSIOLOGY**  
*Second Edition*



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# Chapter 1

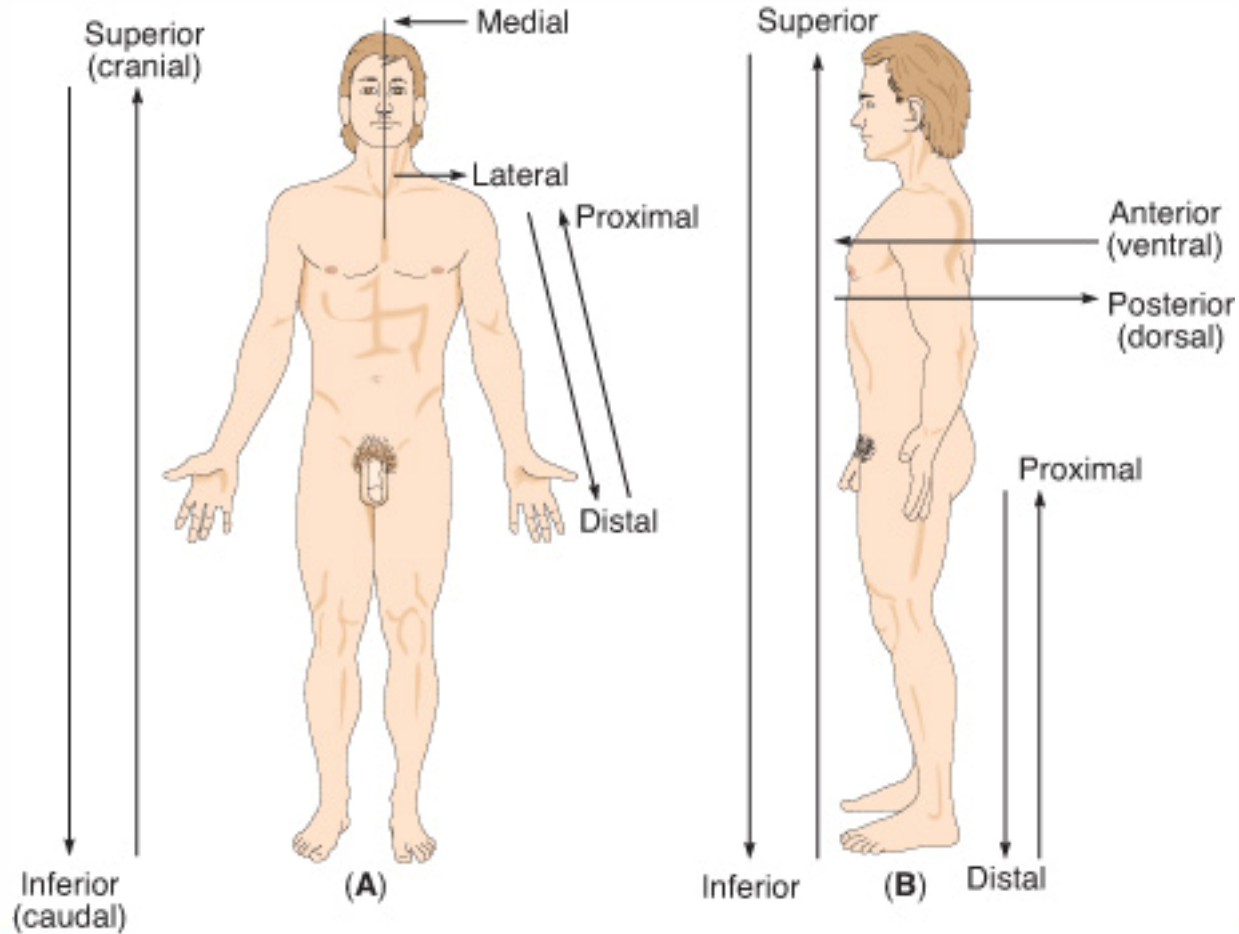
## The Human Body

# Introduction

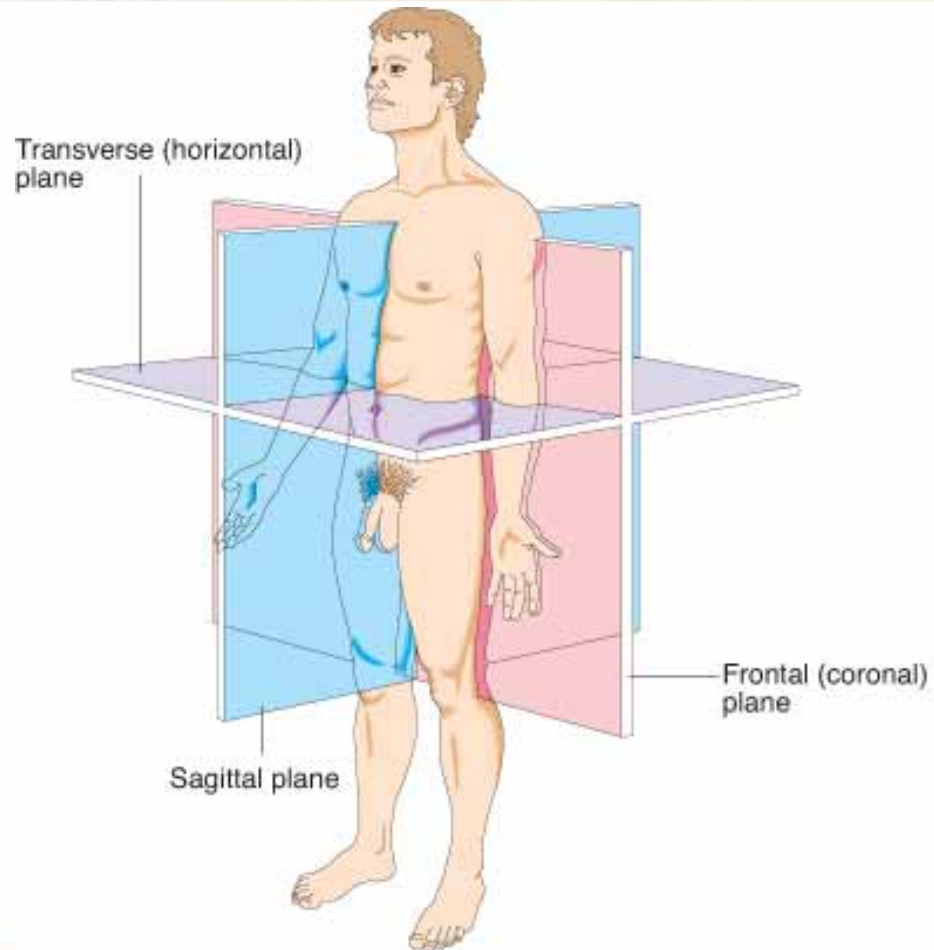
- Anatomy - the study of the structure of the body
- Physiology - the study of the function of the body parts
- Basic reference systems
  - directions, planes, cavities, structural units



# Terms of Direction



# Planes



# Cavities

- Dorsal
  - cranial, spinal
- Ventral
  - thoracic, abdominopelvic

# Structural Units

# Cells

- Smallest units of life
- Perform all activities necessary to maintain life
  - metabolism, assimilation, digestion, excretion, reproduction



# Tissues

- Made up of different types of cells
- Epithelial - covers and protects
- Connective - binds and supports other tissues
- Muscle - movement
- Nervous - connects sensory structures to motor structures

# Organs

- Cells integrated into tissues
- Serve a common function
- Examples
  - liver
  - stomach

# Systems

A group of organs that perform a common function

# Integumentary

- Organs
  - skin, hair, nails, sweat, sebaceous glands
- Functions
  - protection, insulation, regulation of water and temperature

# Skeletal

- Organs
  - Bones, cartilage
- Functions
  - Movement, blood production, fat storage, protection



# Muscular

- Organs
  - skeletal muscle, smooth muscle, cardiac muscle
- Function
  - movement

# Nervous

- Organs
  - brain, spinal cord, cranial and spinal nerves
- Function
  - control and regulation

# Endocrine

- Organs
  - endocrine glands and their hormones
- Function
  - works with nervous system to regulate chemical aspects of the body

# Cardiovascular

- Organs
  - heart, arteries, veins, capillaries
- Function
  - transport substances to and from cells

# Lymphatic/Immune

- Organs
  - lymph nodes, lymphatic vessels, thymus gland, spleen
- Functions
  - drains tissues of excess fluids, transports fats, develops immunities



# Respiratory

- Organs
  - nose, pharynx, larynx, trachea, bronchi, lungs
- Function
  - $O_2 > CO_2$  exchange in the blood

# Digestive

- Organs
  - alimentary canal - mouth, esophagus, stomach, small and large intestines, rectum and anus
  - associated glands - salivary, liver, pancreas

# Digestive

- Functions
  - converting food into simple substances used by cells
  - eliminating indigestible wastes

# Urinary

- Organs
  - kidneys, ureters, bladder, urethra
- Functions
  - chemical regulation of blood
  - formation and elimination of urine
  - maintenance of homeostasis

# Reproductive

- Organs
  - women - ovaries, uterine tubes, uterus, vagina
  - men - testes, seminal vesicles, prostate gland, penis, urethra
- Functions
  - maintains sexual characteristics and perpetuates the species



# Homeostasis

- Maintenance of the body's internal environment
- Negative feedback loop
- Examples
  - blood sugar levels
  - body temperature