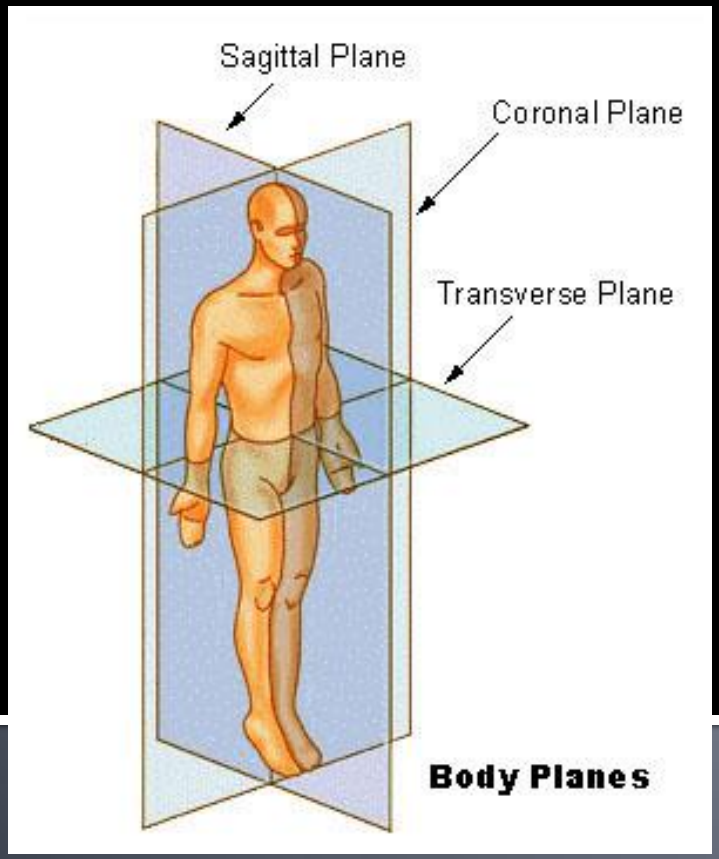
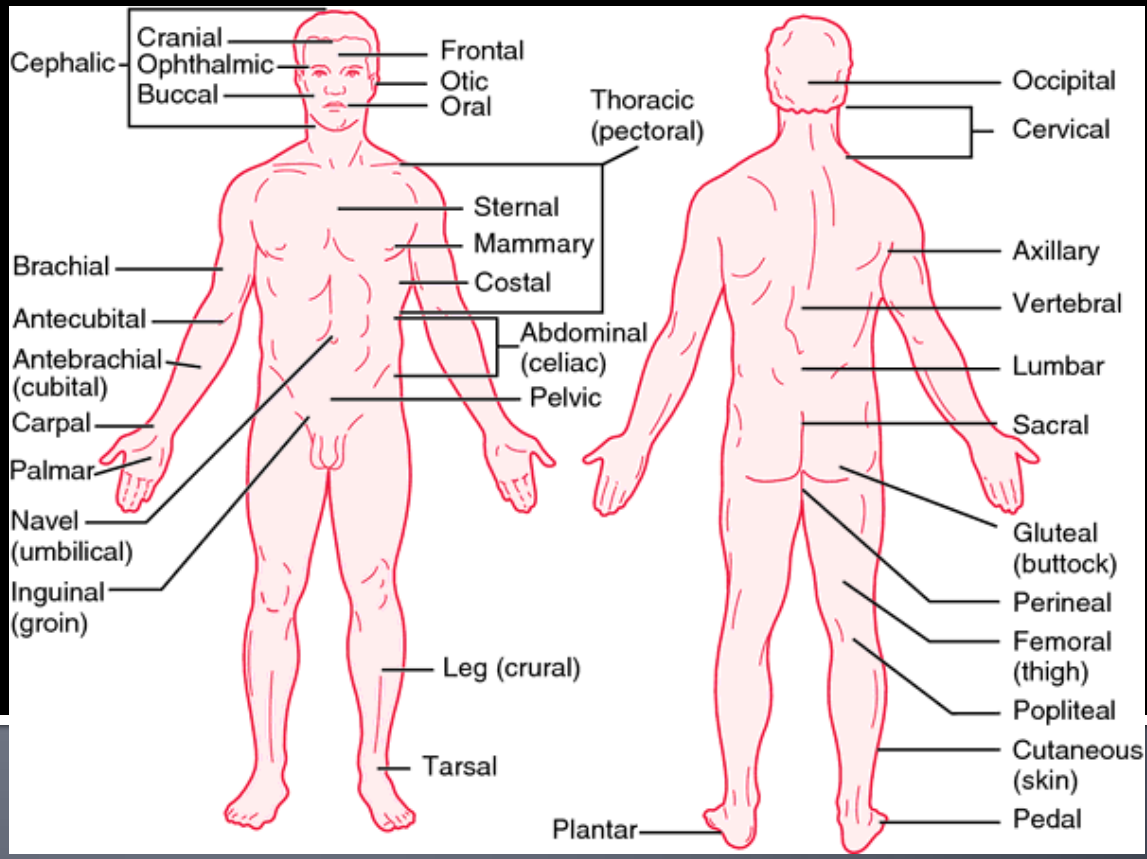
Anatomy Terminology





Anatomy = structure

Parts

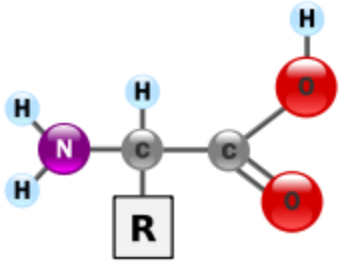
Physiology = function

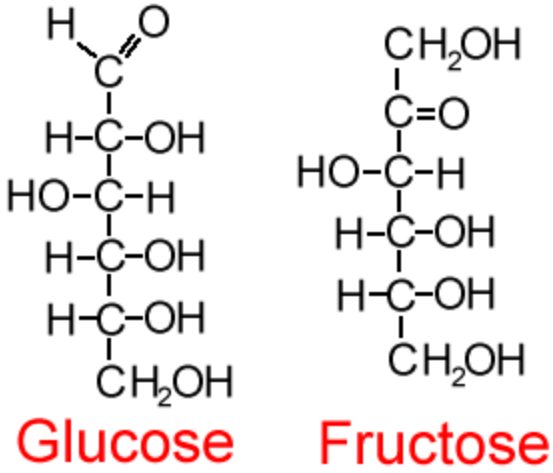
How the parts work

Levels of Organization

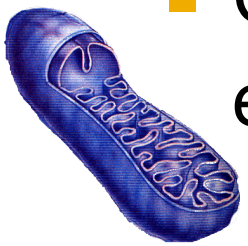
- Atoms – C, H, O, N, P
- Molecules – CO_2, O_2, H_2O

- Macromolecules – carbs, lipids, proteins, nucleic acids

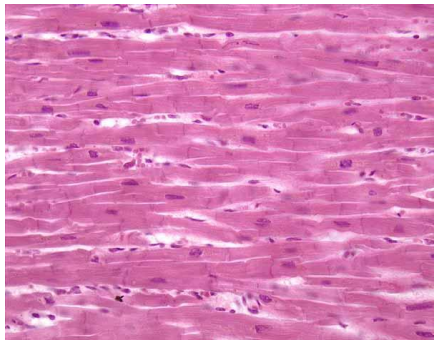




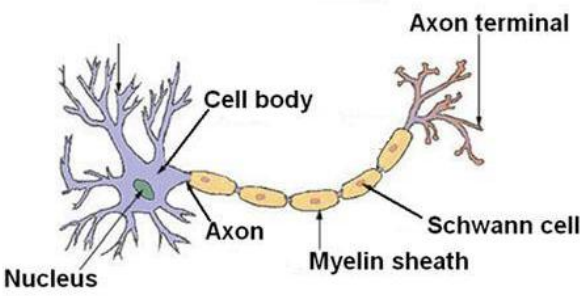
Levels of Organization



- Organelles – mitochondria, lysosome, endoplasmic reticulum



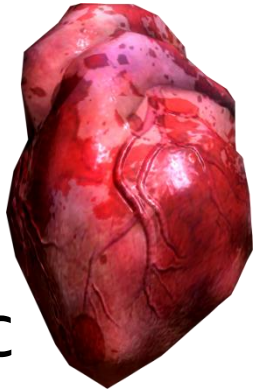
- Cells * – muscle, nerve, skin, liver
- Tissues – epithelial, connective, muscular, nervous

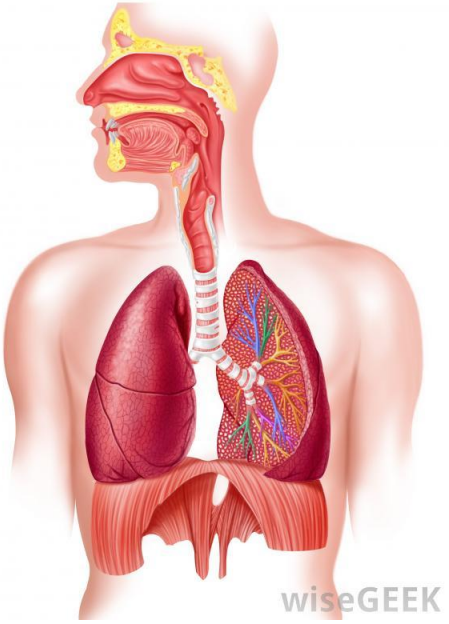


* All levels larger than this level are living

Levels of Organization

- Organs – heart, tongue, brain
- Organ systems – respiratory, lymphatic
- Organism – one living thing





Body System Functions

- Integumentary – protects underlying tissues, makes vitamin D, heat retention and removal, and removal of urea
- Skeletal – supports, protects, aids in movement, storage, blood cell formation

Body System Functions

- Muscular – movement (internal and external), heat production, posture, joint stability
- Nervous – coordinates and controls the body with electrical impulses through nerves

Body System Functions

- Cardiovascular – transport nutrients and waste throughout body
- Respiratory – gas exchange for energy production

Body System Functions

- Endocrine – coordinates and controls the body with hormones
- Lymphatic – immune or defense system

Body System Functions

- Urinary – filters blood to remove waste
- Digestive – breaks down food for nutrients

Body System Functions

- Reproductive – create offspring

Characteristics of Life

- Movement – change in body position
- Responsiveness – reaction to change inside and outside of the body
- Metabolism – all chemical reactions in the body
- Reproduction – production of new organisms or cells

Characteristics of Life

- Growth – increase in body size
- Use energy – break down food, absorb it, circulate it, and with the use of gases from respiration make energy
- Excretion – removal of waste

Requirements to Maintain Life

- Water
- Food
- Oxygen
- Heat
- Atmospheric pressure

Homeostasis

- Homeostasis = maintaining a stable internal environment
- Homeostatic mechanism: receptors, set point, effectors
- Types of feedback mechanisms to maintain homeostasis: negative and positive

Feedback Mechanisms

- Negative feedback – response to a stimulus is to decrease or increase the stimulus back to the set point
  - Ex: body temperature, blood glucose levels

Negative Feedback

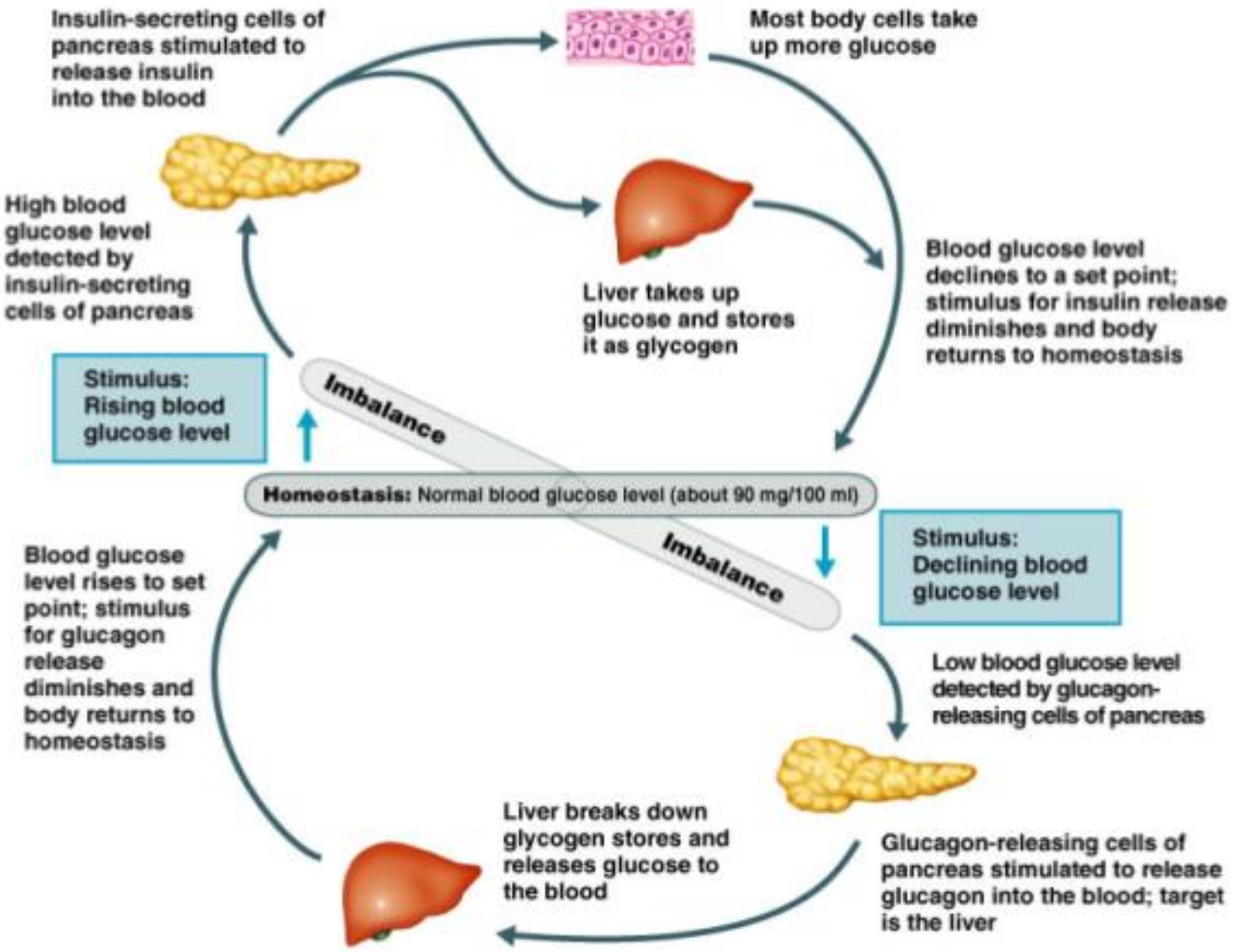
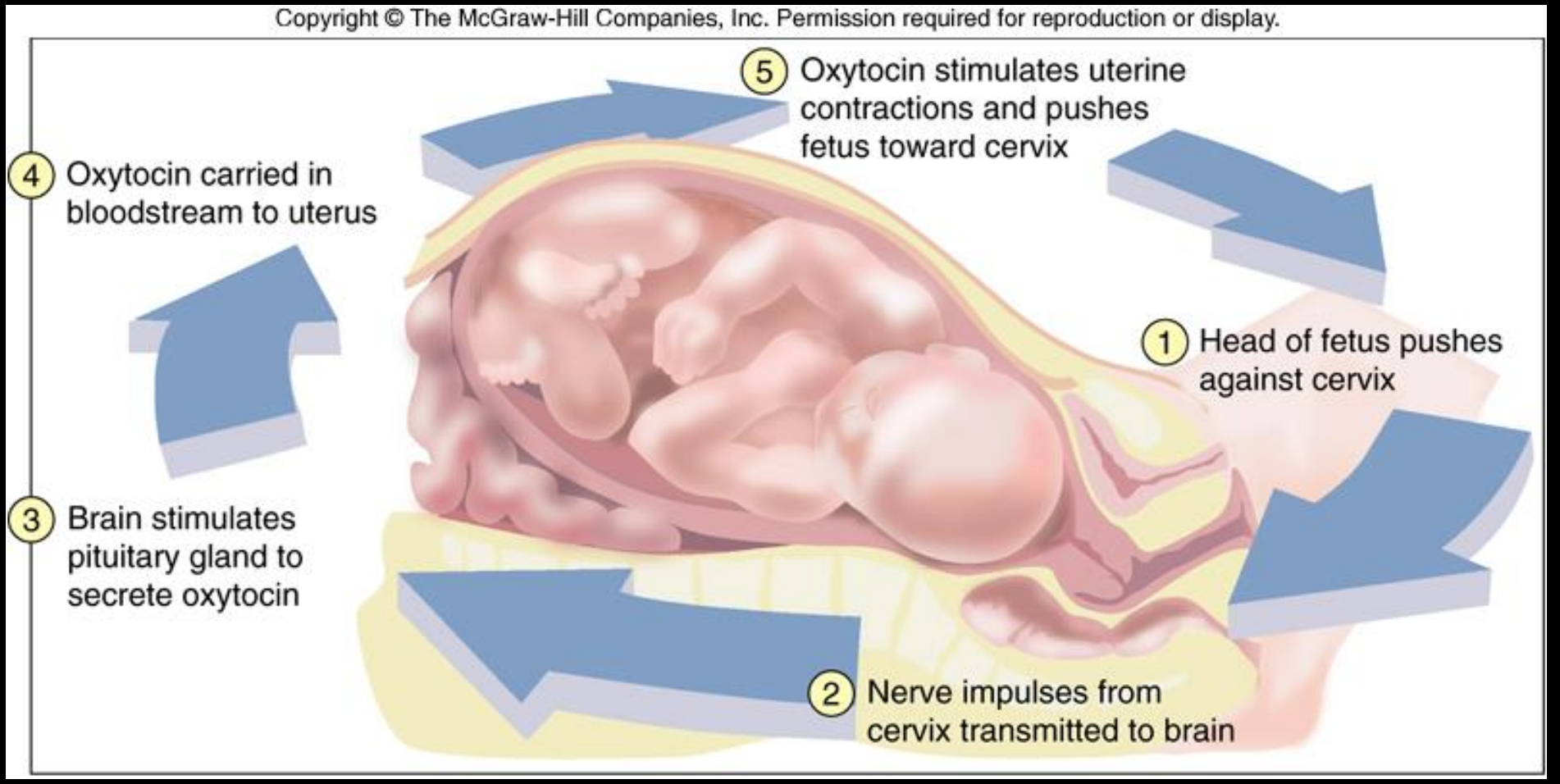


Figure 1.5

Feedback Mechanisms

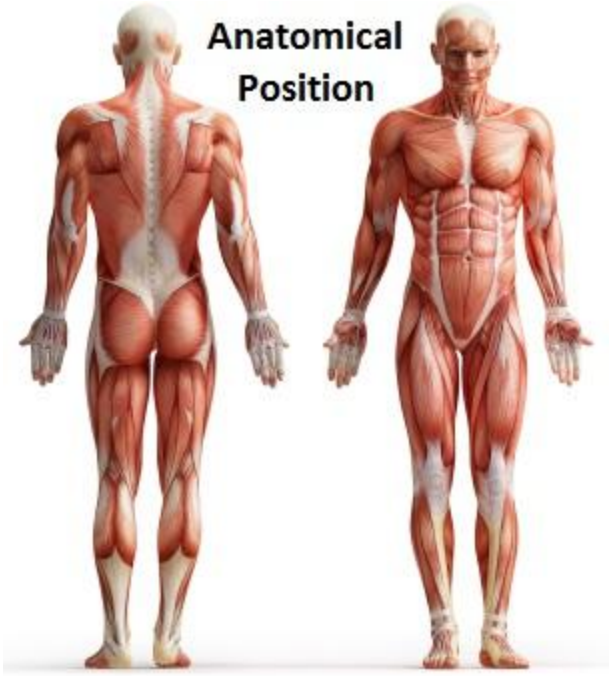
- Positive feedback – response to a stimulus is to move the stimulus away from the set point
  - Ex: blood clotting, contractions in child birth

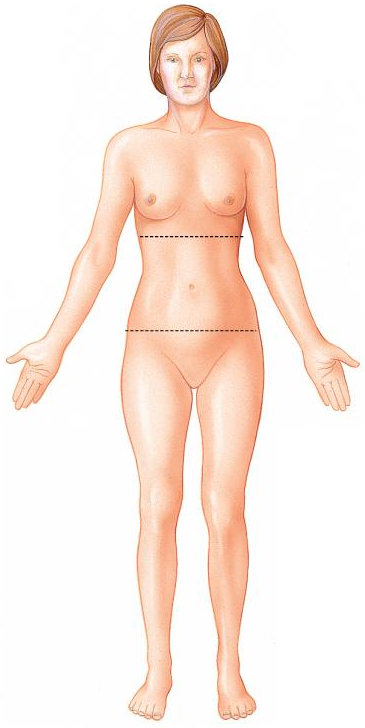
Positive Feedback



Anatomical Position

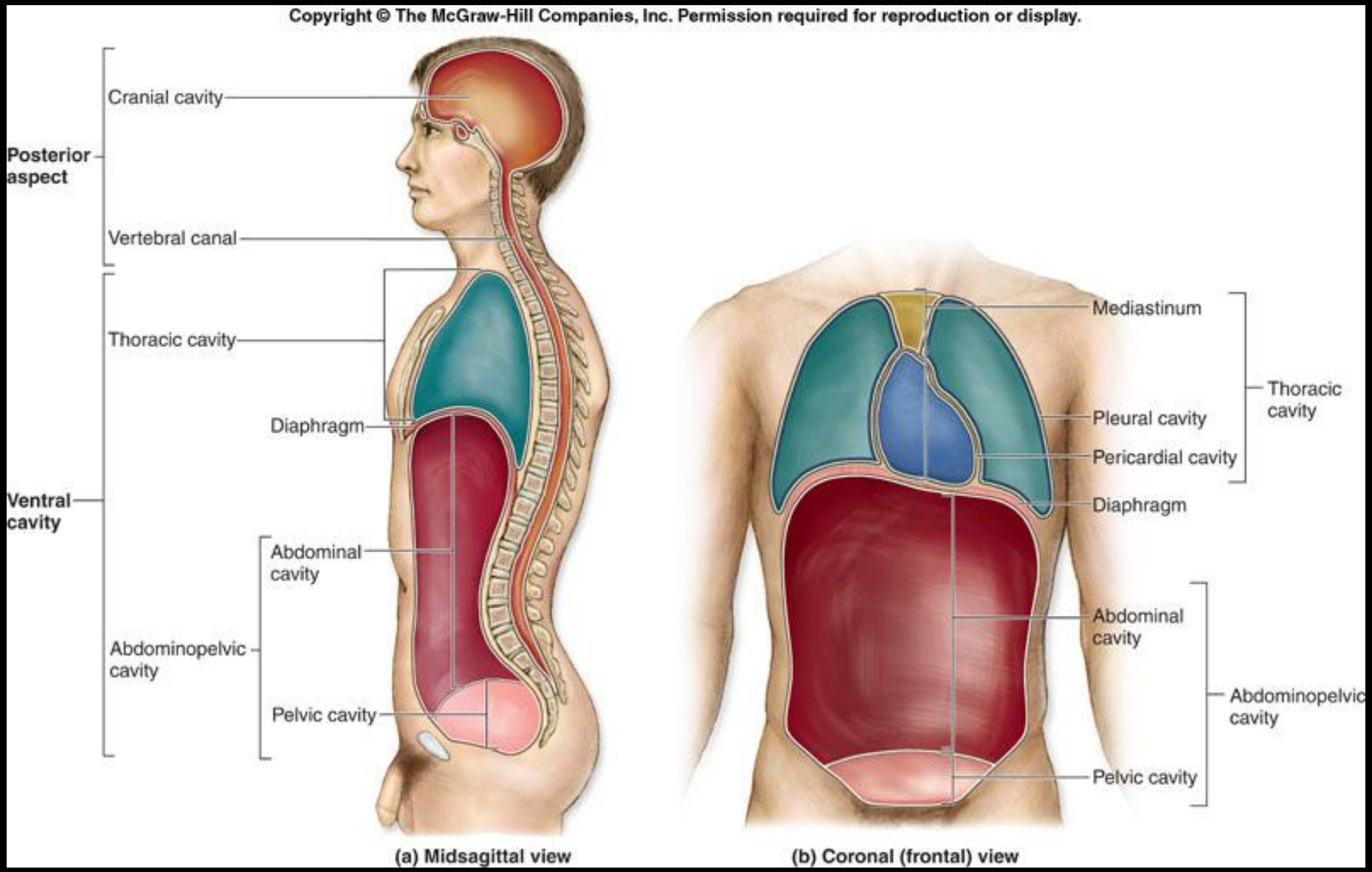
- Standing erect with feet facing forward and palms forward





(a) Anterior view

Body Cavities



Body Cavities

- Body is divided into the Dorsal and Ventral body cavities
- Each cavity is lined with a connective tissue membrane

- Dorsal Cavity
  - Cranial – brain
  - Spinal (vertebral) – spinal cord

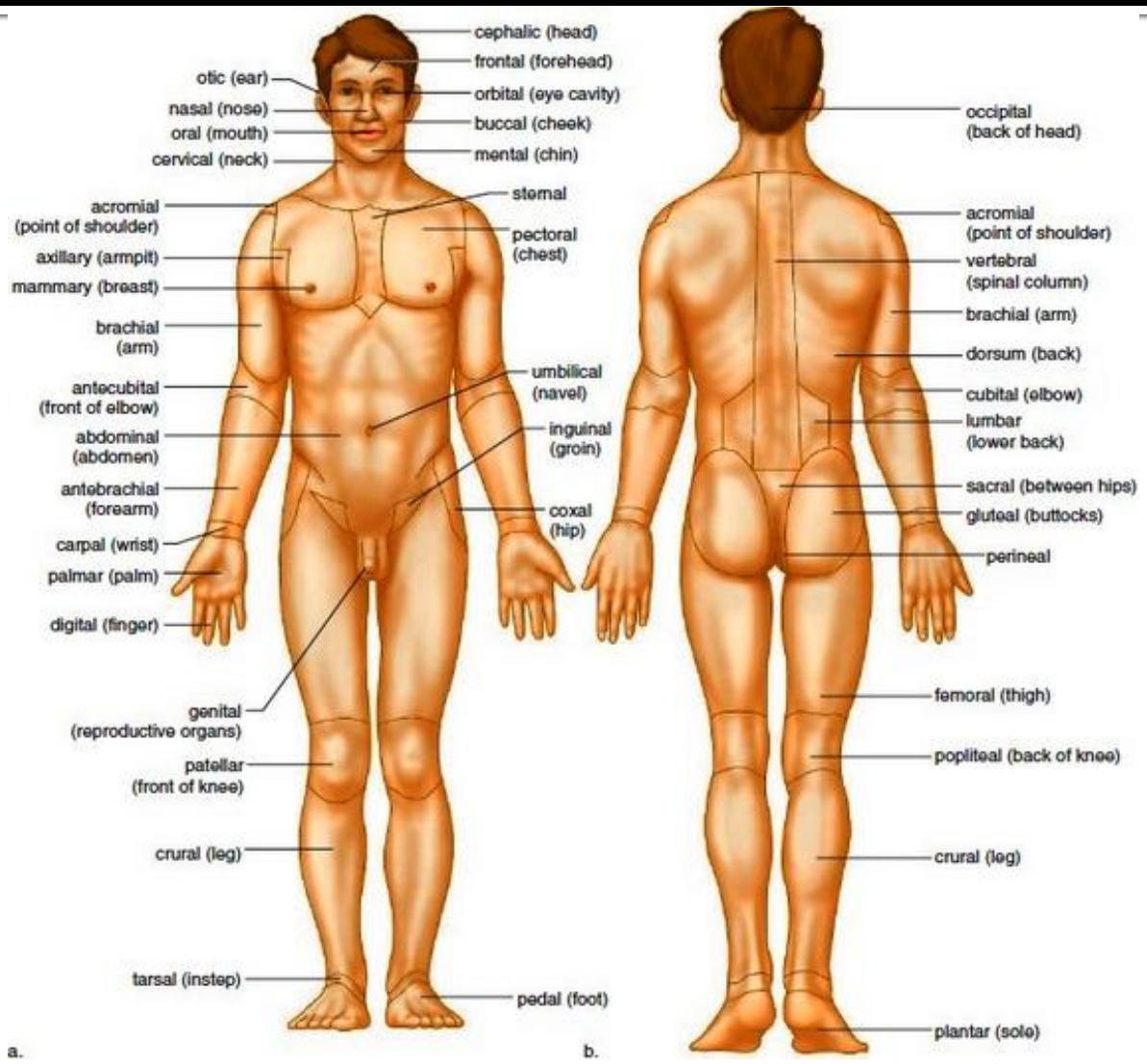
Body Cavities

- Ventral Cavity
  - Thoracic
    - Right and Left Pleural - lungs
    - Mediastinum – major blood vessels, trachea
      - Pericardial - heart

Body Cavities

- Ventral Cavity
  - Abdominopelvic
    - Abdominal – small and large intestines, spleen, stomach, liver
    - Pelvic – bladder, reproductive organs

Body Regions



Body Regions (Anterior view)

- Otic
- Nasal
- Oral
- Cervical
- Deltoid (not acromial)
- Axillary
- Brachial
- Antecubital
- Abdominal
- Carpal
- Digital
- Pubic (not genital)
- Patellar
- Tarsal
- Digital

- Cephalic
- Frontal
- Orbital
- Buccal
- Sternal
- Pectoral
- Umbilical
- Inguinal
- Crural
- Pedal

Body Regions (Posterior view)

- Sural
- Crural

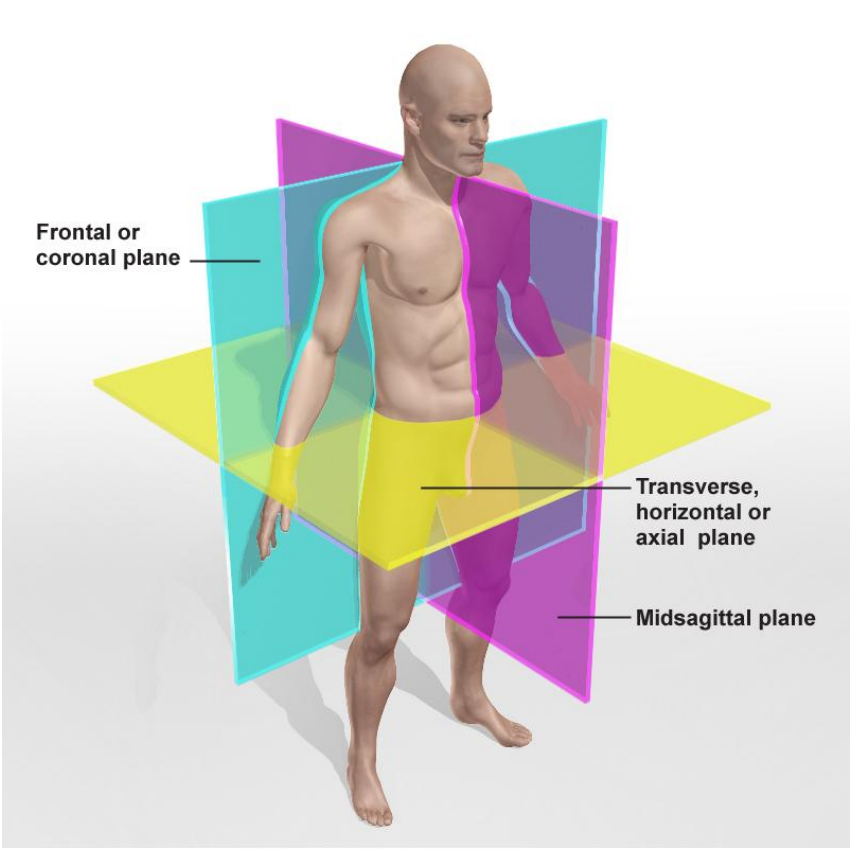
- Occipital
- Deltoid (not acromial)
- Scapular (add – shoulder blade)
- Vertebral
- Brachial
- Cubital
- Lumbar
- Sacral
- Gluteal
- Femoral
- Popliteal
- Peroneal (add – side of lower leg)
- Plantar

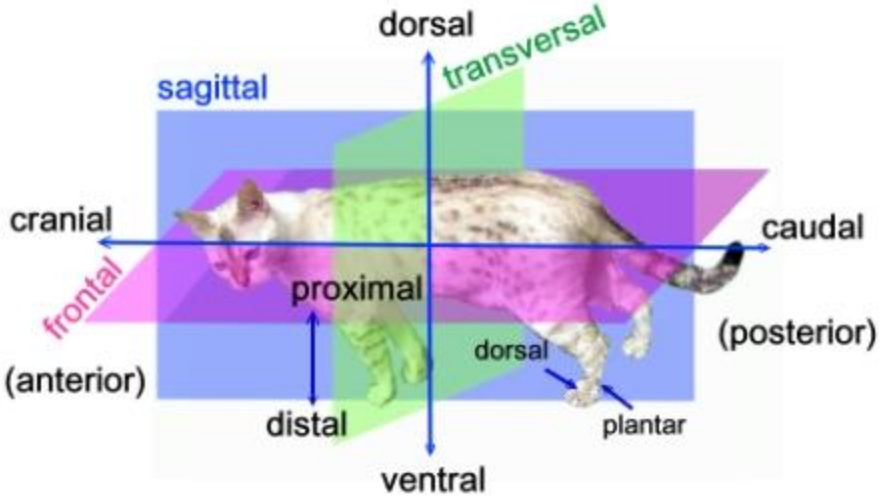
Video

- Anatomical Directions

Body Planes

- Transverse = divides the body into superior and inferior parts
- Sagittal = divides the body into left and right parts
- Frontal (Coronal) = divides the body into anterior and posterior parts


Frontal or
coronal plane
Transverse,
horizontal or
axial plane
Midsagittal plane


dorsal
transversal
sagittal
cranial
caudal
frontal
proximal
(posterior)
dorsal
(anterior)
distal
plantar
ventral

Directional Terms

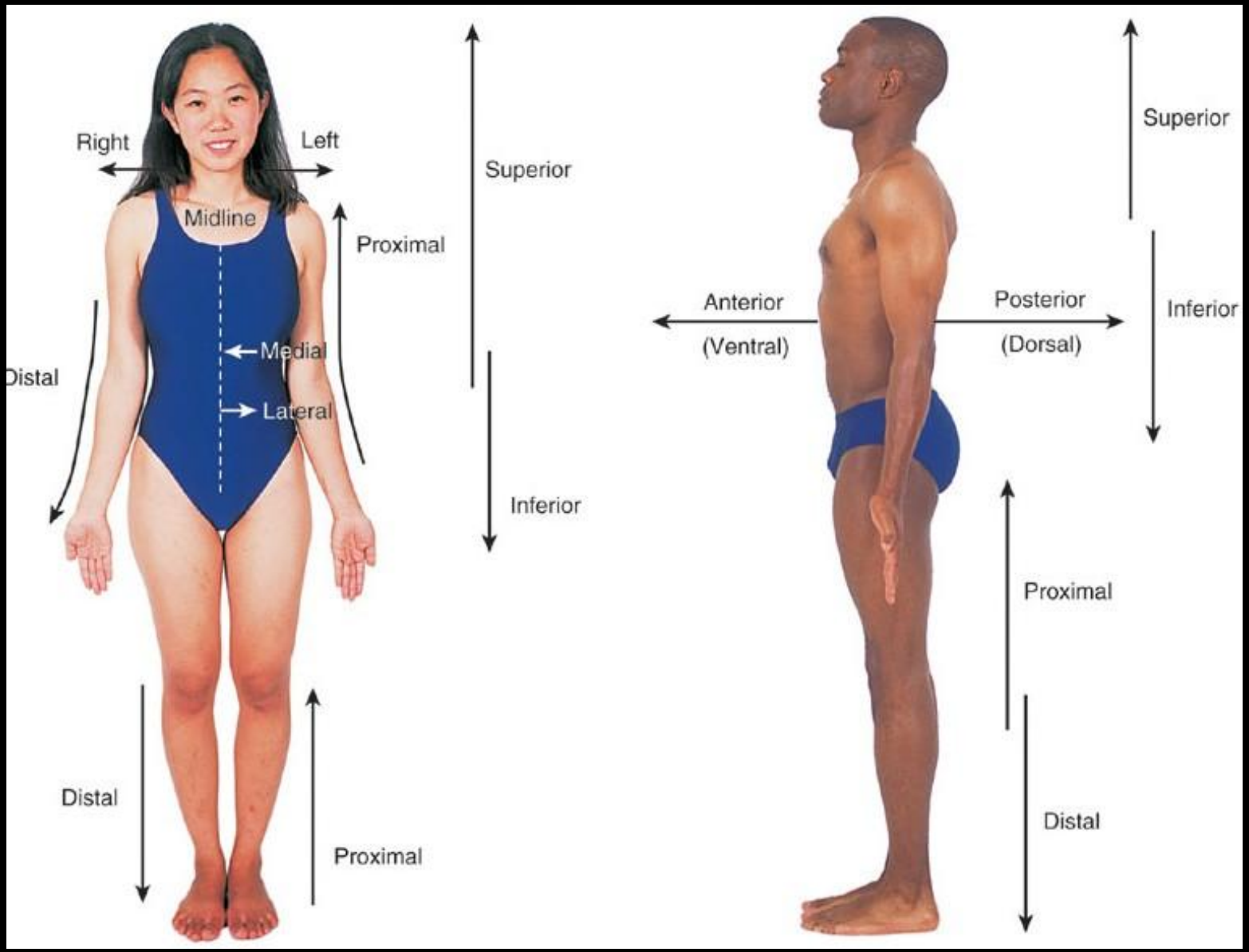
- Superior – above or toward the head
- Inferior – below or toward the feet

- Proximal – toward the point of attachment
- Distal – away from the point of attachment
  - Only use when the two parts you are comparing are both on the arm or leg
  - This compares closeness to the trunk

Directional Terms

- Medial – toward midline of body
- Lateral – away from midline of body

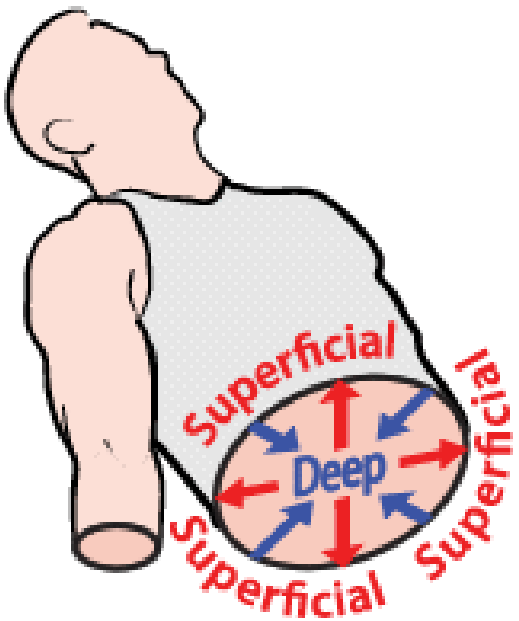
- Anterior (ventral) – toward front of body
- Posterior (dorsal) – toward back of body


Right
Left
Midline
Proximal
Distal
Medial
Lateral
Superior
Inferior
Distal
Proximal
Superior
Anterior
(Ventral)
Posterior
(Dorsal)
Inferior
Proximal
Distal

Directional Terms

- Superficial – toward surface
- Deep – away from surface

- Right – person's right
- Left – person's left



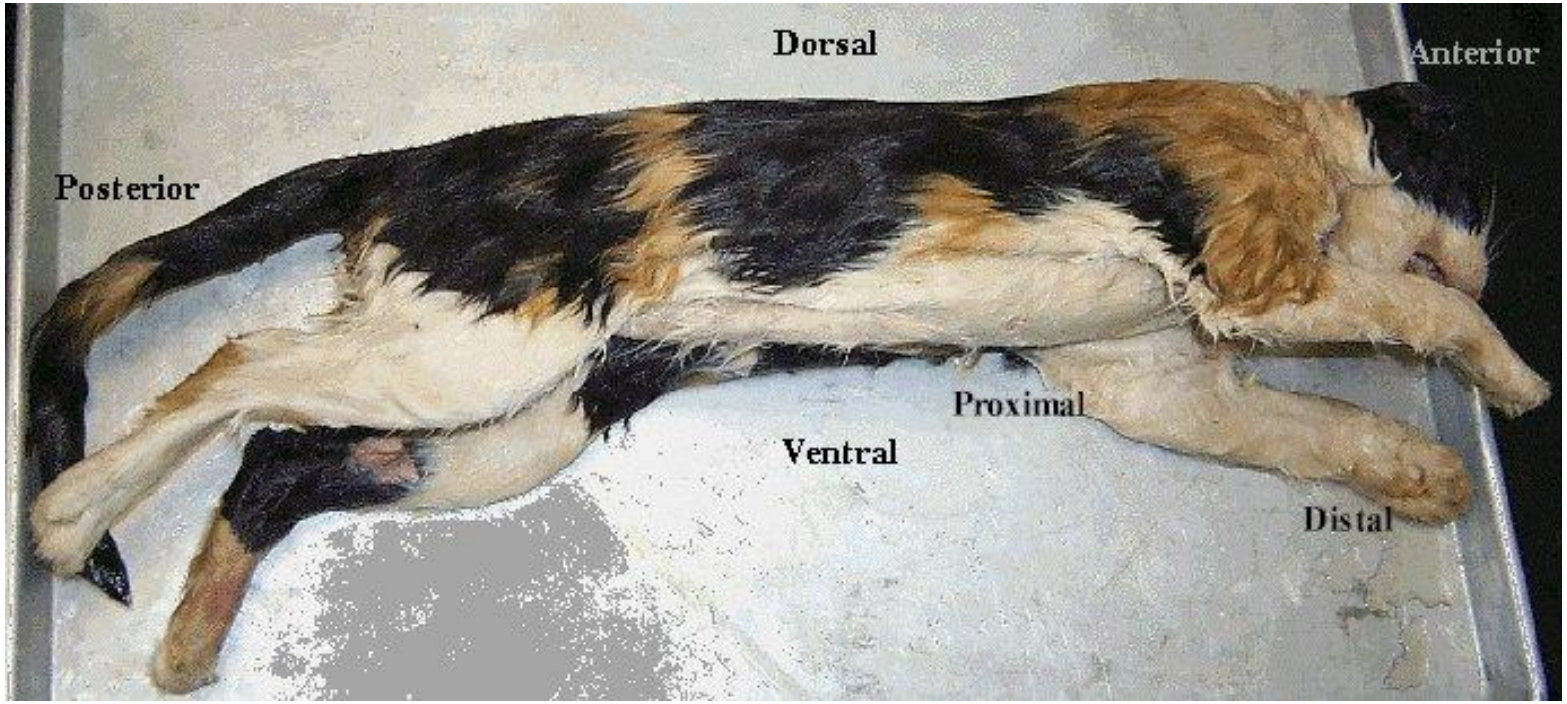
Directional Terms in 4-legged Animals

- Dorsal and Ventral
  - In humans, terms are interchangeable with anterior and posterior
  - In 4-legged animals, terms are interchangeable with inferior and superior

- 4-legged animals
  - Head = Anterior (Cranial)
  - Tail = Posterior (Caudal)

Back = Dorsal

Belly = Ventral


Dorsal
Anterior
Posterior
Proximal
Ventral
Distal

Helpful Tips

- Create mnemonics to remember terms
  - If you can make a connection to something you know, then you will remember the term better
- Storytelling – create a story that links terms
  - Excite the brain – humor, shock, surprise
  - The brain remembers when information is attached to emotional experiences

Helpful Tips

- Use a variety of study aides – flashcards, quizlet, retype notes, highlight notes, ect
  - You'll get bored easily if you use the same thing
- Read aloud
  - Hearing the information and not just reading helps to remember terms better and engages the brain more

Helpful Tips

- Repetition
  - Write words 30 times to commit the terms to long-term memory
- Etymology – what does the term mean
  - Most anatomy terms have a latin or greek root
- Study with friends and share the stories and mnemonics you create