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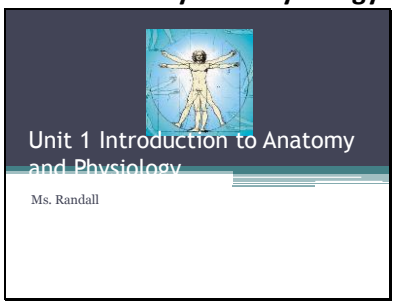

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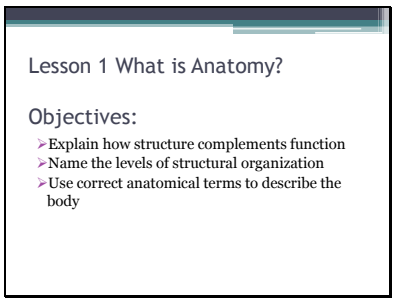

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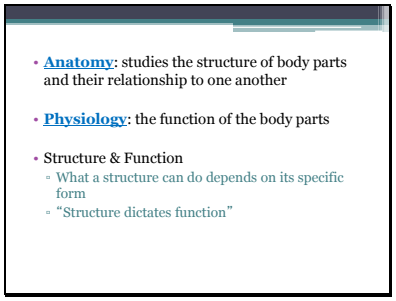

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Subdivisions of Anatomy

- Gross or Macroscopic
  - parts visible to naked eye
  - eg. regional, surface, systemic
- Microscopic
  - **Cytology**: study of cells
  - **Histology**: study of tissues
- Developmental
  - eg. embryology – study changes that occur before birth

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Physiology

- Focuses on events at cellular or molecular level
- Chemical & physical principles

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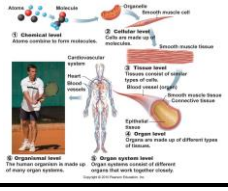
Levels of Structural Organization

- chemical → cellular → tissue → organ → organ system → organism



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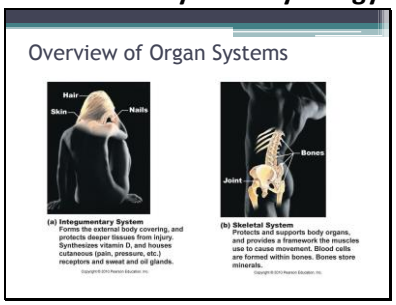

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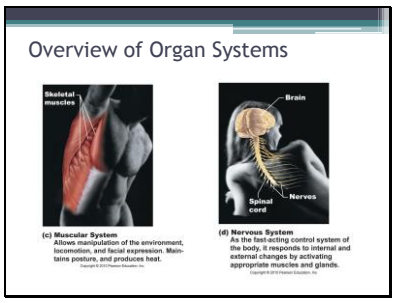

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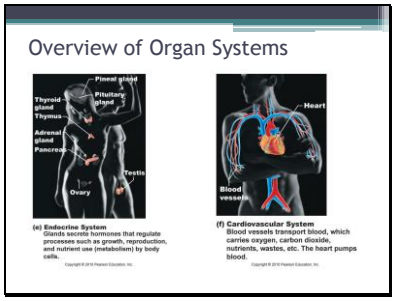

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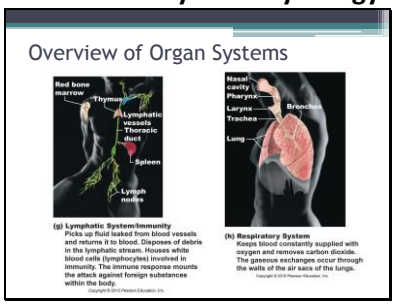

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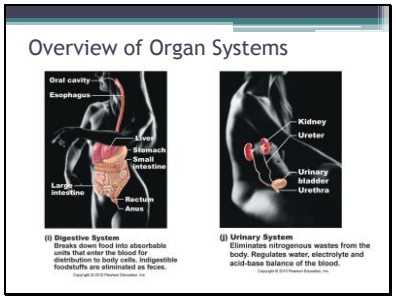

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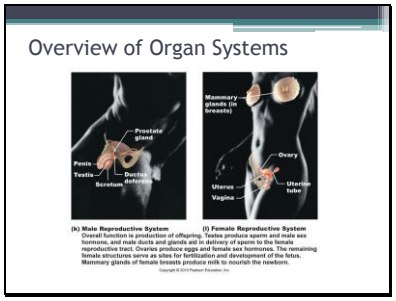

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Lesson 2 Homeostasis

Objectives:

- List the functions necessary for life
- List the survival needs of the body
- Define homeostasis and explain its significance

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Necessary Life Functions for Humans

1. Maintaining boundaries (inside vs. outside)
2. Movement (internal & external)
3. Responsiveness: sense changes and respond
4. Digestion: break down foods for absorption
5. Metabolism: all chemical reactions in body
6. Excretion: remove wastes
7. Reproduction: cell division, whole organism
8. Growth: increase in size/part

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Survival Needs

- Nutrients
- Oxygen
- Water
- Normal Body Temperature (98.6°F or 37°C)
- Atmospheric Pressure

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Homeostasis

- Maintain relatively stable internal conditions
- Receptor (input) → control center → effector (response)
- Negative (-) feedback: reduces effect of stimulus
  - Eg. body temp, breathing rate, blood sugar levels
- Positive (+) feedback: increases response
  - Eg. labor contractions, blood clotting
- Diseases = homeostatic imbalance

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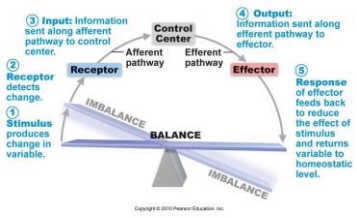

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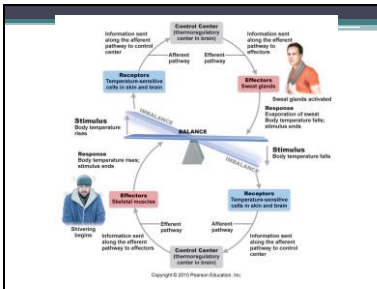

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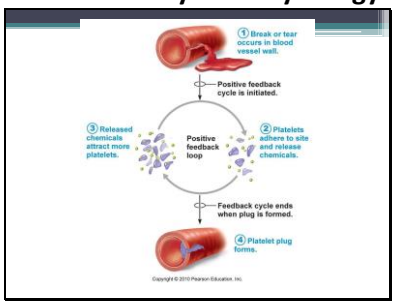

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Lesson 3 The Language of Anatomy?

Objectives:

- Use correct anatomical terms to describe the body

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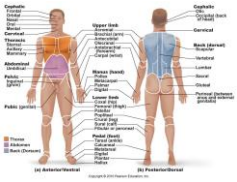
Anatomical Position

- Body erect, feet slightly apart, palm face forward, thumbs pointing out



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Terms you need to know:

- Superior (cranial)
- Inferior (caudal)
- Ventral (anterior)
- Dorsal (posterior)
- Medial
- Lateral
- Intermediate
- Proximal
- Distal
- Superficial (external)
- Deep (internal)
- Axial
- Appendicular
- Saggital plane
  - Midsaggital/median
  - Parasaggital
- Frontal (coronal) plane
- Transverse (horizontal) plane
- Oblique section

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Directional Terms

TABLE 1.1 Orientation and Directional Terms

TERM	DEFINITION	EXAMPLE	
Superior (cranial)	Toward the head end or upper part of a structure or the body; above		The head is superior to the abdomen.
Inferior (caudal)	Away from the head end or toward the lower part of a structure or the body; below		The navel is inferior to the chin.
Ventral (anterior)*	Toward or at the front of the body; in front of		The breastbone is anterior to the spine.
Dorsal (posterior)*	Toward or at the back of the body; behind		The heart is posterior to the breastbone.

*The terms ventral and anterior are synonymous in humans, but this is not the case in four-legged animals. Anterior refers to the leading portion of the body (abdominal surface in humans, head in a cat), but ventral specifically refers to the "belly" of a vertebrate animal, so it is the inferior surface of four-legged animals. Likewise, although the dorsal and posterior surfaces are the same in humans, the term dorsal specifically refers to an animal's back. Thus, the dorsal surface of four-legged animals is their superior surface.

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Directional Terms

TABLE 1.1 Orientation and Directional Terms (continued)

TERM	DEFINITION	EXAMPLE	
Medial	Toward or at the midline of the body; on the inner side of		The heart is medial to the arm.
Lateral	Away from the midline of the body; on the outer side of		The arms are lateral to the chest.
Intermediate	Between a more medial and a more lateral structure		The collarbone is intermediate between the breastbone and shoulder.

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Directional Terms

TABLE 1.1 Orientation and Directional Terms (continued)

TERM	DEFINITION	EXAMPLE
Proximal	Closer to the origin of the body part or the point of attachment of a limb to the body trunk	The elbow is proximal to the wrist.
Distal	Farther from the origin of a body part or the point of attachment of a limb to the body trunk	The knee is distal to the thigh.
Superficial (external)	Toward or at the body surface	The skin is superficial to the skeletal muscles.
Deep (internal)	Away from the body surface; more internal	The lungs are deep to the skin.

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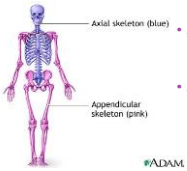
Regional Terms



- **Axial**: main part of body = head, neck, & trunk
- **Appendicular**: limbs attached to axis

ADAM.

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The body can be cut (sectioned) along flat surfaces called planes

- Sagittal plane: divides into right/left
  - Median or midsagittal (exactly down middle)
  - Parasaggital
- Frontal/coronal plane: divides into anterior/posterior
- Transverse/horizontal plane: divides into superior/inferior
- Oblique: diagonal cuts between horizontal & vertical

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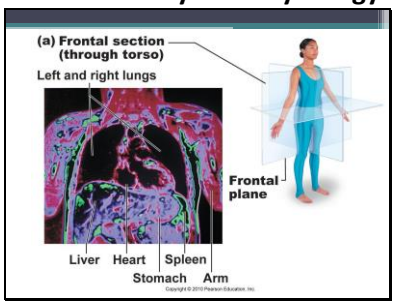

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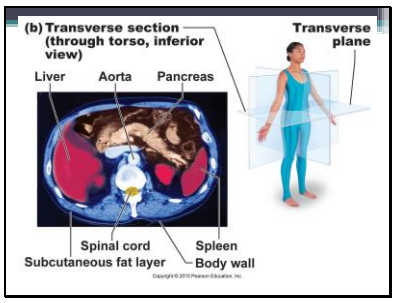

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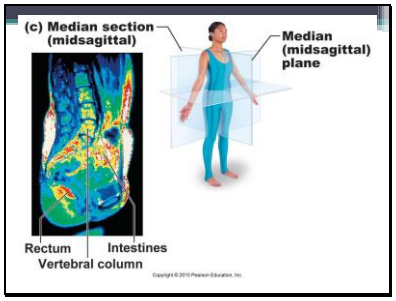

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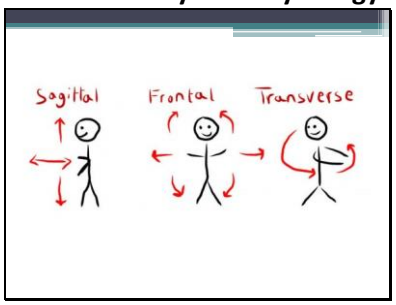

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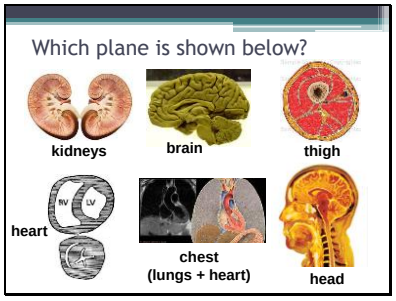

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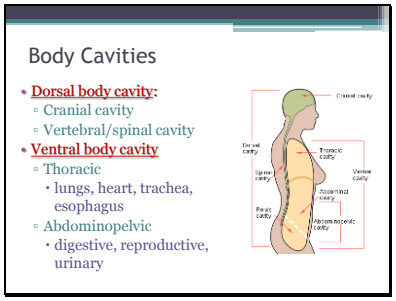

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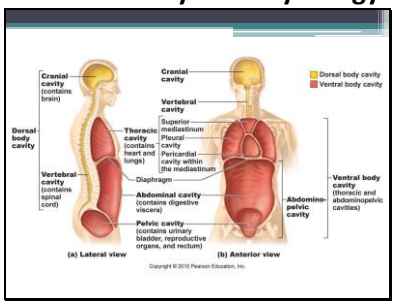

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