RMS Revision Tutorial

Year 1 Part 2

Semester 1 Anatomy

Semester 1 Anatomy

Cells, Tissues, Organs and Body Systems

Introduction to Imaging/Imaging Anatomy & Introduction to Anatomy/Surface Anatomy

Anatomy of the Head and Neck

Anatomy of the Back, Vertebral Column and Spinal Cord

Anatomy of the Joints and Overview of the Musculoskeletal System

Anatomy of the Hand and Upper Limb

Respiratory Tract, Chest, Lungs and Thoracic Cavity

Lower Limb

Blood Supply in the Body

Semester 1 Anatomy

Cells, Tissues, Organs and Body Systems

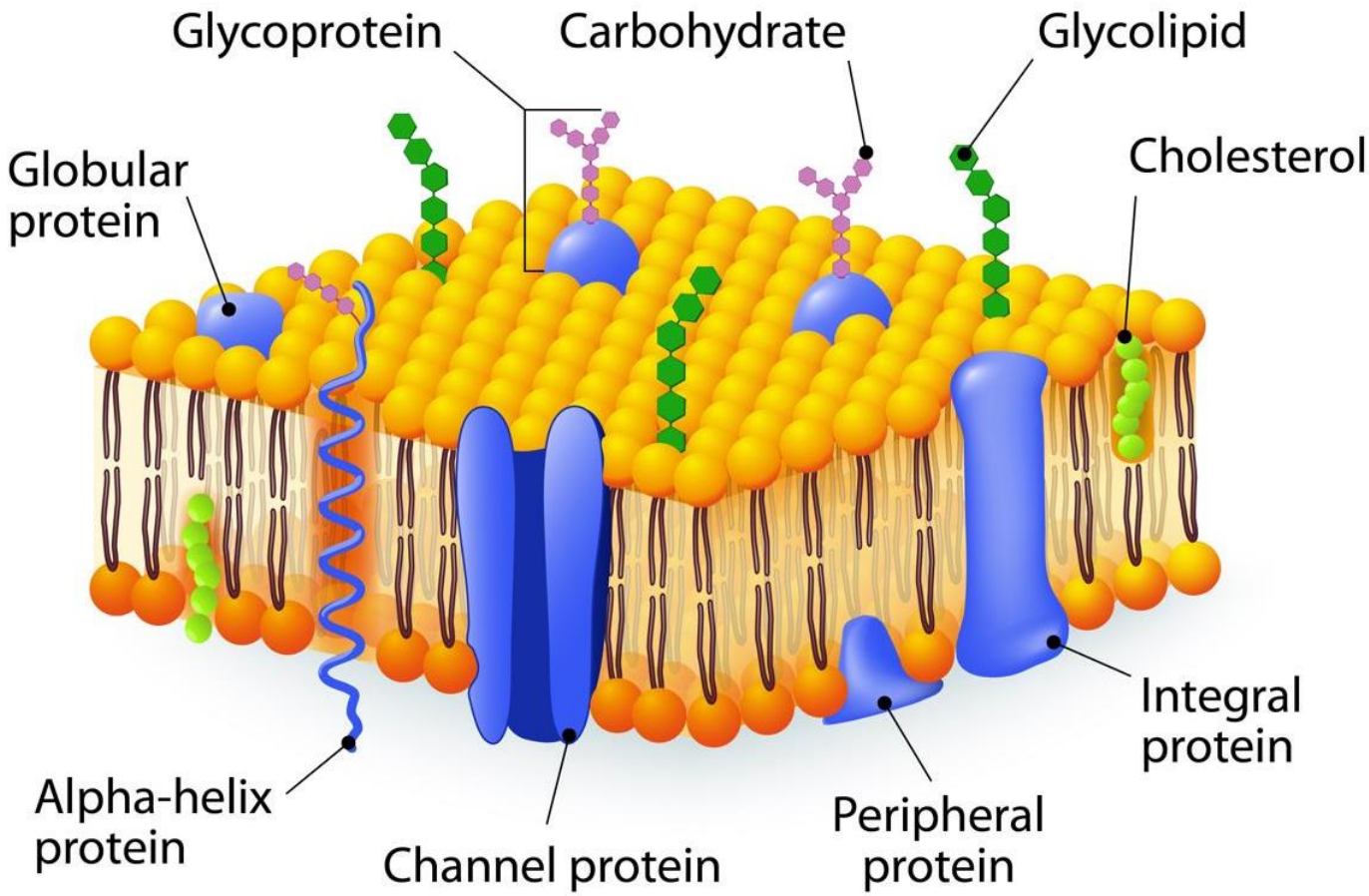
Semester 1 Anatomy

Cells, Tissues, Organs and Body Systems

- Describe the hierarchal structure of the human body from cells to body systems
- Identify key organs within the body
- Examine the cell and the important role it has as the smallest functional unit in the body
- Describe the role the cell has in building tissues and organs
- Examine the anatomy of a normal eukaryotic cell
- Look at the 4 tissue types found within the body and describe their basic structure
- Describe different types of intercellular connections found in tissues
- Describe techniques used to examine cells and tissues

Cells and their Components

- Plasma membrane
- Hydrophilic
- Non-hydrophilic
- Symporter
- Anti-porter



Cells and their Components

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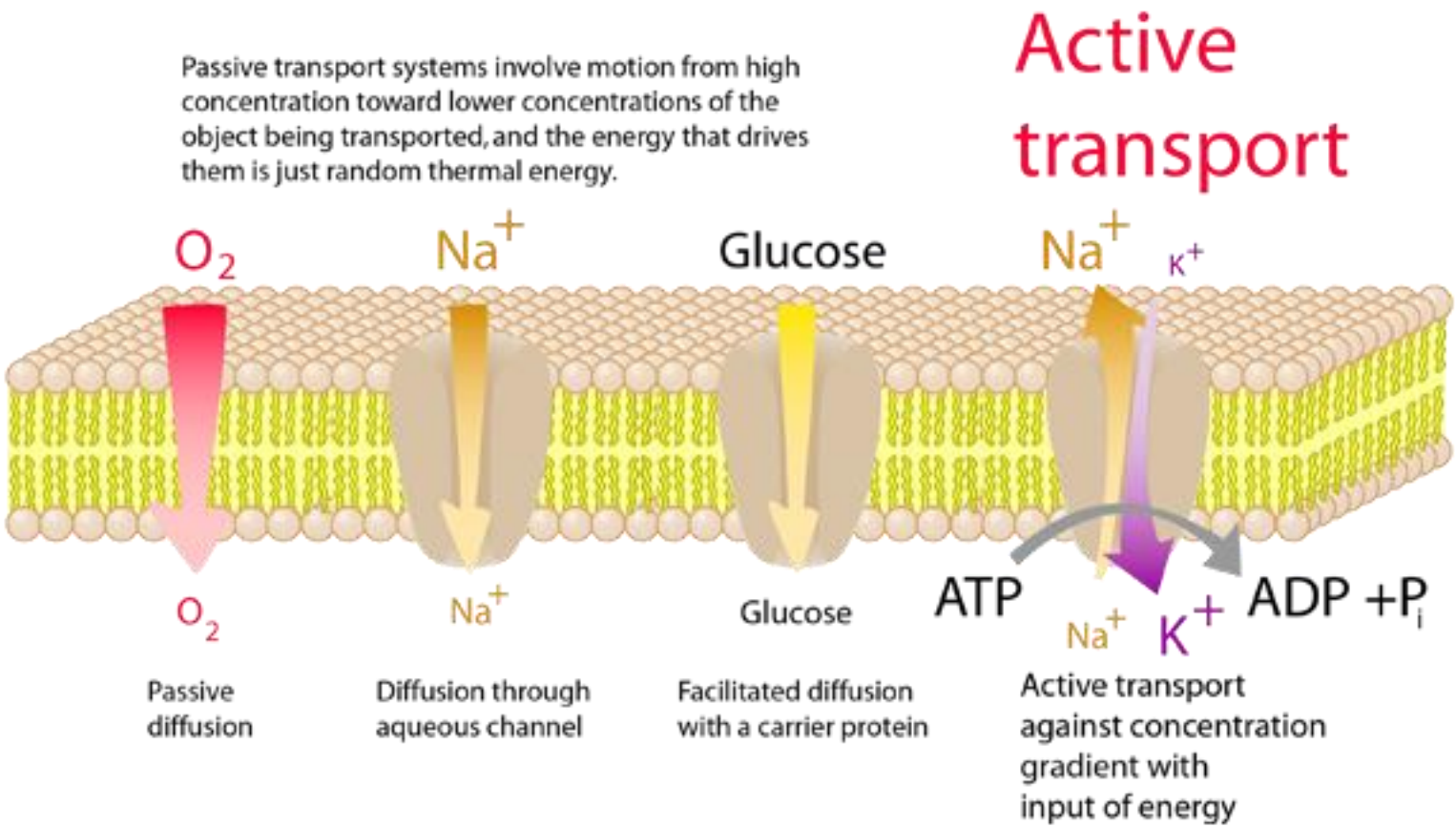


Cells and their Components

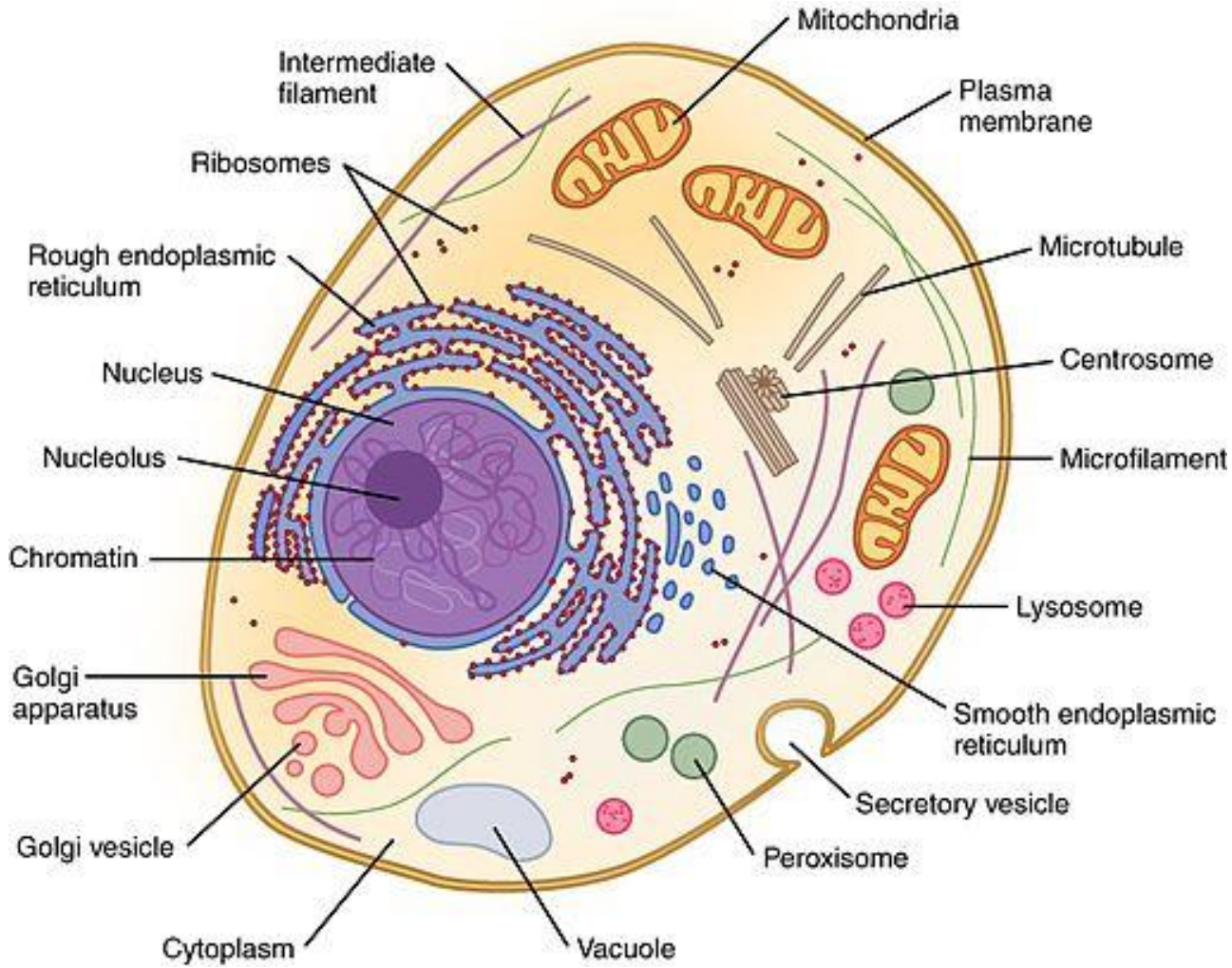
- Plasma membrane – Purpose

- **Physical protective barrier between living components and the outside environment**
- **Regulates membrane transport (molecule uptake or secretion) and hence controls internal environment**
- **Use of ion gradients across membrane in excitation, communication and transport**
- **Holds receptors for cell-cell recognition and detecting/responding to stimuli cytoskeleton and ECM**
- **Endo-membrane (“inside”) system forms compartments and stable binding /catalysis sites for enzyme processes**
- **Dynamic movement involving vesicles**

Cells and their Components

- **Membranous Structures**
- Nucleus
- Mitochondria
- Smooth Endoplasmic reticulum
- Rough Endoplasmic reticulum
- Golgi Apparatus
- Lysosome
- Peroxisomes

- **Non-membranous**
- Cillia
- Flagella
- Cytosol
- Centrosome
- Ribosomes



Cells and their Components

- Cytoskeleton
- Actin microfilaments
- Tubulin microtubules
- Intermediate filaments

Tissues – 4 Types

Tissues – 4 Types

- Epithelial
- Connective
- Muscle
- Nervous

Tissues – Epithelia

Tissues – Epithelia – Simple vs Stratified

- Simple squamous –
- Simple cuboidal -
- Simple columnar -
- Stratified squamous –
- Stratified cuboidal –
- Stratified columnar –

Tissues – Epithelia

- Simple squamous - Heart lining, blood vessels, lymphatics, alveoli, kidney glomerulus
- Simple cuboidal - Ovary, pigmented layer of retina, kidney tubules
- Simple columnar - GI tract lining, gall bladder, glandular ducts, fallopian tubes
- Stratified squamous - Skin (keratinised), mouth/oesophagus (non-keratinised), urinary tract (**transitional**)
- Stratified cuboidal - Ducts of sweat glands, oesophageal glands - RARE
- Stratified columnar - Urethra lining, large gland ducts

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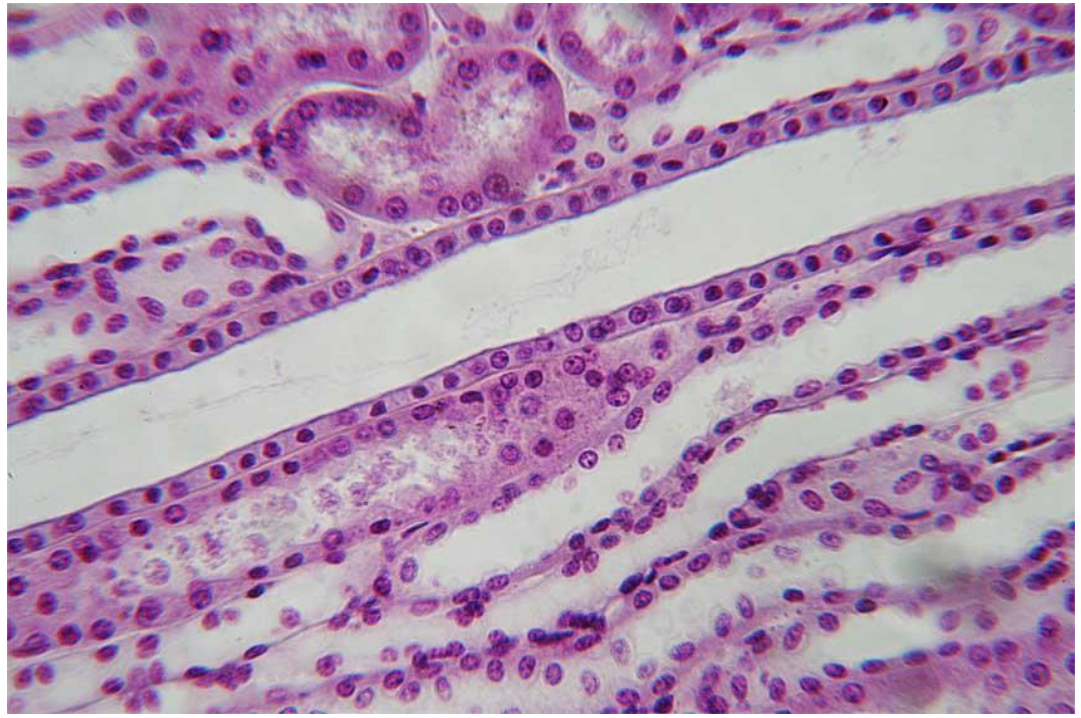
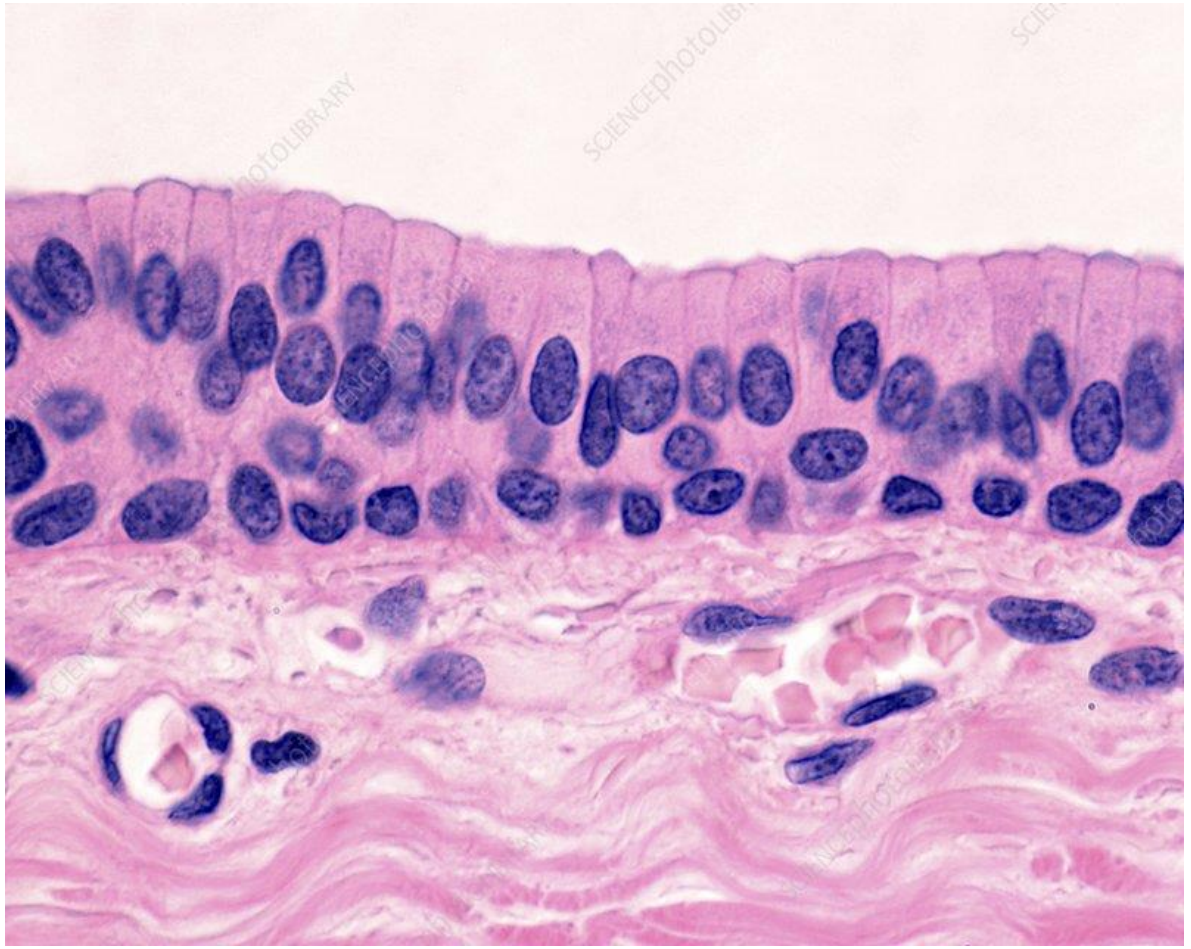
- Pseudostratified epithelium

Tissues – Epithelia





Tissues – Epithelia Function

- simple squamous epithelium…
- All stratified epithelia…
- All cuboidal and columnar epithelia permit secretion – bigger cells have more space to synthesise - and absorption (except stratified columnar; it does not carry out absorption)

Tissues – Epithelia Function

- simple squamous epithelium allows filtration, diffusion, osmosis and secretion but little protection due to its thin nature.

- All stratified epithelia afford protection due to their regenerative capacity and multiple layers.

- All cuboidal and columnar epithelia permit secretion – bigger cells have more space to synthesise - and absorption (except stratified columnar; it does not carry out absorption)

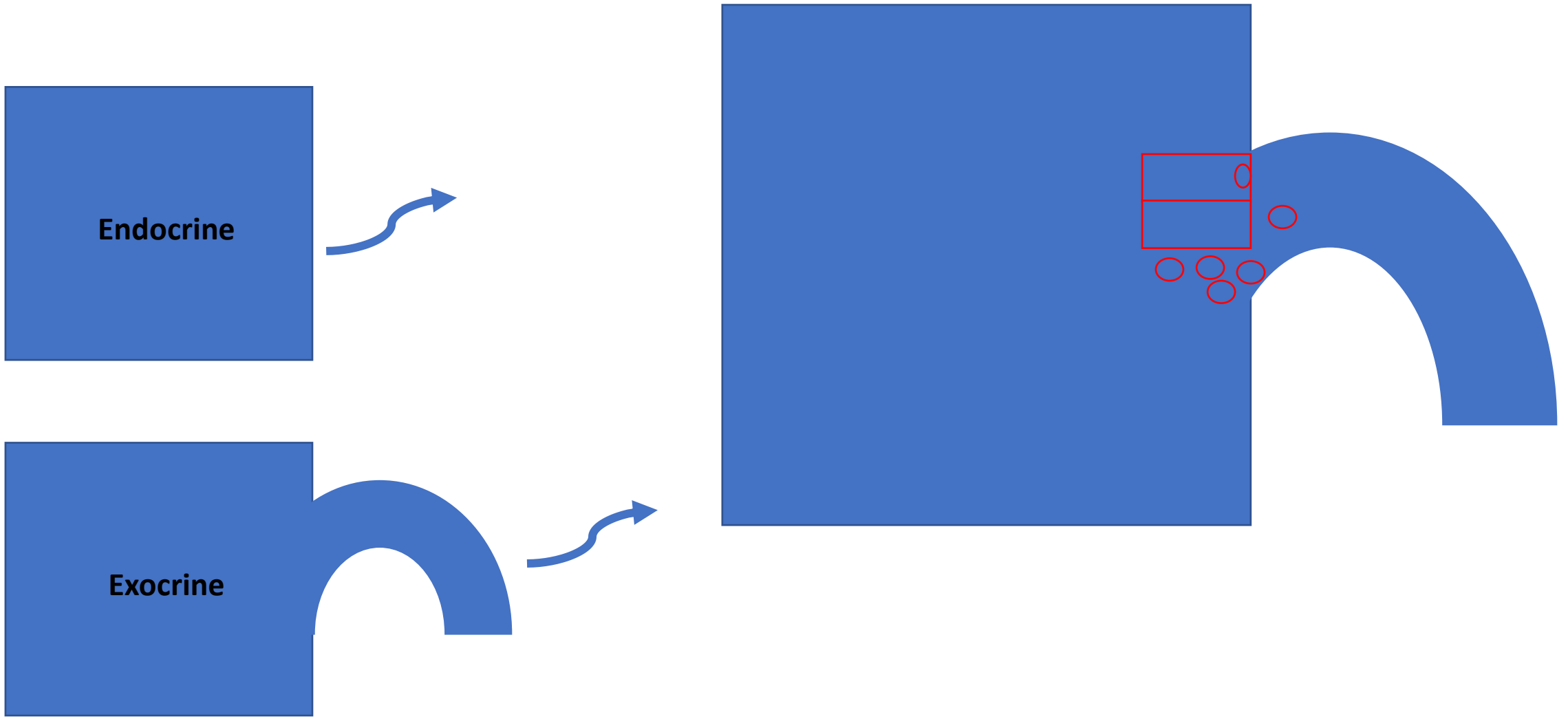
Tissues – Glands

- Glands
- Endocrine glands
- Exocrine glands
- Merocrine:
- Apocrine:
- Holocrine:

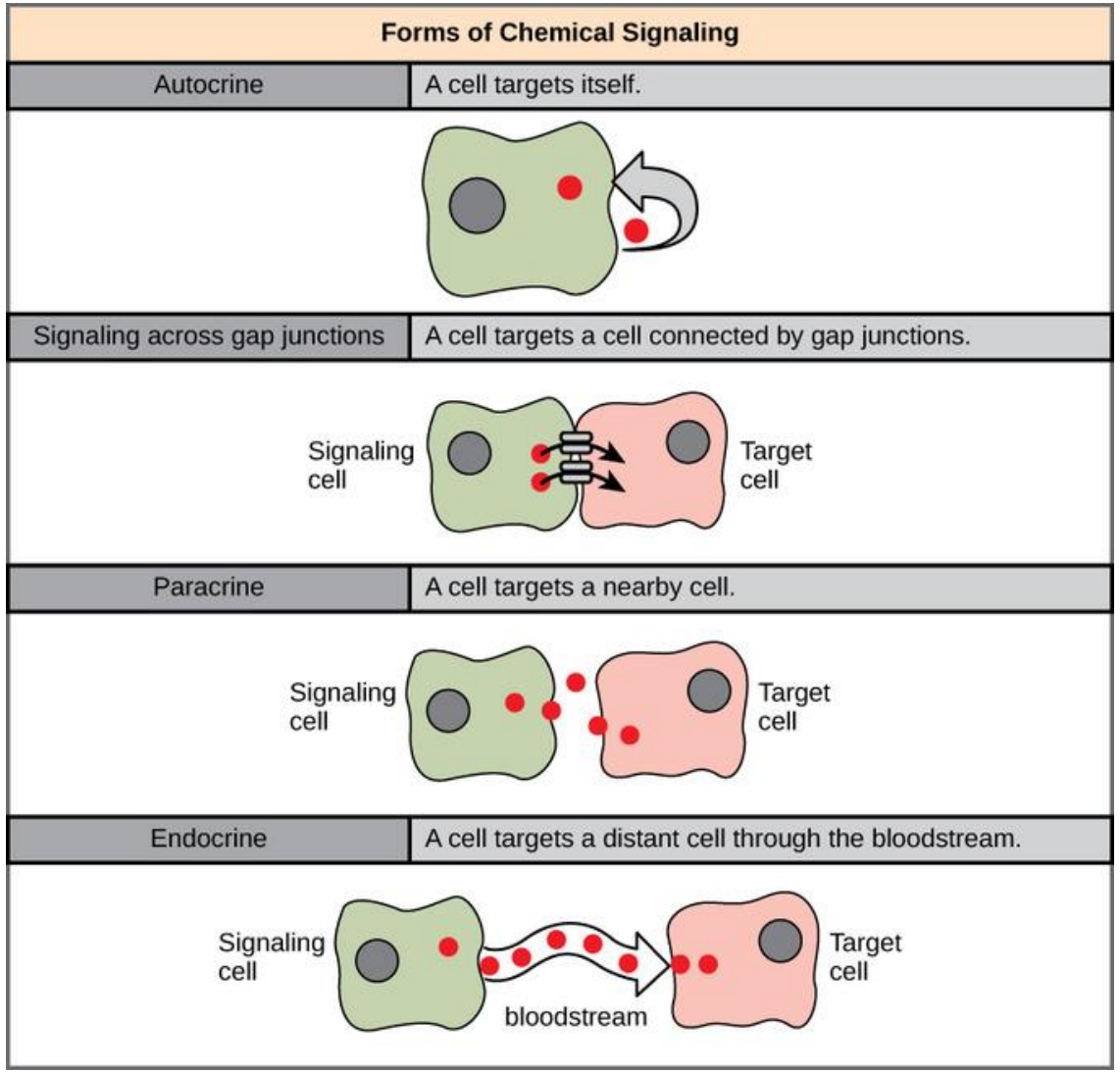
Tissues – Glands

- Glands are epithelia that secrete and store products such as hormones. Goblet cells are unicellular glands.
- Endocrine glands are ductless so hormones are released directly into extracellular fluid or blood to travel to target organs.
- Exocrine glands secrete products through a duct onto epithelium. There are three types:
- Merocrine: secretory product released from glandular cell in exocytosis
- Apocrine: vesicle containing products is secreted from glandular cell
- Holocrine: glandular cell dies and becomes secretory product

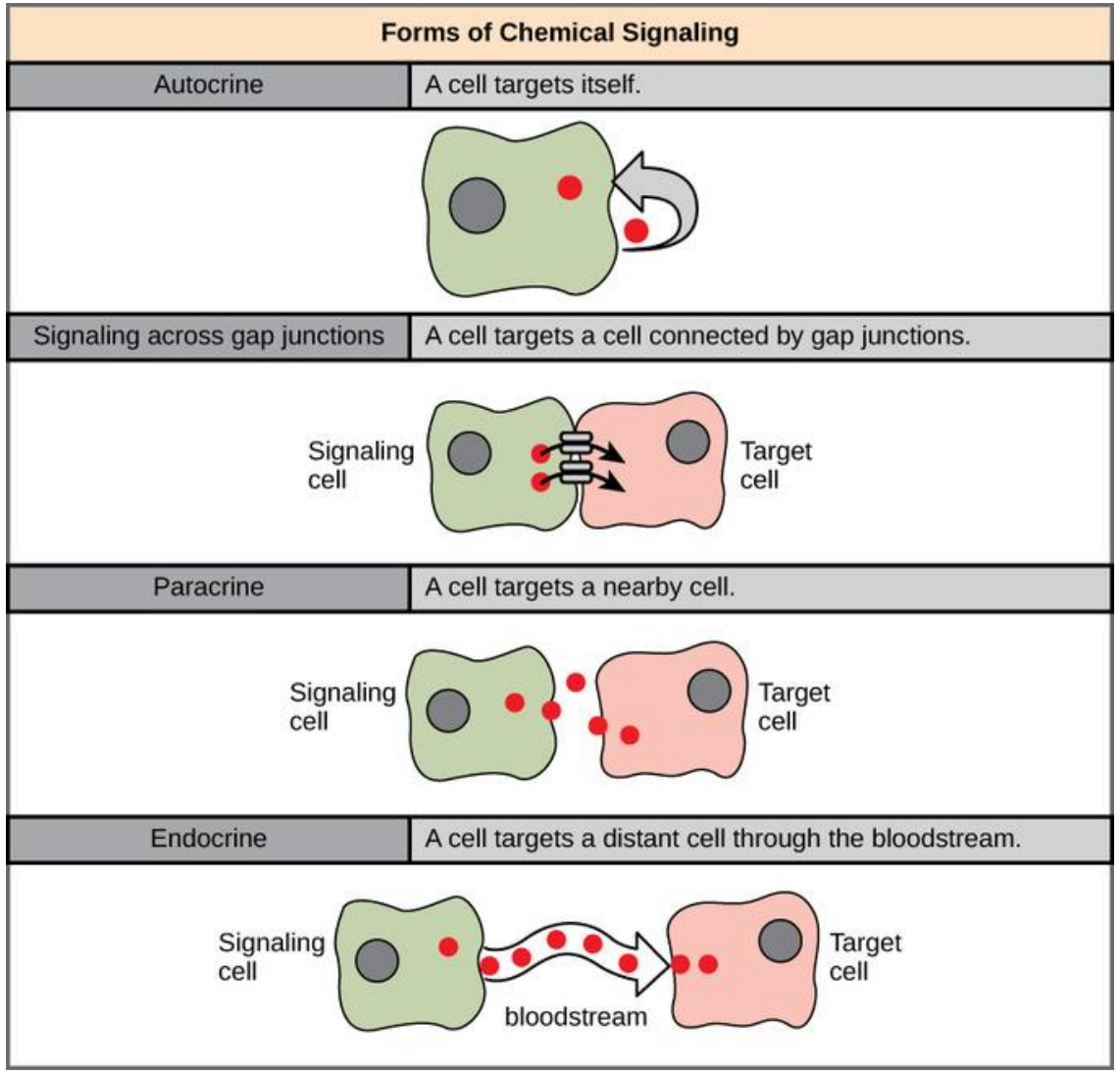
Tissues – Glands



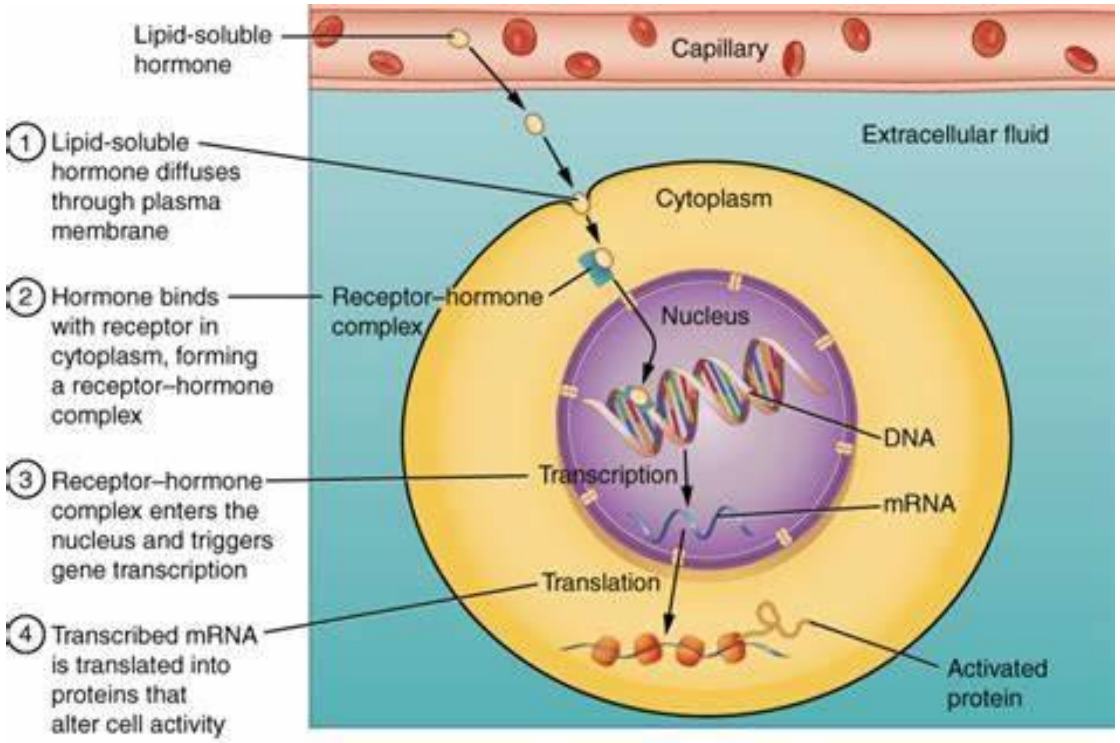
Other Forms of Cell Communication

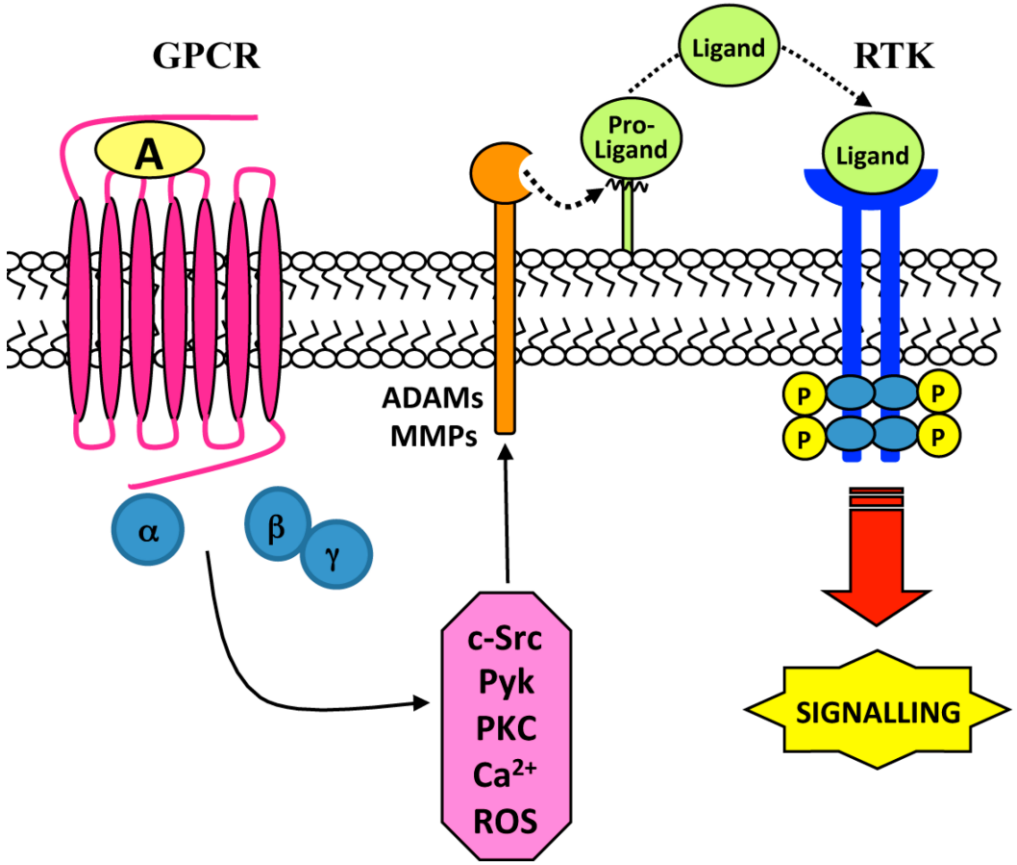


What is a hormone?



Two types of cell activation via hormones





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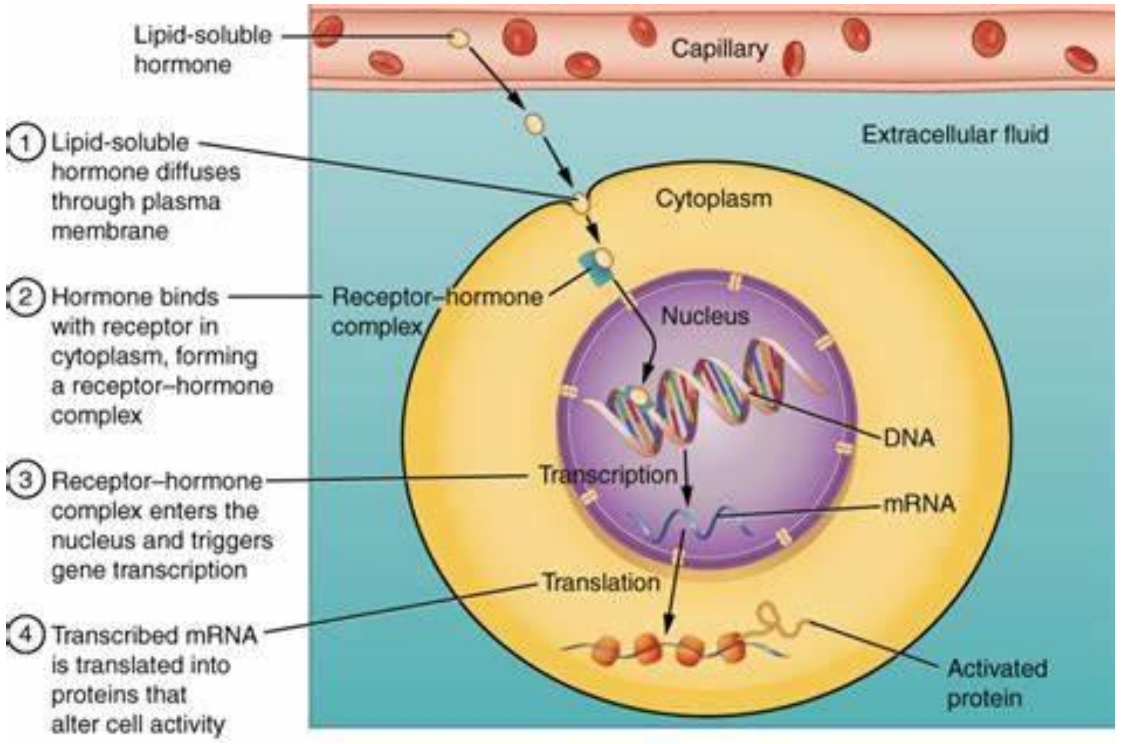
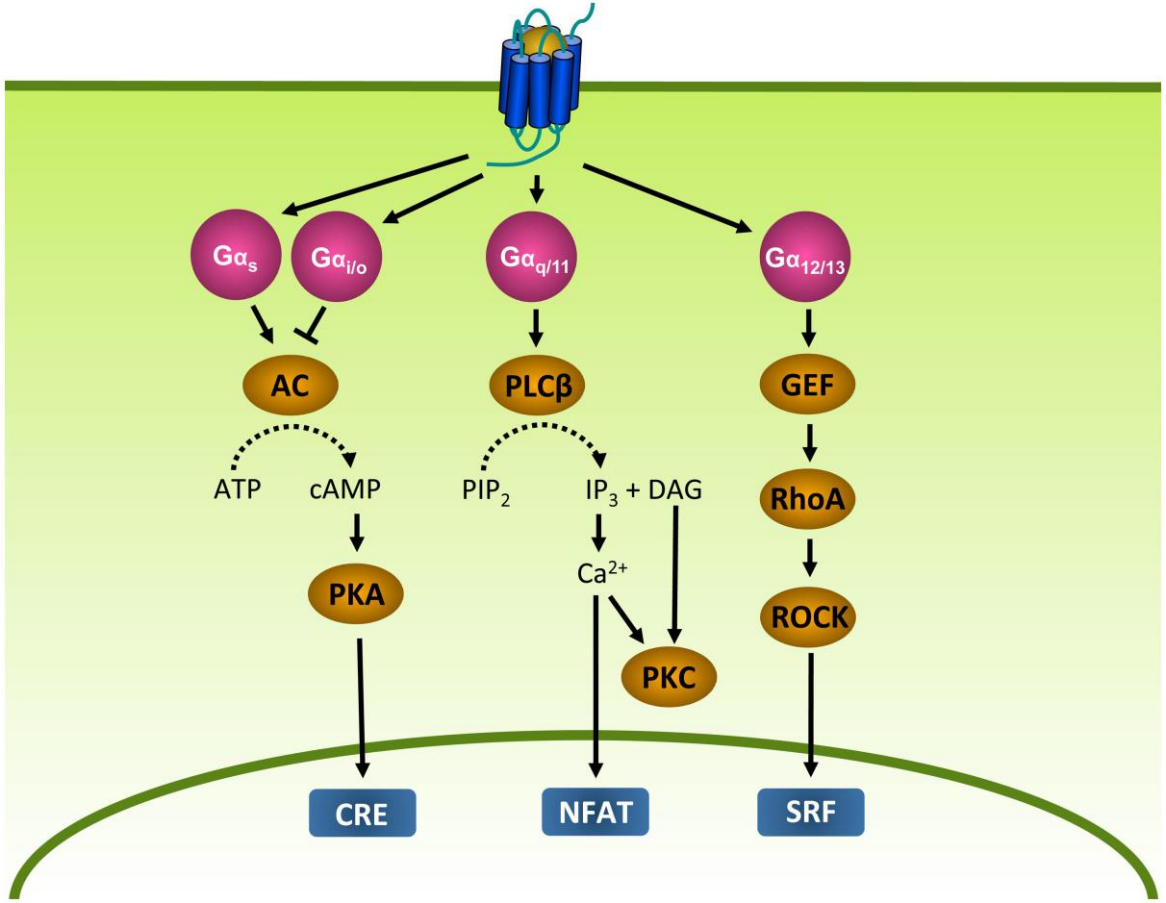
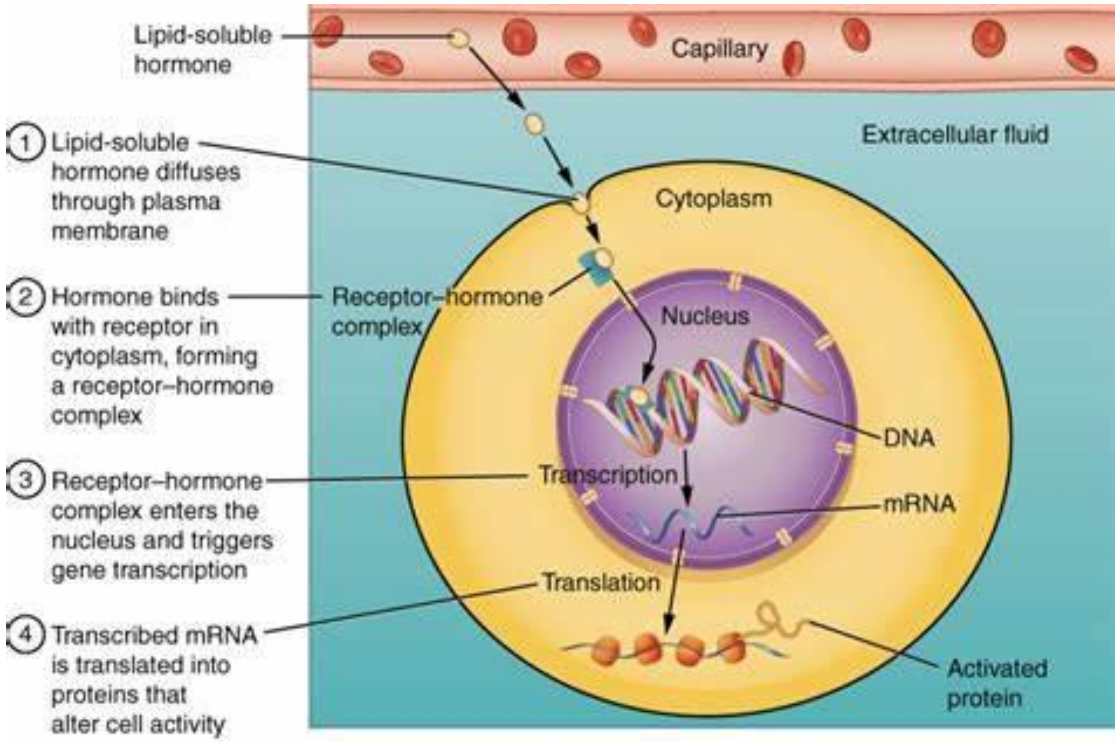
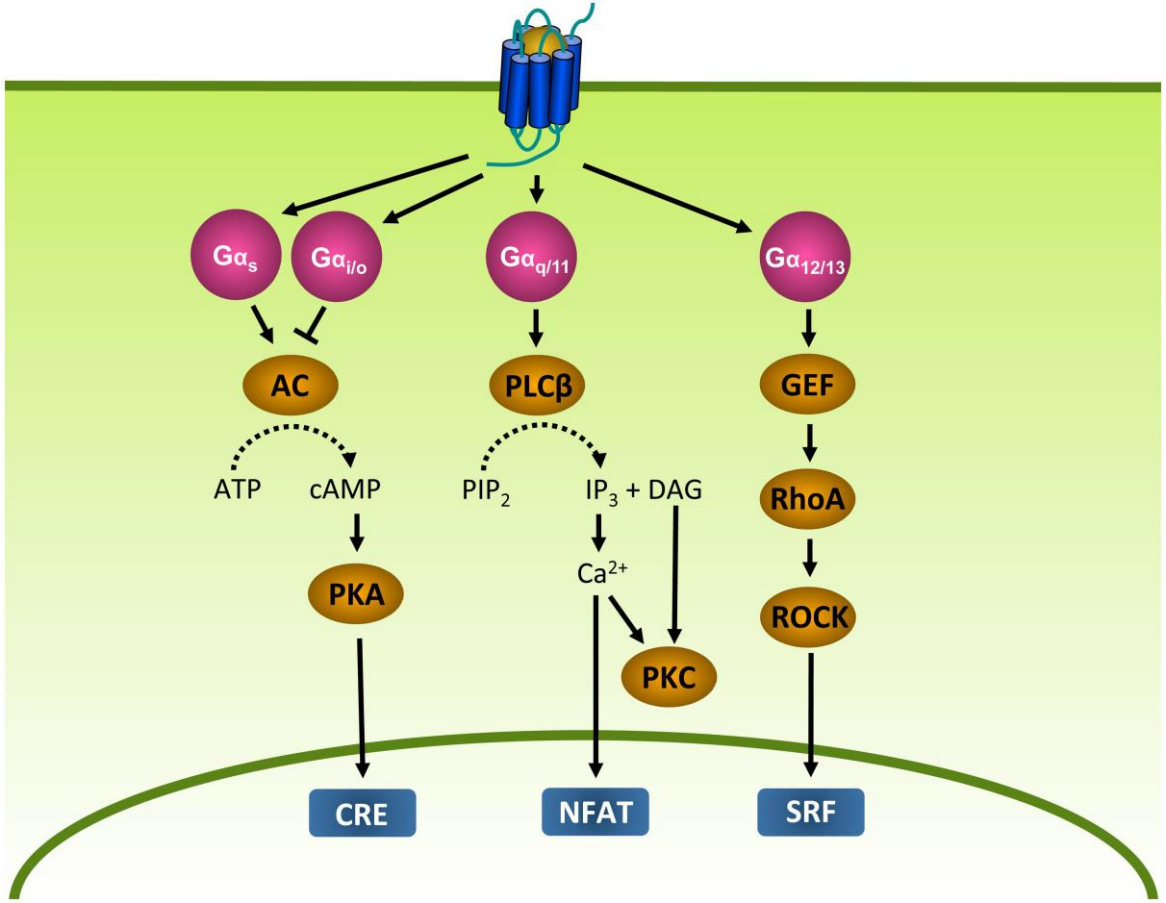




When a signalling molecule binds to a membrane and alters it, what is that called?

Two types of cell activation via hormones

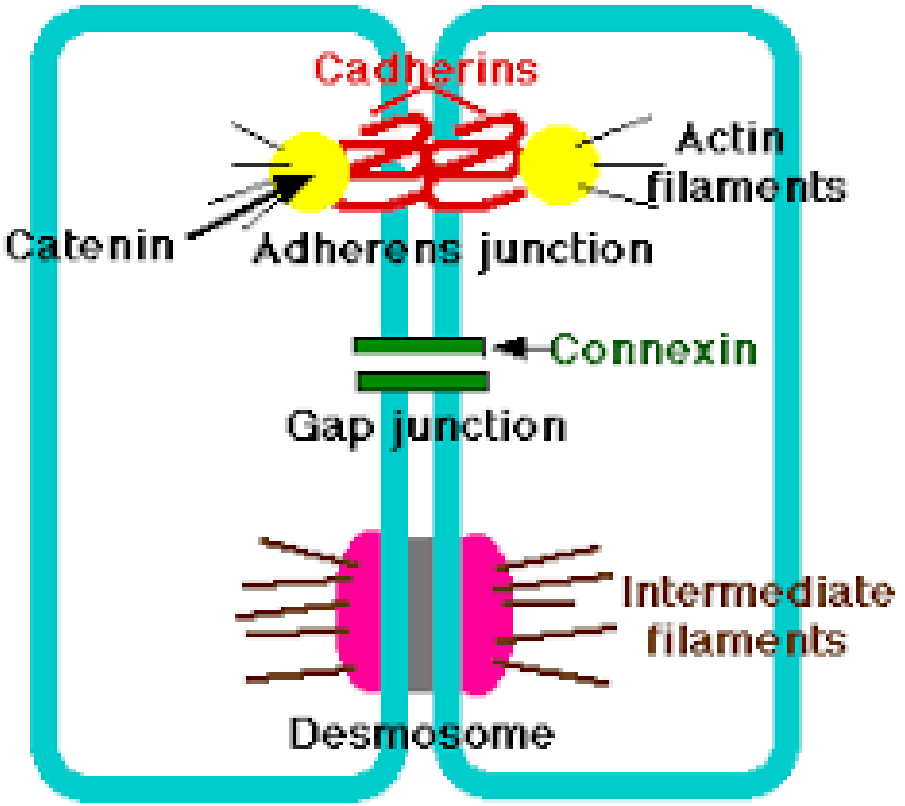




What are the key points of protein signalling:

- **A lipid insoluble molecule binds to a cell surface receptor causing a confirmational change**
- **Through the release of a secondary messenger there is an enzyme cascade/amplification and activtity**

Epithelial cells – Cell Junctions



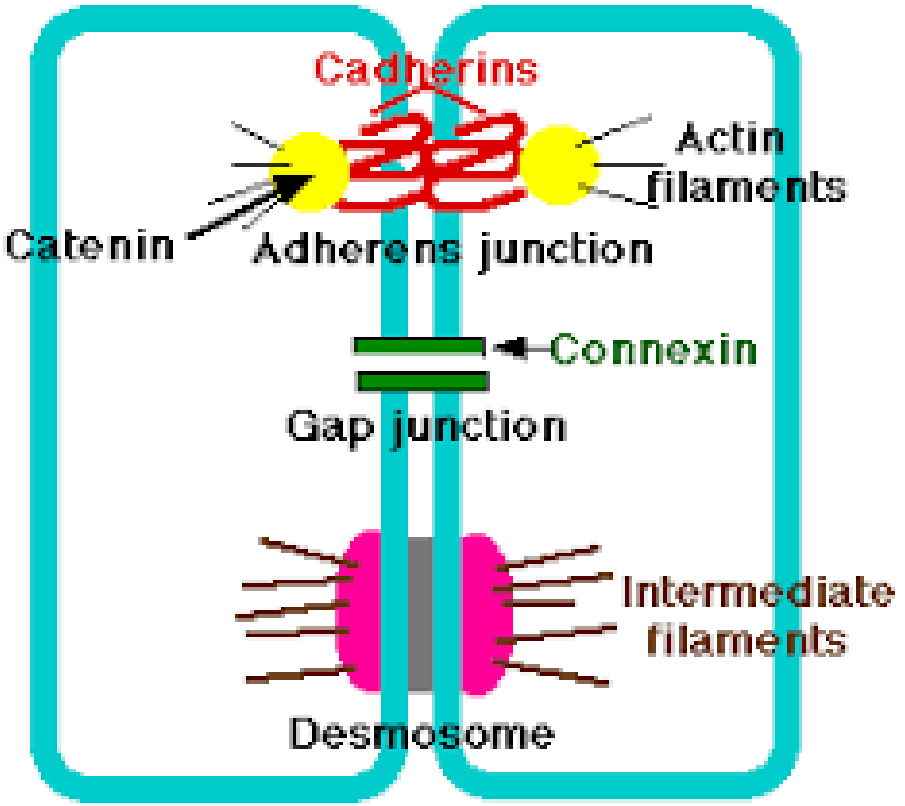
Epithelial cells function together as a tissue, so are tightly associated via intercellular junctions.

Junction type Structure Function
Tight – Made of Occludins (interconnecting membrane protein links)
Interlocking protein links fuse membranes to give small intercellular space that limits permeability between cells

Gap – Made of Connexins (protein tubes) : Protein channels through plasma two membranes or intercellular space allow transport between cells

Desmosome- Made of Cadherins (cell adhesion molecules) - Cadherins bind to the basal lamina of cells at adhering junctions, giving stability to the tissue.

Epithelial cells – Cell Junctions



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Tight –

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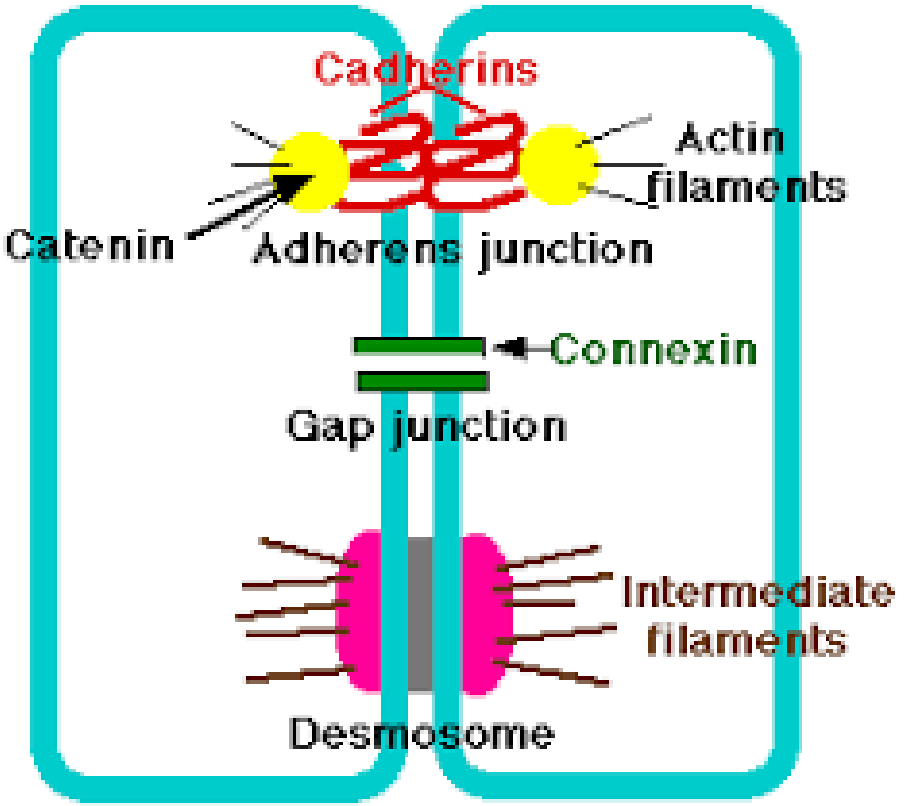
Desmosome-

Epithelial cells – Cell Junctions



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These are all Communicating Cells Junctions, So what is missing?

Tissues – Connective Tissue

Loose (alveolar) connective tissue:

Adipose tissue- Alveolar tissue matrix containing adipocytes. Adipocytes contain large fat globules.

- White adipose tissue- about 20-25% BMI in healthy adults and is a thermal insulator and energy store.
- Brown adipose tissue- found in newborn, highly vascularised and vastly reduced as you develop.

Reticular tissue- found in lymph nodes and organs of the lymphatic system. Matrix consists of reticular fibres. Cells-present are reticular cells and white blood cells

Tissues – Connective Tissue

Dense connective tissue-
Fibrous vs Elastic

Hyaline cartilage-
Fibrocartilage-
Elastic fibrocartilage-

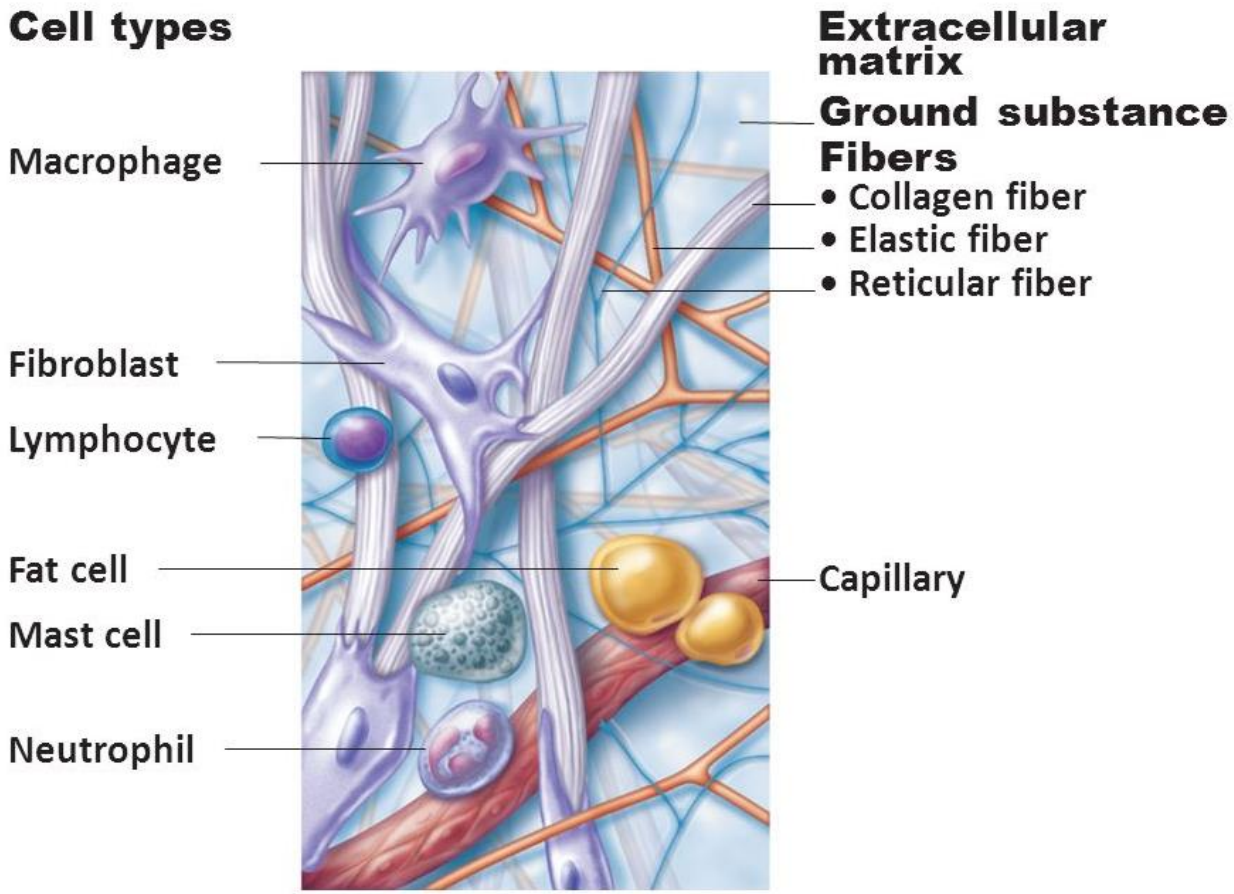
Osteocytes-
Osteoblast-
Osteoclast-
Compact bone-
Spongy/cancellous bone-
Tendons-
Ligaments-

Tissues – Extracellular Matrix

The ECM consists of a framework of extracellular fibres (collagen, elastic fibres and reticular fibres) with ground substance (proteoglycan molecules) filling in the gaps between the framework and any other structures present (cells, nerves, blood vessels and fluid). The connective tissue is therefore a complex mesh with a range of properties depending on the proportion of different components:

- Collagens give tensile strength to the network
- Elastic fibres give elasticity
- Reticular fibres are thinner and branching
- Proteoglycans are highly hydrated molecules allowing compressive strength, as water can be pushed out of the tissue under weight
- Integrins are proteins that signal between the ECM and metabolic systems, allowing it to react to its environment e.g. wound healing. Cartilage thickening with exercise is an example of an ECM adaptive response to mechanical stress.

Tissues – Extracellular Matrix

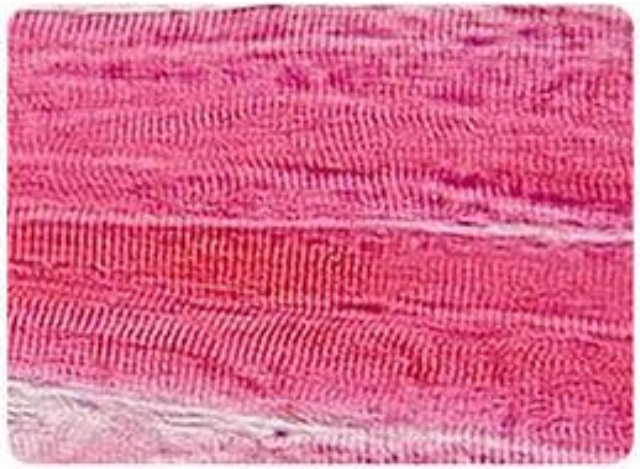


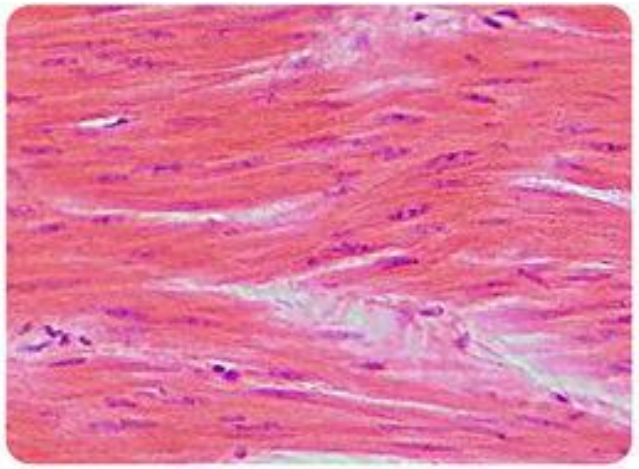
Tissues – Muscle Cells

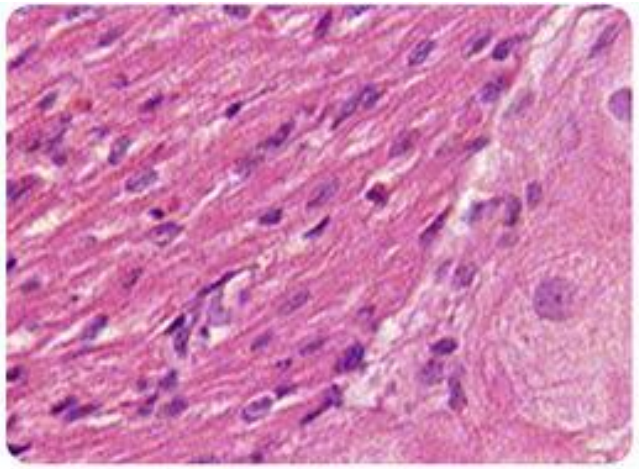
Skeletal

Smooth

Cardiac







Striated

Multinucleated/Mononucleated

Volutary/Involuntary control

Myogenic

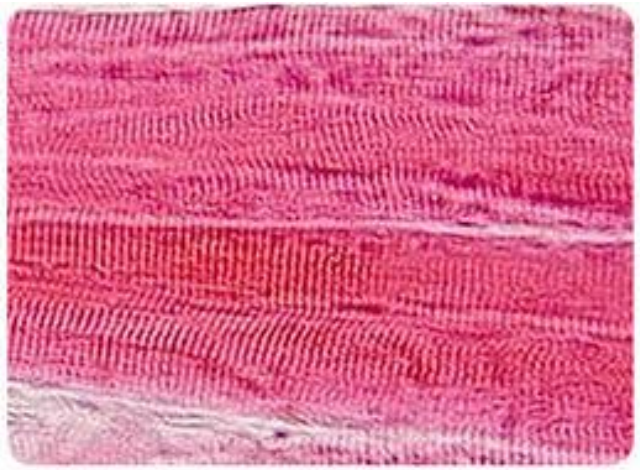
Tissues – Muscle Cells

Skeletal

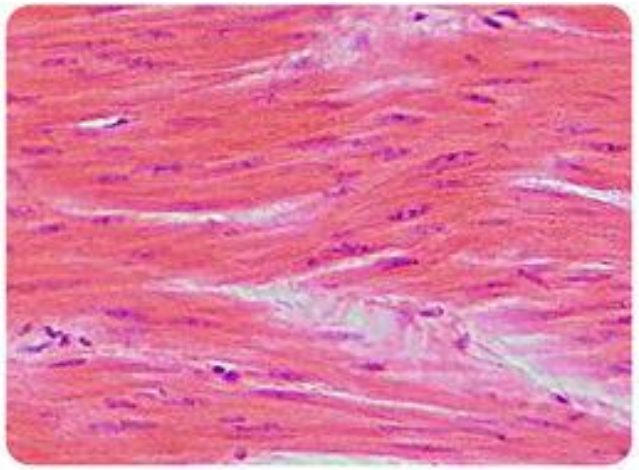
Smooth

Cardiac

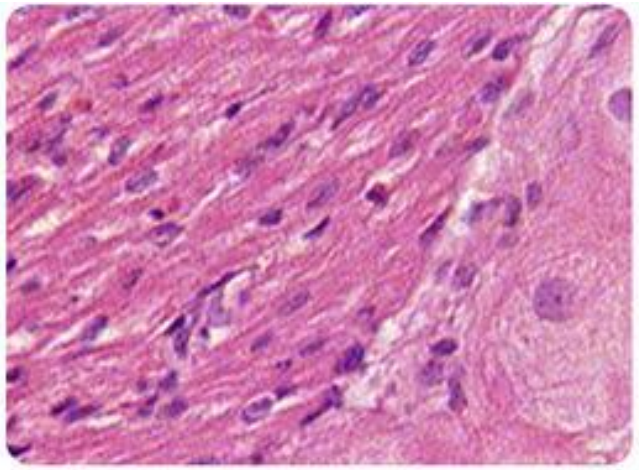
Striated



Skeletal muscle



Smooth muscle



Cardiac muscle

Multinucleated/Mononucleated

Volutary/Involuntary control

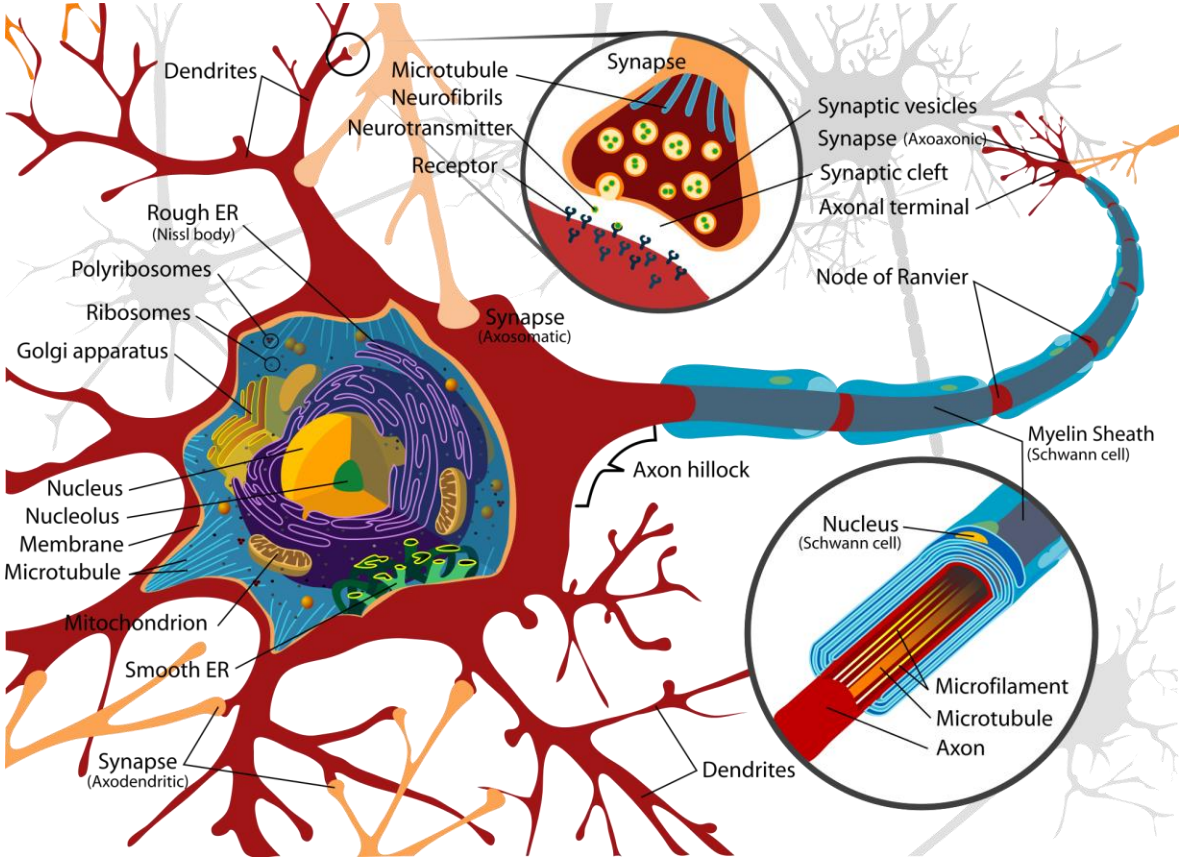
Myogenic

Tissues – Nerve Cells

Schwann cell vs oligodendrocyte

Node of Ranvier – What is it and why?

Neuron vs glia



Semester 1 Anatomy

Introduction to Anatomy and Surface Anatomy

Introduction to Imaging/Imaging Anatomy

Semester 1 Anatomy

Introduction to Anatomy and Surface Anatomy

What do we mean by surface anatomy? (Landmarks levels and lines)

How does it relate to clinical and surgical practice?

The Language of Anatomy

The Anatomical Position

Planes of the Body

Anatomical Terminology

Major Cavities/Regions of the Body

Introduction to the Skeleton and Joints

Terminology for Movement

Semester 1 Anatomy

Introduction to Imaging/Imaging Anatomy

How do we visualise human anatomy?

Why is this important?

PET (Positron Emission Tomography)Scans

MRI

Ultrasound imaging (Sonography)

X-rays (Radiography)

In anatomy teaching

In clinical practice

Histology (microanatomy)

Semester 1 Anatomy

What do we mean by surface anatomy? (Landmarks, levels and lines)

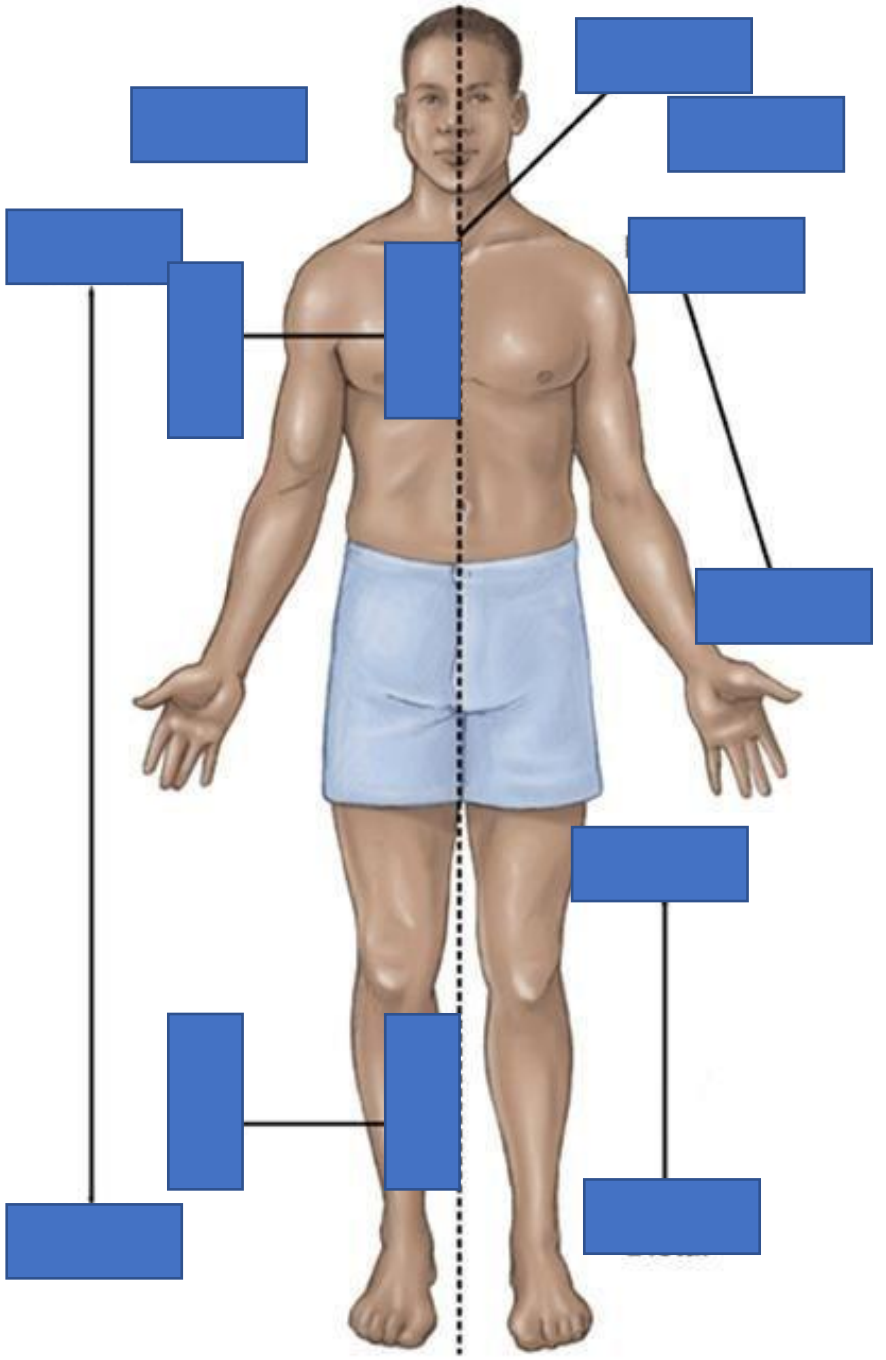
Semester 1 Anatomy

How does it relate to practice?

Semester 1 Anatomy

The Language of Anatomy +

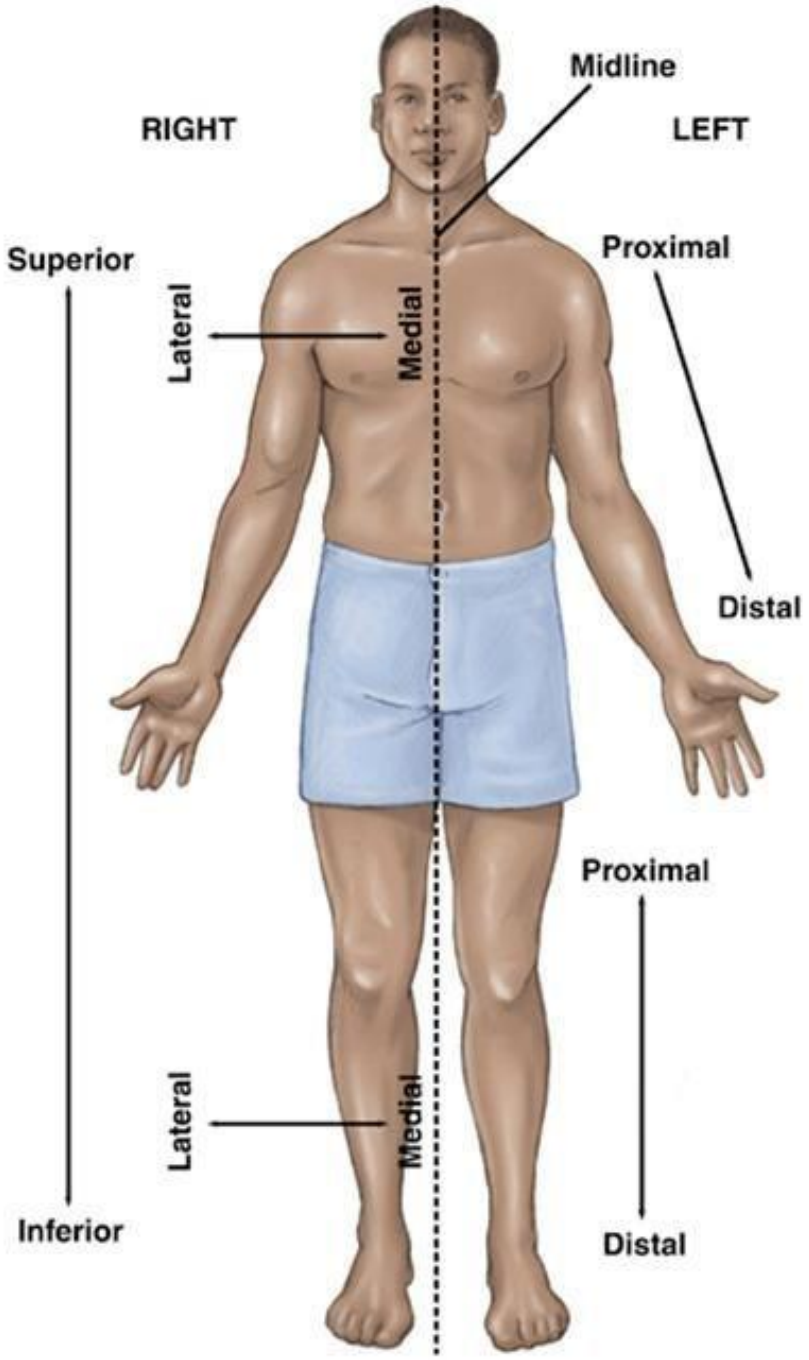
Anatomical Terminology



Semester 1 Anatomy

The Language of Anatomy

What is this person currently standing in?

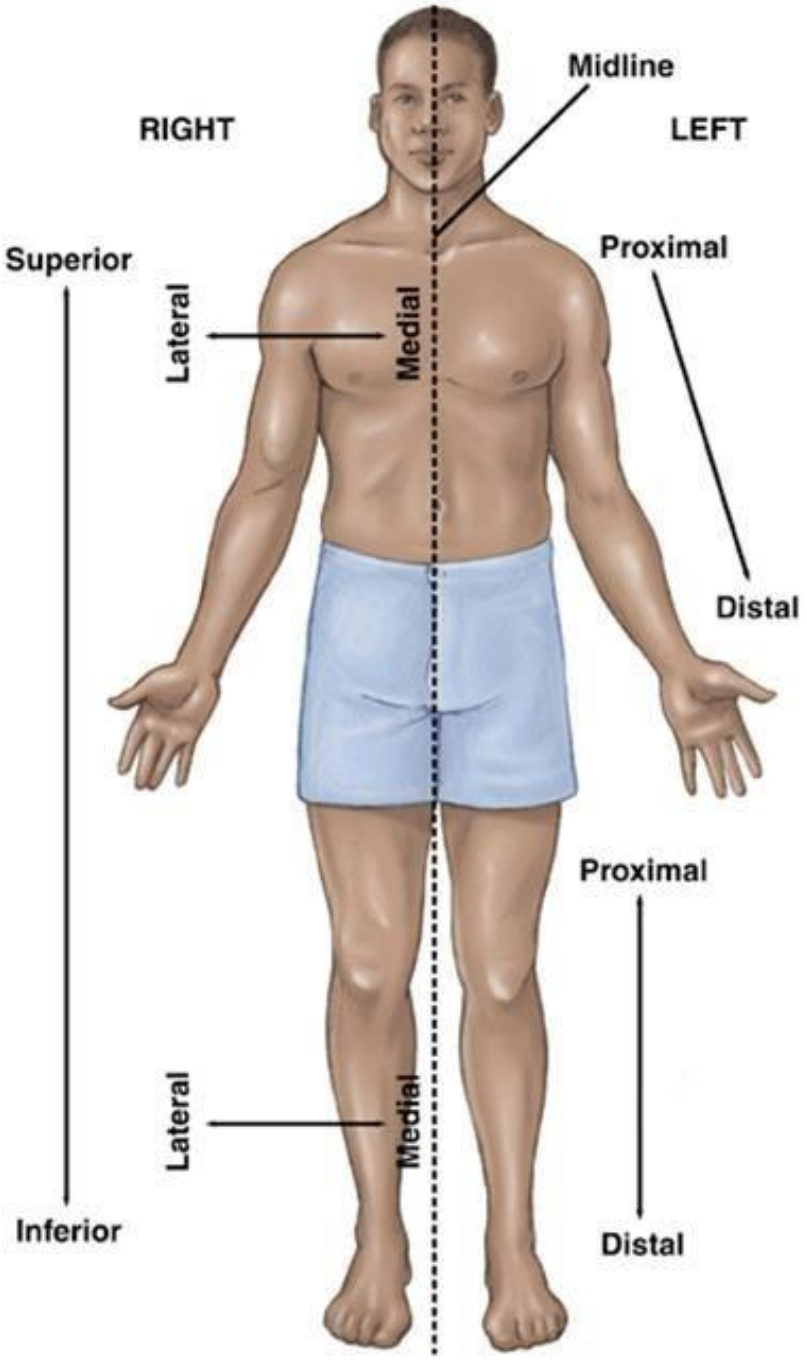


Semester 1 Anatomy

The Language of Anatomy

What is this person currently standing in?

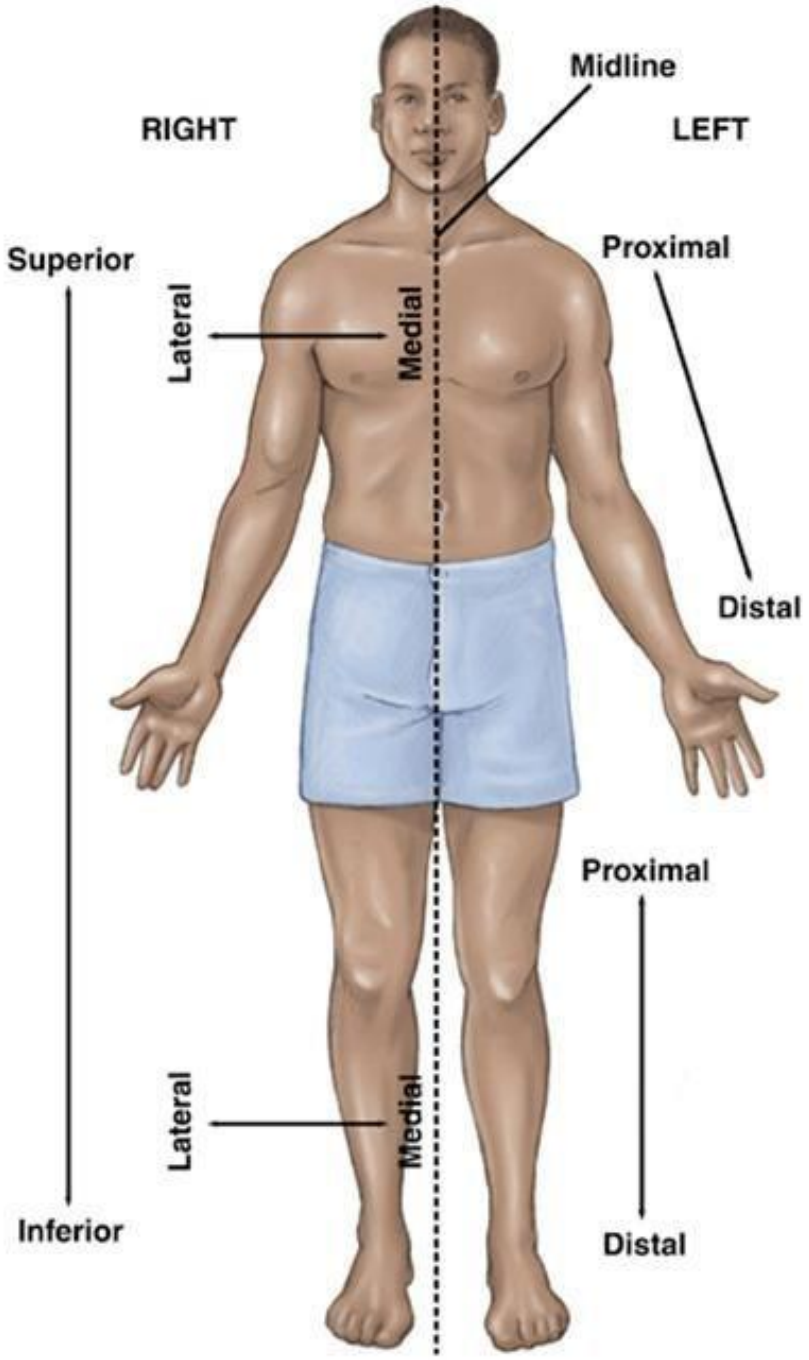
The anatomical position



Semester 1 Anatomy

The sternum is ……. To the spine

The hallux is …… to the 5th digit



Semester 1 Anatomy

The Planes of the Body

What sort of section is this?

Semester 1 Anatomy

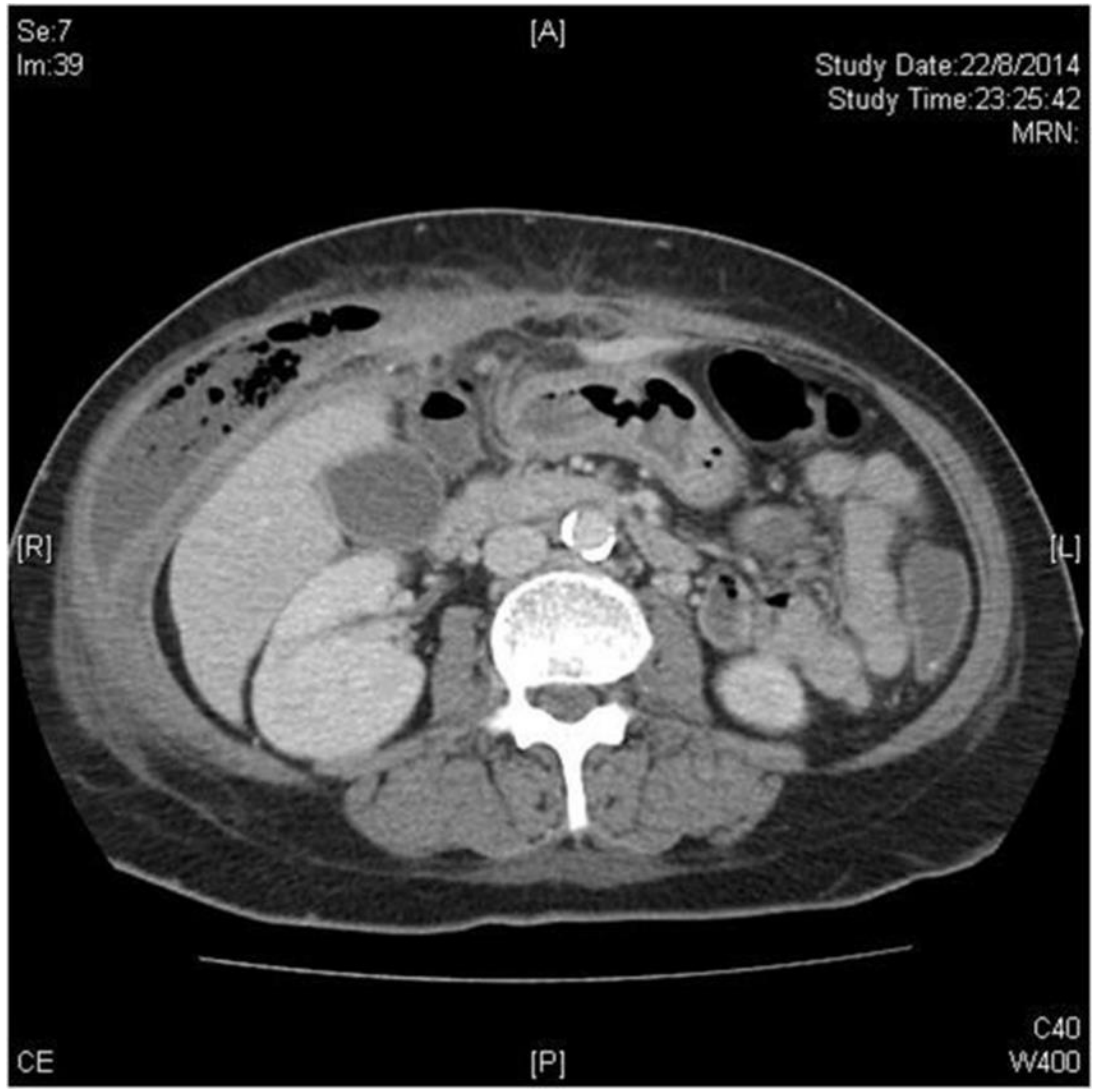
The Planes of the Body

A Sagittal Section

Semester 1 Anatomy

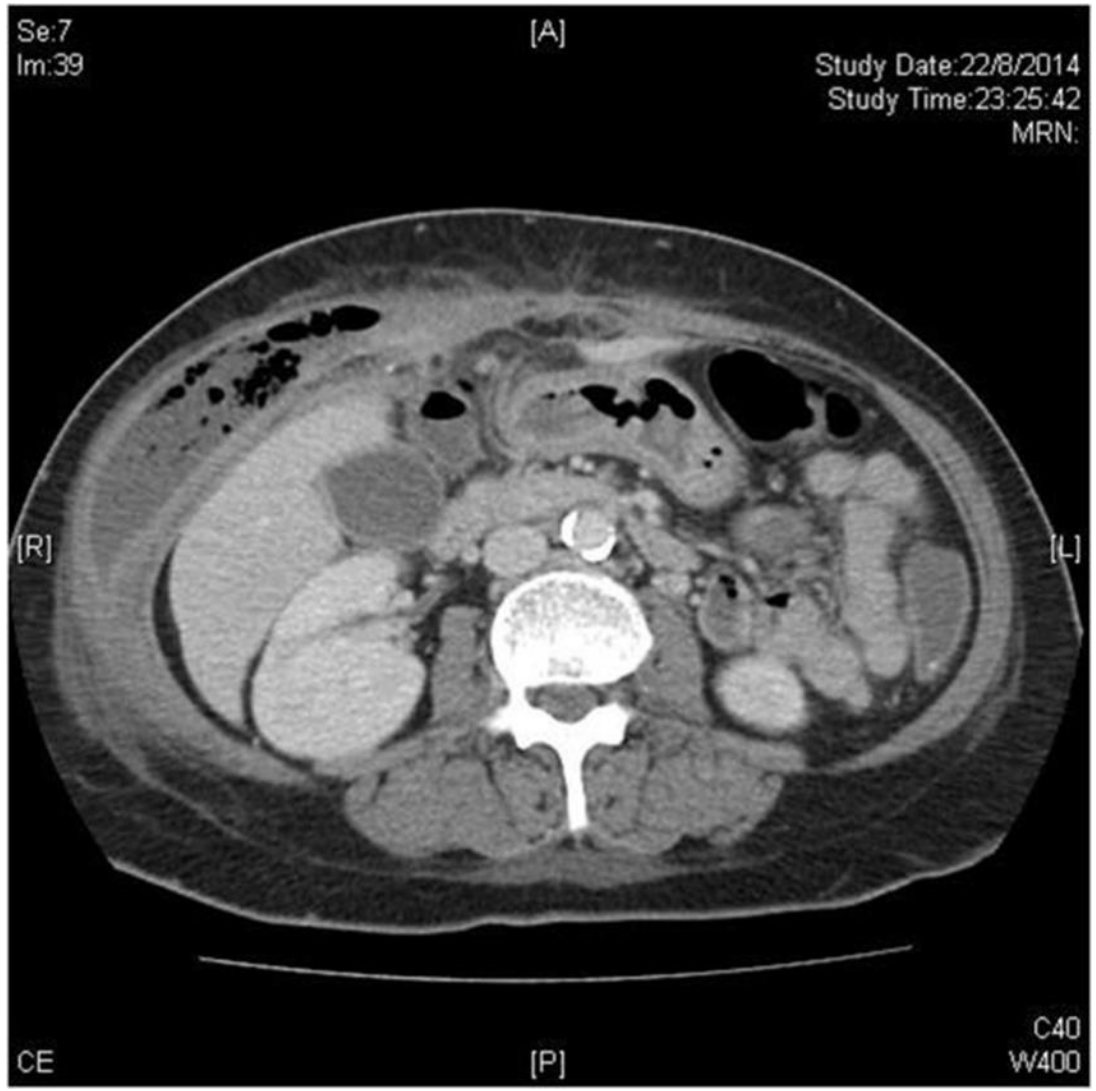
The Planes of the Body

What sort of section is this?



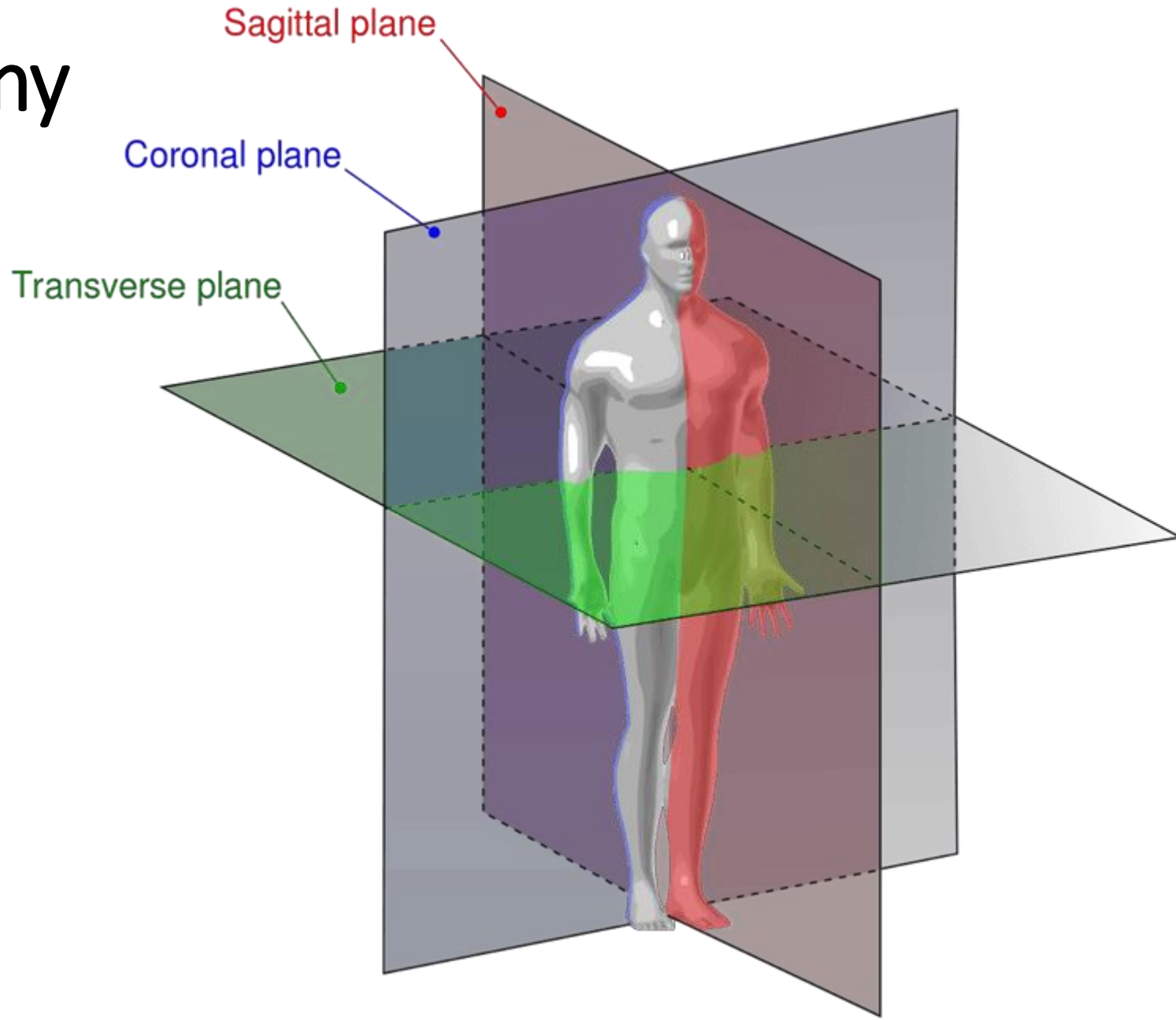
Semester 1 Anatomy

A transverse section



Semester 1 Anatomy

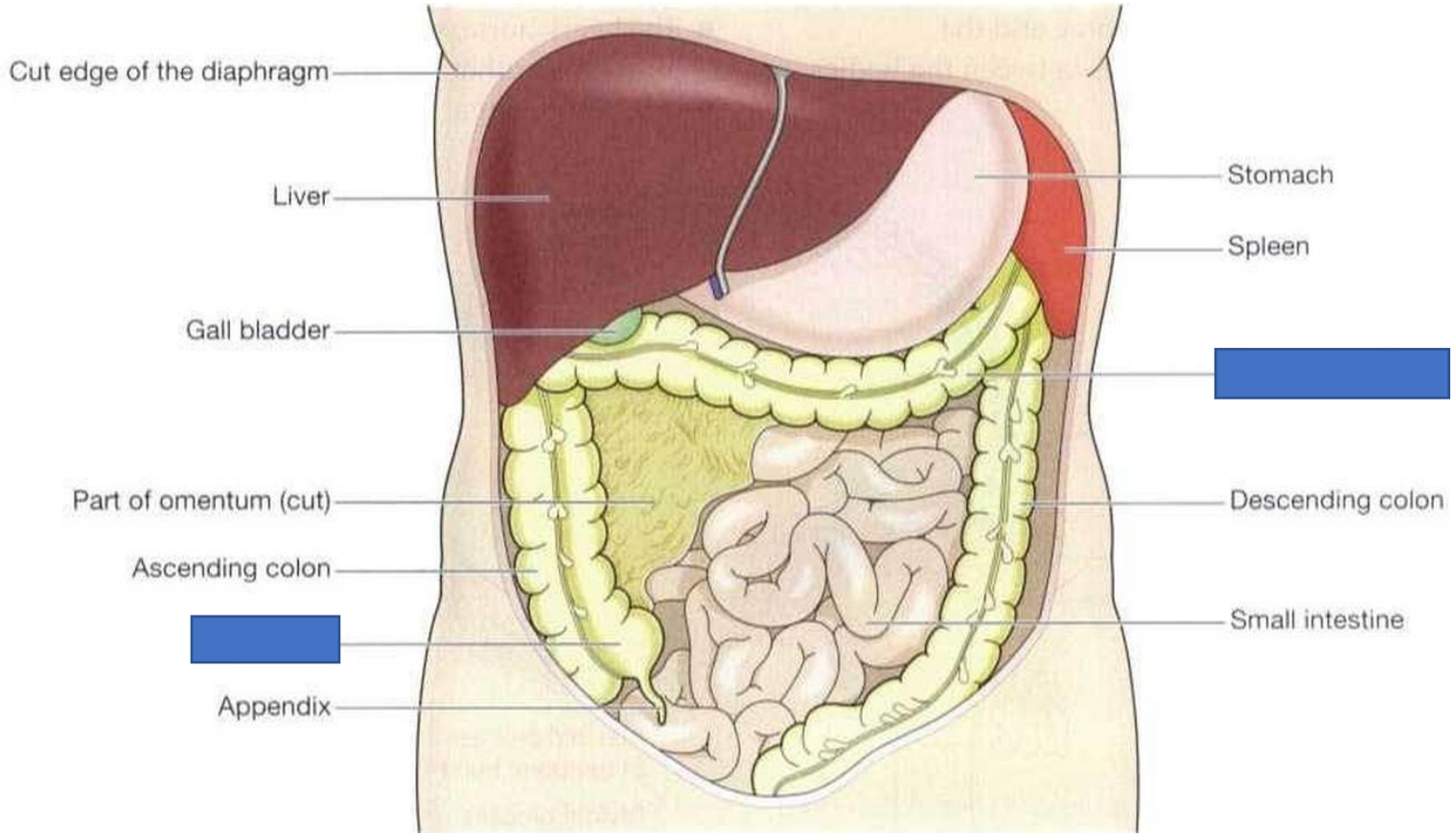
Planes of the body



Semester 1 Anatomy

Major Cavities/Regions of the Body

Abdominal Cavity

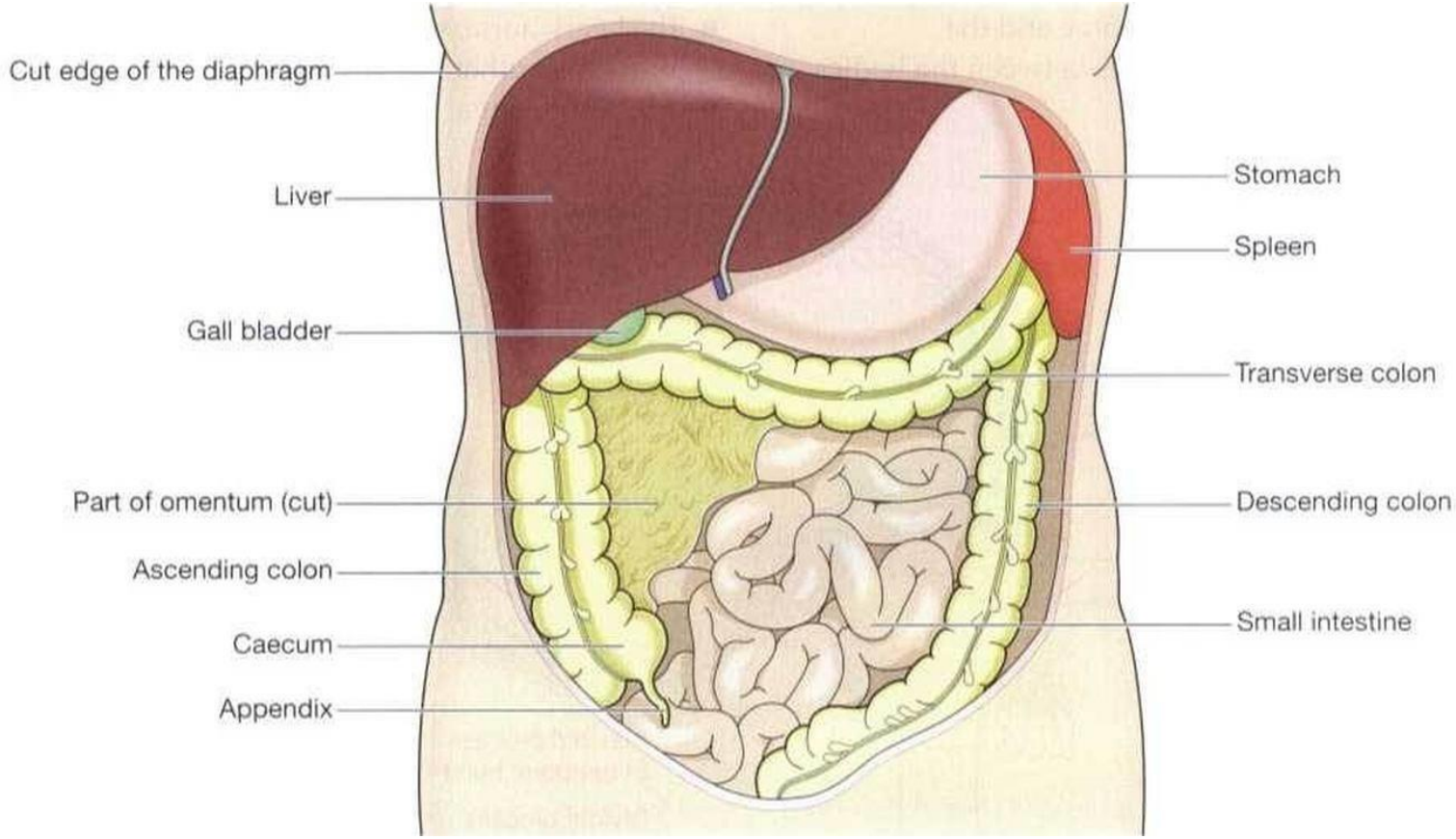


Semester 1 Anatomy

Major Cavities/Regions of the Body

Abdominal Cavity

What is missing?



Semester 1 Anatomy

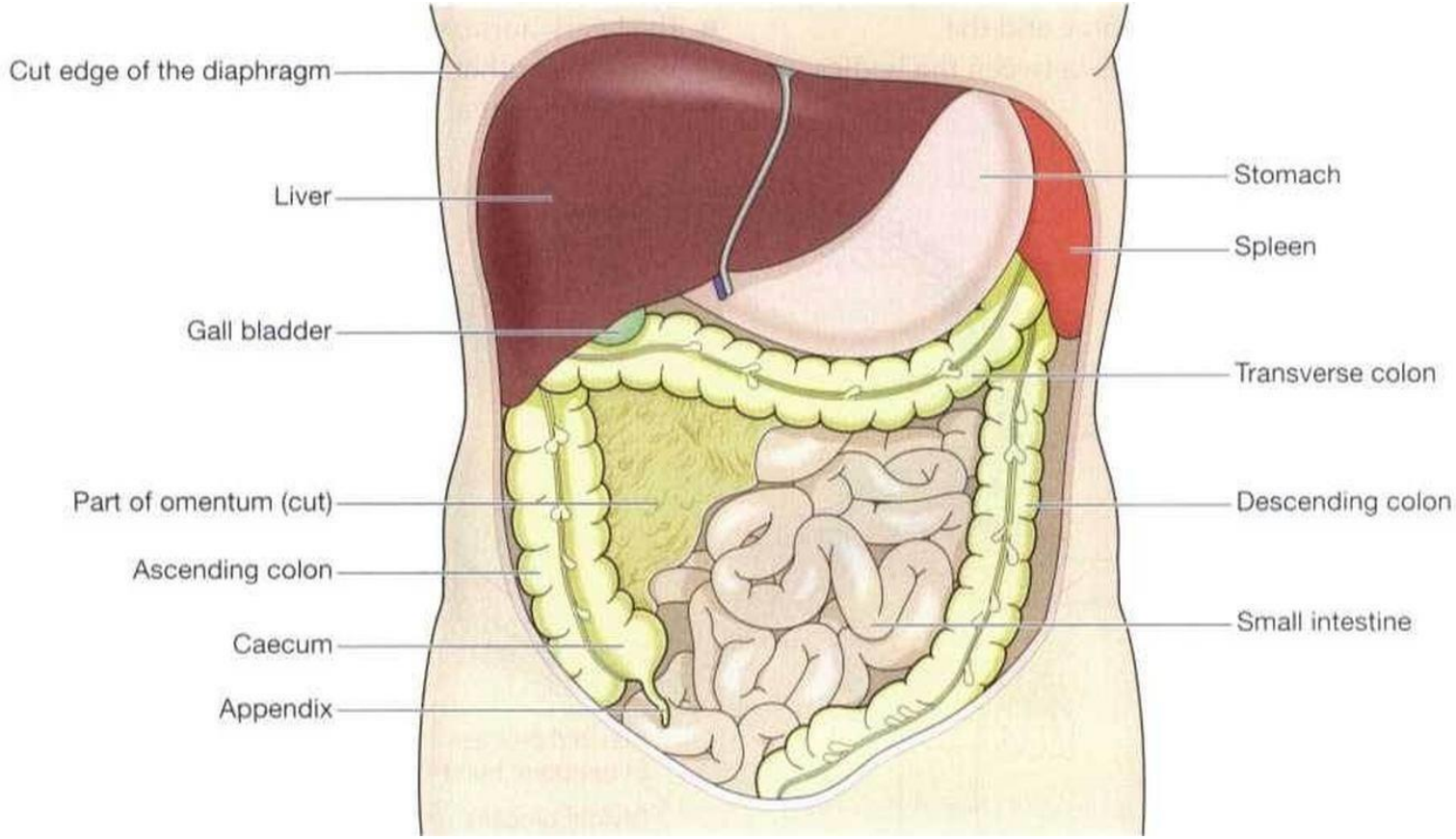
Major Cavities/Regions of the Body

Abdominal Cavity

What is missing?

Jejunum

Ileum



Semester 1 Anatomy

Major Cavities/Regions of the Body

Skull and Brain

What is the Neurocranium?

What is the Viscerocranium?

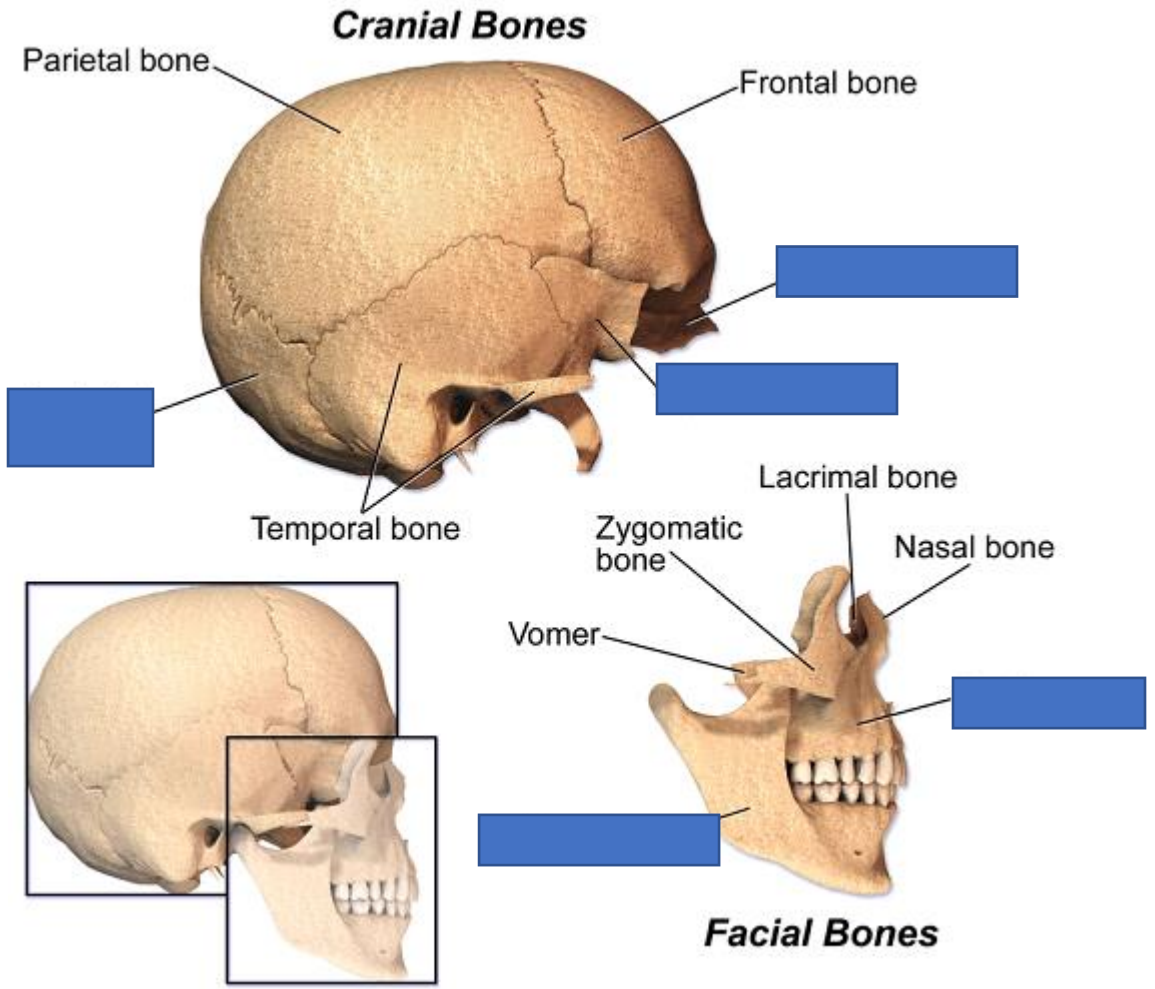
Semester 1 Anatomy

Major Cavities/Regions of the Body

Skull and Brain

What is the Neurocranium?

What is the Viscerocranium?



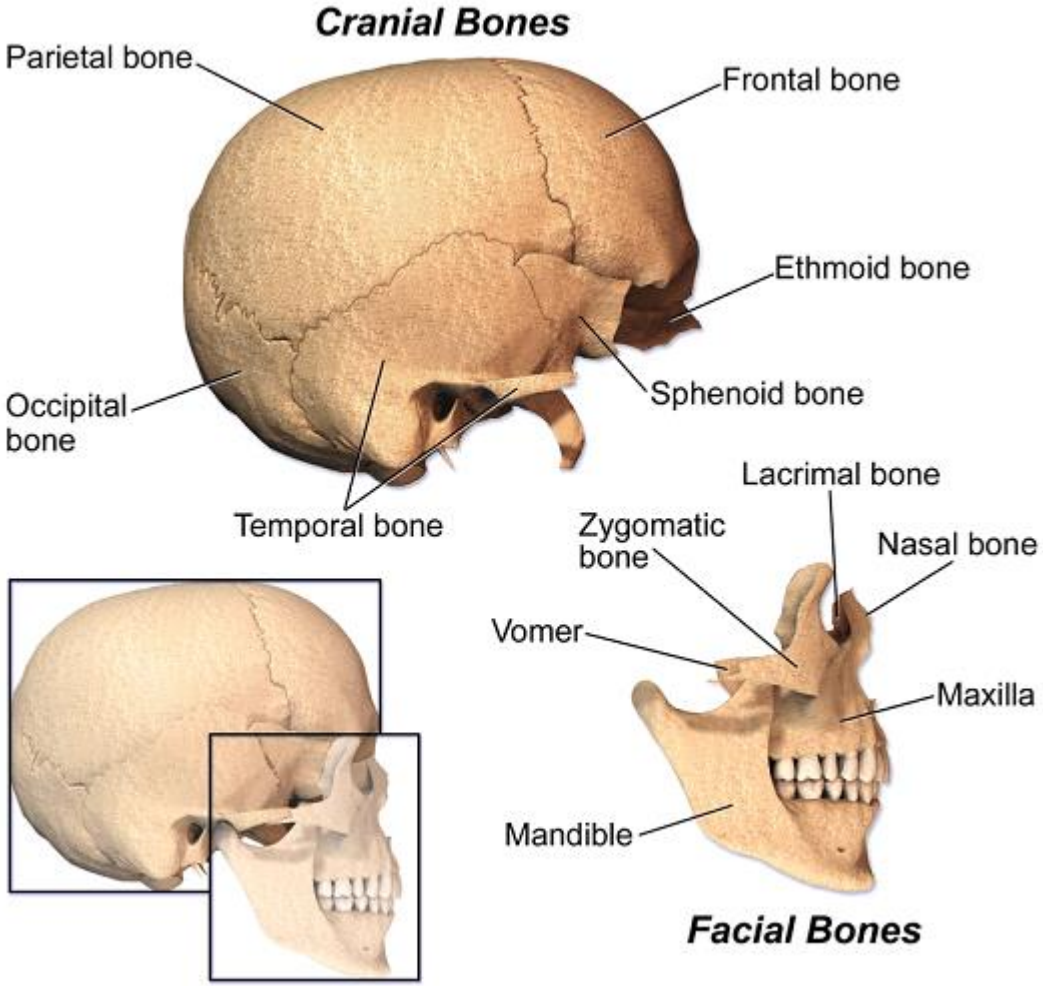
Semester 1 Anatomy

Major Cavities/Regions of the Body

Skull and Brain

What is the Neurocranium?

What is the Viscerocranium?

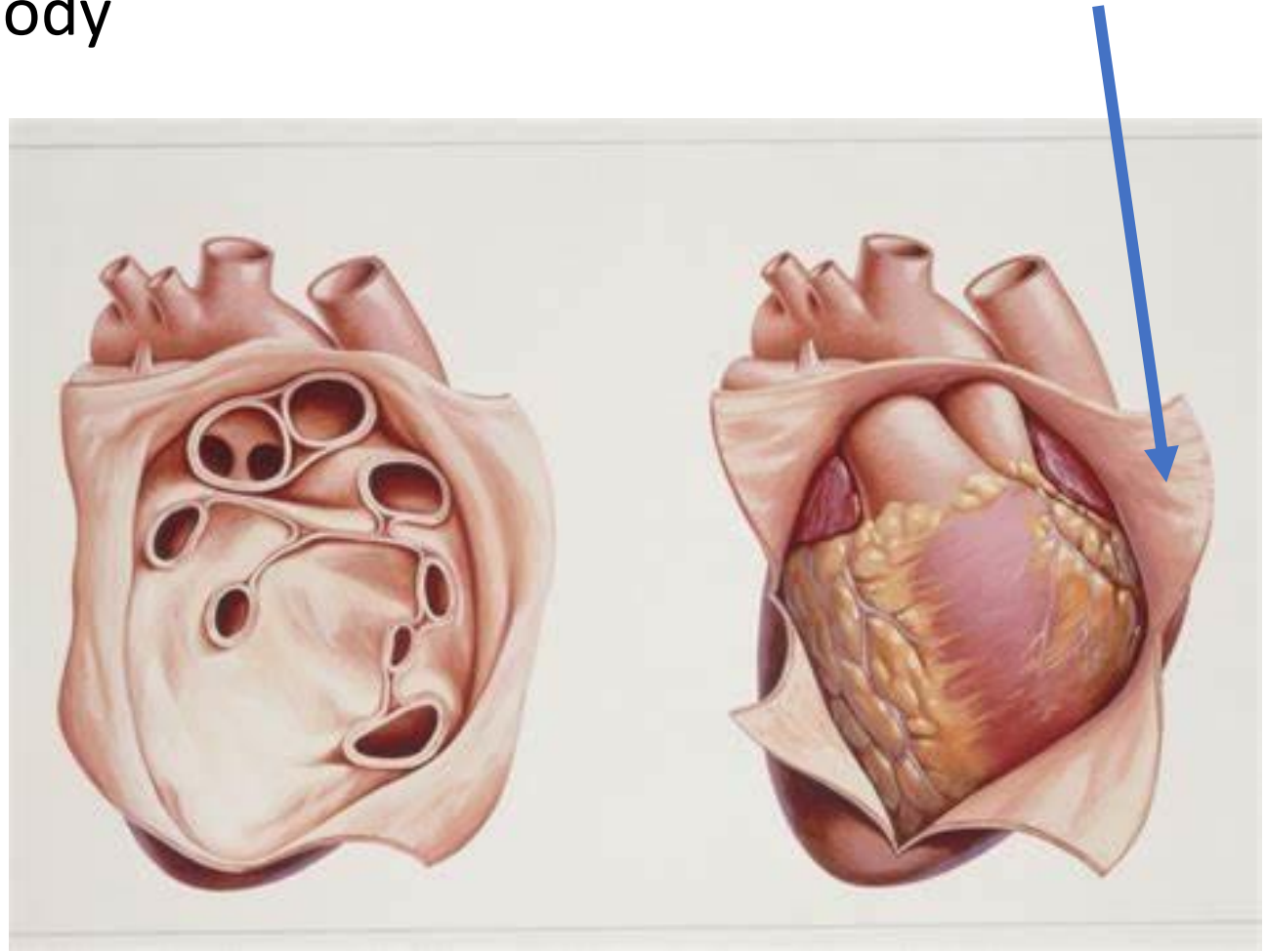


Semester 1 Anatomy

Major Cavities/Regions of the Body

Thorax

What is this?



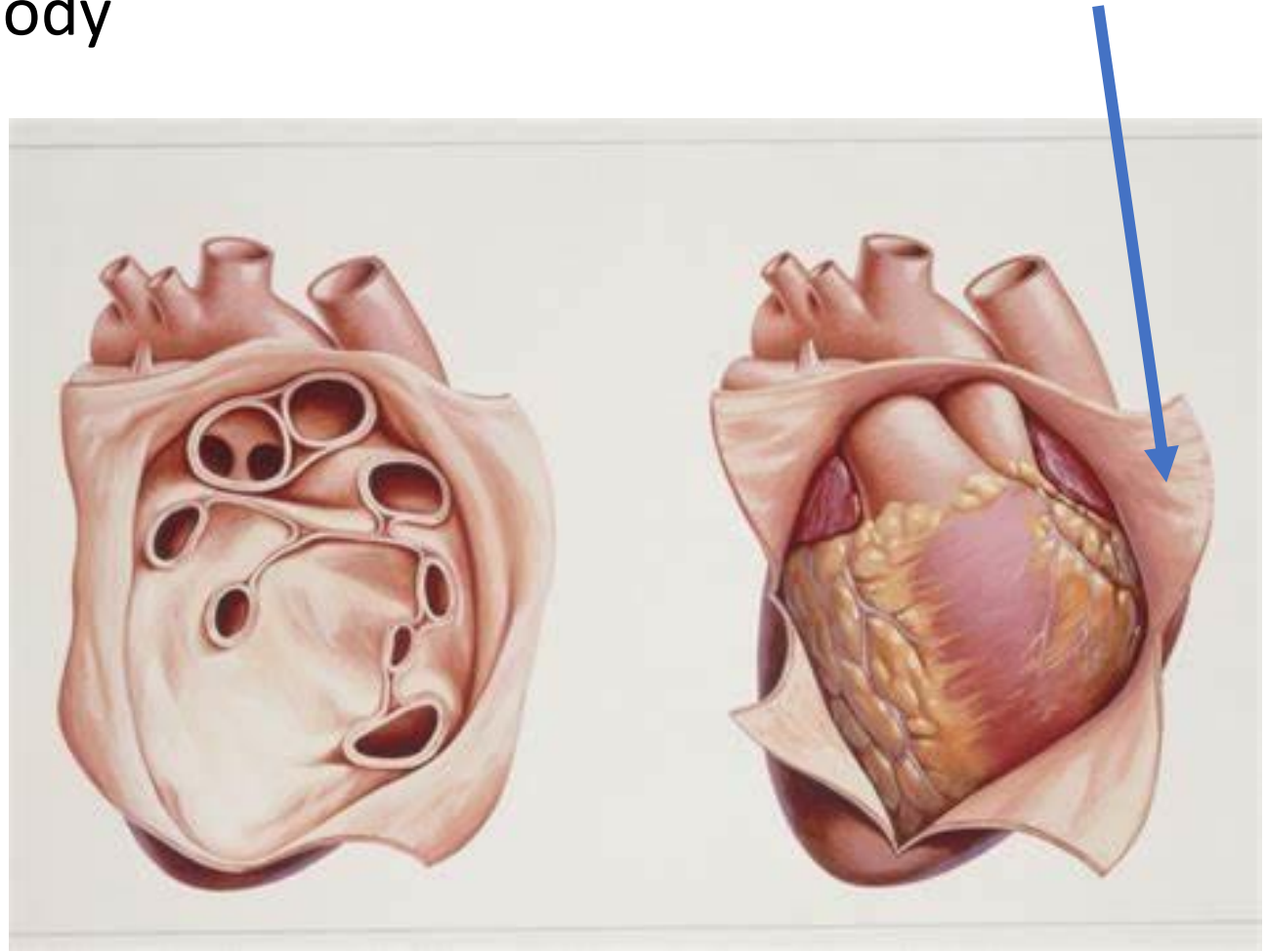
Semester 1 Anatomy

Major Cavities/Regions of the Body

Thorax

What is this?

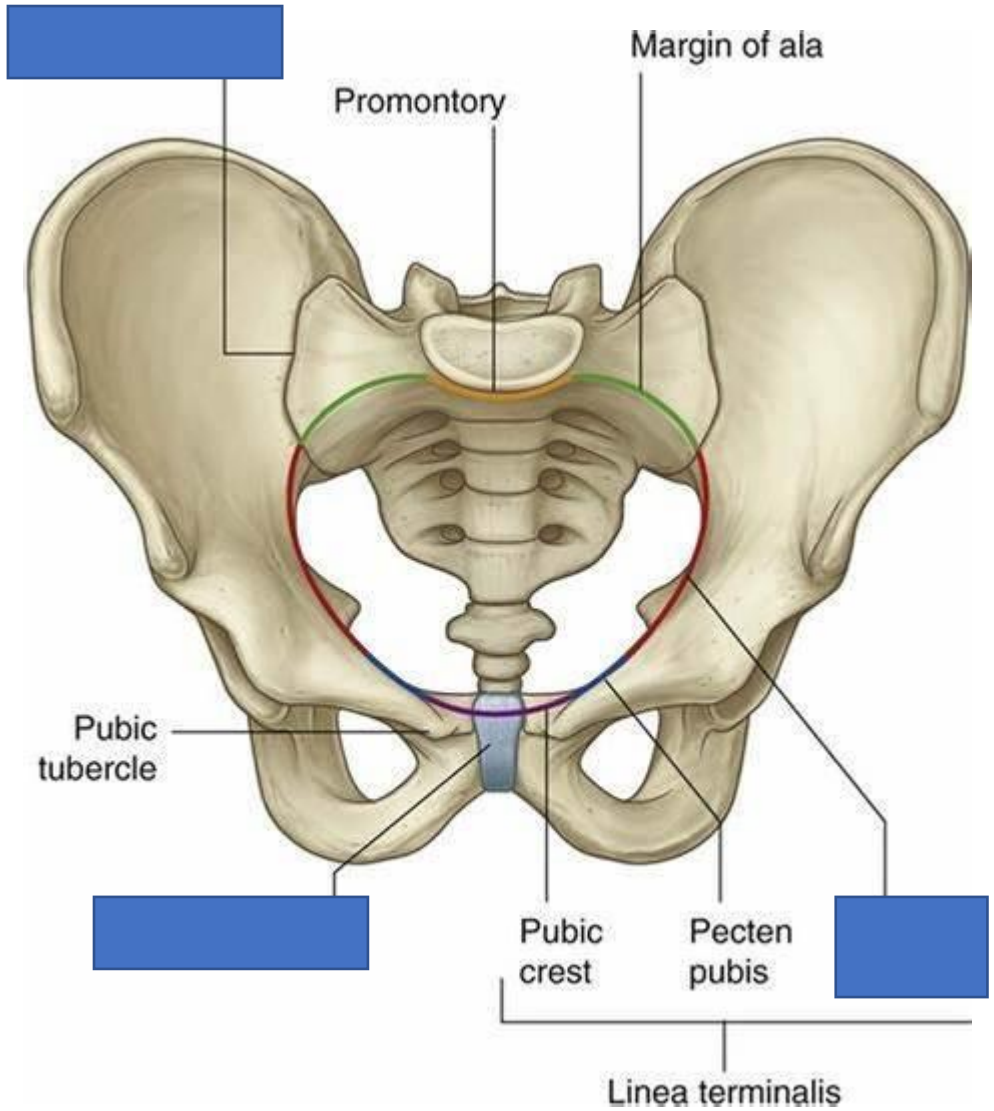
Pericardium



Semester 1 Anatomy

Major Cavities/Regions of the Body

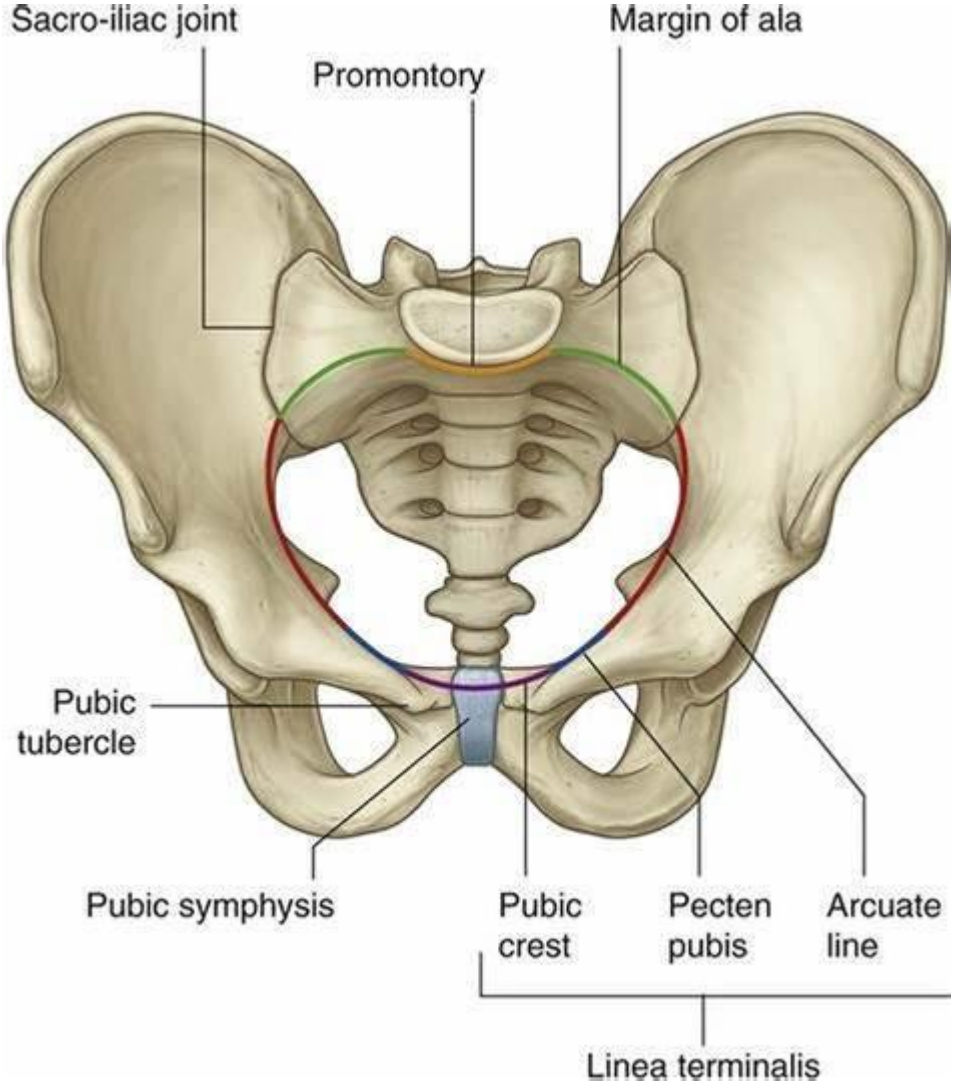
Pelvic Cavity



Semester 1 Anatomy

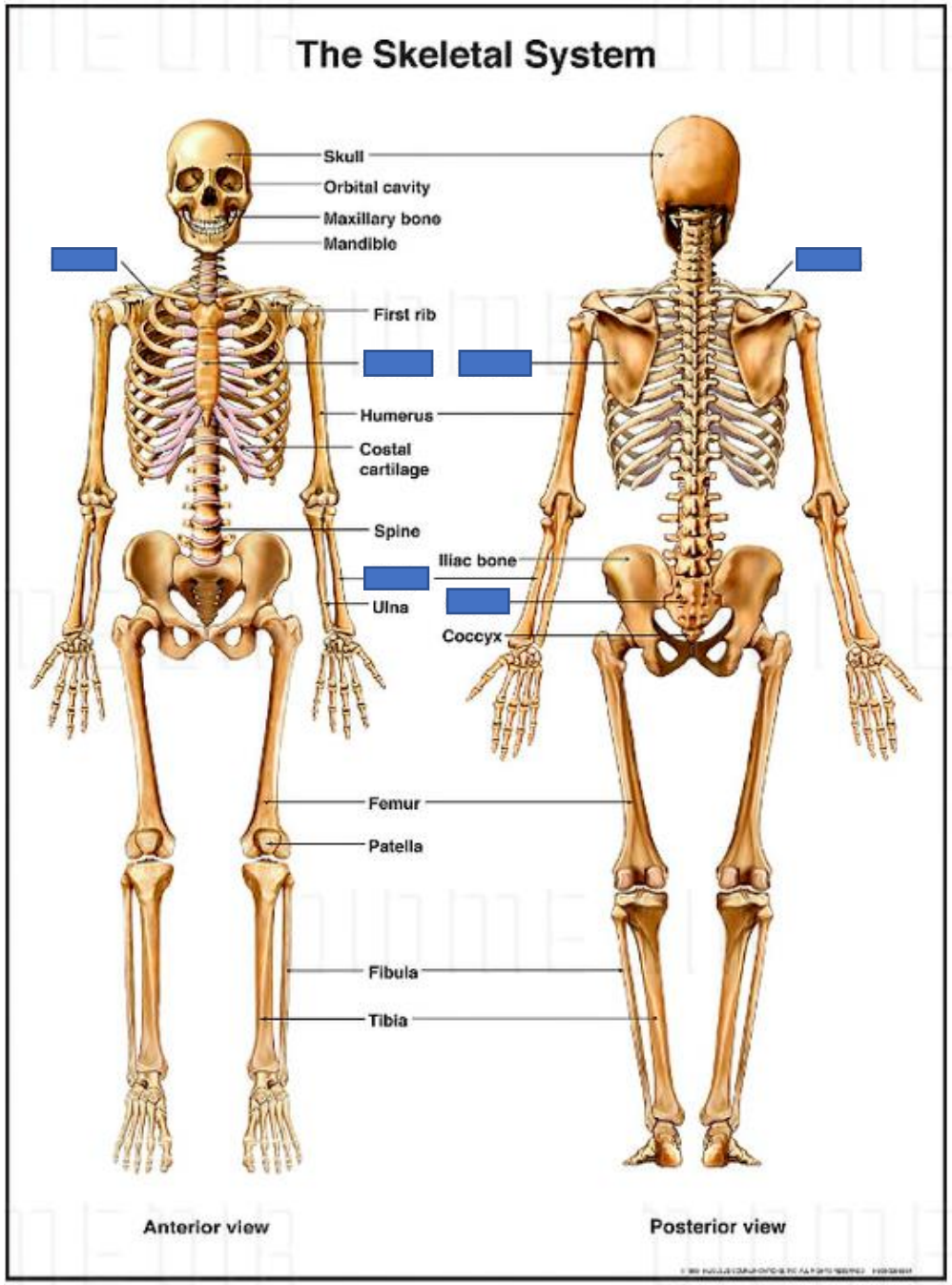
Major Cavities/Regions of the Body

Pelvic Cavity



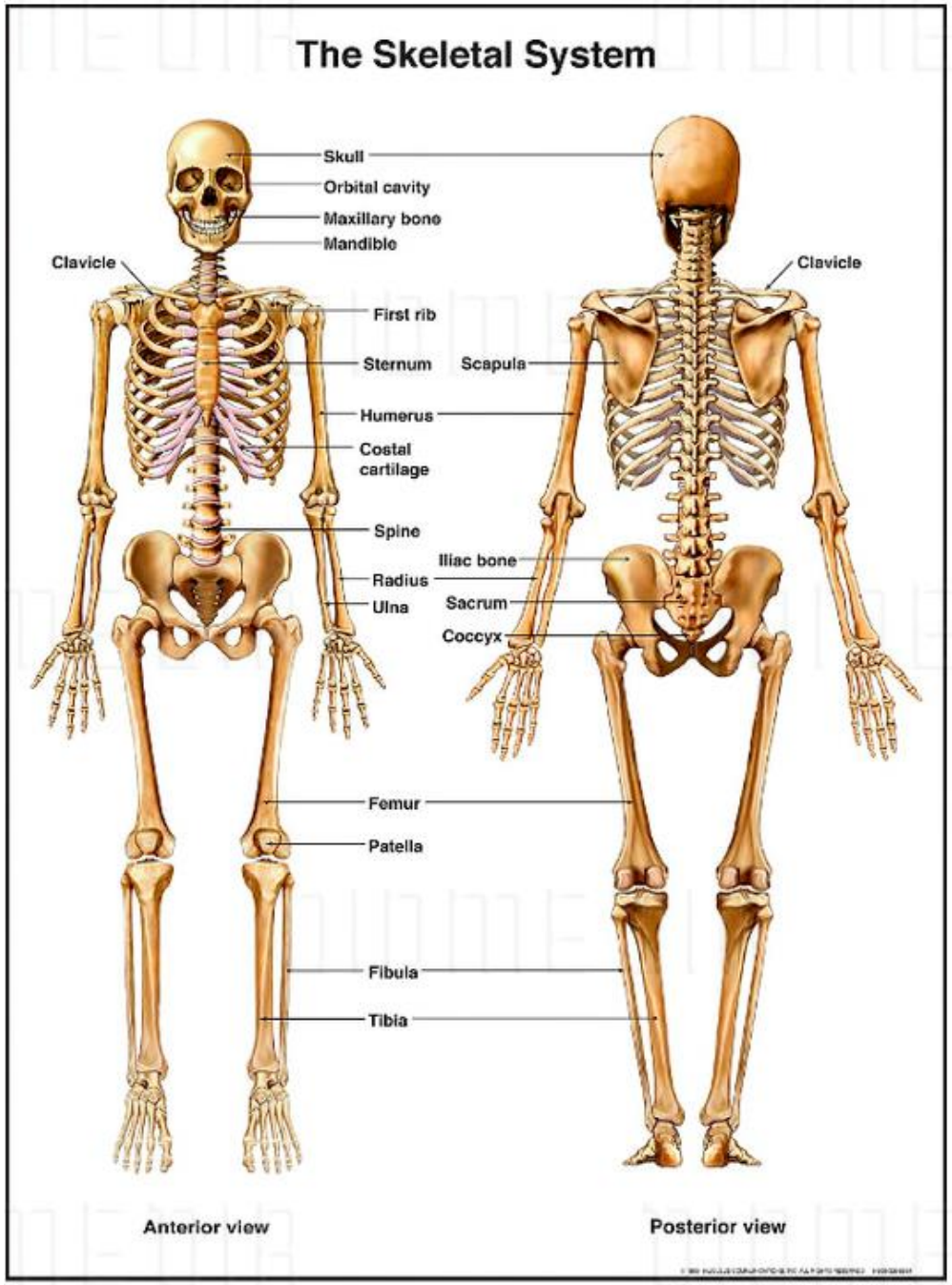
Semester 1 Anatomy

Introduction to the Skeleton and Joints



Semester 1 Anatomy

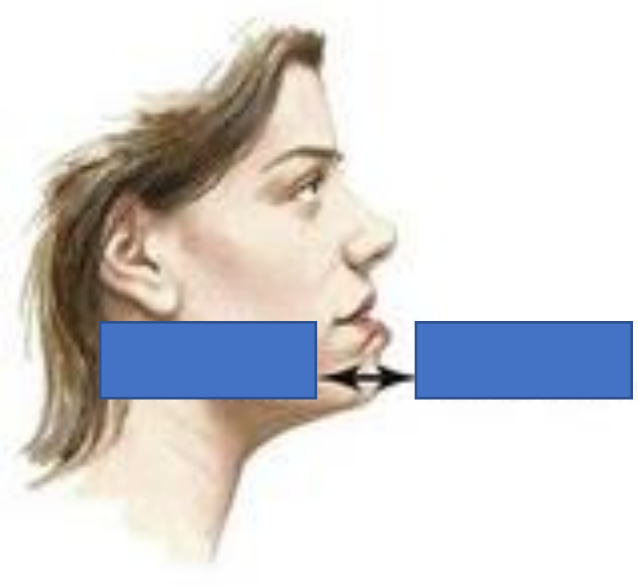
Introduction to the Skeleton and Joints



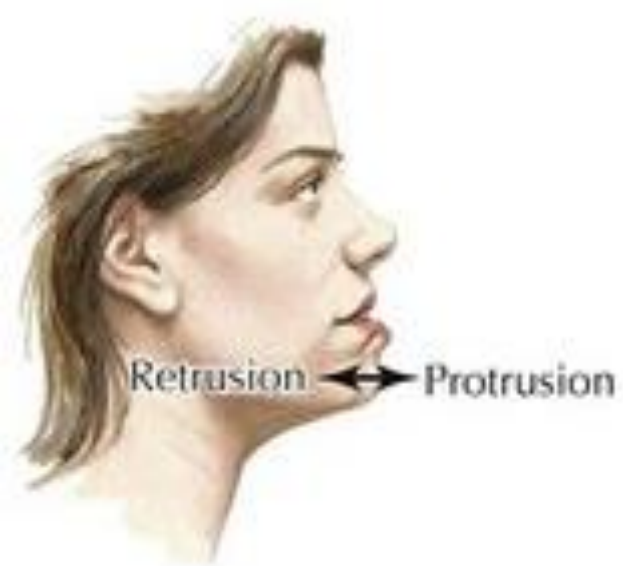
Semester 1 Anatomy

Terms of Movement

Semester 1 Anatomy



Semester 1 Anatomy



Semester 1 Anatomy

Semester 1 Anatomy

Introduction to Imaging/Imaging Anatomy

How do we visualise human anatomy?

Why is this important?

PET (Positron Emission Tomography)Scans

MRI

Ultrasound imaging (Sonography)

X-rays (Radiography)

In anatomy teaching

In clinical practice

Histology (microanatomy)

Semester 1 Anatomy

How do we visualise human anatomy?

Semester 1 Anatomy

How do we visualise human anatomy?

Semester 1 Anatomy

PET (Positron Emission Tomography)

Metabolic and biochemical activity

Semester 1 Anatomy

MRI

Semester 1 Anatomy

Sonography

Semester 1 Anatomy

X-Rays

Semester 1 Anatomy

Histology

H&E staining process:

Semester 1 Anatomy

Anatomy of the Head and Neck

Semester 1 Anatomy

Anatomy of the Head and Neck

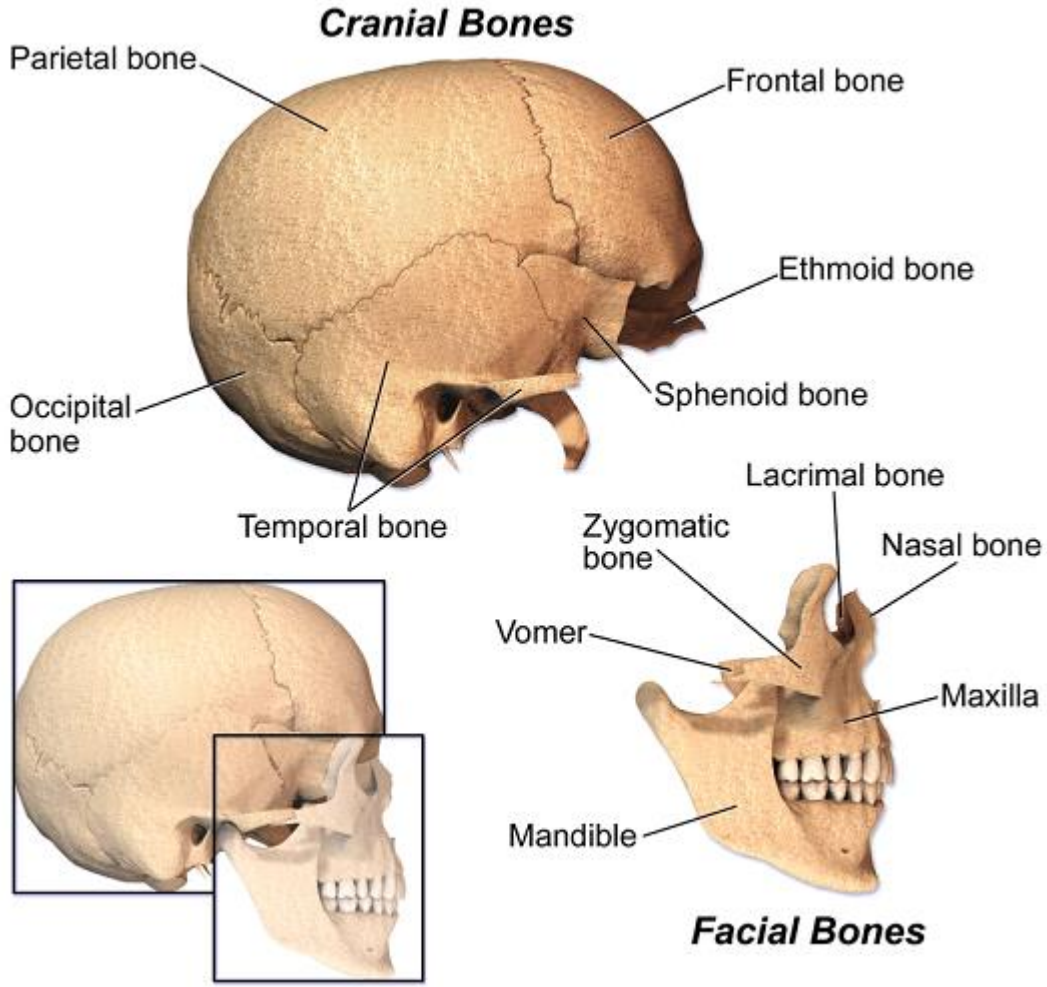
Identify the bones of the skull and describe the major foramina

Describe the major muscles of facial expression and mastication

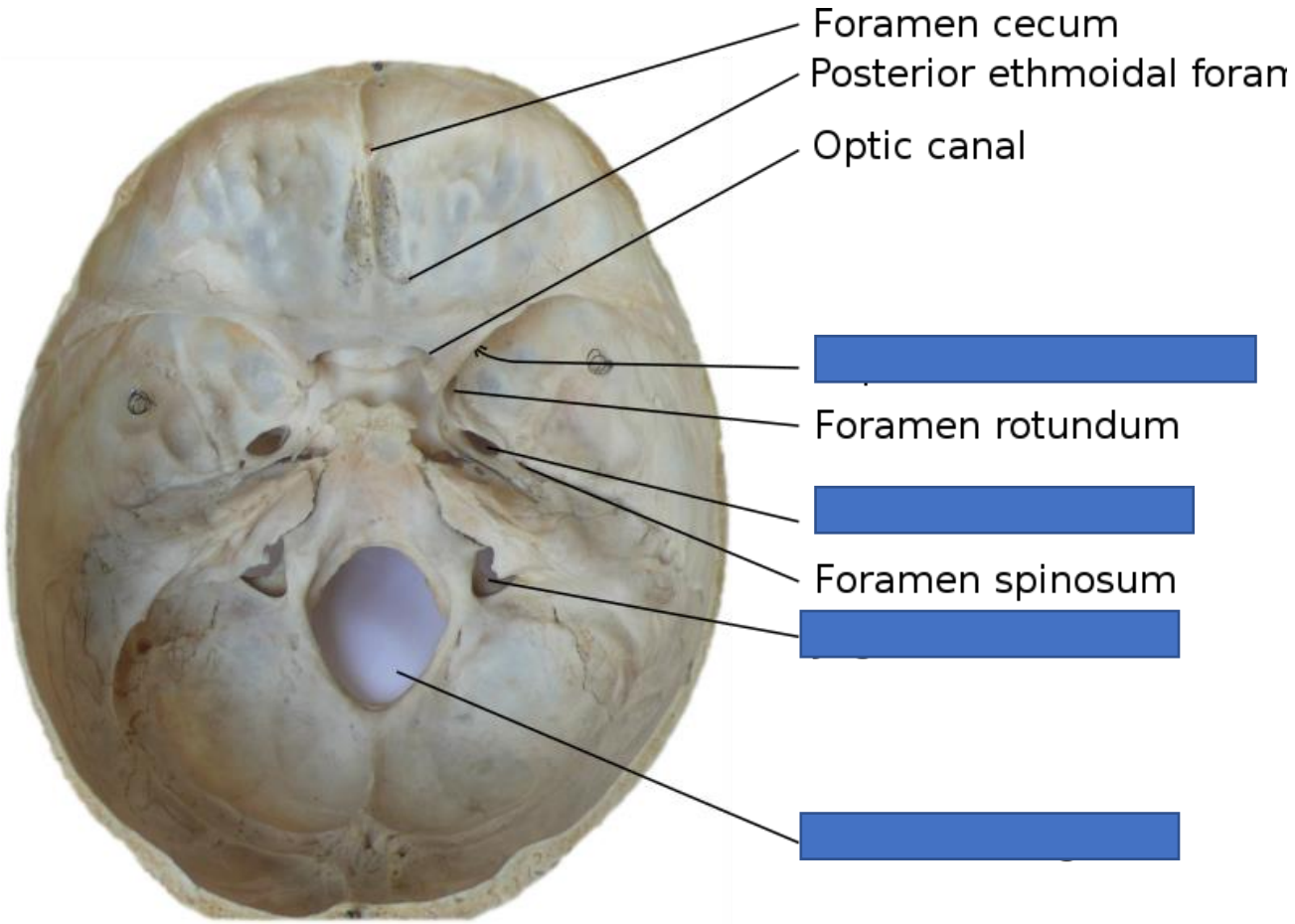
Understand the layout and orientation of the cavities within the head and neck

Utilise anatomical surface landmarks to identify key neck structures

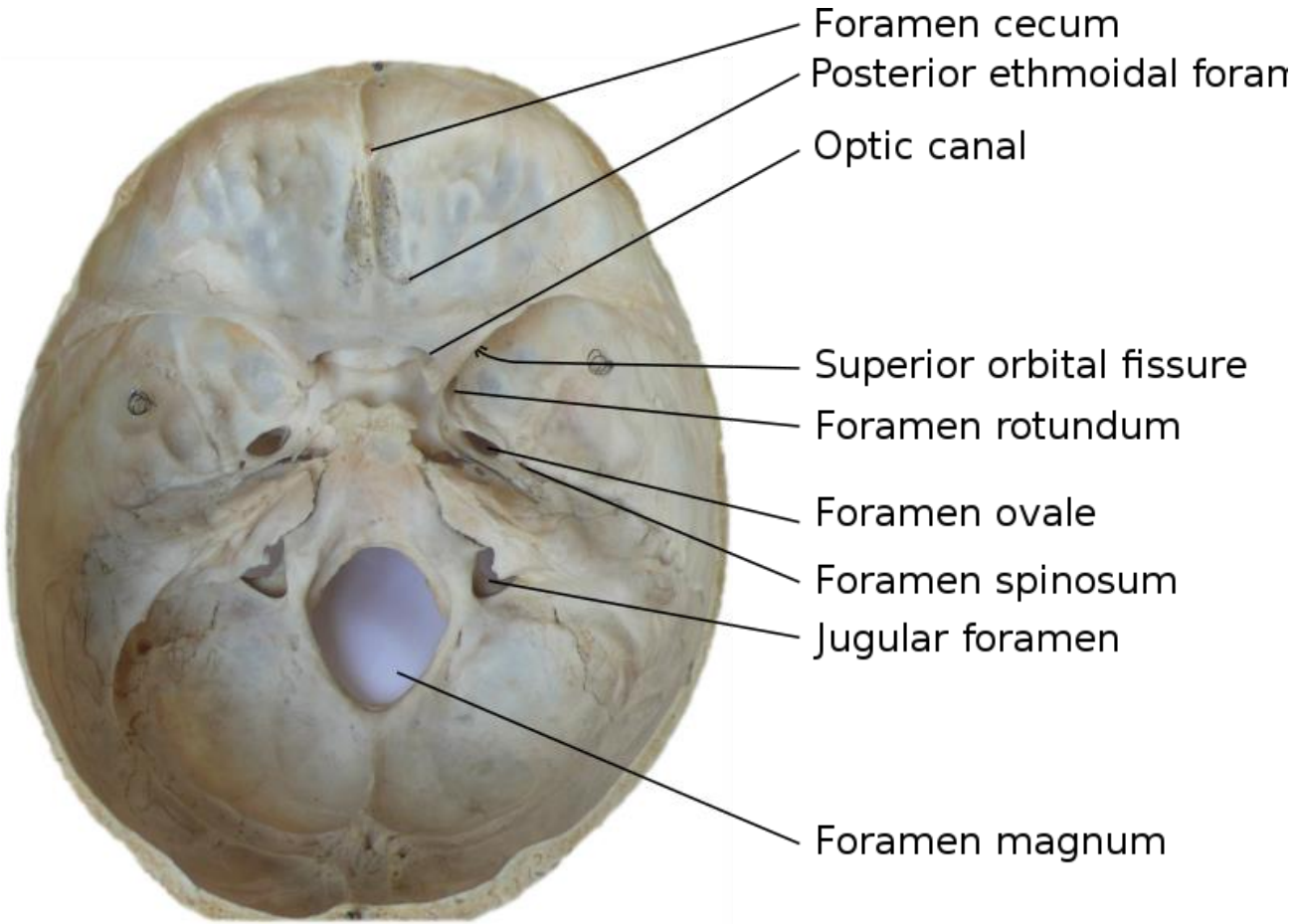
Semester 1 Anatomy



Semester 1 Anatomy



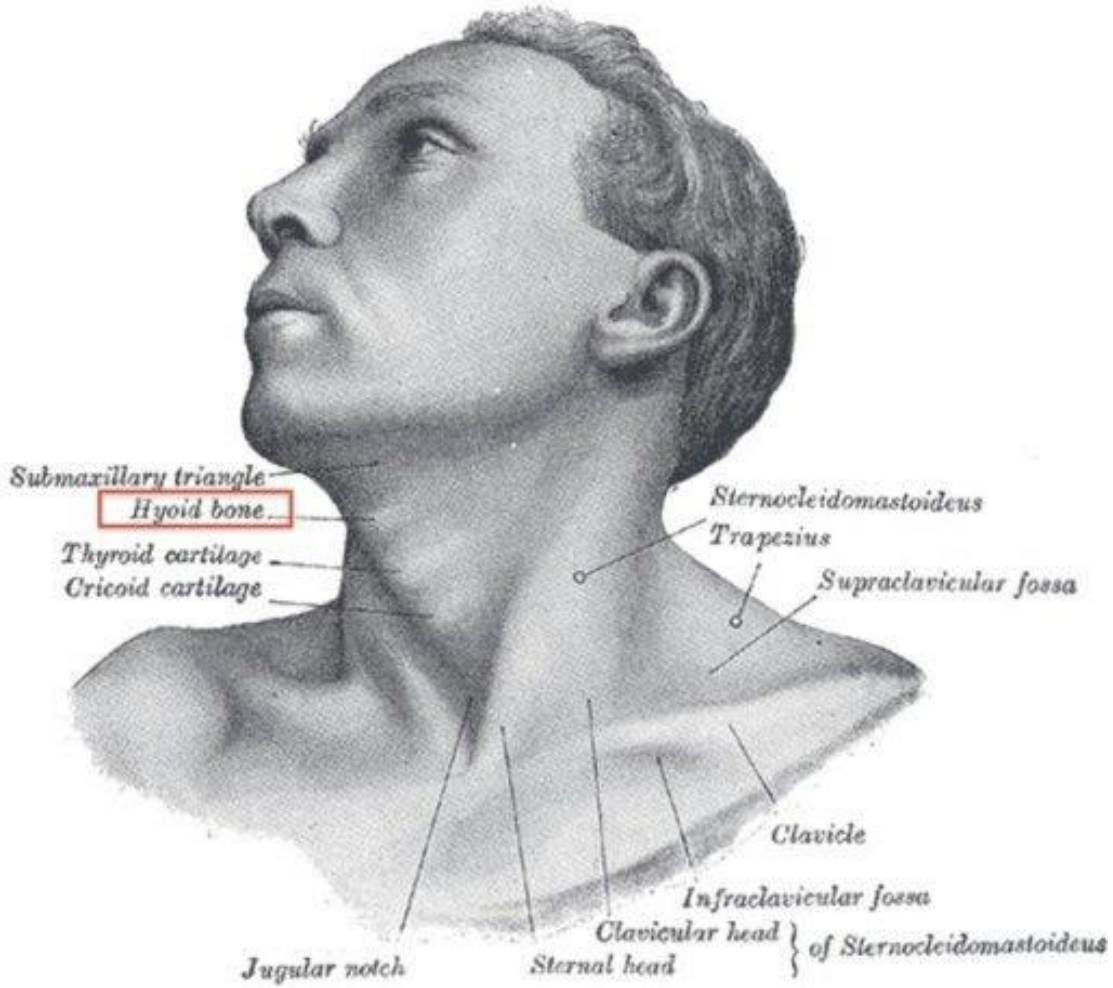
Semester 1 Anatomy



Semester 1 Anatomy

Utilise anatomical surface landmarks to identify key neck structures

Where can we find the carotid?

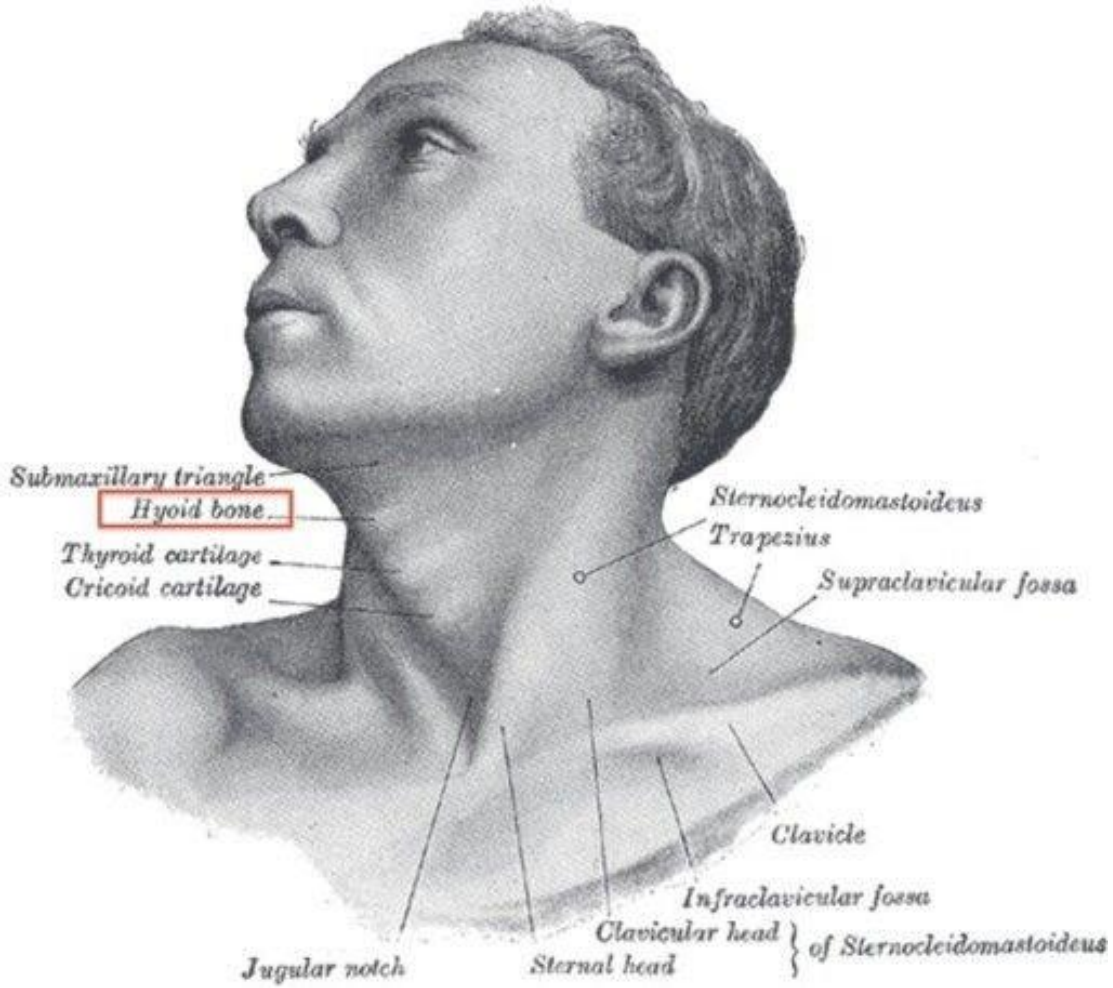


Semester 1 Anatomy

Utilise anatomical surface landmarks to identify key neck structures

Where can we find the carotid?

The carotid pulse can be located between the larynx and the anterior border of the sternocleidomastoid muscle



Semester 1 Anatomy

Anatomy of the Back, Vertebral Column and Spinal Cord

Semester 1 Anatomy

Anatomy of the Back, Vertebral Column and Spinal Cord

Intrinsic muscles of the back

Extrinsic muscles of the back

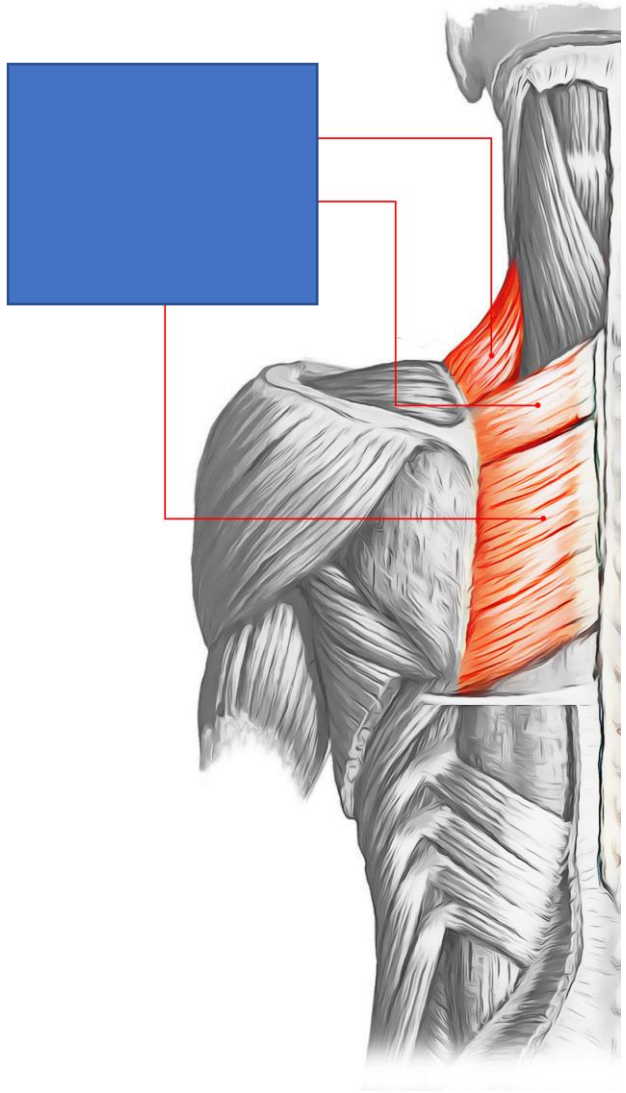
The spinal cord

Meninges

Peripheral nerve roots

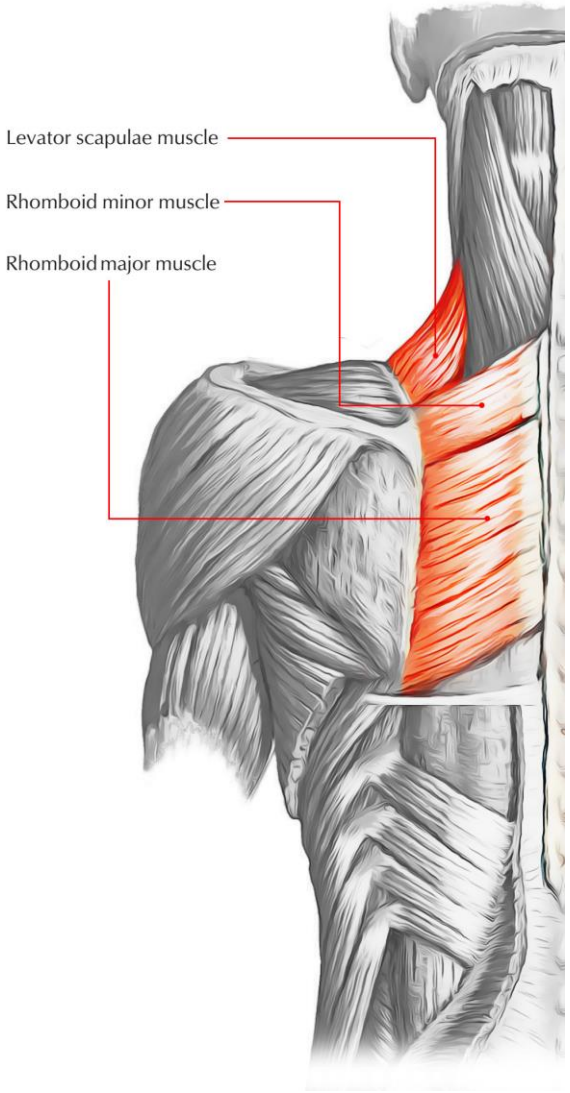
Semester 1 Anatomy

Intrinsic muscles of the back



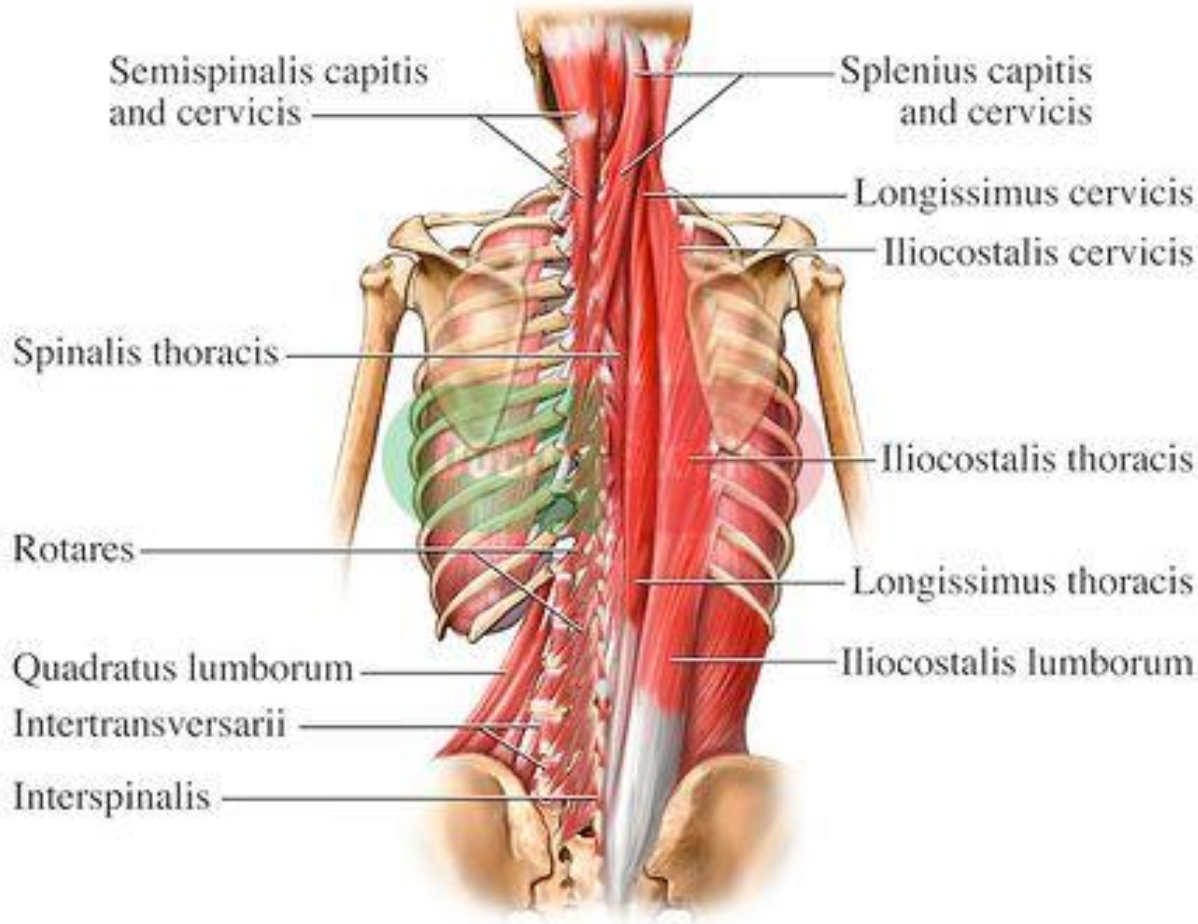
Semester 1 Anatomy

Intrinsic muscles of the back



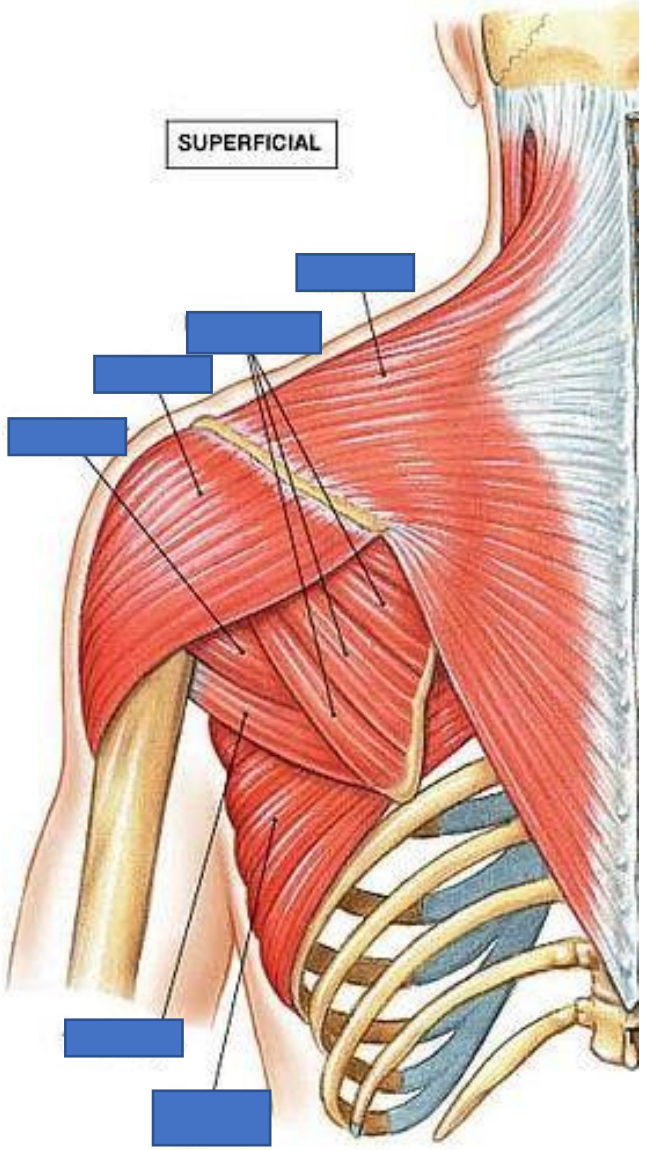
Semester 1 Anatomy

Intrinsic muscles of the back



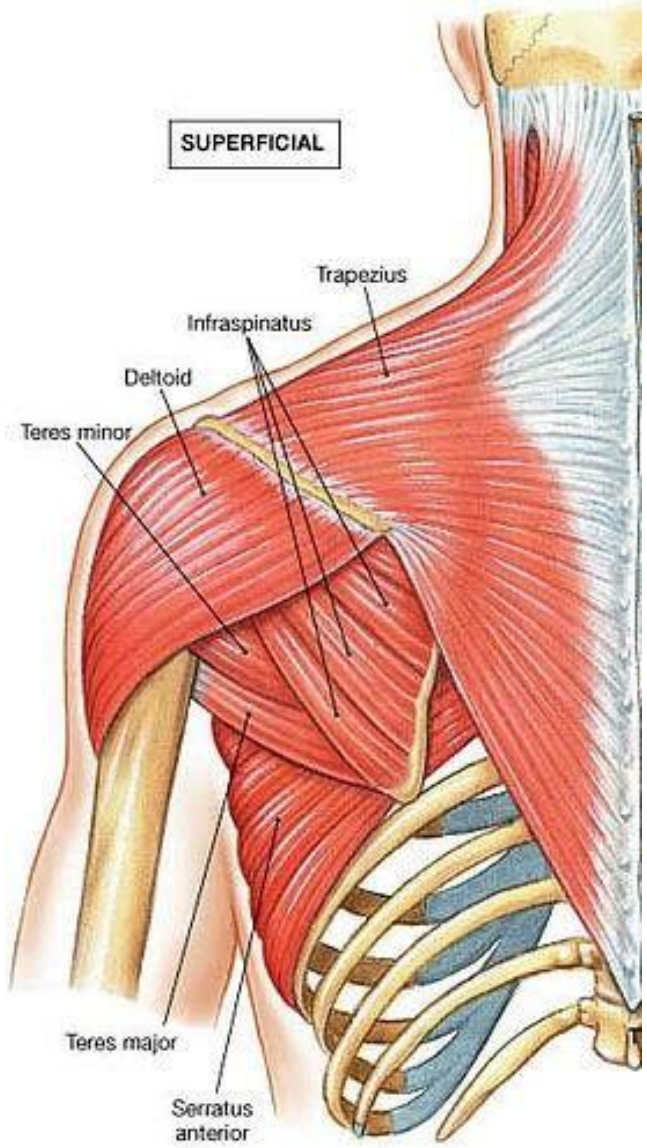
Semester 1 Anatomy

Extrinsic muscles of the back

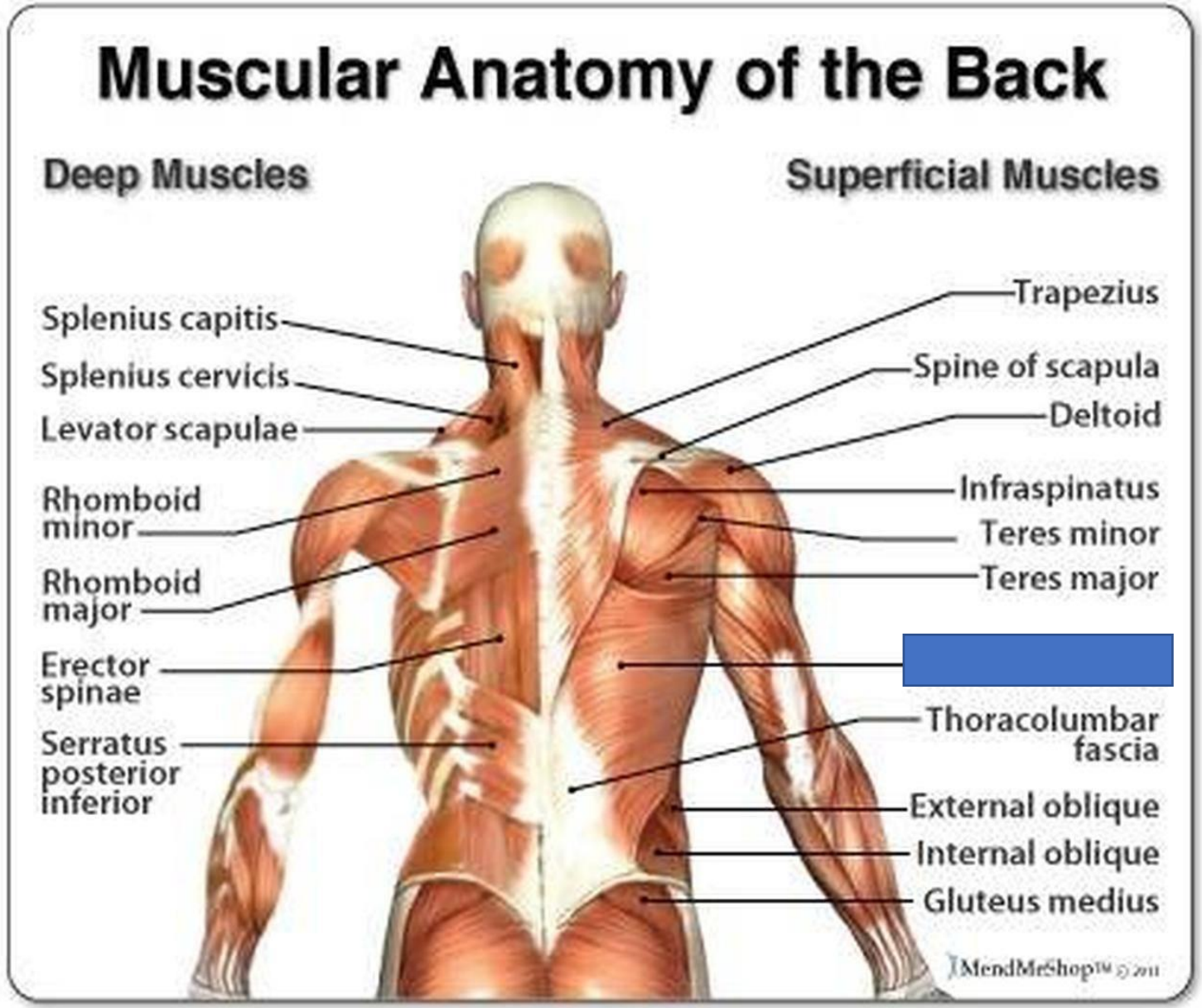


Semester 1 Anatomy

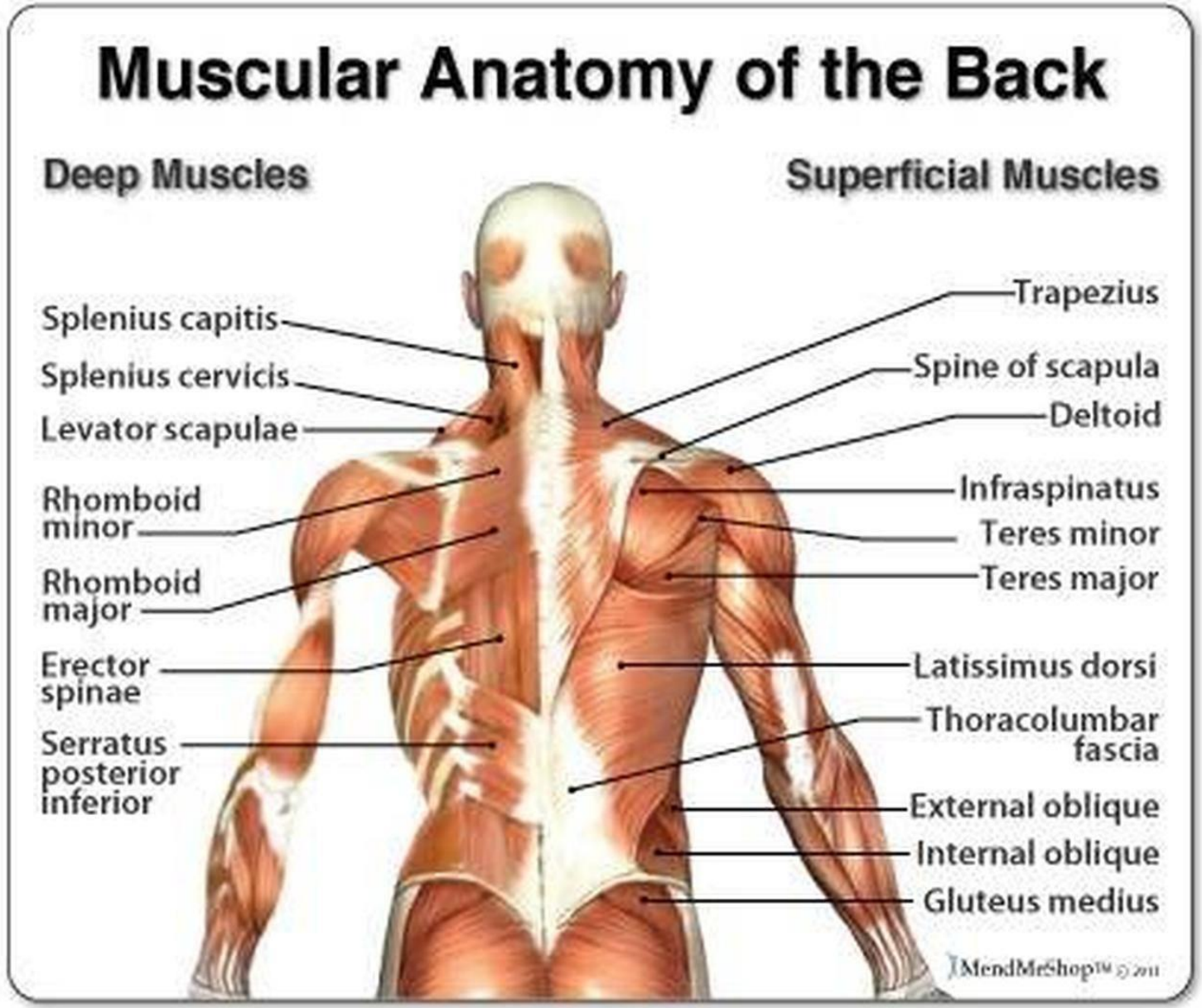
Extrinsic muscles of the back



Muscular Anatomy of the Back

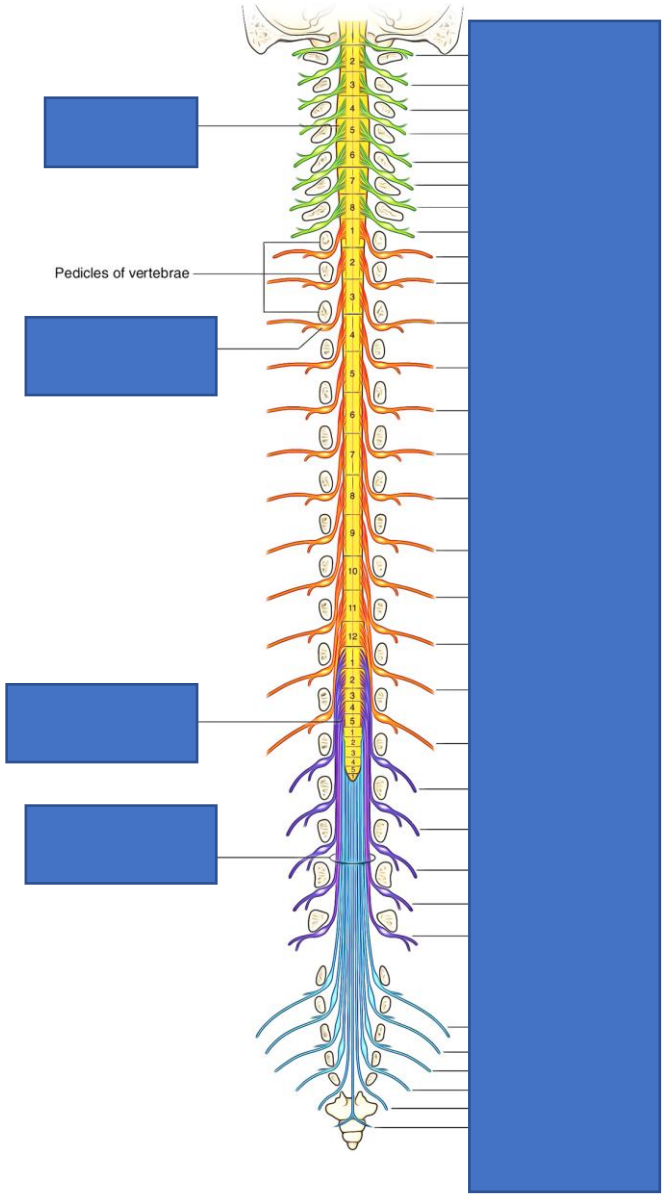


Muscular Anatomy of the Back



Neurology – Basic Anatomy

At what position are the two enlargements of the spinal cord?

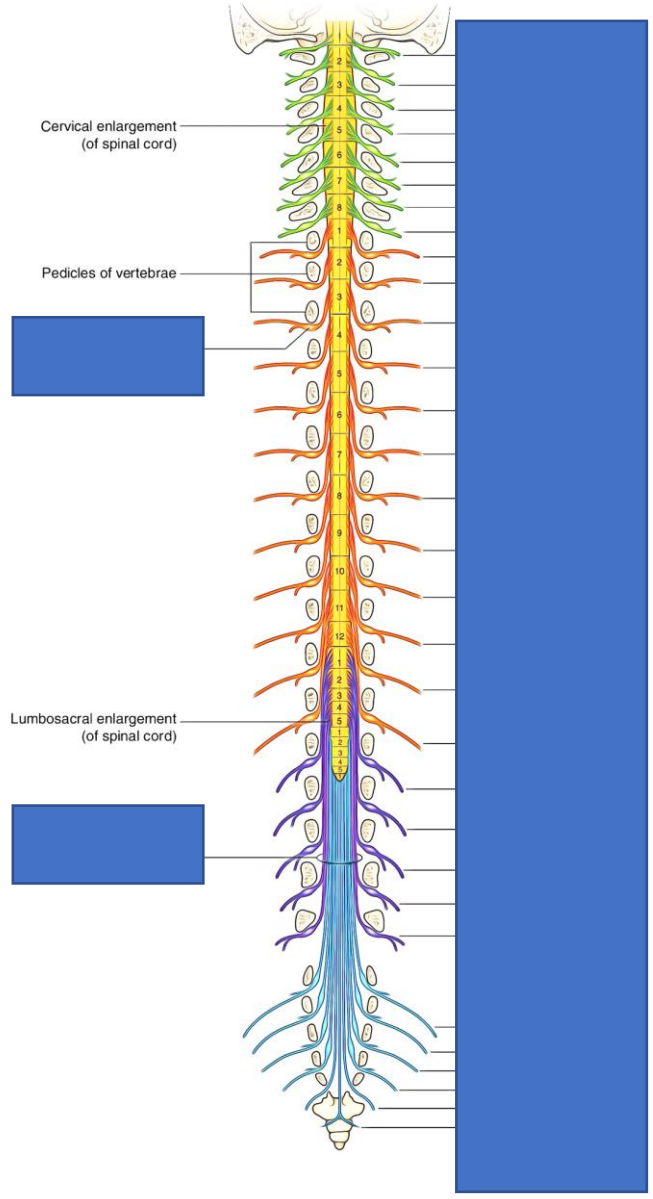


Neurology – Basic Anatomy

At what position are the two enlargements of the spinal cord?

What is the name of this object?

At what level, and at which object, does this phenomenon begin?



Neurology – Basic Anatomy

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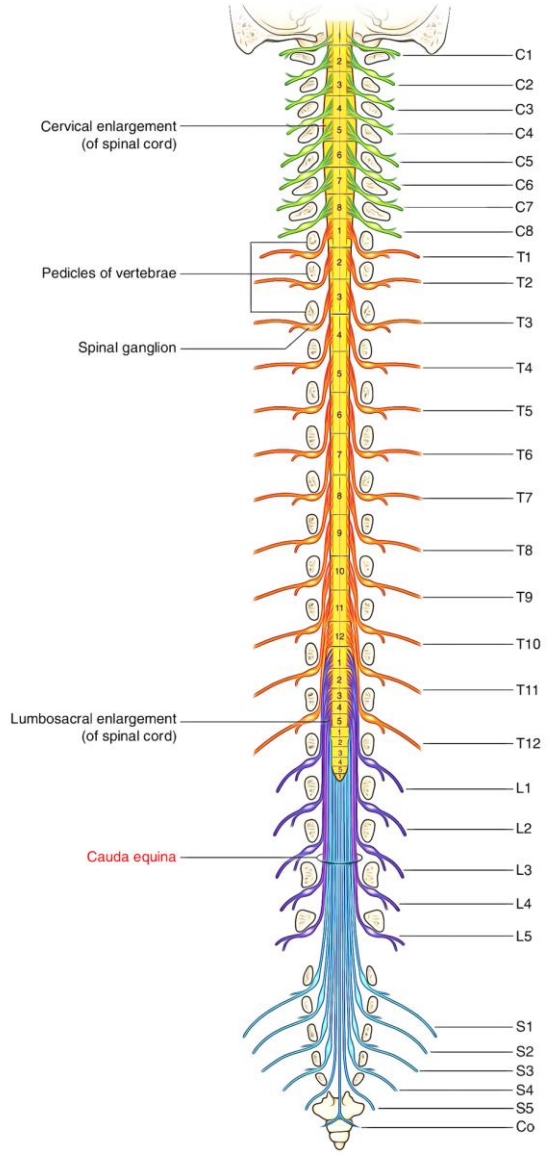


Neurology – Basic Anatomy

What is the name of this object (X)?

Cauda equina

At what level, and at which object,
does this phenomenon begin?

Below the Conus medullaris, the termination
of the spinal cord, at L1/2

Neurology – Basic Anatomy

True or False – Spinal level is equal to vertebral level

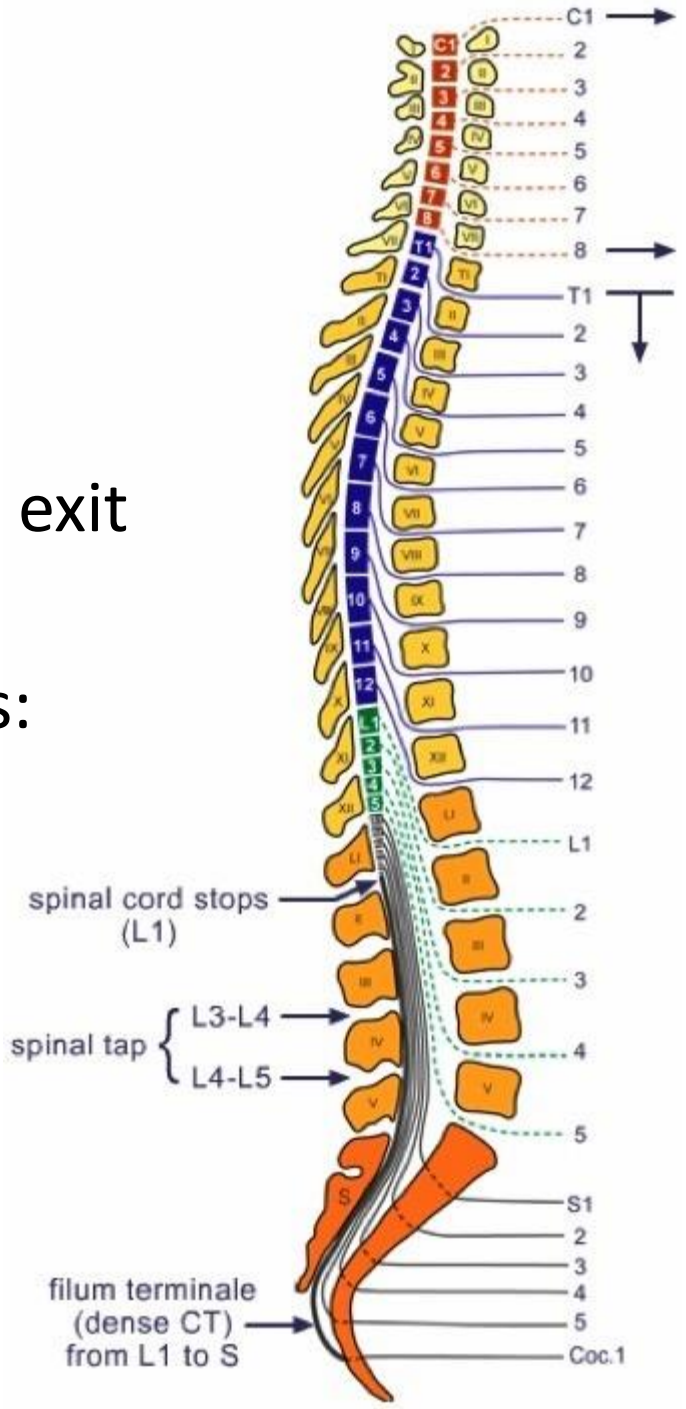
Neurology – Basic Anatomy

True or False – Spinal level is equal to vertebral level

False – Spinal nerves must therefore travel inferiorly to exit

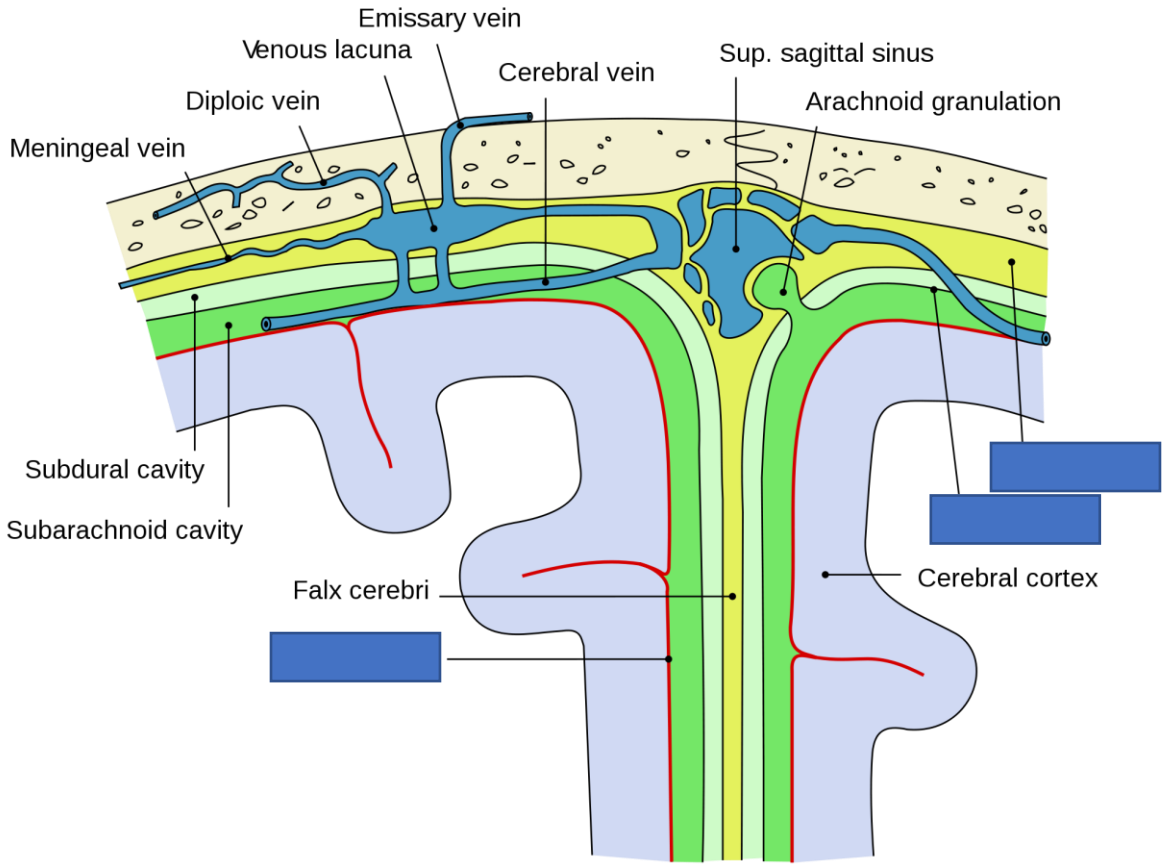
31 bilateral pairs of spinal nerves exit at different levels:

- 8 cervical
- 12 thoracic
- 5 lumbar
- 5 sacral
- 1 coccygeal



Neurology – Basic Anatomy

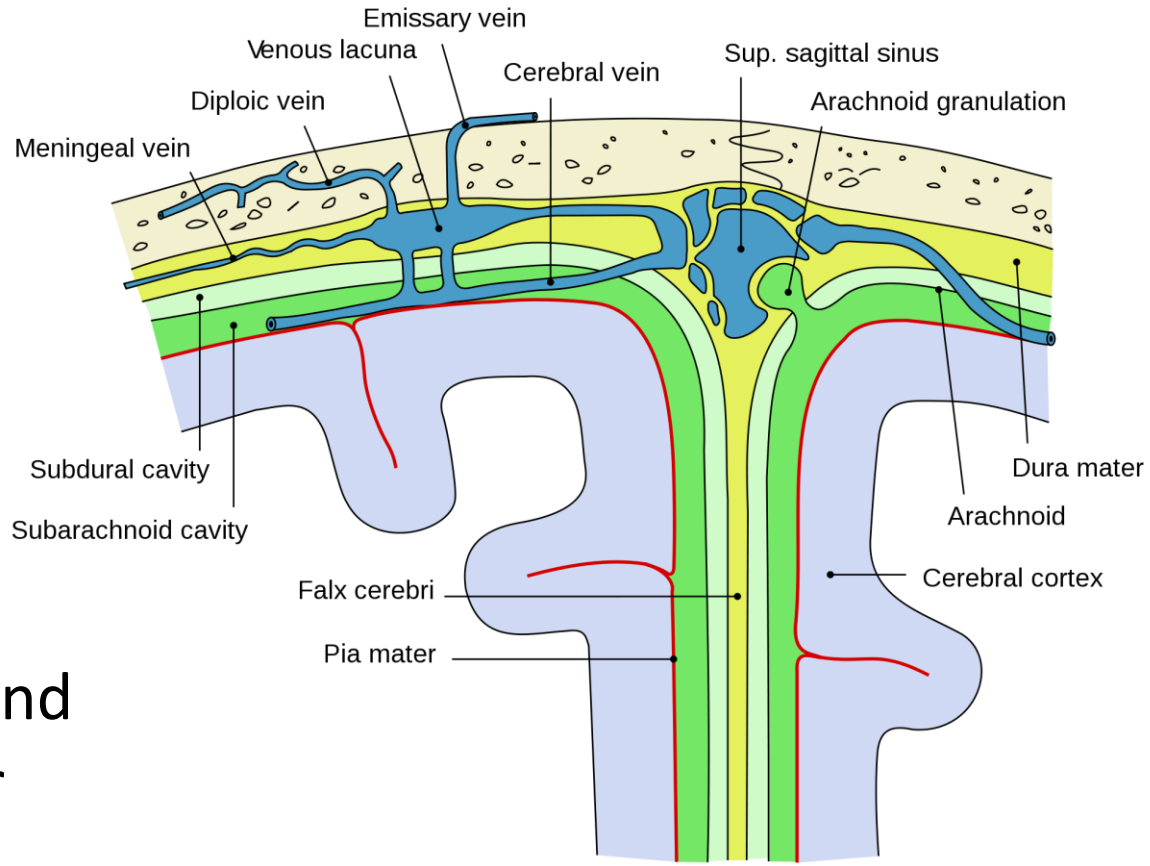
Name the Meninges



Neurology – Basic Anatomy

Name the Meninges

- Dura mater - thickest, usually visible outer layer
- Arachnoid mater - Middle layer, has arachnoid trabeculae in subarachnoid space (contains CSF and arteries)
- Pia mater - Thinnest, cannot be seen and covers all sulci and gyri, innermost layer



Neurology – Basic Anatomy

The Dura Mater has four main folds. Name two of them…

Neurology – Basic Anatomy

The Dura Mater has four main folds. Name two of them…

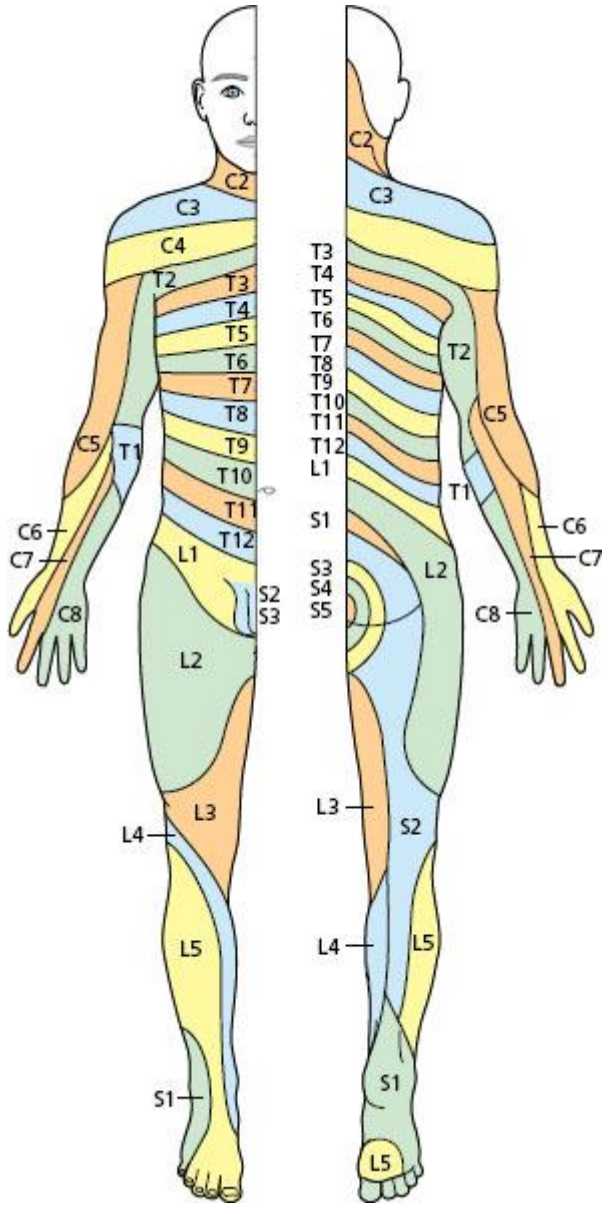
- Falx cerebri divides the cerebral hemispheres
- Tentorium cerebelli separates cerebellum from inferior portion of occipital lobes
- Meninges continue down spinal cord. Space between dura and vertebra is normal (extradural

space). Anchored at sacrum

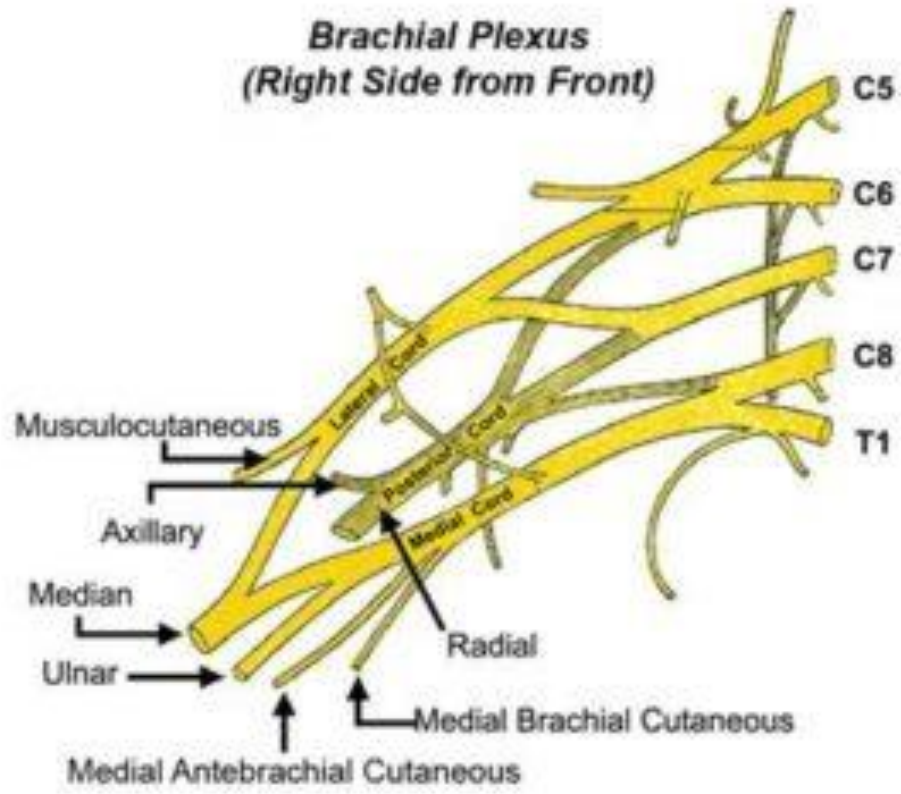
Neurology – Basic Anatomy

When do the peripheral nerve roots start?

Neurology – Basic Anatomy



Neurology – Basic Anatomy



Semester 1 Anatomy

Lower Limb

Semester 1 Anatomy

Anatomy of the Lower Limb

Describe the movements possible at the hip, knee and ankle joints

Identify and describe the structures which support each of these joints

Identify, describe and state the actions of the muscles acting across these joints

State the innervation and blood supply to each muscle compartment associated with these joints

Semester 1 Anatomy

Joint Type? Possible Movements?

Hip

Knee

Ankle

Semester 1 Anatomy

Joint Type? Possible Movements?

Hip – Ball and Socket

Knee – Hinge

Ankle – Hinge

Semester 1 Anatomy

Joint Type? Possible Movements?

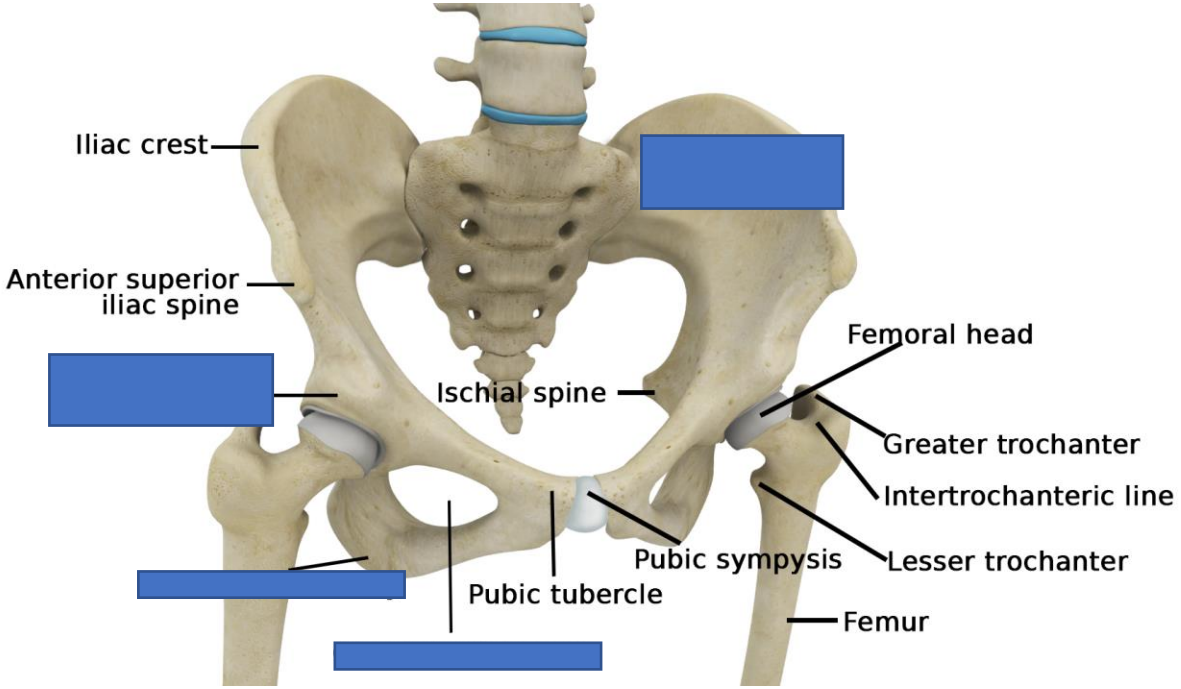
Hip – Ball and Socket - Flexion, extension, abduction, adduction, rotation, circumduction

Knee – Hinge – Flexion and Extension

Ankle – Hinge – Dorsiflexion and Plantarflexion

Semester 1 Anatomy

Hip Joint - Structures



Semester 1 Anatomy

Hip Joint – Structures – Ligaments

Two categories: Capsular ligaments and intracapsular ligaments

Capsular: Iliofemoral ligament, pubofemoral, ischiofemoral

Intracapsular: Transverse ligament of the acetabulum and ligament of the head of the femur

Semester 1 Anatomy

Hip Joint – Structures – Ligaments

Two categories: Capsular ligaments and intracapsular ligaments

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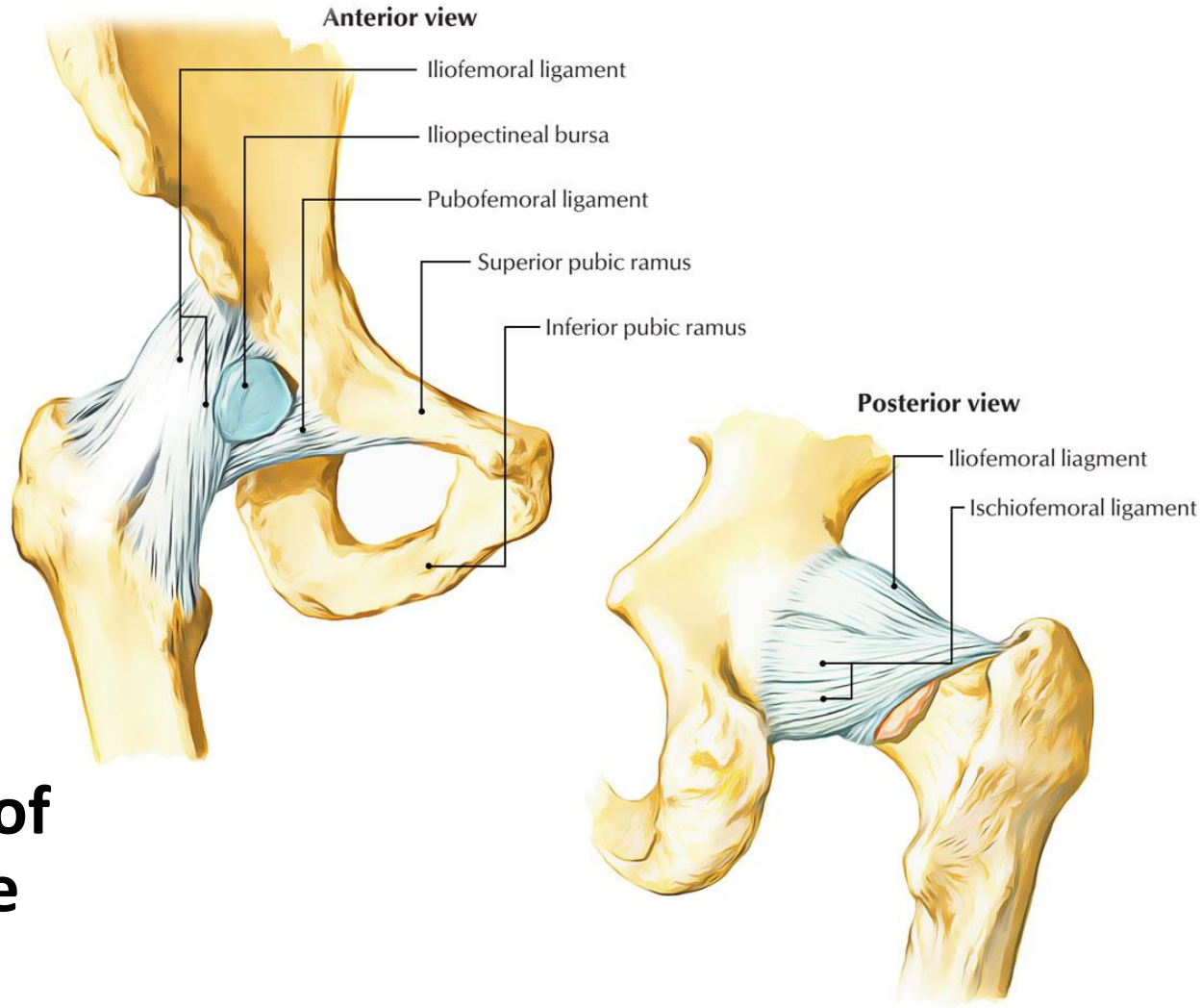


Semester 1 Anatomy

Hip Joint – Muscles

Flexion
Psoas major, iliacus and rectus femoris; assisted by pectineus, tensor fasciae latae and sartorius
Extension
Gluteus maximus, biceps femoris, semitendinosus,
semimembranosus and adductor magnus
Abduction
Glutei medius and minimus; assisted by tensor fasciae latae, piriformis and sartorius
Adduction
Adductors longus, brevis and magnus, gracilis; assisted by pectineus, quadratus femoris and the inferior fibres of gluteus maximus
Internal rotation
Glutei minimus and medius; assisted by tensor fasciae latae and most adductor muscles
External rotation
Gluteus maximus, obturator internus, superior and inferior gemelli, quadratus femoris, piriformis; assisted by obturator externus and sartorius

Semester 1 Anatomy

Hip Joint – Neurovasculature

The lumbrosacral plexus originates at level…

Semester 1 Anatomy

Hip Joint – Neurovasculature

The lumbrosacral plexus originates at level… L2-S1

The following nerves from the plexus innervate the hip joint…

Semester 1 Anatomy

Hip Joint – Neurovasculature

The lumbrosacral plexus originates at level… L2-S1

The following nerves from the plexus innervate the hip joint…

The femoral nerve innervates the anterior aspect

The obturator nerve supplies the inferior aspect

The superior gluteal nerve supplies the superior aspect

The nerve to the quadratus femoris innervates the posterior aspect.

Semester 1 Anatomy

Hip Joint – Neurovasculature

The femoral nerve, obturator nerve, superior gluteal nerve, nerve to the quadratus femoris

The blood supply of the hip joint is from the medial and lateral circumflex femoral arteries, the obturator artery and the superior and inferior gluteal arteries

Semester 1 Anatomy

Knee Joint – Structures

On which bone are the two menisci located?

Semester 1 Anatomy

Knee Joint – Structures

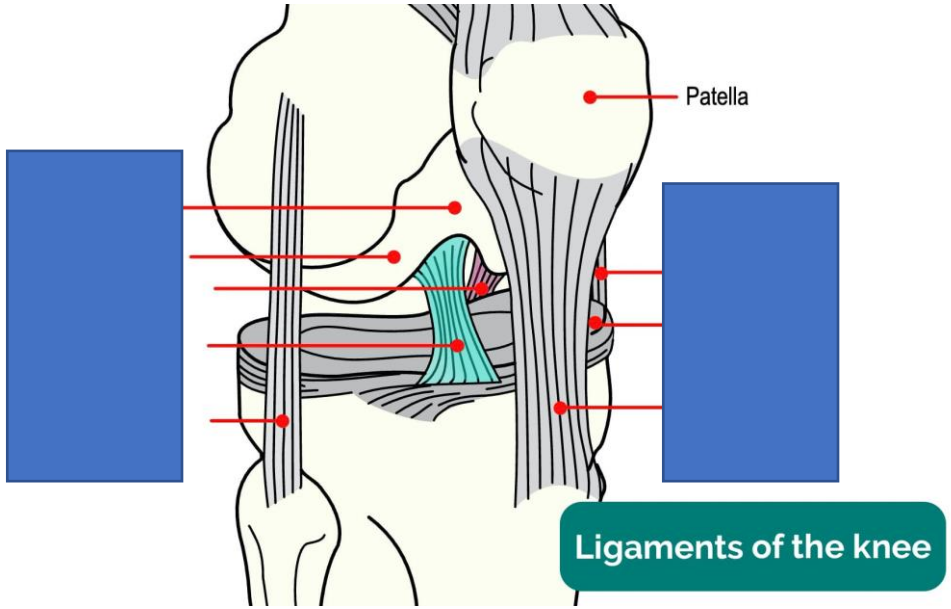
On which bone are the two menisci located?

Tibia (Lateral and Medial Menisci)

Semester 1 Anatomy

Knee Joint – Structures – Ligaments

Which ligament is attached to the patella?

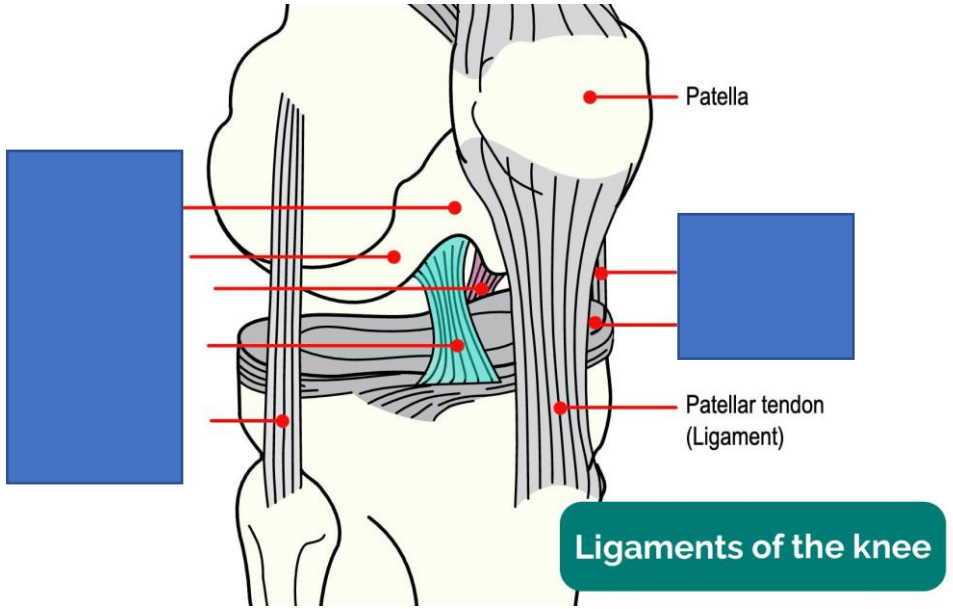


Semester 1 Anatomy

Knee Joint – Structures – Ligaments

Which ligament is attached to the patella? Patella tendon

What are the CLs, where are they positioned, and what do they do?



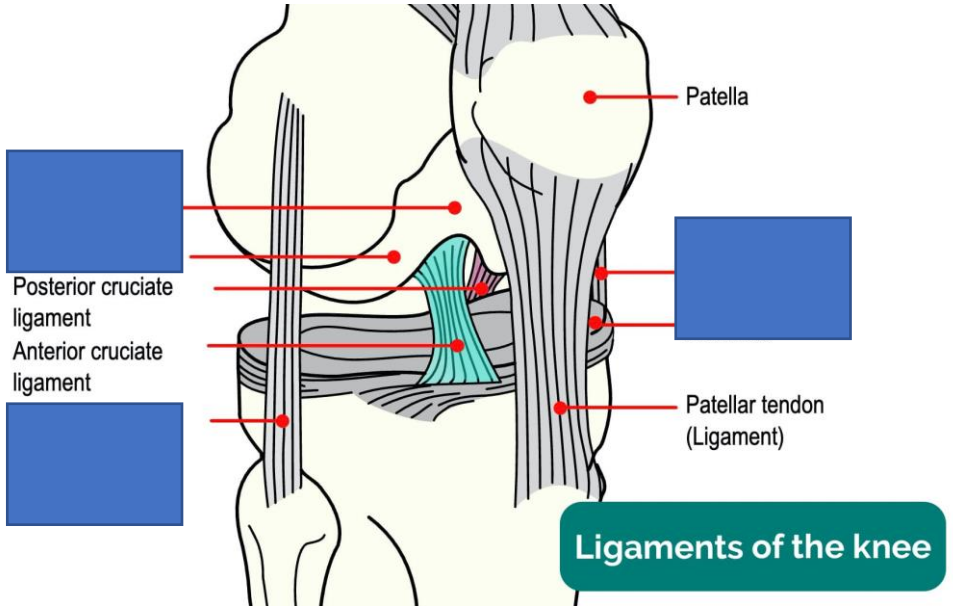
Semester 1 Anatomy

Knee Joint – Structures – Ligaments

Which ligament is attached to the patella? Patella tendon

What are the CLs, where are they positioned, and what do they do?

Anterior Cruciate ligament – Prevents anterior displacement of the knee
Posterior Cruciate ligament – Prevents Posterior displacement of the knee



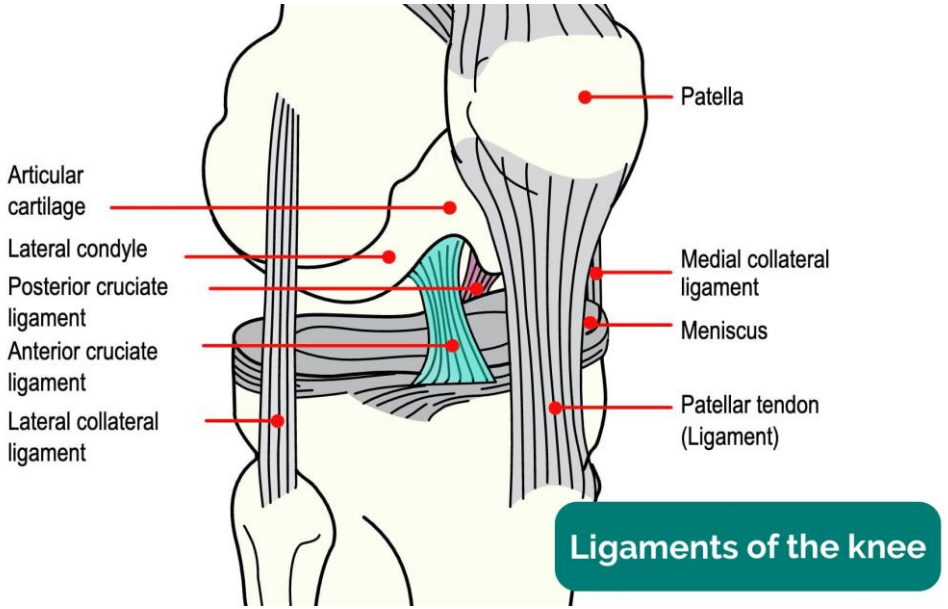
Semester 1 Anatomy

Knee Joint – Structures – Ligaments

Which ligament is attached to the patella? Patella tendon

What are the CLs, where are they positioned, and what do they do?

Lateral Collateral ligament – Stabilises the knee and prevents varus deformity
Medial Collateral ligament – Stabilises the knee and prevents valgus deformity



Semester 1 Anatomy

Knee Joint – Muscles

The anterior compartment…

The posterior compartment…

The medial compartment…

Semester 1 Anatomy

Knee Joint – Muscles

The anterior compartment… extends the knee joint -

The posterior compartment… contributes to flexion at the knee joint. Additionally, biceps femoris externally rotates and semitendinosus+ semimembrahosus internally rotate

The medial compartment… contributes to flexion of the knee

Semester 1 Anatomy

Knee Joint – Muscles

The anterior compartment… extends the knee joint and includes…

The posterior compartment… contributes to flexion at the knee joint. Additionally, biceps femoris externally rotates and semitendinosus+ semimembrahosus internally rotate. It includes…

The medial compartment… contributes to flexion of the knee and includes…

Semester 1 Anatomy

Knee Joint – Muscles

The anterior compartment… extends the knee joint and includes… vastus medialis, vastus intermedius, vastus lateralis, rectus femoris, sartorius

The posterior compartment… contributes to flexion at the knee joint. Additionally, biceps femoris externally rotates and semitendinosus+ semimembrahosus internally rotate. It includes… the hamstrings.

The medial compartment… contributes to flexion of the knee and includes… the gracilis muscle

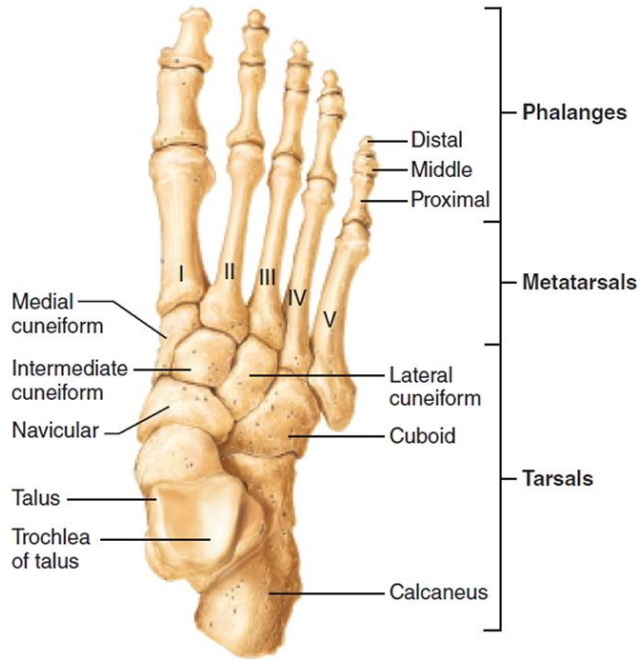
Semester 1 Anatomy

Knee Joint – Neurovasculature

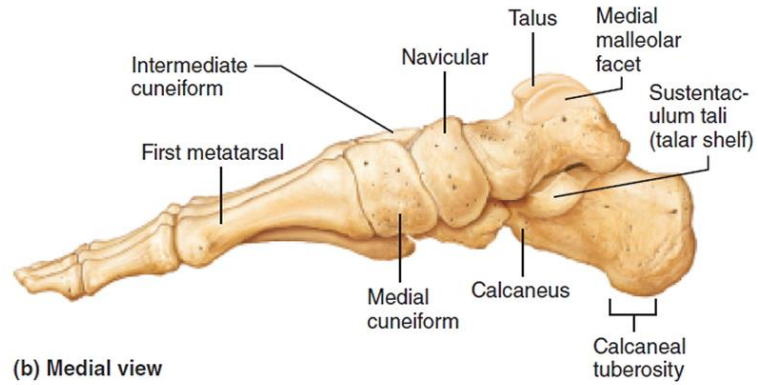
Blood supply to the knee originates from the femoral, popliteal and lateral circumflex femoral arteries

Innervation of the joint involves branches of the obturator, femoral, tibial and common fibular nerves.

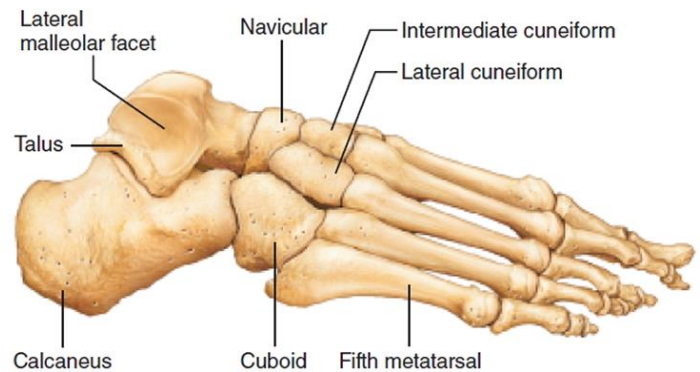
Bones of the Foot



(a) Superior view



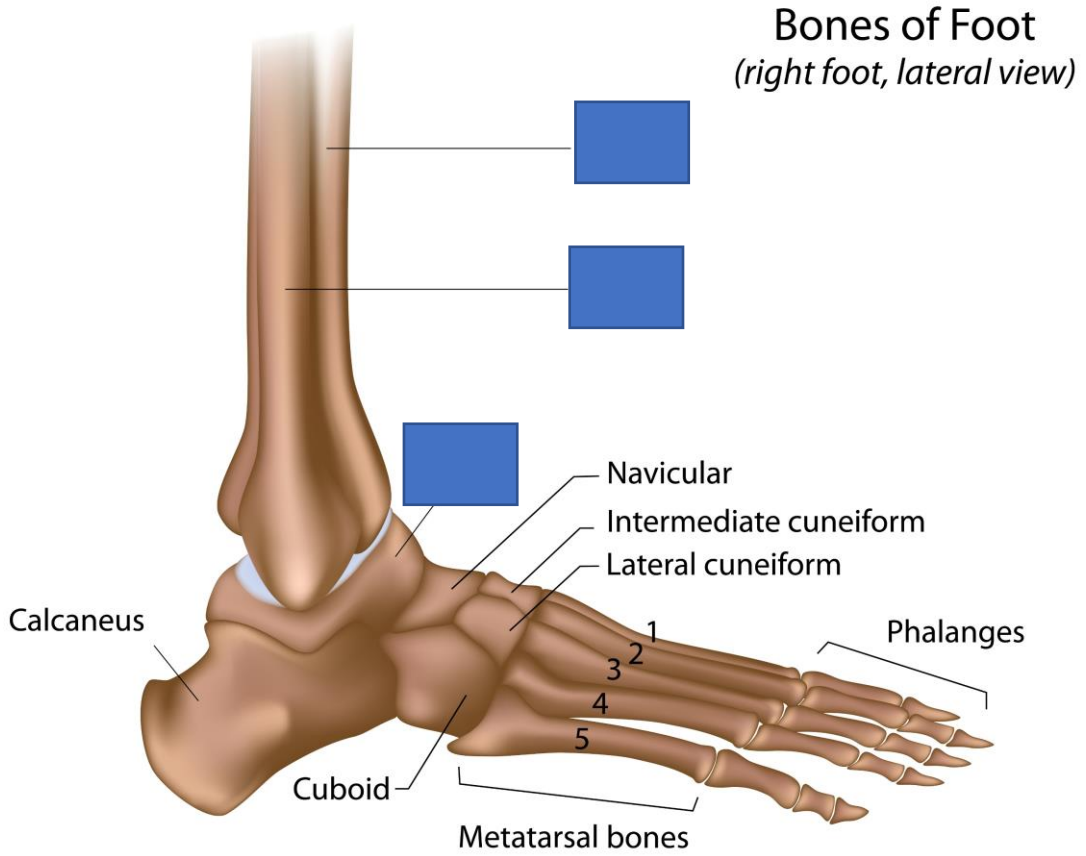
(b) Medial view



(c) Lateral view

Semester 1 Anatomy

Ankle Joint – Structures

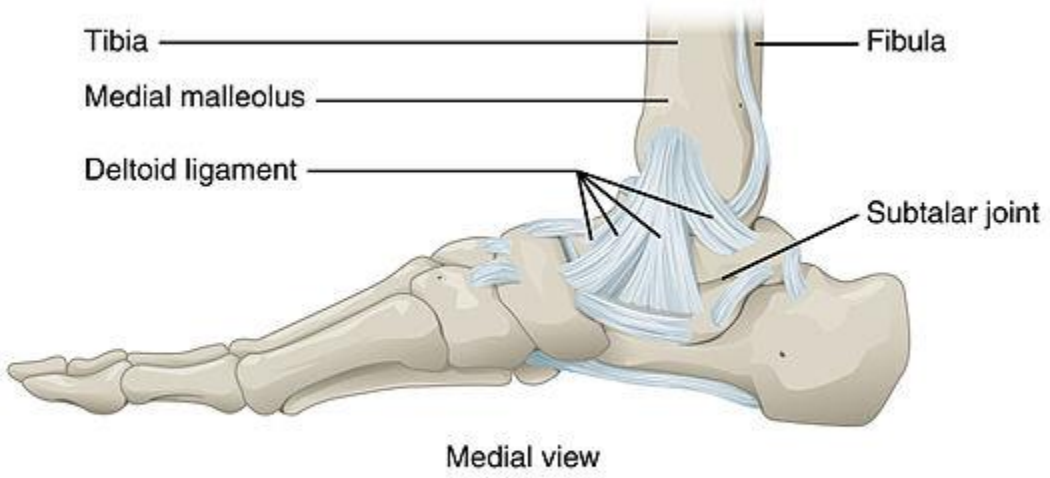


Semester 1 Anatomy

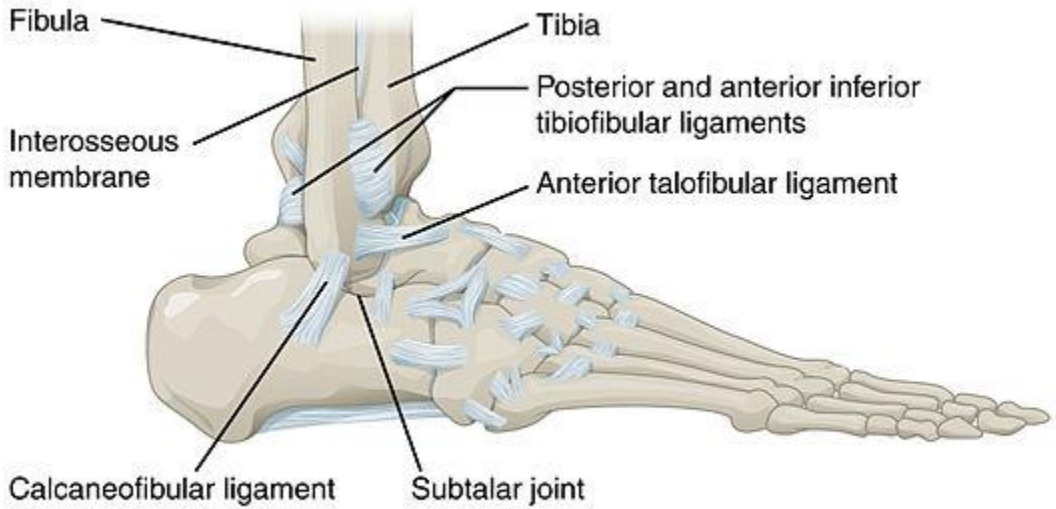
Ankle Joint – Structures

What is the purpose of the Medial Ligament?

What is the purpose of the Lateral?



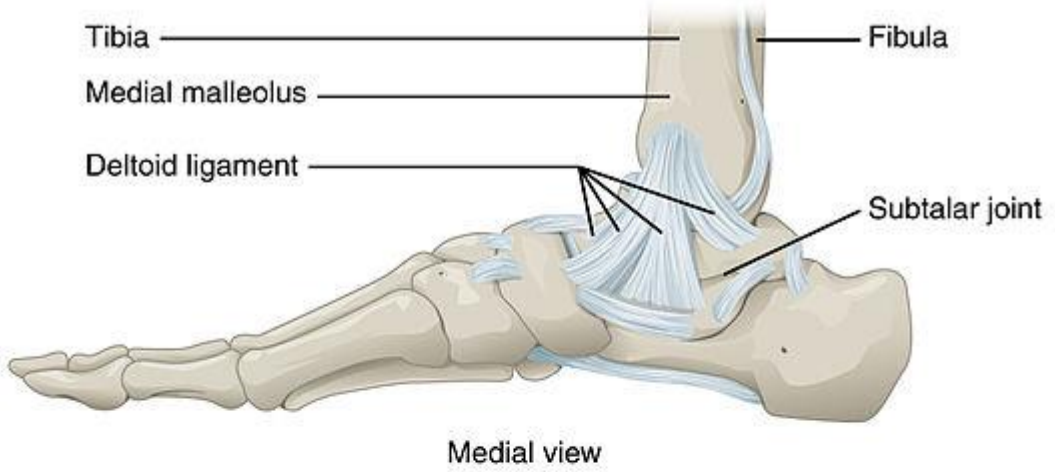
Medial view



Lateral view

Semester 1 Anatomy

Ankle Joint – Structures



Medial view

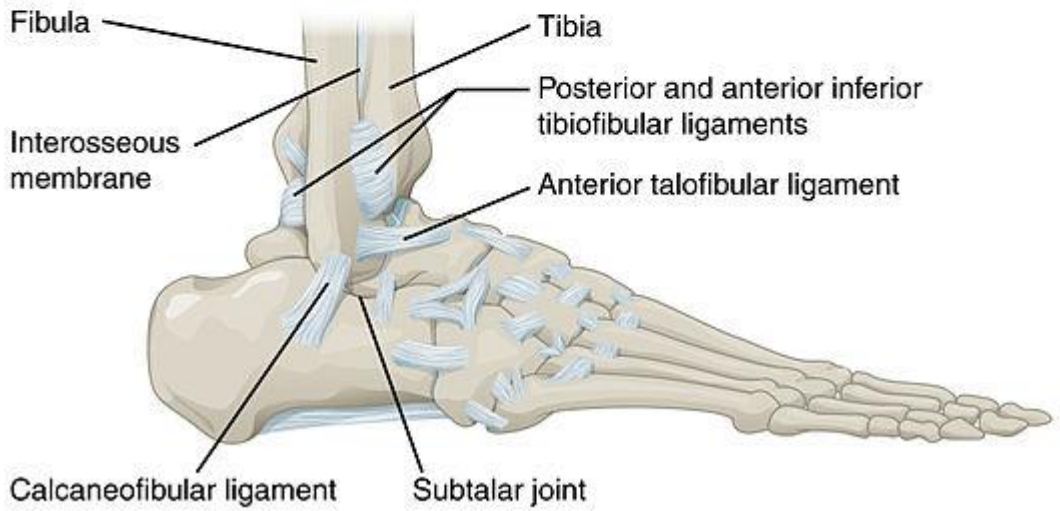
Medial ligament: resist over-eversion of the foot

Lateral ligaments resist over-inversion:

Anterior talofibular

Posterior talofibular

Calcaneofibular



Lateral view

Semester 1 Anatomy

Ankle Joint – Structures

Are eversion and inversion produced at the ankle joint?

Semester 1 Anatomy

Ankle Joint – Structures

Are eversion and inversion produced at the ankle joint?

No – they are produced at the other joints of the foot.

Semester 1 Anatomy

Ankle Joint – Muscles

Plantarflexion –

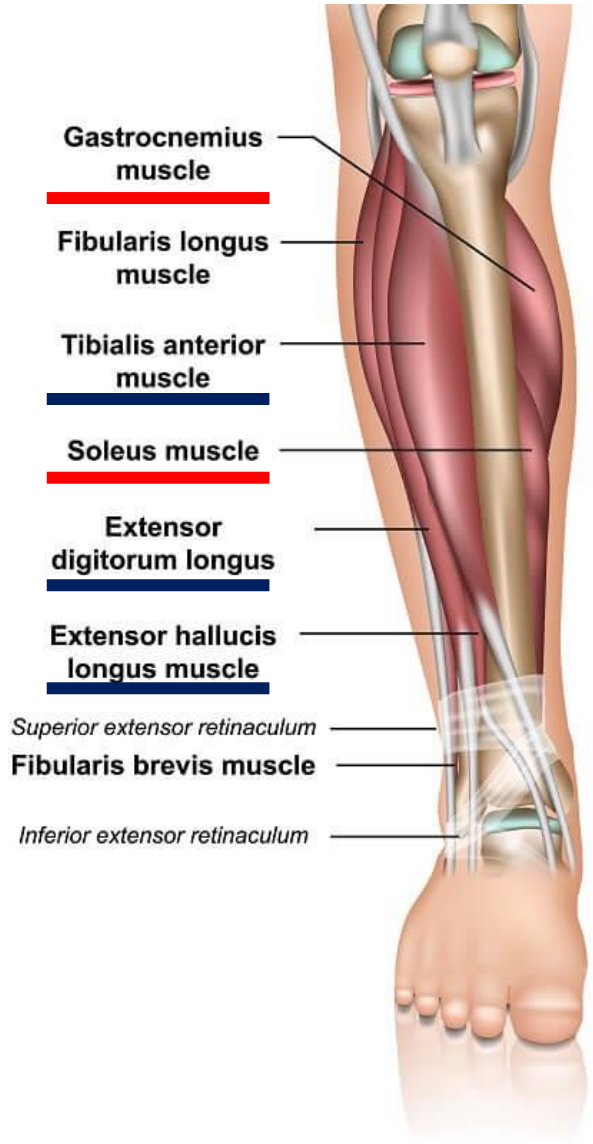
Dorsiflexion –

Semester 1 Anatomy

Ankle Joint – Muscles

Plantarflexion – produced by the muscles in the **posterior compartment** of the leg (gastrocnemius, soleus, plantaris and posterior tibialis).

Dorsiflexion – produced by the muscles in the **anterior compartment of the leg** (tibialis anterior, extensor hallucis longus and extensor digitorum longus).



Semester 1 Anatomy

Ankle Joint – Neuro-vasculature

Arterial supply to the ankle joint is derived from…
the branches of the anterior tibial,
posterior tibial and fibular arteries

Innervation is provided by…
nerves

Semester 1 Anatomy

Ankle Joint – Neuro-vasculature

Arterial supply to the ankle joint is derived from… the malleolar branches of the anterior tibial, posterior tibial and fibular arteries

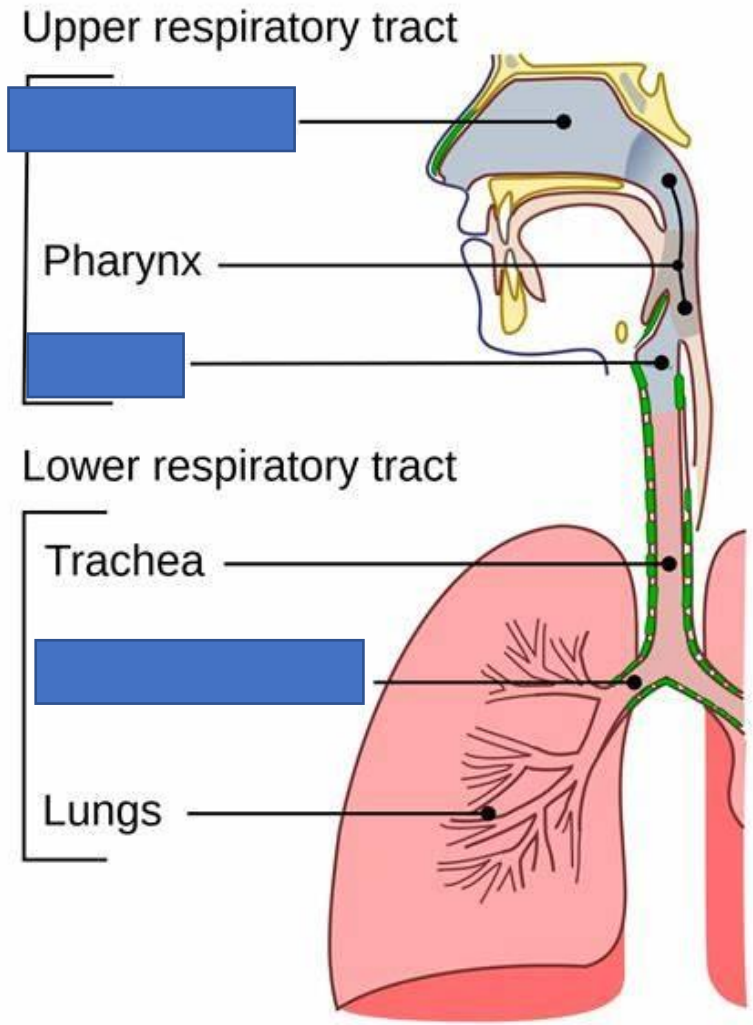
Innervation is provided by… tibial, superficial fibular and deep fibular nerves

Semester 1 Anatomy

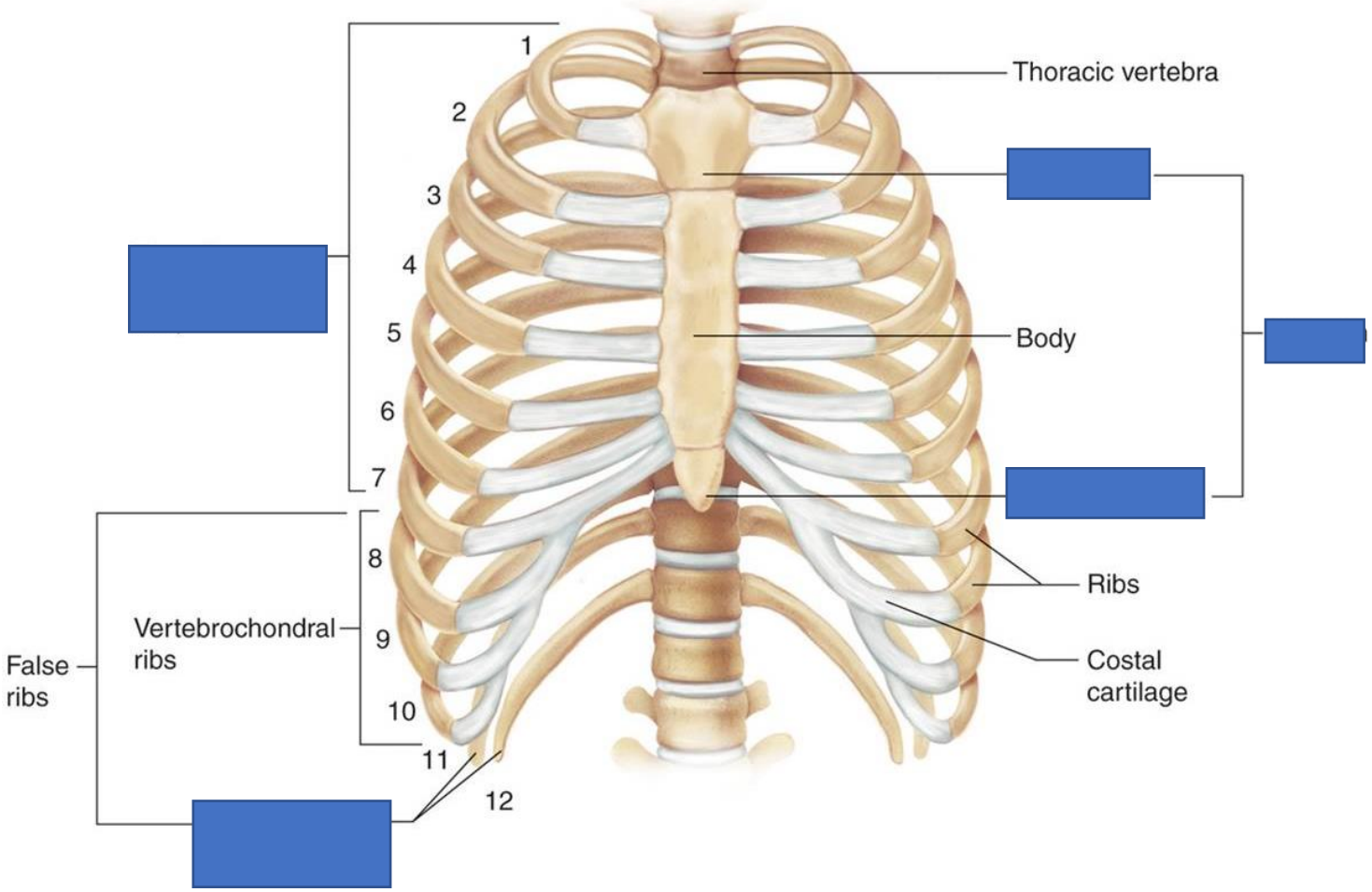
Respiratory Tract, Chest, Lungs and Thoracic Cavity

Breathing, Circulation and Blood

The Respiratory Tract



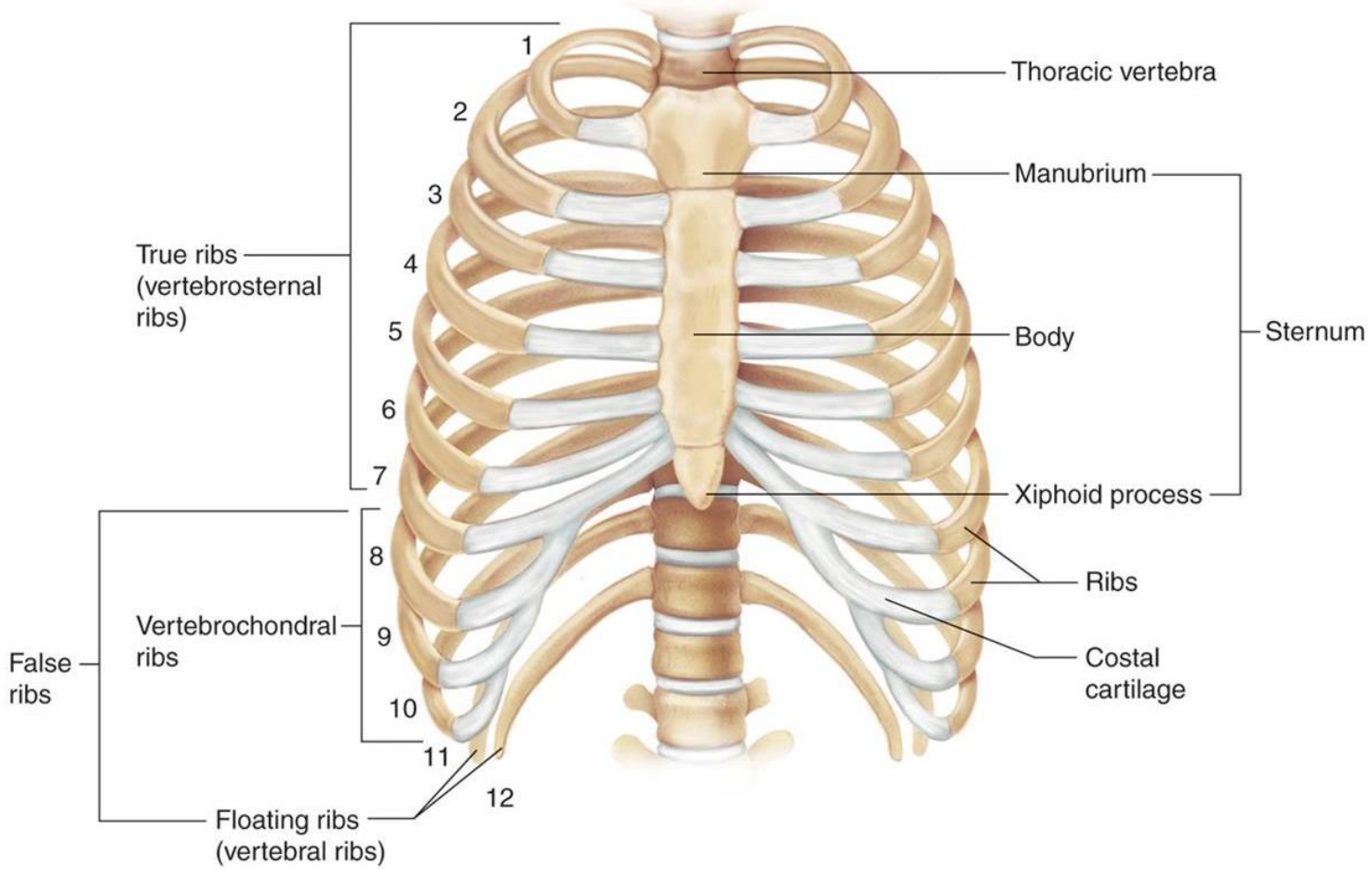
Anatomy of the Chest



Anatomy of the Chest

The manubrium is on level…

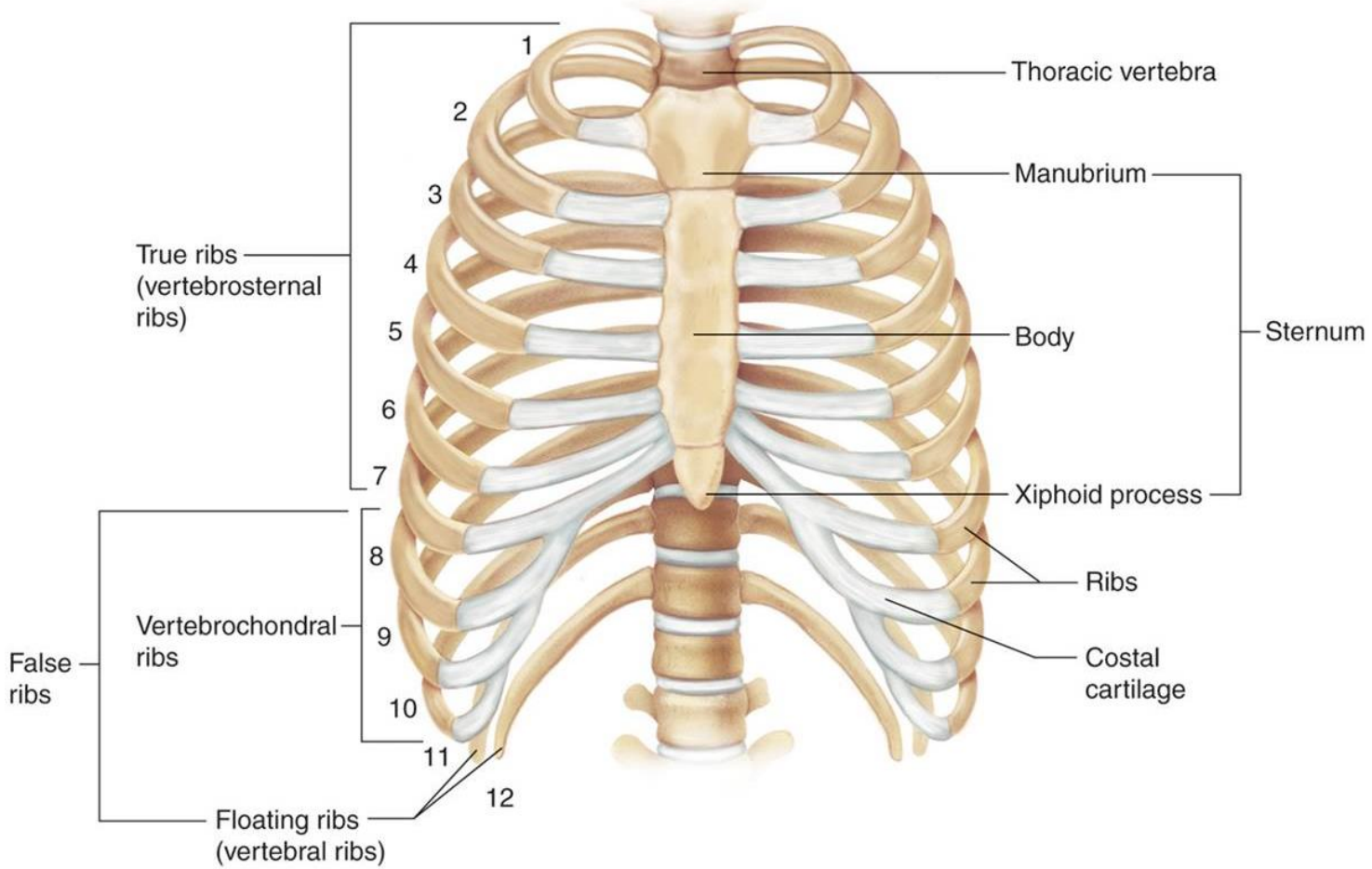
The xiphoid process is on level…



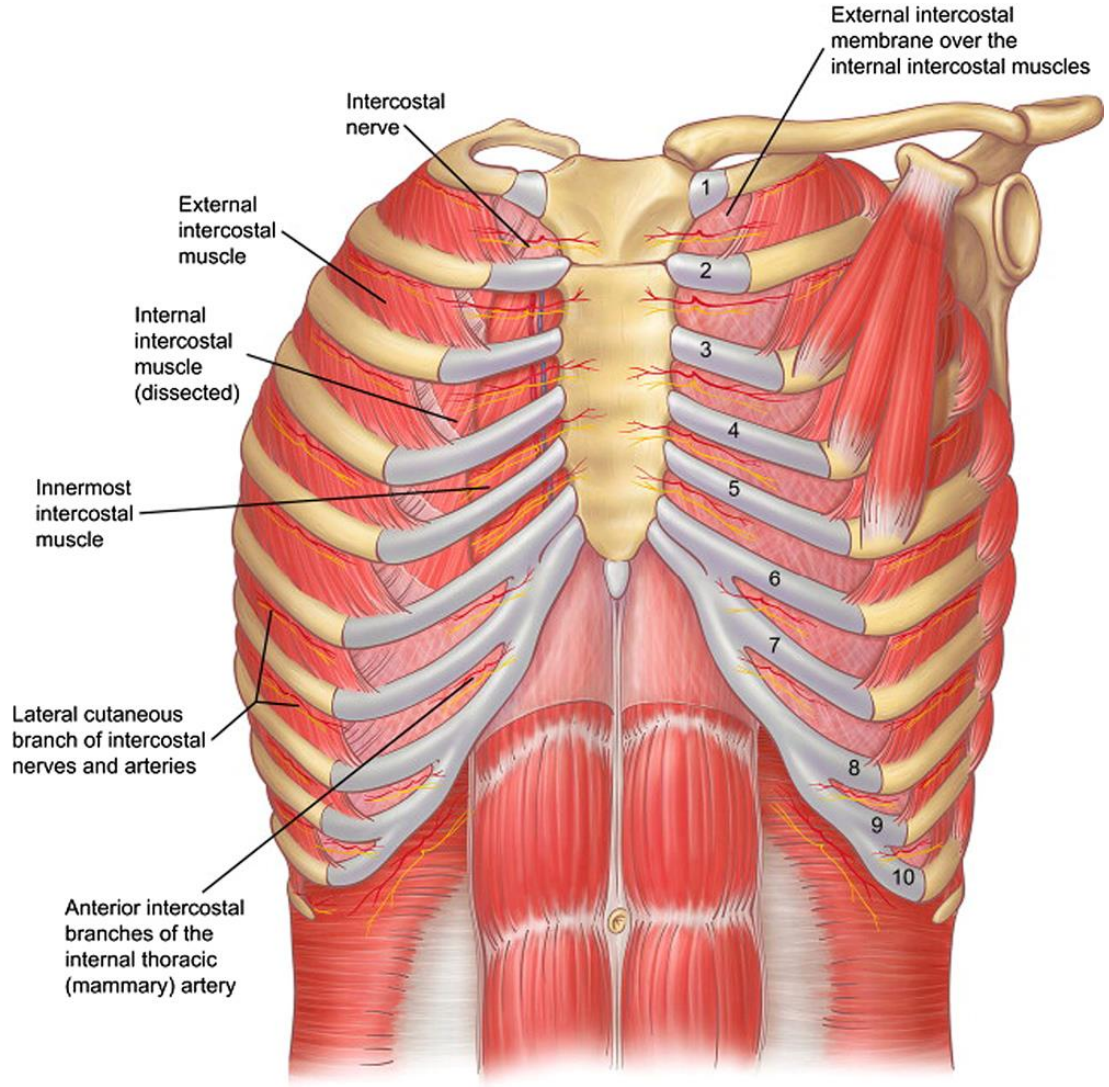
Anatomy of the Chest

The manubrium is on level… T3-T4

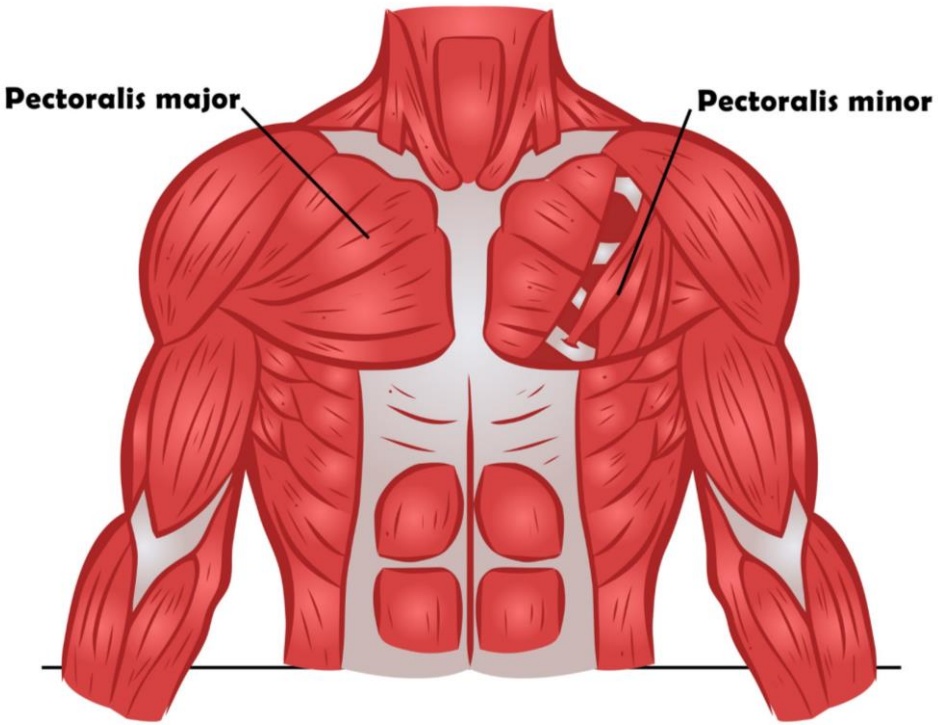
The xiphoid process is on level… T9

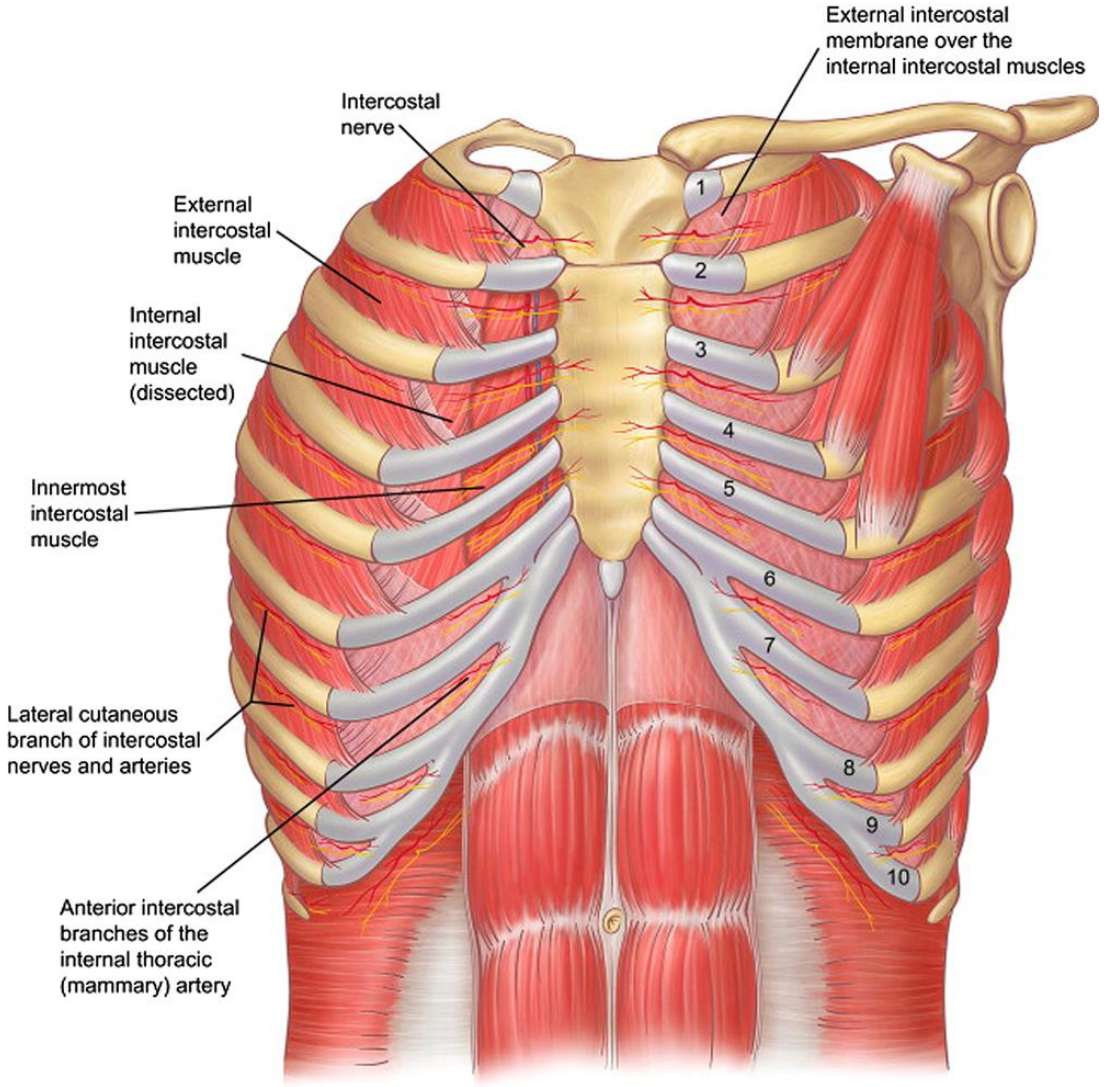


Anatomy of the Chest

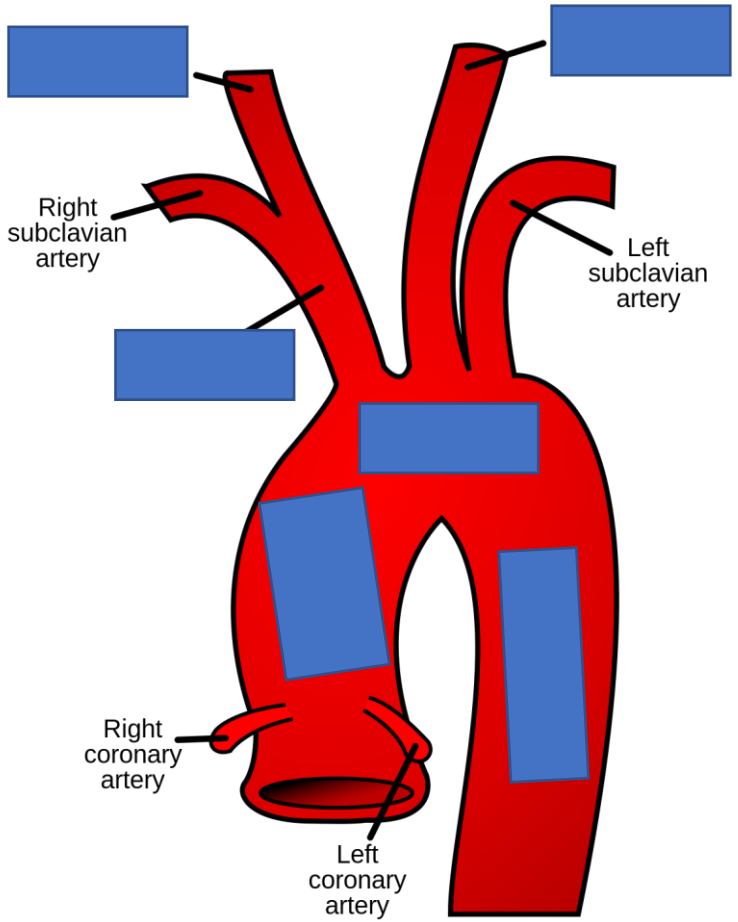


Anatomy of the Chest

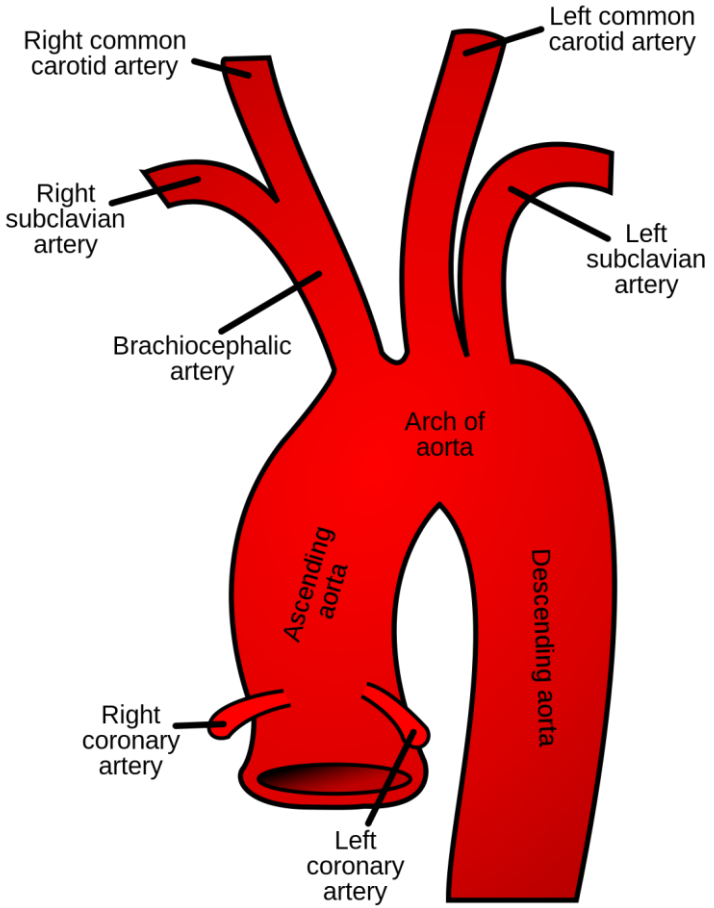




Anatomy of the Thoracic Cavity



Anatomy of the Thoracic Cavity



Innervation of the Thoracic Cavity

The diaphragm is innervated by the…

The intercostal muscles are innervated by the…

Innervation of the Thoracic Cavity

The diaphragm is innervated by the… phrenic nerve, which arises from the …

The intercostal muscles are innervated by the… intercostal nerves

Innervation of the Thoracic Cavity

The diaphragm is innervated by the… phrenic nerve, which arises from the … C3-C5

The intercostal muscles are innervated by the… intercostal nerves

When you are making an incision into the intercostals, should you make the incision close to the ventral or dorsal surface of the bone?

Breathing, Circulation and Blood

The Respiratory Tract

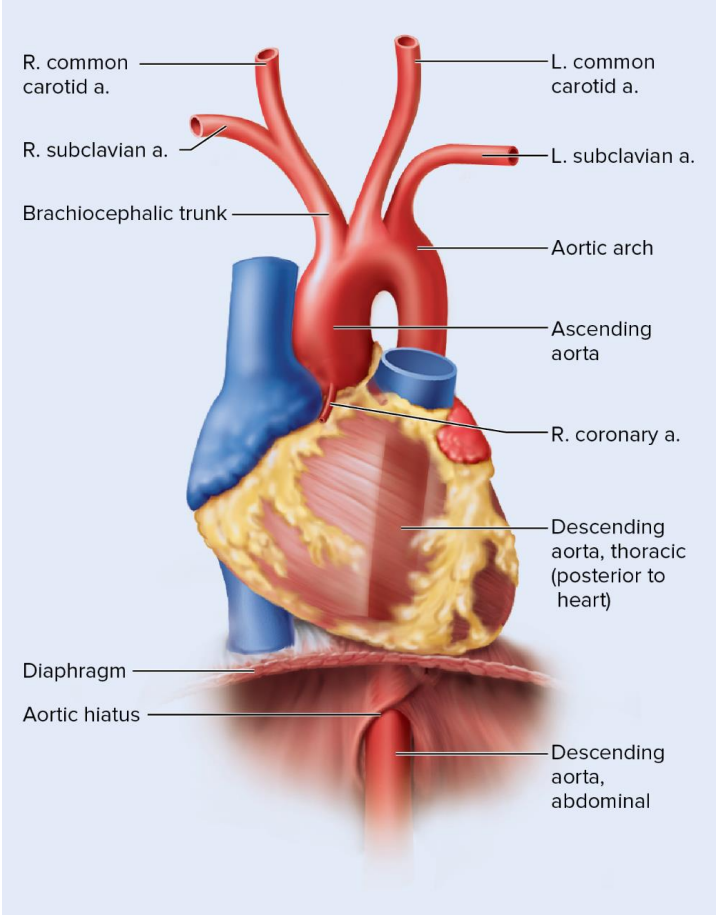
Pathway of air: nasal cavities (or oral cavity) > pharynx > trachea > primary bronchi (right & left) > secondary bronchi > tertiary bronchi > bronchioles > alveoli (site of gas exchange

Semester 1 Anatomy

Blood Supply in the Body

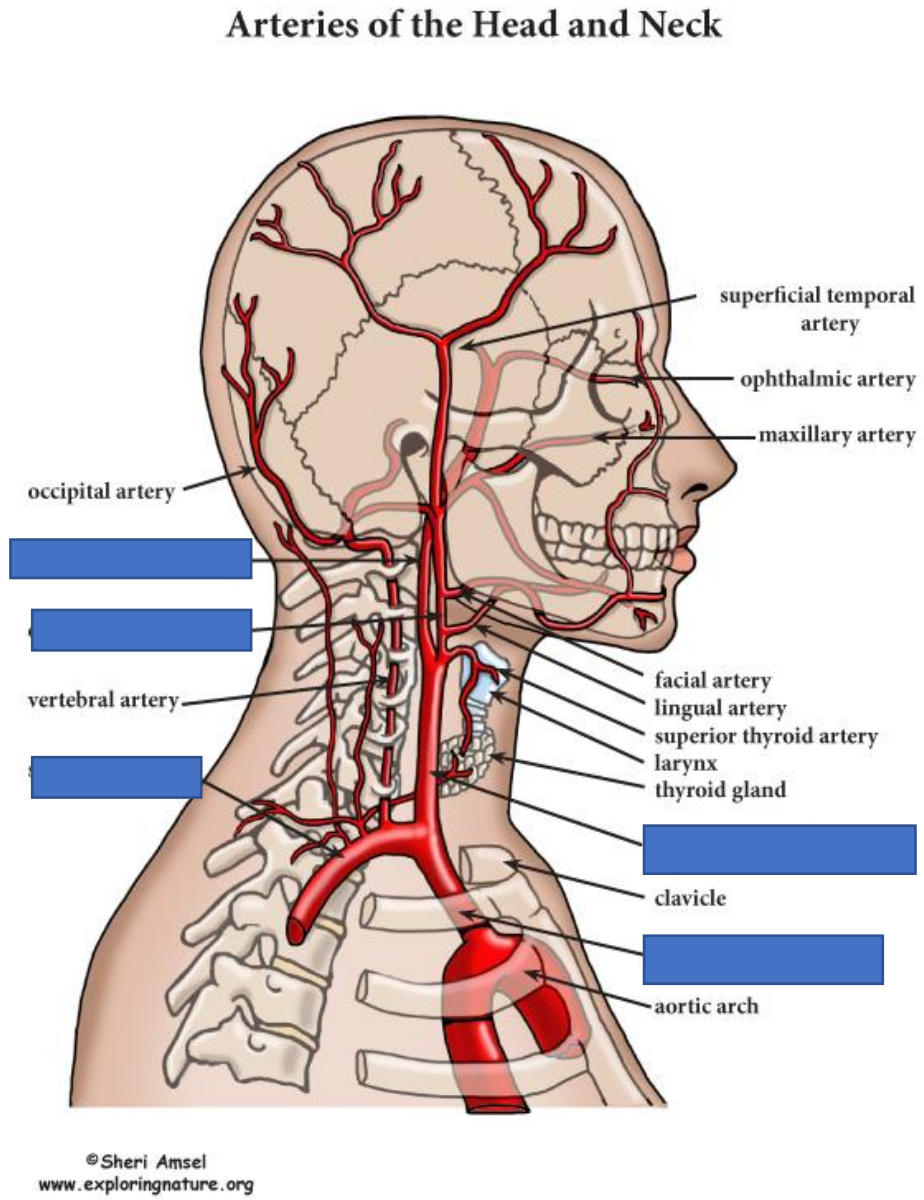
Semester 1 Anatomy

Blood Supply in the Body – Thoracic blood supply



Semester 1 Anatomy

Blood Supply in the Body – Head and Neck



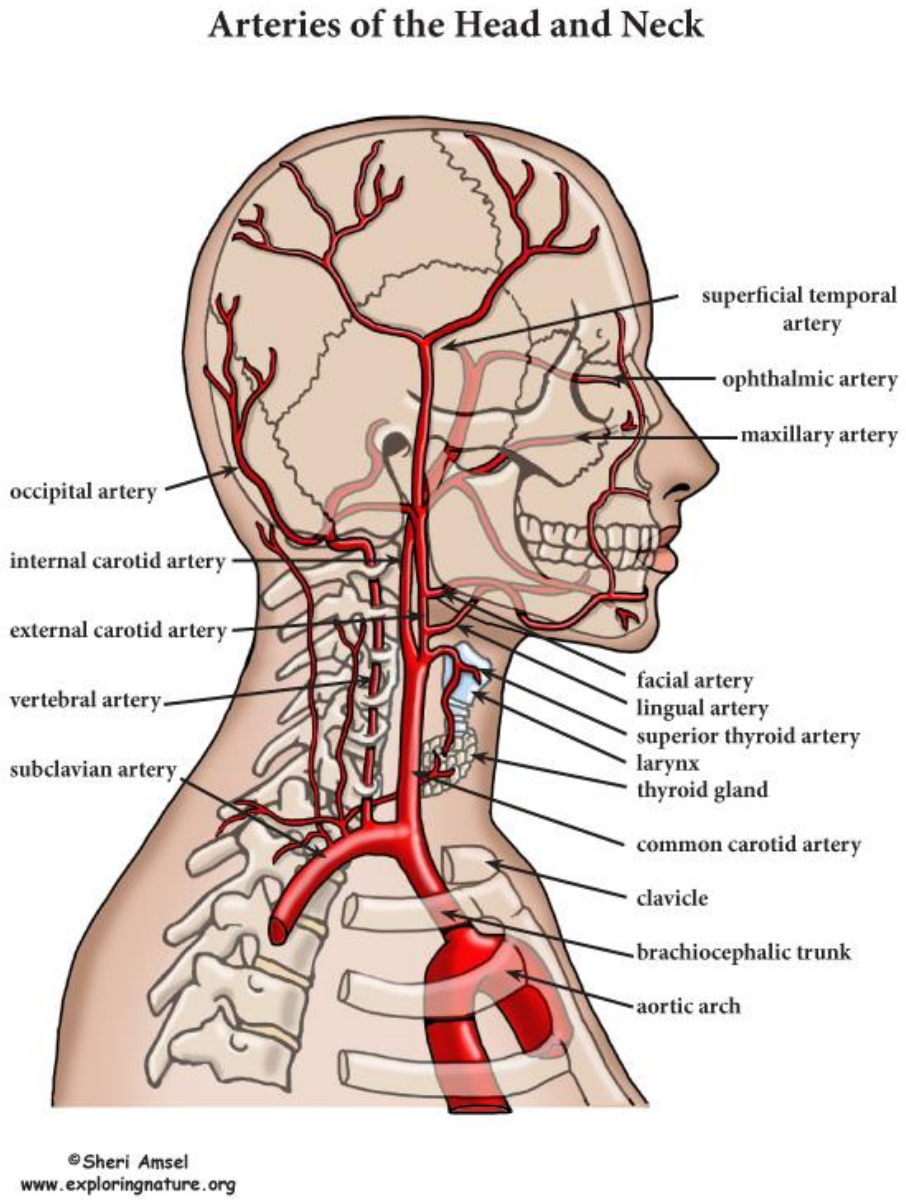
Semester 1 Anatomy

Blood Supply in the Body – Head and Neck

The internal carotid supplies…

The external carotid supplies…

The carotid bifurcates as level…



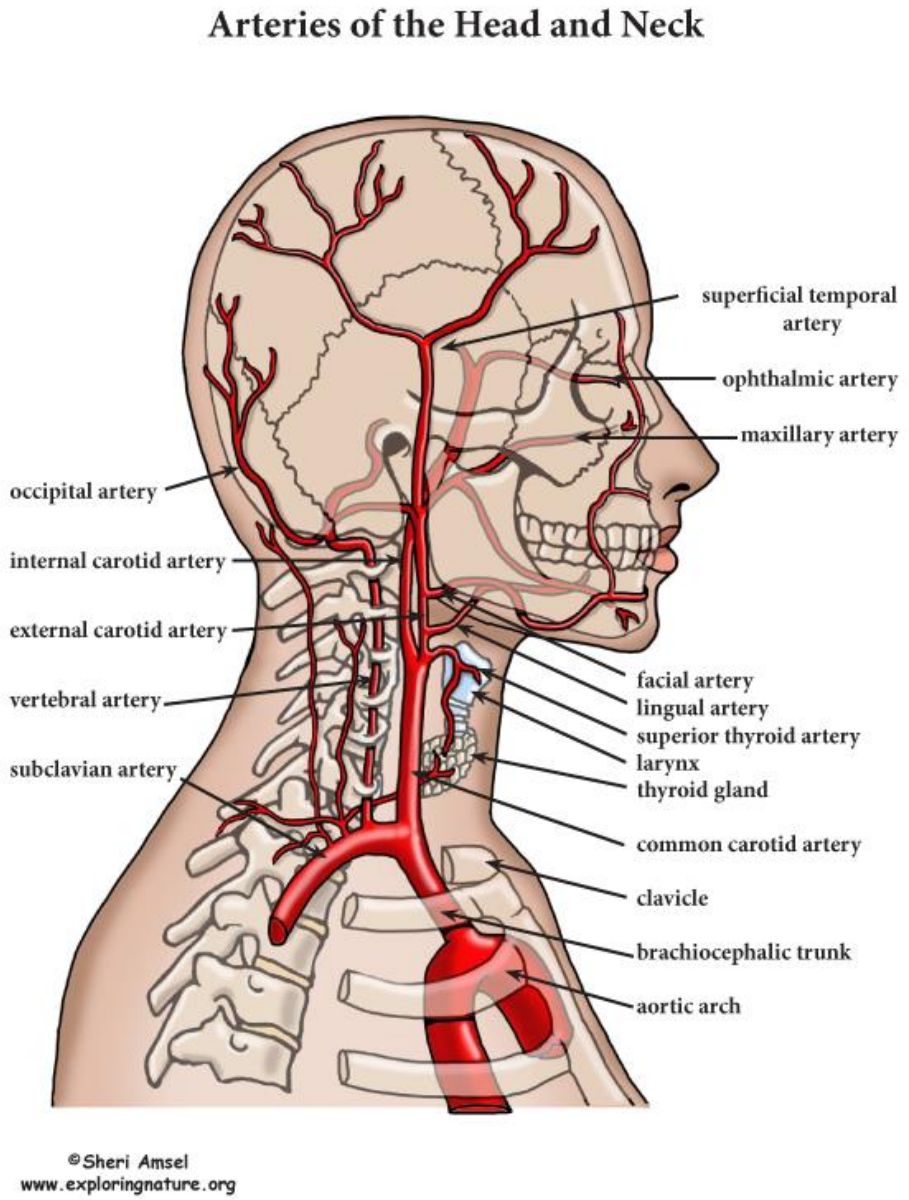
Semester 1 Anatomy

Blood Supply in the Body – Head and Neck

The internal carotid supplies… the nearest brain hemisphere, alongside the basilar

The external carotid supplies… blood to the face and neck

The carotid bifurcates as level… C3-4



Semester 1 Anatomy

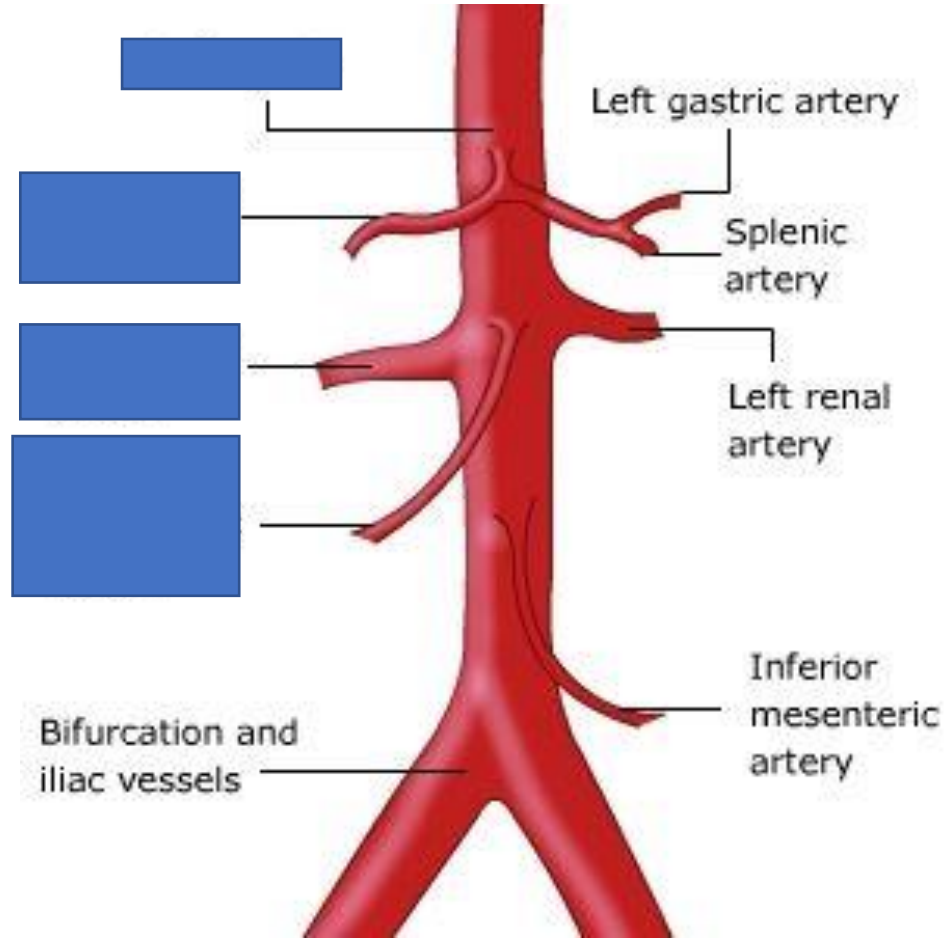
Blood Supply in the Body –Aorta

The thoracic aorta becomes the abdominal at level…

Semester 1 Anatomy

Blood Supply in the Body –Aorta

The thoracic aorta becomes the abdominal at level… T12, at the diaphragm



Semester 1 Anatomy

Anatomy of the Joints and Overview of the MSK

Semester 1 Anatomy

Anatomy of the Joints

Types of joint – fibrous, cartilaginous, synovial

Synovial Joints I – structure & classification

Synovial joints II – movement & stability; applied anatomy

Overview of the MSK

Basics of the Musculoskeletal system

Joints of the lower limb

Joints of the upper limb

Neuro-vasculature of limbs

Bioengineering options of MSK repair

Semester 1 Anatomy

Types of Joint

Semester 1 Anatomy

Anatomy of the Hand and Upper Limb

Semester 1 Anatomy

Anatomy of the Hand

Layout of the bones of the hand

Intrinsic hand muscles

Actions of the intrinsic muscles

Neurovasculature supplying the hand

Be aware of important clinical anatomical relationships within the hand

Overview of the MSK

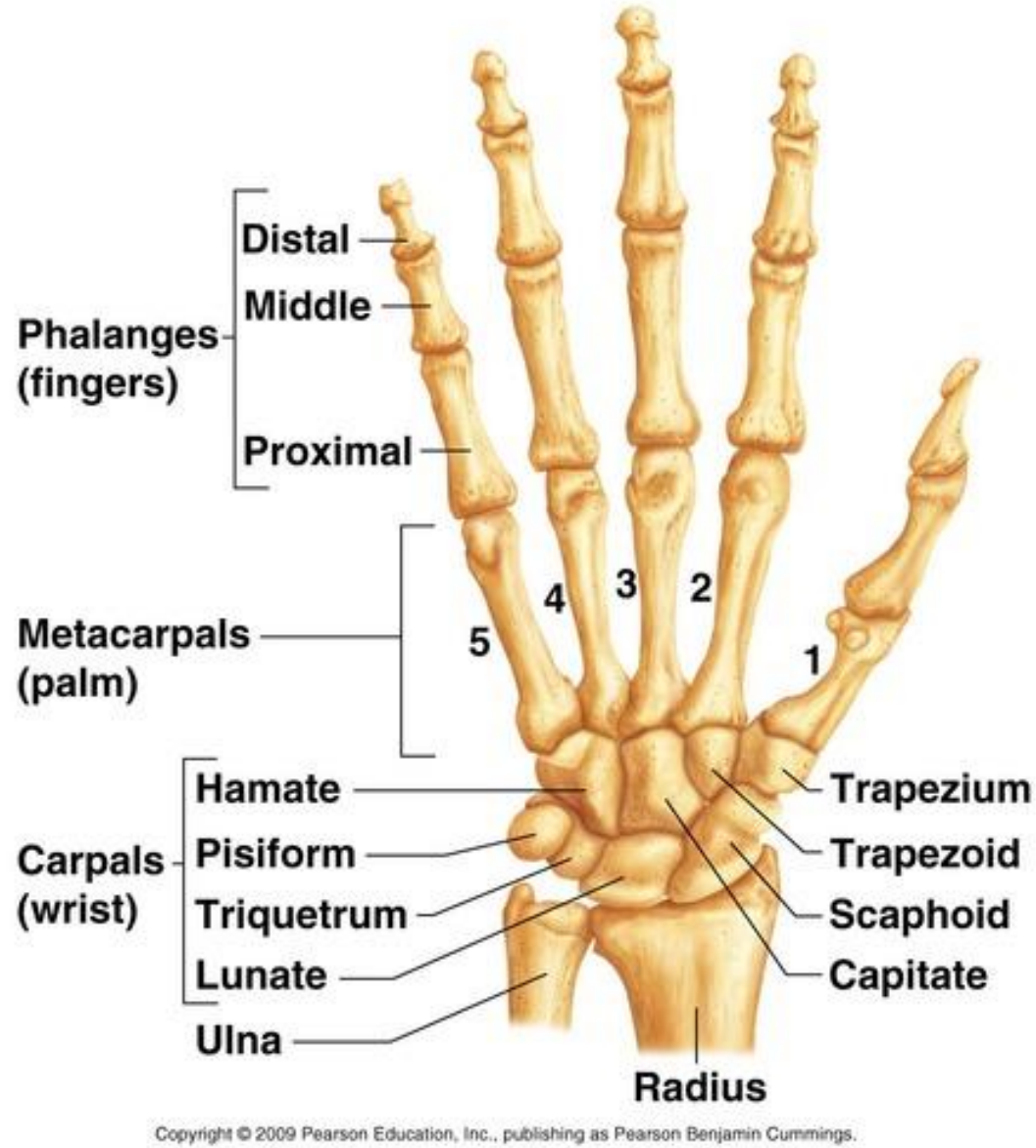
Name and ID the supporting structures of each major joint in the upper limb

To understand the range of motion supported by each joint

To recap the action of key muscles at each of these joints

Semester 1 Anatomy

Bones of the Hand



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Intrinsic Hand Muscles