

Chapter 2

The Human Body in
Health and Disease

Anatomic Reference Systems

► Describe the location and functions of body parts using:

- Body planes

- Body directions

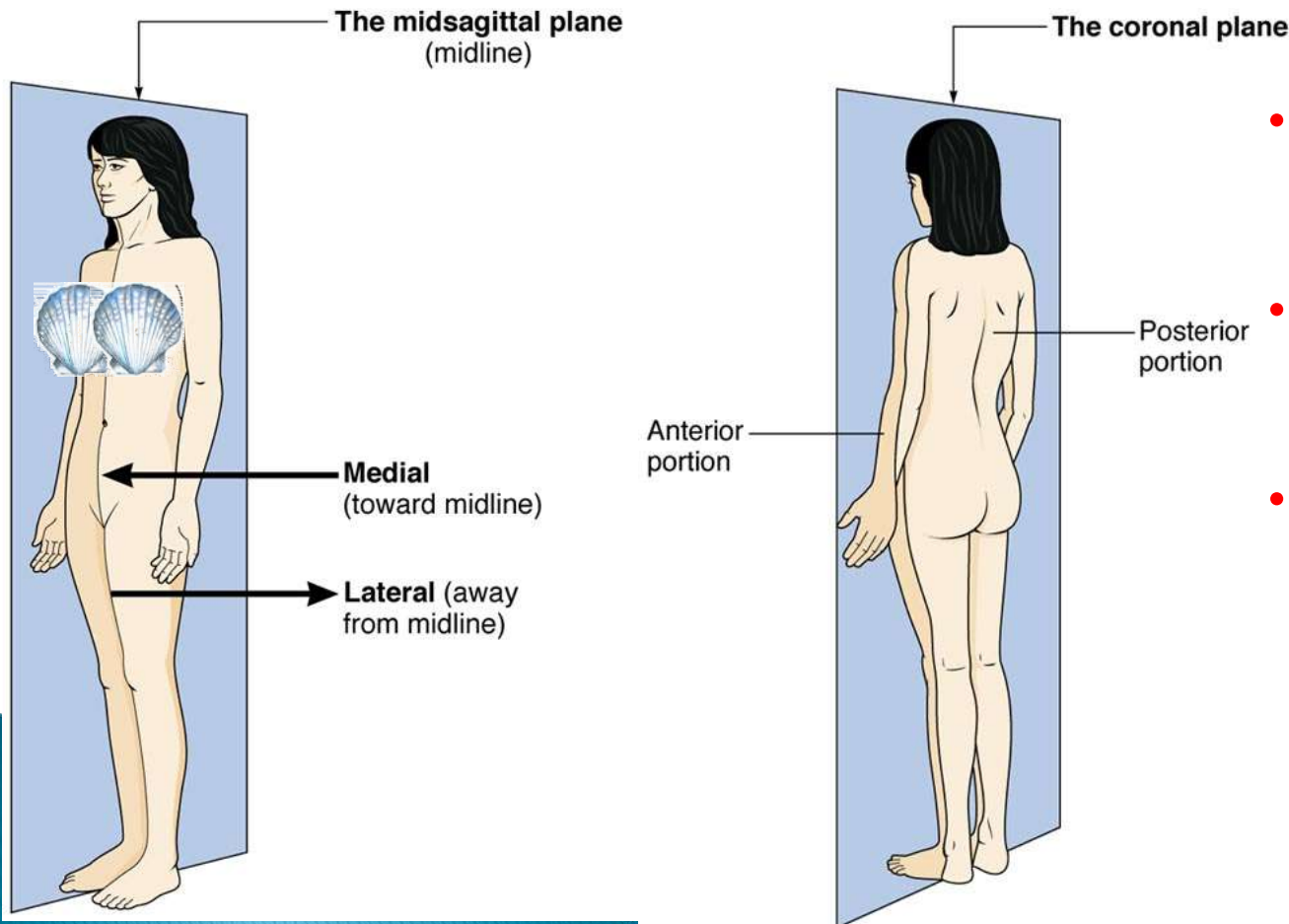
- Body cavities

- Structural units

- **Anatomy** is the study of the structures of the body
- **Physiology** is the study of the functions of these structures
- Descriptions of the body are based on the **anatomic position** – standing up, facing forward, arms at sides and palms forward.

Body Planes

► Ventral Planes – an up and down line

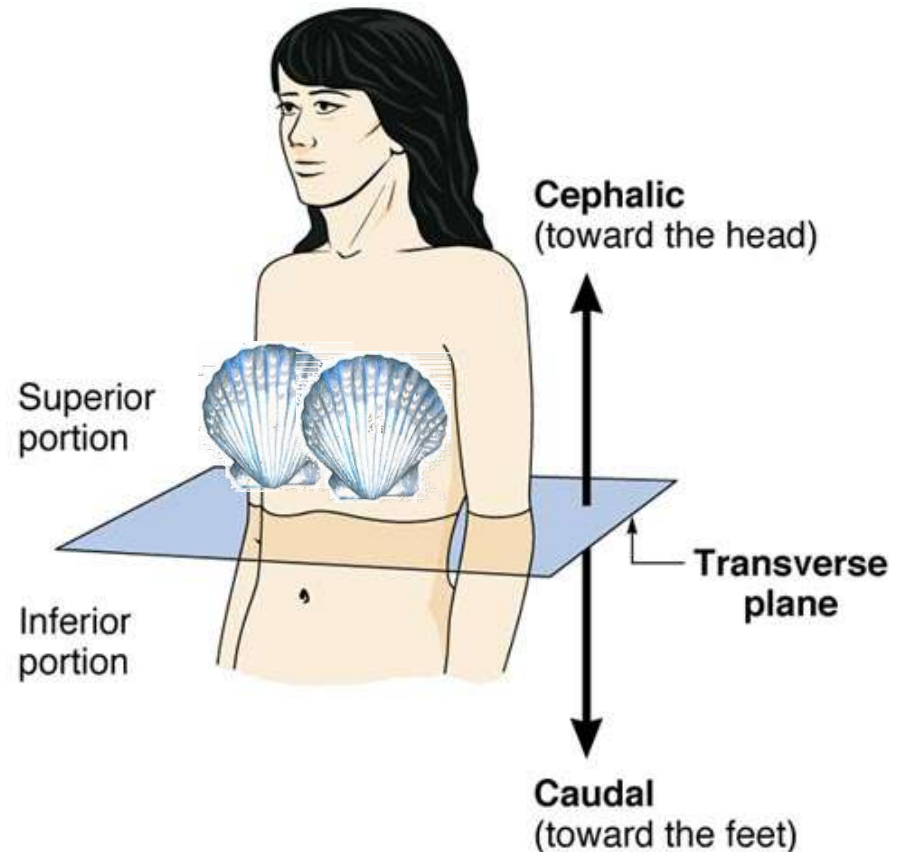


- **Midsagittal** – cuts body into equal left and right sides
- **Sagittal** – cuts but into unequal left and right sides
- **Coronal/Frontal** – cuts body into front and back sides

Body Planes

- ▶ Horizontal Planes – a flat crosswise line like the horizon

Transverse plane – also known as a horizontal plane, cuts the body into top and bottom halves (does not have to be equal)

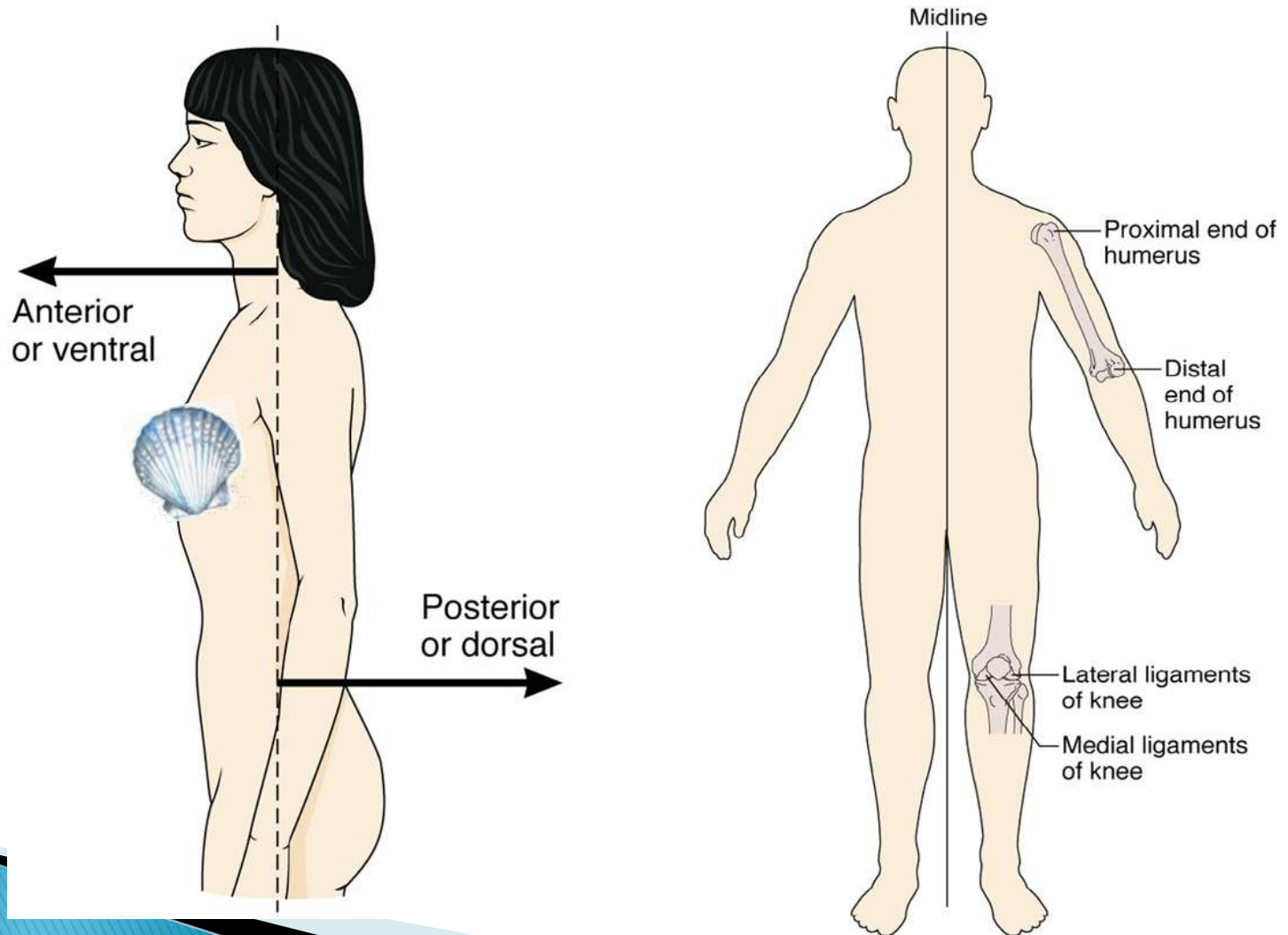


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Body Directions

| Body Directions | |
|---|---|
| Ventral refers to the front (or belly) side of the body or organ. | Dorsal refers to the back of the body or organ. |
| Anterior means situated in the front. Also means forward part of organ. | Posterior means situated in the back. Also means the back part of the organ. |
| Superior means uppermost, above or toward head. | Inferior means lowermost, below or towards the feet. |
| Cephalic means towards the head. | Caudal means towards the lower part of the body. |
| Proximal means situated nearest the midline or beginning of a structure. | Distal means situated farthest from the midline or beginning of a structure. |
| Medial means the direction toward or nearer the midline. | Lateral means the direction toward or nearer the side, away from midline. |

Body Directions



Major Body Cavities

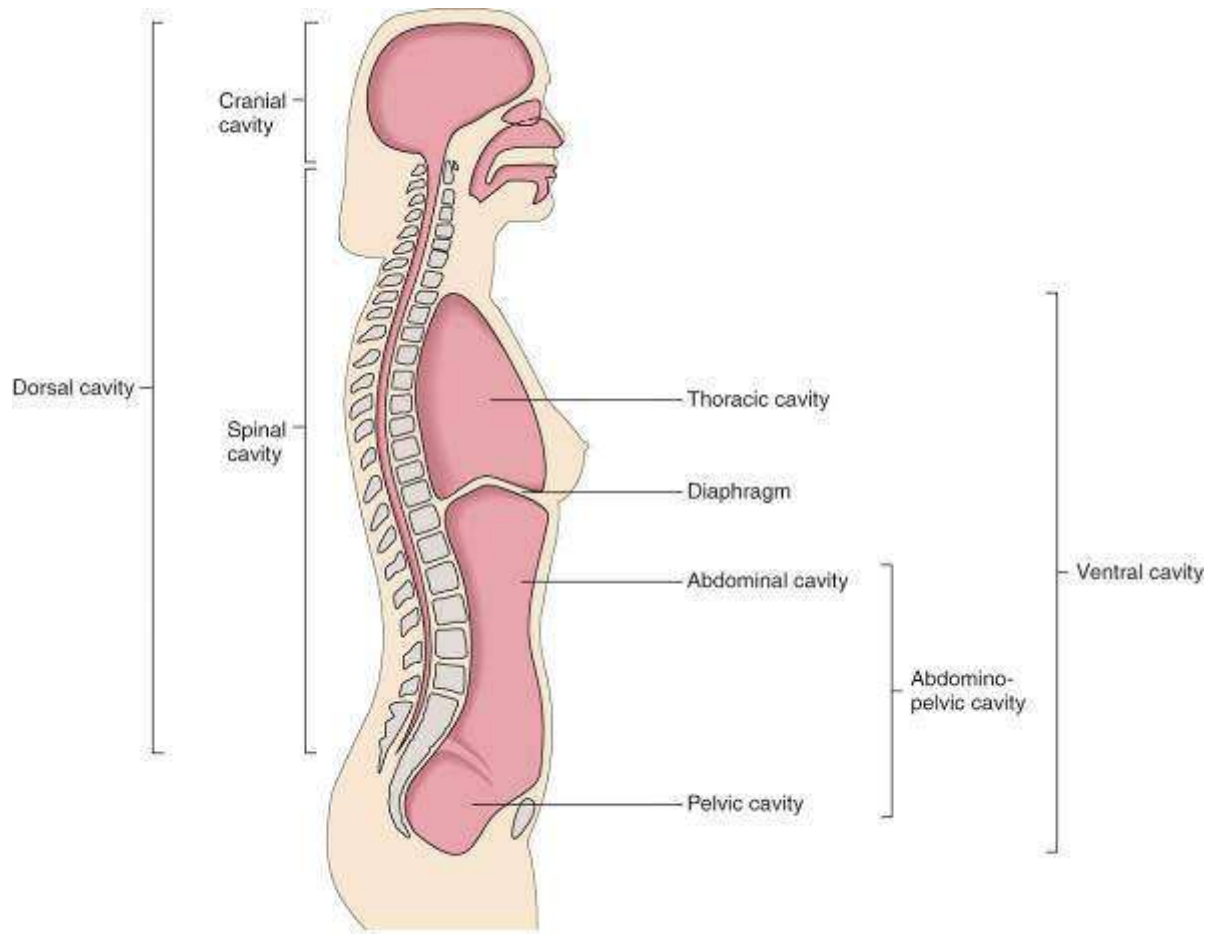
► Dorsal Cavity

- Cranial Cavity is located within the **skull**
- Spinal Cavity is located within the **spinal column**

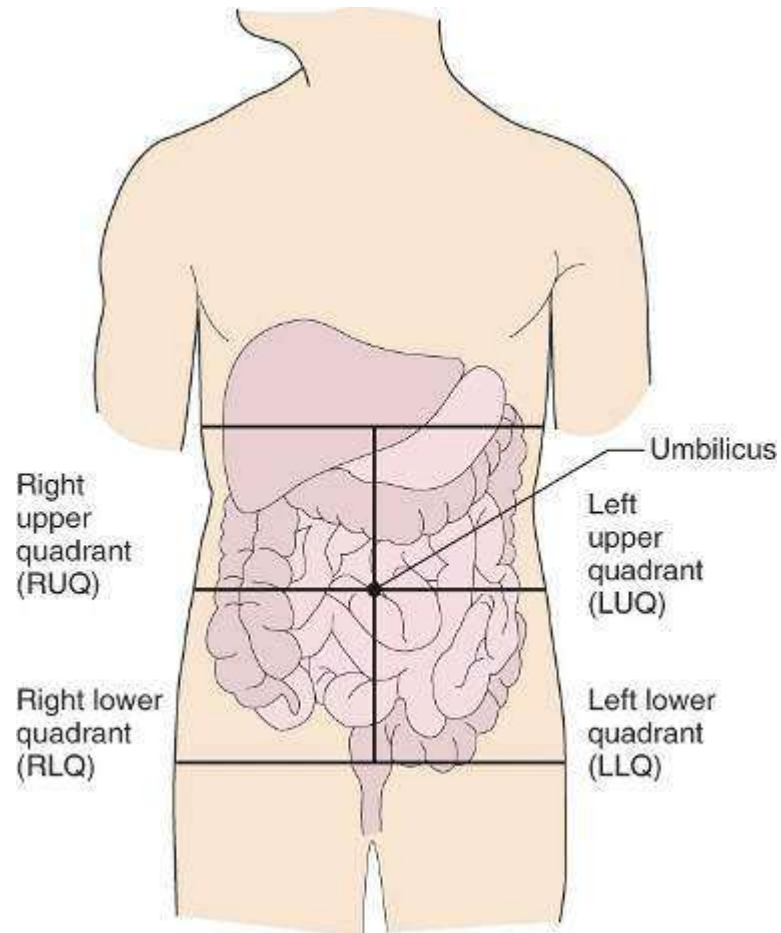
► Ventral Cavity has 3 parts and contains many of the organs that maintain **homeostasis** (constant internal environment)

- Thoracic Cavity or chest cavity
- Abdominal Cavity or abdomen
- Pelvic Cavity is the space formed by the **pelvic bones**.

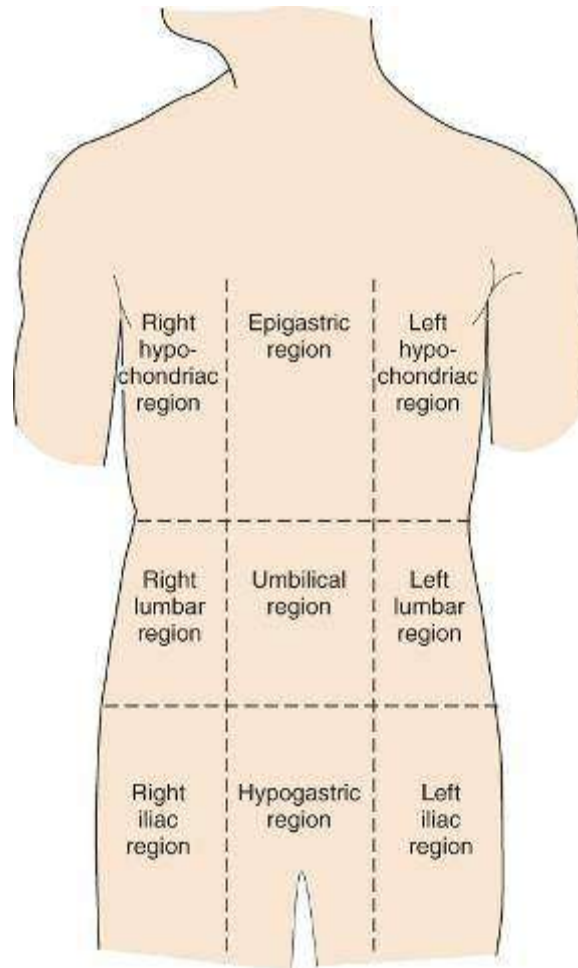
Major Body Cavities



Quadrants of the Abdomen



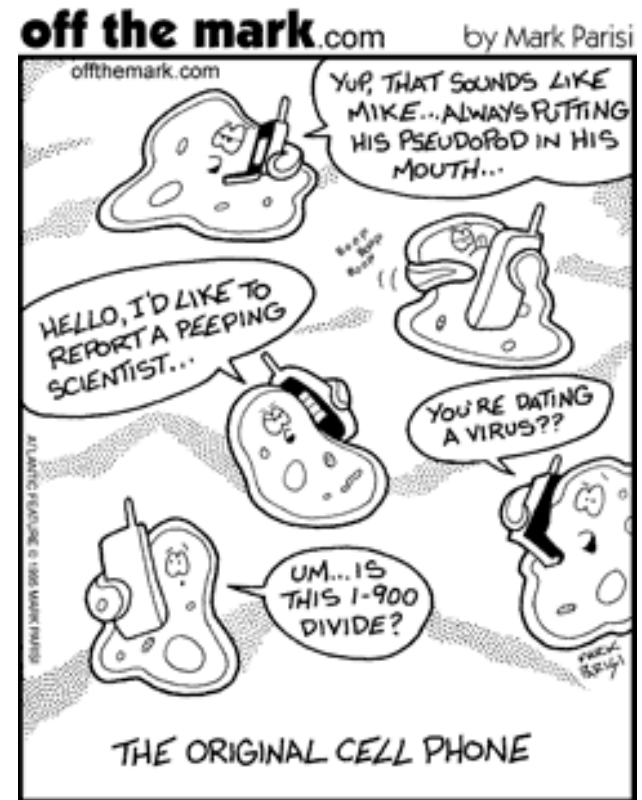
Regions of the Abdomen



Cytology

► The study of the formation, structure, and function of cells, including:

- Chromosomes – 23 pairs
- DNA – 2 long, coiled molecules make up chromosomes. Contain (functional units of heredity).
- Genetics is the study of how genes are from parents to child.



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Histology

- ▶ The study of tissues, which are composed of cells that join together to perform specific functions, including:
 - **Epithelial** Tissues - protective covering for all internal and external surfaces of the body.
 - **Connective** Tissues – support and connect organs and other body tissues
 - **Muscle** Tissue – contains cell material with the specialized ability to contract and relax
 - **Nerve** Tissue – contains cells with the specialized ability to react to stimuli and conduct electrical impulses.

Glands

- ▶ Specialized cells that secrete material used elsewhere in the body, including:
 - **Exocrine** Glands secrete their substances into ducts (sweat)
 - **Endocrine** Glands do not have ducts, they flow directly into the bloodstream.

Organ and Body Systems

► Body parts are organized into systems according to function

► Examples:

- Skeletal System
- Muscular System
- Cardiovascular System

