



# FINAL EXAM

TOPICS: LE1-LE6

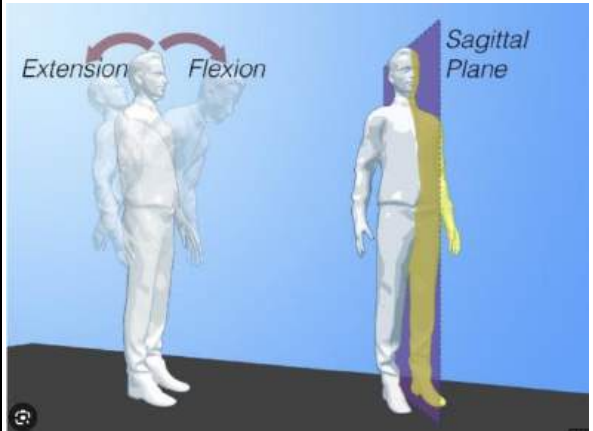
## ANATOMY

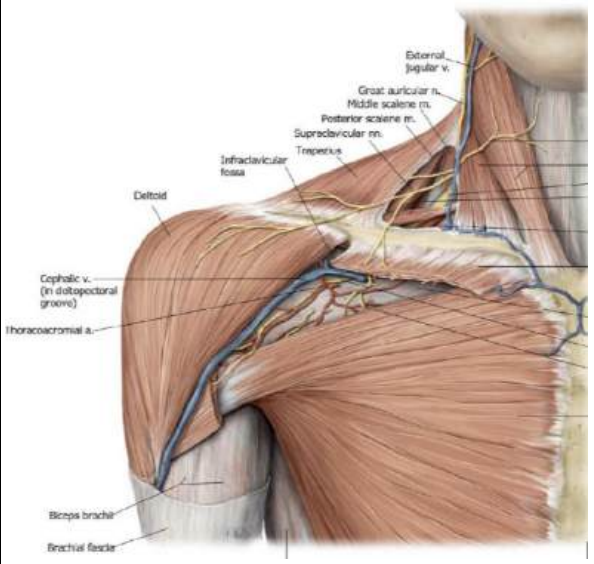
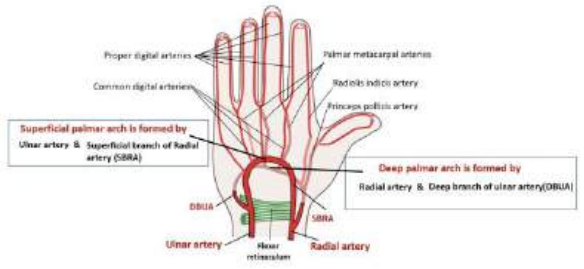
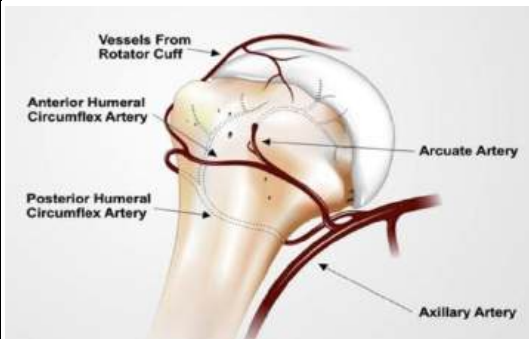
### LEGEND

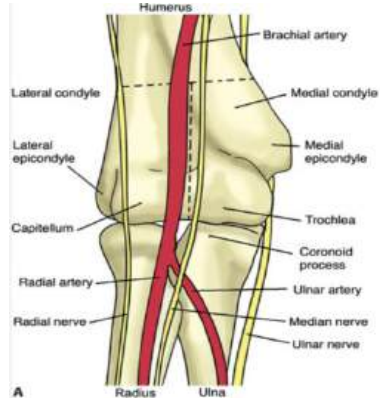
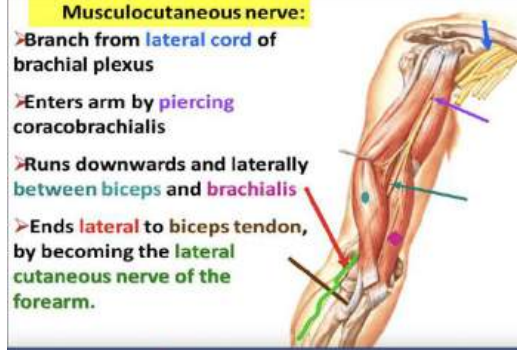
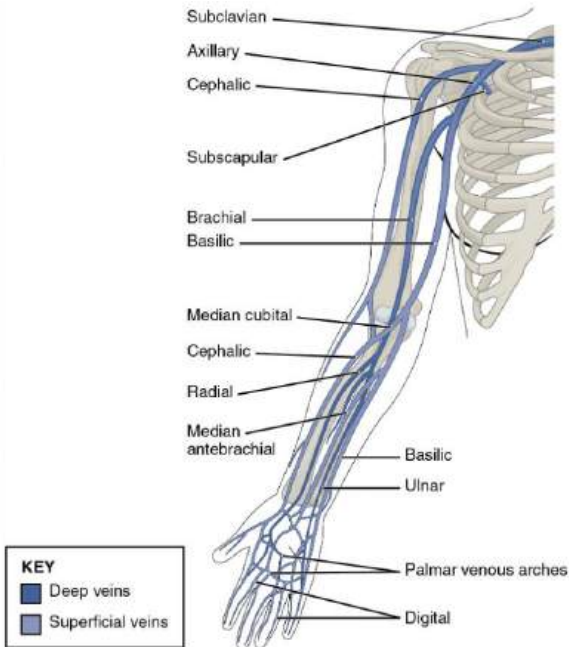
 Ratio from 2026 Cuervo

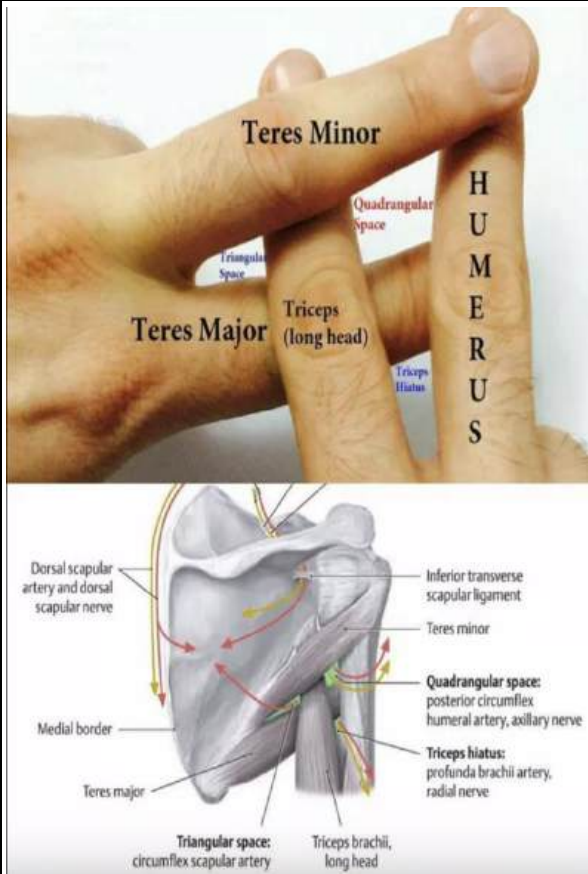
 Explanation from Book / Trans

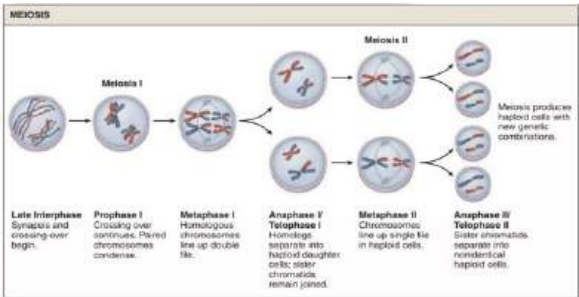

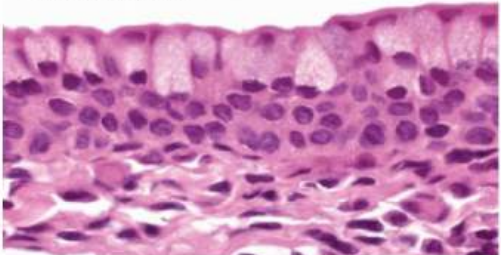
 Explanation from Prof

QUESTION	CHOICES	ANSWER & RATIONALE	
ANATOMY OF MOTION			
1. Flexion occurs in which plane?	A. Frontal	C	 <p>Elbow flexion and extension occur along the sagittal plane and frontal axis.</p> <p>Plane is the reference along which an action is performed. Axis is the line in which the joints move.</p>
	B. Transverse		
	C. Sagittal		
2. Scaphoid is BEST classified as what type of bone?	A. Flat	C	Example: sternum
	B. Irregular		Example: vertebra
	C. Short		
	D. Long		Example: humerus, femur, tibia
3. Deltoid is best classified as?	A. Multipennate	A	-
	B. Fusiform		Example: Biceps brachii
	C. Convergent		Example: Latissimus dorsi
	D. Bipennate		Example: Stapedius, Rectus femoris
UPPER LIMBS (MUSCLE AND FASCIA, BLOOD SUPPLY AND NEUROVASCULATURE)			
4. Wrist extension is an action by which compartment of the upper limb?	A. Anterior arm	D	Elbow flexion
	B. Anterior forearm		Wrist flexion
	C. Posterior arm		Elbow extension
	D. Posterior forearm		-
5. Elbow pain on wrist extension would be localized in which landmark?	A. Coronoid process	C	-
	B. Medial epicondyle of humerus		Elbow pain experienced in wrist <b>flexion</b>

	C. Lateral epicondyle of humerus		-
	D. Olecranon process		-
6. Which intrinsic hand muscle flexes the metacarpophalangeal joints and extends the proximal interphalangeal joints?	A. Palmar interossei	C	Adducts 2nd, 4th, and 5th digits ( <b><i>Pad-DAb</i></b> )
	B. Dorsal interossei		Abducts 2nd, 4th, 5th digits ( <b><i>Pad-DAb</i></b> )
	C. Lumbricals		-
7. Which vein lies along the deltopectoral groove?	A. Axillary	C	
	B. Brachial		
	C. Cephalic		
	D. Subclavian		
8. Which of the following PRIMARILY forms the superficial palmar arch?	A. Axillary	D	-
	B. Brachial		-
	C. Radial		primarily forms the <b>Deep palmar arch</b>
	D. Ulnar		Superficial palmar arch is formed <b>MAINLY</b> by the superficial palmar branch of the ulnar artery (on medial side) and contribution from one of the branches of radial artery (lateral side).
			
9. Which artery encircles the surgical neck of the humerus?	A. Brachial	C	
	B. Circumflex scapular		
	C. Posterior circumflex humeral		
	D. Profunda brachii		

10. Which nerve that supplies the latissimus dorsi would MOST LIKELY be injured during mastectomy?	A. Suprascapular	D	supplies supraspinatus
	B. Lateral pectoral		supplies the pectoralis
	C. Long Thoracic		supplies the serratus anterior
	D. Thoracodorsal		i.e., middle pectoral nerve
11. Which branch of the brachial plexus passes posterior to the medial condyle of the humerus?	A. Axillary	D	
	B. Medial		
	C. Radial		
	D. Ulnar		
12. What is the terminal branch of the brachial plexus that pierces the coracobrachialis muscle?	A. Median	B	<p><b>Musculocutaneous nerve:</b></p> <ul style="list-style-type: none"> <li>➤ Branch from <b>lateral cord of brachial plexus</b></li> <li>➤ Enters arm by <b>piercing coracobrachialis</b></li> <li>➤ Runs downwards and laterally <b>between biceps and brachialis</b></li> <li>➤ Ends <b>lateral to biceps tendon, by becoming the lateral cutaneous nerve of the forearm.</b></li> </ul> 
	B. Musculocutaneous		
	C. Ulnar		
	D. Radial		
13. Which of the following veins unite with the brachial vein to form the axillary vein?	A. Basilic	A	
	B. Cephalic		
	C. Median cubital		
	D. Median antebrachial		
14. The lymph from mammary glands drain mainly into which group of lymph nodes?	A. Axillary	A	<p>The <b>axilla</b> is where the majority of the lymph nodes are. Route: <b>RADIAL AND ULNAR CHANNELS</b> - continuous subcutaneously through the forearm and arm until it reaches the axillary nodes.</p>
	B. Interpectoral		
	C. Parasternal		

	D. Mediastinal		5 PRINCIPAL GROUPS: <ul style="list-style-type: none"><li>- <b>Pectoral</b></li><li>- <b>Subscapular</b></li><li>- <b>Humeral</b></li><li>- <b>Central</b></li><li>- <b>Apical</b></li></ul>
15. Which artery that passes through the quadrangular space is likely to be injured?	A. Axillary	C	
	B. Profunda brachii		
	C. Posterior circumflex humeral		
CELLS, EPITHELIUM, GLANDS			
16. During what phase does DNA replication happen?	A. G1	B	The cell grows physically and increases the volume of both protein and organelles
	B. S phase		"REPLICATION PHASE" - DNA replication consumes most of the cell's resources.
	C. G2		This phase involves further cell growth and organization of cellular contents
	D. M phase		"MITOTIC PHASE" - the cell divides its copied DNA and cytoplasm to make two new cells
17. What is the non-motile apical modification that improves absorptive function and increases surface area of the small intestine?	A. Flagella	D	Long, "whip-like" structures made up of microtubules; related to the sperm cells
	B. Cilia		Cylindrical, motile cytoplasmic apical projections of cells lining surface along which materials are transported
	C. Stereocilia		Similar to the structure of microvilli EXCEPT that they are much longer and restricted to the lining of epididymis and vas deferens and the receptor hair cells of the auditory and vestibular system in the inner ear
	D. Microvilli		Brush or striated border of absorptive epithelial lining such as in the small intestine and the proximal convoluted tubules in the kidney

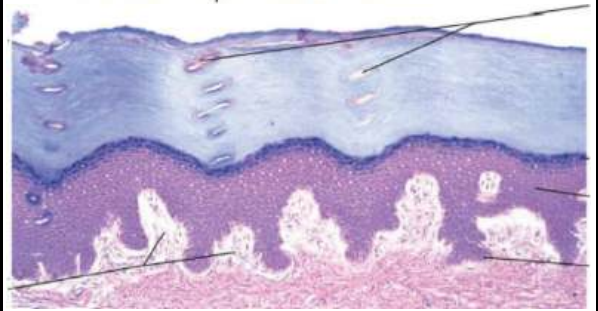
<p>18. Which of the following is the meiosis stage where there is a reduction of chromosomes in half?</p>	<p>A. Metaphase I</p> <p>B. Metaphase II</p> <p>C. Telophase I</p> <p>D. Telophase II</p>	<p><b>C</b></p>  <p>The diagram illustrates the stages of meiosis. It begins with Late Interphase, followed by Prophase I (crossing over), Metaphase I (homologous chromosomes line up), Anaphase I (homologs separate), and Telophase I. This is followed by Meiosis II, which includes Prophase II, Metaphase II (chromosomes line up), Anaphase II (sister chromatids separate), and Telophase II. The final result is four haploid daughter cells, each with new genetic combinations.</p>
<p>19. Which type of epithelial lining is characterized by topmost cells that are flattened when stretched and dome-shaped cells when relaxed?</p>	<p>A. Pseudostratified columnar</p> <p>B. Stratified columnar</p> <p>C. Stratified squamous</p>	<p><b>D</b></p> <p><b>Pseudostratified Columnar Epithelium</b></p> <ul style="list-style-type: none"> <li>• One layer of tall cells</li> <li>• All the tall columnar cells rest on the basement membrane, but not all cells are of the same height; creates illusion of stratification</li> <li>• Functions: <ul style="list-style-type: none"> <li>→ Secretion</li> <li>→ Protection</li> <li>→ Cilia-mediated transport</li> </ul> </li> <li>• Location: <ul style="list-style-type: none"> <li>→ Respiratory passages (e.g. trachea)</li> </ul> </li> </ul>  <p><b>Stratified Columnar Epithelium</b></p> <ul style="list-style-type: none"> <li>• Quite rare</li> <li>• Location: <ul style="list-style-type: none"> <li>→ Conjunctiva</li> <li>→ Largest Ducts of Exocrine Glands</li> <li>→ Anorectal Junction</li> </ul> </li> </ul>  <p><b>Stratified Squamous Non-keratinized Epithelium</b></p> <ul style="list-style-type: none"> <li>• Wet type</li> <li>• Due to relative thickness, main function is <b>protection</b> <ul style="list-style-type: none"> <li>→ Other functions: Secretion and prevention of water loss</li> </ul> </li> <li>• Location: Areas subjected to <b>constant friction</b> <ul style="list-style-type: none"> <li>→ Esophagus</li> <li>→ Oral mucosa</li> <li>→ Vagina</li> <li>→ Cervix</li> <li>→ Anal Canal</li> </ul> </li> <li>• Multiple layers of cells, cuboidal cells at the base, polyhedral cells in the middle and flat cells with sparse or no keratin at the top <ul style="list-style-type: none"> <li>→ Cells at the basal portion are the most immature</li> <li>→ Cells at the apical portion are the most mature</li> </ul> </li> </ul>





### Stratified Squamous Keratinized Epithelium

- Dry type
- Thick skin (Palms and soles)
  - Stratum corneum (Top part: Keratin) is **very thick**
  - From bottom to top: starts as columnar to cuboidal to flattened cells
  - No hair follicles
- Thin skin
  - Stratum corneum (Top part: Keratin) is **thinner**
  - With hair follicles
- Lack of nuclei in the top most layer (Thin lamellae, dead skin cells)
- Function:
  - Protection and prevention of water loss



### D. Transitional

### Transitional Epithelium

- Found only in mammals
- Location: Urinary Tracts
  - Bladder
  - Ureters
  - Renal Calyces
- If relaxed,
  - Have features that are intermediate between stratified cuboidal and stratified squamous
  - Topmost layer: Dome-shaped
    - AKA **Umbrella Cells**
- If stretched,
  - Topmost layer will be flattened
- Has plaques
  - Serves as an osmotic barrier (Not uniform throughout)
  - Prohibits passage of water and salts



Figure 22. Relaxed bladder (Difiore)

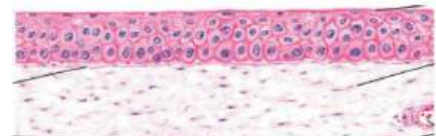
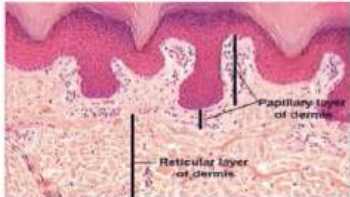
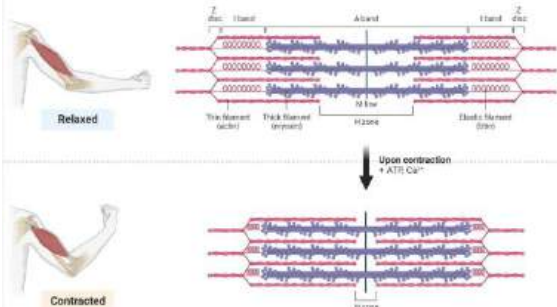


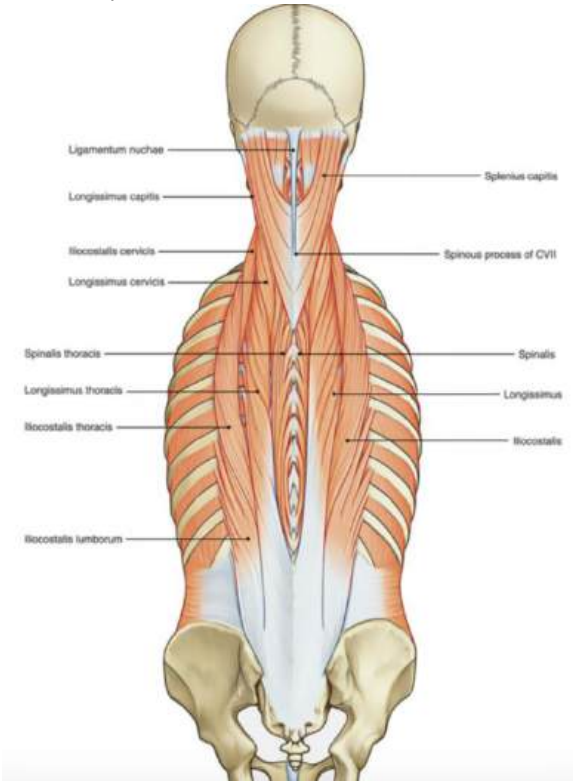
Figure 23. Distended/Stretched bladder (Difiore)

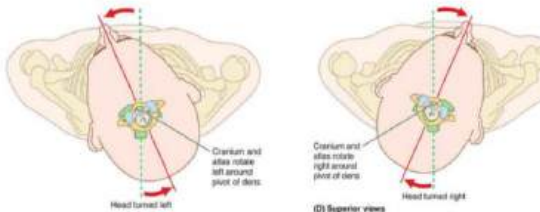
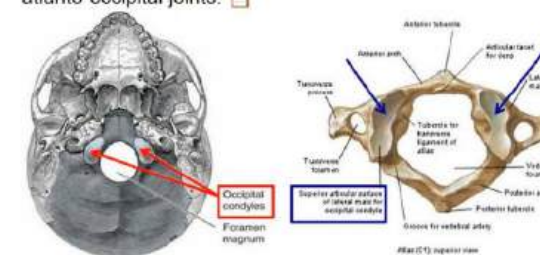
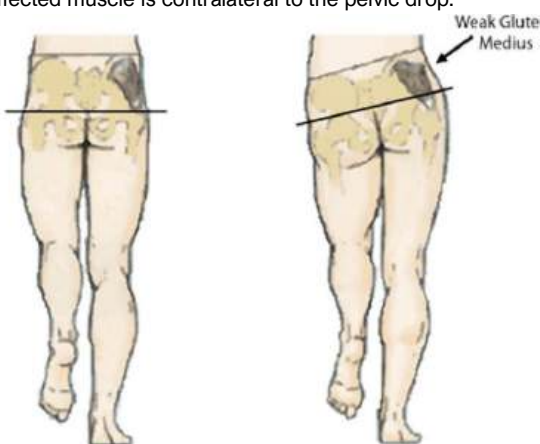
CONNECTIVE TISSUE & SKIN				
20. Which of the following structures is found in ALL connective tissues?	A. Adipocytes	D	<div>B. COMPONENTS</div> <ul style="list-style-type: none"> <li>All connective tissues are derived from undifferentiated mesenchymal cells.</li> <li>The connective tissues are made up of:               <ul style="list-style-type: none"> <li>→ <b>Extracellular matrix</b> (major component):                   <ul style="list-style-type: none"> <li>Connects and supports other tissues and cells to form and maintain the general function of the organ</li> <li><b>Composed of:</b> <ul style="list-style-type: none"> <li>Ground substance</li> <li>Protein fibers (binds the different cell types)</li> </ul> </li> </ul> </li> </ul> </li> </ul>	
	B. Collagen fibers			
	C. Fibroblasts			
	D. Ground substance			
21. The sebaceous gland is best classified according to which secretion type?	A. Holocrine	A	<ul style="list-style-type: none"> <li><b>Sebaceous gland</b> <ul style="list-style-type: none"> <li>→ Simple branched acinar</li> <li>→ Cells appear vacuolated as lipid content is lost during histologic preparation</li> <li>→ Secretes <b>sebum</b> that coats the hair and surface of the skin</li> <li>→ <b>Holocrine</b></li> </ul> </li> <li><b>Eccrine sweat gland</b> <ul style="list-style-type: none"> <li>→ Simple coiled tubular</li> <li>→ Most numerous on the palms and soles of feet</li> <li>→ Opens directly to the skin surface</li> <li>→ Secretes watery secretion without proteins</li> <li>→ Merocrine</li> </ul> </li> <li><b>Apocrine sweat gland</b> <ul style="list-style-type: none"> <li>→ Located in the dermis and is largely confined in axillary and perineal regions</li> <li>→ Wider lumens compared to eccrine sweat glands</li> <li>→ Releases fluid (watery with proteins, lipids carbohydrates, ammonium, and other organic compounds) [2024B]</li> <li>→ Merocrine [2024B]</li> </ul> </li> </ul>	
	B. Apocrine			
	C. Autocrine			
	D. Paracrine			
22. The reticular layer of the dermis is composed of which type of tissue?	A. Dense irregular	A	<div>  <p>Figure 27. Papillary and Reticular Layer of Dermis. [Lecturer's PPT]</p> </div> <ul style="list-style-type: none"> <li>Layers:               <ul style="list-style-type: none"> <li>→ <b>Papillary Layer</b> <ul style="list-style-type: none"> <li>Seen immediately below the epidermis</li> <li>Tissue Type: <b>Loose CT</b></li> <li>Includes dermal papillae where Meissner's corpuscles and capillary loops can be found [2024A]</li> </ul> </li> <li>→ <b>Reticular Layer</b> <ul style="list-style-type: none"> <li>Found under the papillary layer</li> <li>Thicker</li> <li>Tissue Type: <b>Dense Irregular CT</b></li> </ul> </li> </ul> </li> </ul>	
	B. Loose connective			
	C. Elastic			
	D. Dense regular			
23. Which of the following structures play a role in the thermoregulatory function of the skin?	A. Arteriovenous anastomoses	A	<div><b>Blood Supply of the Skin</b></div> <ul style="list-style-type: none"> <li>Dermis with rich network of blood and lymphatic vessels</li> <li>Functions:               <ul style="list-style-type: none"> <li>→ <b>Nutritive</b> functions via capillary loops through diffusion                   <ul style="list-style-type: none"> <li><b>Subpapillary Plexus (SPP)</b> - forms capillary branches extends into the dermal papillae to form a rich nutritive capillary network</li> <li><b>Cutaneous plexus</b> - bigger blood vessels that supply the interface between reticular dermis and subcutaneous tissue</li> </ul> </li> <li>→ <b>Thermoregulatory functions</b> <ul style="list-style-type: none"> <li><b>Arteriovenous anastomoses</b> or shunts located between subpapillary plexus and cutaneous plexus.</li> <li><b>In cold</b> → blood from SPP is shunted away from skin surface through the <i>constriction of blood vessels</i> (decreased blood flow) minimizing heat loss (Skin cold and pale)</li> </ul> </li> </ul> </li> </ul>	

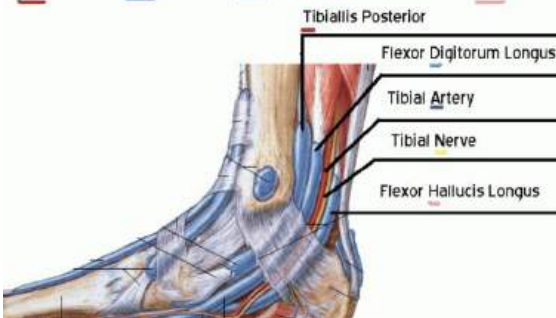
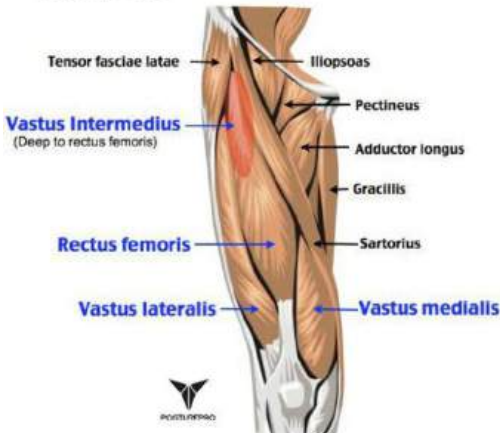
B. Capillary loops		→ <b>Nutritive</b> functions via <b>capillary loops</b> through diffusion
C. Elastic lamellae		<ul style="list-style-type: none"> <li>▪ <b>Subpapillary Plexus (SPP)</b> - forms capillary branches extends into the dermal papillae to form a rich nutritive capillary network</li> <li>▪ <b>Cutaneous plexus</b> - bigger blood vessels that supply the interface between reticular dermis and subcutaneous tissue</li> </ul>
D. Parasympathetic nerves		<ul style="list-style-type: none"> <li>▪ <b>Elastic Fibers</b></li> <li>→ <b>Thinner than type I collagen fibers</b></li> <li>→ Composed of <b>fibrillin</b> which forms microfibrils embedded in <b>elastin</b> <ul style="list-style-type: none"> <li>▪ Allows the tissues to be stretched and distended and is capable of returning to its original shape</li> </ul> </li> <li>→ Can be found in organs that expand: <ul style="list-style-type: none"> <li>▪ Skin, lungs, walls of blood vessels, bladder</li> </ul> </li> <li>→ <b>Elastic lamellae</b> in large arteries <ul style="list-style-type: none"> <li>▪ Elastic fibers found in big blood vessels like aorta synthesized by smooth muscle tissues</li> <li>▪ Elastic fibers found in the skin are synthesized by the fibroblasts</li> <li>▪ Elastic fibers found in the organs that expand (e.g., lungs) are synthesized by the epithelial tissues</li> </ul> </li> </ul>

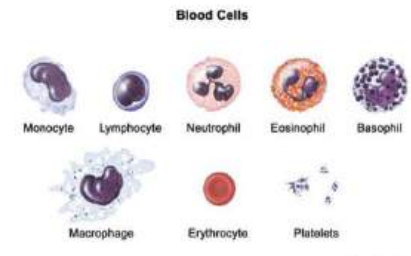
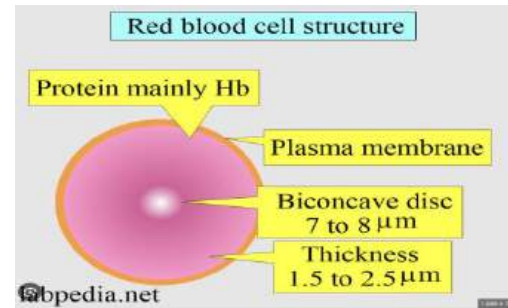
MUSCLE & NERVOUS TISSUE																							
24. What happens to the sarcomere when the muscle is contracted?	A. H band is unaltered	C	 <p><b>DURING MUSCLE CONTRACTION:</b></p> <ul style="list-style-type: none"><li>- <b>A Band:</b> Unaltered ["<b>A</b>lang nangyare"]</li><li>- <b>I Band:</b> Narrows</li><li>- <b>H Band:</b> Disappears ["<b>H</b>ala Nawala"]</li><li>- <b>M Line:</b> Unaltered</li><li>- <b>Z Disc:</b> Moves closer</li></ul>																				
	B. A band lengthens																						
	C. Z disc shortens																						
	D. M line disappears																						
25. Which cell is striated and multinucleated?	A. skeletal	A	<table><thead><tr><th></th><th>Skeletal Muscle</th><th>Cardiac Muscle</th><th>Smooth Muscle</th></tr></thead><tbody><tr><td><b>Fibers</b></td><td>Single multinucleated cells</td><td>Aligned cells in branching arrangement</td><td>Single small, closely packed fusiform cells</td></tr><tr><td><b>Cell/fiber shape and size</b></td><td>Cylindrical, 10-100 µm diameter, many cm long</td><td>Cylindrical, 10-20 µm diameter, 90-100 µm long</td><td>Fusiform, diameter 0.2-10 µm, length 50-200 µm</td></tr><tr><td><b>Striations</b></td><td>Present</td><td>Present</td><td>Absent</td></tr><tr><td><b>Location of nuclei</b></td><td>Peripheral, adjacent to sarcolemma</td><td>Central</td><td>Central, at widest part of cell</td></tr></tbody></table>		Skeletal Muscle	Cardiac Muscle	Smooth Muscle	<b>Fibers</b>	Single multinucleated cells	Aligned cells in branching arrangement	Single small, closely packed fusiform cells	<b>Cell/fiber shape and size</b>	Cylindrical, 10-100 µm diameter, many cm long	Cylindrical, 10-20 µm diameter, 90-100 µm long	Fusiform, diameter 0.2-10 µm, length 50-200 µm	<b>Striations</b>	Present	Present	Absent	<b>Location of nuclei</b>	Peripheral, adjacent to sarcolemma	Central	Central, at widest part of cell
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B. smooth																							
C. cardiac																							
26. Which neurotransmitter is secreted at the neuromuscular junction during the transmission of nerve impulses?	A. GABA	C	Inhibitory Neurotransmitter																				
	B. Dopamine			Both excitatory and inhibitory neurotransmitter																			
	C. Acetylcholine			<p><b>Motor Innervation: Motor End Plate/Neuromuscular Junction</b></p> <ol style="list-style-type: none"><li>1. A nerve impulse triggers release of acetylcholine (Ach) from the synaptic knob into the synaptic cleft.<ul style="list-style-type: none"><li>• Ach binds to Ach receptors in the motor end plate of the neuromuscular junction initiating a muscle impulse in the sarcolemma of the muscle fiber.</li></ul></li><li>2. Muscle impulse spreads quickly from the sarcolemma to T-tubules, resulting in calcium (Ca<sup>2+</sup>) released from the terminal cisternae to the sarcoplasm.</li></ol>																			



	D. Glutamate		Excitatory Neurotransmitter
DEEP BACK			
27. What is the primary extensor of the spine?	A. Longissimus	A	<p><input type="checkbox"/> The extensor muscles are attached to back of the spine and enable actions like standing and lifting objects. These muscles include the large paired muscles in the lower back, called <b>erector spinae</b>, which help hold up the spine and the gluteal muscles.</p> <p><b><u>ERECTOR SPINAE MUSCLES:</u></b>  <b>"I-L-S = I-LOVE-SEX"</b> [Lateral → Medial]</p> <ul style="list-style-type: none"> <li>- Iliocostalis</li> <li>- Longissimus</li> <li>- Spinalis</li> </ul> 
	B. Multifidus		
	C. Rotatores		
	D. Semispinalis		
28. Which muscle forms the roof of the suboccipital triangle?	A. Obliquus capitis superior	D	<p>→ <b>Semispinalis capitis</b>: superomedial occipital bone</p> <ul style="list-style-type: none"> <li>▪ Becomes the <b>roof of the suboccipital triangle</b> !</li> <li>▪ Forms a palpable longitudinal bulge at the back near the median plane</li> </ul> <p>→ <b>Semispinalis cervicis</b>: spinous process of the <b>cervical</b> vertebrae</p> <p>→ <b>Semispinalis thoracis</b>: spinous process of the <b>thoracic</b> vertebrae</p>
	B. Obliquus capitis inferior		
	C. Rectus capitis posterior major		
	D. Semispinalis capitis		
	A. Cervical vertebrae		-

<p>29. Which joint is involved in the action of nodding?</p>	<p>B. Atlanto-axial</p>	<p><b>C</b></p> <div data-bbox="950 111 1502 556"> <h3>ATLANTO-AXIAL JOINT</h3> <ul style="list-style-type: none"> <li>• <b>Synovial joint with NO IV disc</b> → Atlas has no vertebral body</li> <li>• <b>"NO" Joint !</b> → <b>Pivot</b> joint that allows you to shake your head "no" 🍷 → Allows <b>rotation</b> 📐</li> <li>• Formed between the atlas (C1 vertebrae) and axis (C2 vertebra) 📐</li> </ul>  <p>Figure 27. Movement of Atlanto-axial joints [Moore]</p> </div> <p>"Nah A-A"</p>
	<p>C. Atlanto-occipital</p>	<p><b>"NAH A-A"</b></p> <div data-bbox="950 648 1502 1165"> <h3>ATLANTO-OCCIPITAL JOINT</h3> <ul style="list-style-type: none"> <li>• Synovial joint of the <b>condyloid type</b></li> <li>• <b>"YES" joint !</b> → Allows you to nod your head 🍷 → Allows flexion and extension of the neck, and also permits lateral flexion, rotation as a condyloid joint 📐</li> <li>• Formed between the atlas (C1 vertebrae) and occipital bone of the cranium 📐</li> <li>• <u>Anterior and posterior atlanto-occipital</u> membranes stabilize or prevent excessive movement of the atlanto-occipital joints. 📐</li> </ul>  <p>Figure 26. Atlanto-occipital Joint [Lecture PPT]</p> </div> <p>"YA-Oh"</p>
<p><b>LOWER LIMBS (MUSCLE AND FASCIA, BLOOD SUPPLY AND NEUROVASCULATURE)</b></p>		
<p>30. A patient was noted to have a right sided pelvic drop while standing on his left leg. Which of the following muscles is MOST LIKELY injured?</p>	<p>A. Left gluteus maximus</p> <p>B. Left gluteus medius</p> <p>C. Right gluteus minimus</p> <p>D. Right tensor fasciae latae</p>	<p><b>B</b></p> <p>The gluteus medius supports the contralateral side. Hence, the affected muscle is contralateral to the pelvic drop.</p>  <p>Normal</p> <p><b>Trendelenburg Sign</b> Drop of pelvis when lifting leg opposite to weak gluteus medius</p>

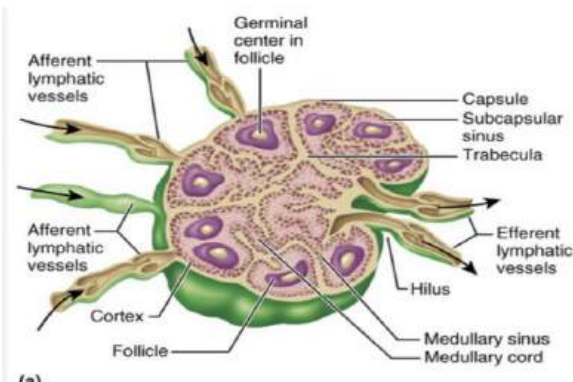
31. A posteromedial blow to the medial malleolus will affect what tendon?	<div>A. Flexor digitorum longus</div> <div>B. Flexor hallucis longus</div> <div>C. Peroneus brevis</div> <div>D. Tibialis posterior</div>	<div>B</div>	<div>Tom, Dick, And Nervous Harry</div> <div></div>												
32. Knee extensors are part of what compartment of the lower limb?	<div>A. Anterior thigh</div> <div>B. Posterior thigh</div> <div>C. Anterior leg</div> <div>D. Posterior leg</div>	<div>A</div>	<div><div>Primary Extensors of the Knee</div><div><div><div><div>• Rectus femoris</div><div>• Vastus lateralis</div><div>• Vastus intermedius</div><div>• Vastus medialis</div></div><div>Quadriceps</div></div><div></div></div><div>Posterior thigh: Knee flexor, thigh extensor</div><div>Anterior leg: Dorsiflexor</div><div>Posterior leg: Plantarflexor</div></div>												
33. Which among the following is a DEEP VEIN of the lower limb?	<div>A. Dorsal venous arch</div> <div>B. Fibular</div> <div>C. Perforating</div> <div>D. Small saphenous vein</div>	<div>C</div>	<div><div><input type="checkbox"/>The <b>perforating veins of the lower limb</b> (PV or “perforators”) are so called because they perforate the deep fascia of muscles, to connect the superficial venous systems of the lower extremity with the deep veins where they drain</div></div>												
34. Which is found most lateral in the femoral triangle?	<div>A. Femoral artery</div> <div>B. Femoral nerve</div> <div>C. Femoral vein</div> <div>D. Lymph node</div>	<div>B</div>	<div><div>→ <b>Contents</b> (from lateral to medial)</div><div><div><div>• Femoral nerve</div><div>• Femoral sheath and its contents</div><div><div>– Femoral artery and branches</div><div>– Femoral vein and proximal tributaries</div><div>– Deep inguinal lymph nodes &amp; lymphatic vessels</div></div></div></div></div>												
35. Which muscle is innervated by the inferior gluteal nerve	<div>A. Gluteus maximus</div> <div>B. Gluteus medius</div> <div>C. Gluteus minimus</div>	<div>A</div>	<div><div>Table 2. Branches of the Sacral Plexus</div><table><tr><th>Roots</th><th>Nerve</th><th>Structure Supplied</th></tr><tr><td>L4-S1</td><td>Superior gluteal</td><td>Supplies the <u>gluteus medius</u> (<b>Superior branch</b>); Supplies the <u>gluteus medius, minimus, and tensor fasciae latae</u> (<b>Inferior branch</b>)</td></tr><tr><td>L4-S1</td><td>Nerve to quadratus femoris</td><td>Articular branch to hip joint; quadratus femoris and inferior gemellus</td></tr><tr><td>L5-S2</td><td>Inferior gluteal</td><td>Gluteus maximus (motor innervation)</td></tr></table></div>	Roots	Nerve	Structure Supplied	L4-S1	Superior gluteal	Supplies the <u>gluteus medius</u> ( <b>Superior branch</b> ); Supplies the <u>gluteus medius, minimus, and tensor fasciae latae</u> ( <b>Inferior branch</b> )	L4-S1	Nerve to quadratus femoris	Articular branch to hip joint; quadratus femoris and inferior gemellus	L5-S2	Inferior gluteal	Gluteus maximus (motor innervation)
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L5-S2	Inferior gluteal	Gluteus maximus (motor innervation)													

BLOOD & MYELOID				
36. Which of the following precursor blood cells are NOT derived from myeloid line?	A. Lymphoblast	A	Lymphoid lineage	
	B. Megakaryoblast		Myeloid lineage	
	C. Myeloblast			
	D. Proerythroblast			
37. Which of the following cells are bilobed nucleus and large pink cytoplasmic granules which increases in parasitism?	A. Basophil	B	<div><input type="checkbox"/> With regard to parasitosis, a sustained rise in <b>eosinophils</b> is usually seen when the parasites migrate into tissues and come into contact with patrolling immune cells.</div> <div></div> <div><input type="checkbox"/> <b>LYMPHOCYTES</b> are increased with <u>VIRAL</u> infections</div> <div><input type="checkbox"/> <b>BASOPHILS</b> are increased with <u>ALLERGIC</u> reactions</div> <div><input type="checkbox"/> <b>MONOCYTES</b> function as <u>phagocytes</u></div> <div><input type="checkbox"/> <b>NEUTROPHILS</b> are increased with <u>BACTERIAL</u> infections</div>	
	B. Eosinophil			
	C. Lymphocyte			
	D. Monocyte			
38. What is a normal erythrocyte characteristic?	A. Anucleated	A	<div></div> <div><b>RBCs are ANUCLEATED</b></div>	
	B. Diameter of 9.0 μm			
	C. Discoid shape			
	D. Granular cytoplasm			
BONE & CARTILAGE				
39. Which of the following is used for cartilage healing and growth?	A. Endosteum	B	<div><input type="checkbox"/> The main functions of the perichondrium are to protect bones from injury and damage, nourish cartilage through blood vessels, and facilitate cartilage growth.</div>	
	B. Perichondrium			
	C. Periosteum			
40. Which zone of maturation contains actively dividing chondrocytes forming columns that looks like stacked coins?	A. Hypertrophy	C	<div><div>Five Overlapping Zones</div><div><div>1. Resting Zone</div><div>• Zone of resting cartilage</div><div>• Consists of "normal" hyaline cartilage with typical chondrocytes</div></div><div><div>2. Proliferative Zone</div><div>• Zone of proliferating cartilage</div><div>• Isogenous group of chondrocytes actively divide and form columns of stacked cells parallel to the long axis of bone</div></div><div><div>3. Hypertrophic Cartilage Zone</div><div>• Zone of maturation and hypertrophy</div><div>• Contains swollen, degenerative chondrocytes that have accumulation of glycogen in cytoplasm</div><div>• Hypertrophy of chondrocytes compress the matrix into spicules and stiffens it by secretion of type X collagen</div><div>→ Type X Collagen</div><div>• Unique to hypertrophic chondrocytes in developing (or fractured) bone</div><div>• It limits diffusion in the matrix and together with growth factors, it promotes vascularization from the adjacent primary ossification center.</div></div><div><div>4. Calcified Cartilage Zone</div><div>• Zone of calcification</div><div>• Loss of chondrocytes by apoptosis</div><div>• Accompanied by calcification of cartilage matrix by the formation of hydroxyapatite crystals</div></div><div><div>5. Ossification Zone</div><div>• First appearance of bone tissue</div><div>• Blood vessels and osteoblasts invade lacunae of chondrocytes</div><div>• Bone tissue deposited on calcified cartilage</div></div></div>	
	B. Ossification			
	C. Proliferative			
	D. Calcification			



41. Which structure increases bone resorption?	A. Osteocyte	<b>C</b>	Bone cells for maintaining the bone matrix
	B. Osteoblast		For bone formation; "osteoblast = Build"
	C. Osteoclast		For bone resorption; "osteoclast = Cut down"

### LYMPHOID TISSUE


42. Metastasized cancer cells are first filtered through which structure?	A. Cortex	<b>A</b>	 <p>(a)</p> <p><b>Subcapsular sinus:</b> immediately inside/below the capsule  → Receives lymph from the afferent lymphatic LVs  → From here, lymph drains to either the cortical or trabecular sinuses  → Where <b>metastatic cancer cells are INITIALLY found</b> !  The subcapsular sinus is contained within the <b>CORTEX</b>.</p>
	B. Medulla		
	C. Paracortex		
43. The presence of which of the following features is common to all secondary lymphoid organs?	A. Germinal centers	<b>B</b>	The germinal center of lymphoid organs is the main structure where antigen-activated B cells diversify their immunoglobulin genes by somatic hypermutation (SHM) to generate high-affinity antibodies.
	B. Lymphoid nodules		<div style="border: 1px solid black; padding: 5px;"> <b>LYMPHOID NODULES</b> <ul style="list-style-type: none"> <li>• Characteristic of all <u>secondary lymphoid organs</u></li> <li>• Composed of large aggregates of B lymphocytes (cells) <ul style="list-style-type: none"> <li>→ Spherical clusters</li> <li>→ May look different depending on the activity of the immune cells within the organ</li> </ul> </li> </ul> </div>
	C. Hassall corpuscle		<b>"Thymic Corpuscle"</b> seen in the Thymus gland that secretes cytokines
44. Immune cells are seen infiltrating the lining epithelium of which of the following lymphoid organs?	A. Tubal tonsil	<b>B</b>	<b>"Gerlach Tonsil"</b> ; One of the four tonsils that form the Waldeyer's Ring.
	B. Palatine tonsil		As a mucosa-associated lymphoid tissue, the <b>palatine tonsils</b> serve as the primary lymphatic tissue of the oropharynx. This tissue houses B cells that can go through the maturation process and produce all isotypes of immunoglobulins (IgA, IgD, IgE, IgG, and IgM)
	C. Lingual tonsil		It has a singular tonsillar crypt and lacks a distinct capsule
	D. Pharyngeal tonsil		Its mucosa is invaginated by infoldings that do not have crypts

### INTRO TO EMBRYOLOGY

45. Which process results to the blastomere rapidly dividing within the zona pellucida without increasing in size?	A. Acrosome reaction	<b>C</b>	At binding of the sperm cell to the zona pellucida, Zona proteins induce the acrosome reaction mediated by the ZP3 receptors
	B. Cortical reaction		Lysosomal enzymes from the cortical granules are released into the zona pellucida
	C. Compaction		Subsequent mitotic divisions lead to a continuous decrease of blastomere size; These cells communicate via extensive gap junctions

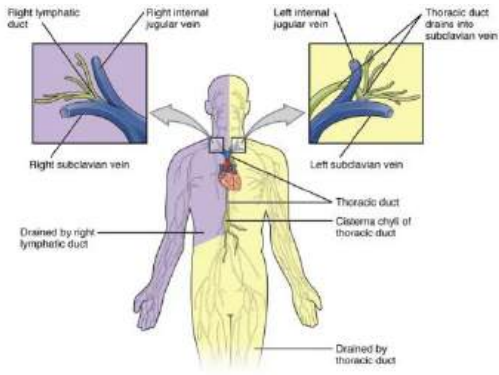
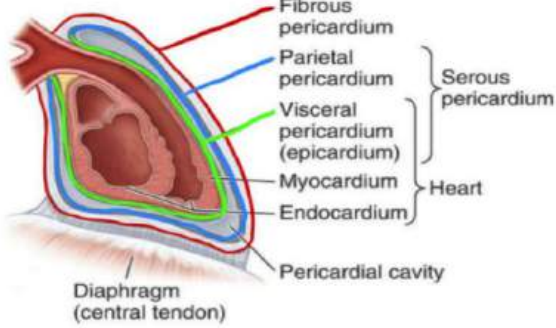
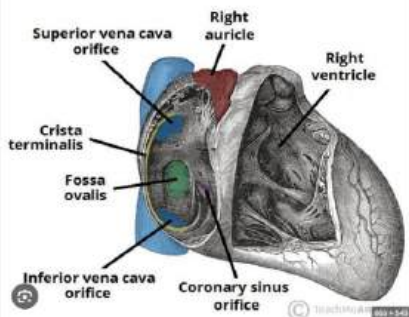
	D. Capacitation		Process where the glycoprotein coat and seminal plasma proteins are removed from the plasma membrane
46. The appearance of which structure determines the establishment of body axes?	A. Primitive streak	A	Thickened structure that forms along the midline of the amniotic surface of the epiblast near the caudal end
	B. Notochord		Induces formation of the CNS from the overlying ectoderm
	C. Neural groove		Partly fuses to become the neural tube
47. The notochord gives rise to which structure?	A. Annulus fibrosus	B	From mesenchymal cells
	B. Nucleus pulposus		-
	C. Sclerotome		Surrounds the notochord which eventually degenerates to become the nucleus pulposus derived from the mesoderm
H&N I			
48. Which is the most frequently fractured facial bone?	A. Frontal	B	The <b>nose</b> is the most prominent feature of facial structures and is the most fractured of all facial bones.
	B. Nasal		
	C. Maxillary		
	D. Zygomatic		
49. Which space is a potential pathway for neck abscess to spread to the mediastinum?	A. Prevertebral	B	<b>RETROPHARYNGEAL SPACE</b> – most common culprit for oral cavity and neck abscess spread to the posterior mediastinum since it ruptures through the alar fascia. - other potential major pathways for infection spread along the fascial spaces: - <b>PRETRACHEAL ROUTE --&gt; Anterior Mediastinum</b> - <b>LATERAL PHARYNGEAL ROUTE --&gt; Lateral Mediastinum</b>
50. What structure can be found in the loose connective tissue that makes it the danger layer?	B. Pretracheal	A	Contained in the Loose Connective Tissue
	C. Deep investing		Contained in the Pericranium
	C. Jugular Vein		Passes through the Jugular foramen
H&N II			
51. Which intrinsic longitudinal muscle is innervated by the glossopharyngeal nerve?	A. Palatoglossus	B	Innervated by CN X
	B. Stylopharyngeus		Innervated by CN IX; “ <i>Stylish people apply Gloss</i> ”
	C. Tensor veli palatini		Innervated by CN V3
52. Which of the following cranial nerves passes through the jugular foramen?	A. CN IV	C	Passes through Superior Orbital Fissure
	B. CN V		V1: Passes through Superior Orbital Fissure V2: Passes through Foramen Rotundum; “ <i>FR Max (-illary)</i> ” V3: Passes through Foramen Ovale; “ <i>FO Man (-dinbular)</i> ”
	C. CN X		Passes through Jugular Foramen
	D. CN VII		Passes through Internal Acoustic Meatus
53. Which nerve provides the taste sensation of the anterior 2/3 of the tongue?  <b>**UNRECALLED QUESTION – this item is just added (HIGH YIELD)**</b>	A. Chorda tympani of CN VII	A	Taste sensation of the anterior 2/3 of the tongue
	B. Lingual branch of CN V3		General sensation of the anterior 2/3 of the tongue
	C. Glossopharyngeal N.		General and taste sensation of the posterior 1/3 of the tongue

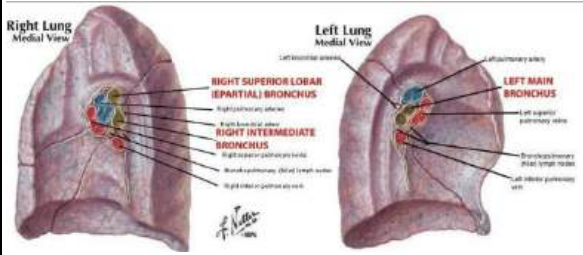
H&N III				
54. Which cartilage glides and changes vocal fold length?	A. Arytenoid	B	Tenses and relaxes the vocal folds to enable phonation	
	B. Cricoid		Main movement: Rotation and gliding of thyroid cartilage resulting to change in length of vocal folds	
	C. Epiglottic		Elastic cartilage for flexibility of epiglottis	
	D. Corniculate		Attach to the arytenoid cartilage's apices	
55. What artery runs superomedially that MAINLY supply the posterior aspect of the thyroid gland?	A. Ascending pharyngeal artery	C	Supplies blood to the Tonsillar artery for arterial supply of the oral and pharyngeal regions.	
	B. Superior thyroid artery		First branch of the external carotid artery and supply the <b>ANTEROSUPERIOR ASPECT</b> of the thyroid gland	
	C. Inferior thyroid artery		Largest branch of the thyrocervical trunk from the subclavian arteries; supplies the <b>POSTERIOR ASPECT &amp; INFERIOR POLES</b> of the thyroid gland	
	D. Thyroidea ima artery		<b>"NEUBAUER ARTERY"</b> ; Present in only 10% of individuals and is the ONLY UNPAIRED ARTERY of the thyroid gland from the Brachiocephalic trunk and supplies blood to the <b>isthmus</b> of thyroid gland.	
56. The ____ tonsil is located surrounding the pharyngeal orifice of the auditory tube.	A. Tubal tonsil	A	Located near the opening of the eustachian/pharyngotympanic tube.	
	B. Pharyngeal tonsil		Located at the posterior wall of nasopharynx	
	C. Palatine tonsil		Located posteriorly on the lateral wall of the pharynx	
	D. Lingual tonsil		Located along the base of the tongue	
EYES				
57. Which part of the orbital wall is the strongest and thickest?	A. Lateral	A	Strongest and Thickest wall	
	B. Superior		"Roof"; houses the lacrimal fossa	
	C. Medial		Thinnest wall	
58. The location of cells responsible for corneal regeneration and repair is found at?	A. Limbus	A	<b>"Corneoscleral Junction"</b> ; Regeneration site	
	B. Choroid		Posterior 2/3 of Middle/Vascular/Uvea Layer; heavily pigmented	
	C. Iris		Most anterior extension of uveal tract; gives color to the eyes	
	D. Pupil		Central depression in the iris	
59. The superior oblique muscle is innervated by which cranial nerve?  <b>**UNRECALLED QUESTION – this item is just added (HIGH YIELD)**</b>	A. CN IV	A	<b>"LASOT"</b> <i>Lateral Rectus ms = innerv by <b>ABDUCENS N.</b></i> <i>Superior Oblique ms = innerv by <b>TROCHLEAR N.</b></i>	
	B. CN VI			
	C. CN III		Innervates the other EOMs	
EARS, NOSE, PARANASAL SINUSES				
60. Endolymph is produced by which structure?	A. Organ of Corti	B	This mainly functions for <b>HEARING</b> .	
	B. Stria vascularis		<b>This is the structure that produces endolymph contained in SCALA MEDIA/COCHLEAR DUCT.</b>	
	C. Tectorial membrane		Functions in determining the remarkable sensitivity and frequency selectivity	

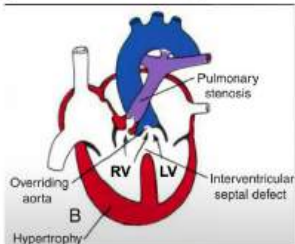
	D. Vestibular membrane		It helps to transmit vibrations from fluid in the vestibular duct to the cochlear duct; it is also known as the REISSNER'S MEMBRANE.												
61. The maxillary sinus drains into which of the following structures?	A. Inferior nasal meatus	B	Nasolacrimal Duct												
	B. Middle nasal meatus		Anterior/Middle Ethmoidal Sinus and Maxillary/Frontal Sinus; "FEMM = frontal, ethmoidal, maxillary, middle"												
	C. Spheno-ethmoidal meatus		-												
	D. Superior nasal meatus		Posterior Ethmoidal Sinus												
62. Cone of light is reflected in which quadrant of the tympanic membrane?	A. Superoanterior	C	<input type="checkbox"/> Shining light on the tympanic membrane causes a cone-shaped reflection of light to appear in the <b>anterior inferior quadrant</b> . This corresponds to the 4 o'clock to 5 o'clock position in the right eardrum and the 7 o'clock to 8 o'clock position in the left eardrum. <div><div>Right Eardrum</div><div>Left Eardrum</div><div></div></div>												
	B. Posteroinferior														
	C. Anteroinferior														
	D. Superoposterior														
THORAX & BREAST															
63. Which rib can be classified as TRUE and ATYPICAL?	A. 1st	A	<b>TRUE RIBS:</b> Ribs <b>1-7</b> <b>FALSE RIBS:</b> Ribs <b>8-10</b> <b>FLOATING RIBS:</b> Ribs <b>11-12</b>  <b>ATYPICAL RIBS:</b> <b>1-2, 10-12</b> <b>TYPICAL RIBS:</b> <b>3-9</b>												
	B. 7th														
	C. 10th														
	D. 12th														
64. The mitral valve can be auscultated at which level?	A. 2nd ICS right parasternal border	C	Aortic valve												
	B. 2nd ICS left parasternal border		Pulmonic valve												
	C. 5th ICS midclavicular line		Mitral valve/APEX BEAT												
65. The inferior visceral pleura reflects on the chest wall at the midclavicular line at the level of the ____ rib at end-expiration.	A. 4th	B	<b>Table 4. Lines of Pleural Reflection (at rest/at the end of expiration)</b> <table><tr><th>Lines</th><th>Visceral</th><th>Parietal</th></tr><tr><td>Midclavicular line (anterior)</td><td>6th rib</td><td>8th rib</td></tr><tr><td>Scapular line (posterior)</td><td>10th rib</td><td>12th rib</td></tr><tr><td>Midaxillary line (lateral)</td><td>8th rib</td><td>10th rib</td></tr></table>	Lines	Visceral	Parietal	Midclavicular line (anterior)	6th rib	8th rib	Scapular line (posterior)	10th rib	12th rib	Midaxillary line (lateral)	8th rib	10th rib
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B. 6th															
C. 8th															
D. 10th															
HEART & MEDIASTINUM															
66. To which structure does the left jugular lymphatic trunk drain to?	A. Internal jugular vein	C													
	B. External jugular vein														

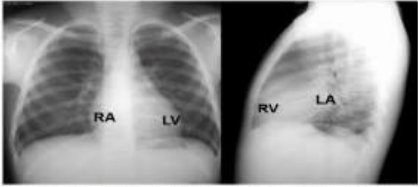






	C. Thoracic duct		
67. The pericardial cavity is found between the parietal serous pericardium and ___?	A. fibrous pericardium B. endocardium C. epicardium	C	<p>The pericardial cavity is found between the <b>parietal serous pericardium</b> and the <b>visceral serous pericardium (Epicardium)</b></p>  <p><b>Figure 18. Layers of the pericardium</b> [Moore]</p>
68. What structure demarcates the interior of the rough and smooth parts of the atria?	A. crista terminalis B. sulcus terminalis C. aortic vestibule	A	 <p>V-shaped groove separating the anterior two thirds of the tongue from the posterior third and containing the circumvallate papillae</p> <p>Smooth walled outflow portion of the left ventricle that leads into the aortic orifice</p>
<b>CVS HISTO</b>			
69. Which structure differentiates veins from arteries?	A. Presence of vasa vasorum B. Presence of valves C. Presence of internal elastic lamina	B	<p>"Vessel of the vessels"; Small blood vessels which come from neighboring arteries</p> <p><b>Only present in veins</b></p> <p>This differentiates arteries from veins</p>
70. ___ capillaries have large fenestrations without diaphragm slits?	A. Sinusoidal capillaries B. Fenestrated capillaries C. Continuous capillaries	A	<p><b>"DISCONTINUOUS CAPILLARIES"</b>; Widely spaced large fenestrations <b>without</b> diaphragms</p> <p><b>"VISCERAL CAPILLARIES"</b>; regularly spaced fenestrations <b>with</b> pore diaphragms</p> <p><b>"SOMATIC CAPILLARIES"</b>; No openings or pores</p>

71. Which layer of the cardiac wall contains the coronary vessels?	A. Endocardium	B	Purkinje Fibers
	B. Epicardium		Coronary vessels
	C. Myocardium		SA Node
RESPIRATORY SYSTEM			
72. Which structure is most SUPERIOR in the hilum of the left lung?	A. Lobar bronchus	B	
	B. Pulmonary artery		
	C. Pulmonary vein		
73. Which of the following is lined with simple ciliated cuboidal epithelium?	A. Large bronchus	B	<b>HISTOLOGY OF BRONCHUS</b> <ul style="list-style-type: none"><li>• <b>Respiratory epithelium</b> → <b>Pseudostratified ciliated columnar epithelium WITH goblet cells</b> → Less tall and it has less goblet cells compared to trachea</li></ul>
	B. Respiratory bronchiole		<b>VERY SMALL BRONCHIOLES</b> <ul style="list-style-type: none"><li>• Epithelium: <b>Simple ciliated columnar cells or simple cuboidal cells</b></li><li>• There are several layers of smooth muscle cells that comprises the high proportion of the wall</li></ul>
	C. Trachea		<b>HISTOLOGY OF TRACHEA</b> <ul style="list-style-type: none"><li>• Lined by <u>respiratory epithelium</u> → <b>Pseudostratified ciliated columnar epithelium WITH goblet cells</b></li></ul>
	D. Vocal fold		<ul style="list-style-type: none"><li>• <b>Vocal folds (vocal cords/true vocal cords)</b> → Lined by <u>nonkeratinized stratified squamous epithelium</u> that protect the mucosa from abrasion and desiccation from rapid air movement</li></ul>
74. A mother brought her infant who was choking to the ER. Her 1 year old infant was drinking milk while lying down on his back. Where can the aspirated milk be found?	A. Right apical segment	A	<b>CHOKING/FOREIGN BODY OBSTRUCTION: BRONCHOPULMONARY SEGMENTS</b> <input type="checkbox"/> <b>SITTING UPRIGHT:</b> R POSTERIOR BASAL BP SEGMENT <input type="checkbox"/> <b>LYING ON THE R SIDE:</b> POST/MID/RIGHT POSTERIOR BP SEGMENT <input type="checkbox"/> <b>LYING ON THE L SIDE:</b> L SUPERIOR/INFERIOR LINGULAR BP SEGMENT <input type="checkbox"/> <b>SUPINE:</b> R SUPERIOR BP SEGMENT <input type="checkbox"/> <b>INFANT SUPINE:</b> R APICAL BP SEGMENT
	B. Left inferior lingular segment		
	C. Anteromedial basal segment		
	D. Apicoposterior segment		
EMBRYOLOGY OF CVS & RESPIRATORY SYSTEM			
75. A congenital condition wherein there is anterior displacement of the spiral septum during fetal development is	A. Overriding aorta	A	
	B. Atrial septal defect		
	C. Aortic stenosis		

characterized by which of the following features?	D. Left ventricular hypertrophy		<p><b>Tetralogy of Fallot (TOF)</b></p> <ul style="list-style-type: none"> <li>• Most common cyanotic heart defect seen in children <b>beyond infancy</b></li> <li>• Due to unequal division of the conus resulting from <b>anterior displacement</b> of the conotruncal / spiral septum <ul style="list-style-type: none"> <li>→ The pulmonary trunk is affected because it is more anterior</li> </ul> </li> <li>• <b>Four components:</b> <ul style="list-style-type: none"> <li>→ <b>Pulmonary stenosis</b> <ul style="list-style-type: none"> <li>▪ Most important component !</li> <li>▪ Anterior displacement of the spiral septum</li> <li>▪ Small pulmonary trunk would make for a larger aorta !</li> </ul> </li> <li>→ <b>Overriding aorta</b> <ul style="list-style-type: none"> <li>▪ Abnormally large aorta would override both ventricles</li> </ul> </li> <li>→ <b>Ventricular septal defect (VSD)</b> <ul style="list-style-type: none"> <li>▪ Problem with spiral septum (pars membranacea)</li> <li>▪ Due to failure of the interventricular foramen to close</li> </ul> </li> <li>→ <b>Right ventricular hypertrophy (RVH)</b> <ul style="list-style-type: none"> <li>▪ Due to right ventricle having to work harder because of stenosis</li> </ul> </li> </ul> </li> <li>• Clinical Manifestations: <ul style="list-style-type: none"> <li>→ Cyanosis at birth</li> <li>→ Dyspnea on exertion</li> <li>→ Decreased exercise tolerance</li> </ul> </li> <li>• Management: <ul style="list-style-type: none"> <li>→ Palliative shunt procedure to increase pulmonary blood flow</li> <li>→ Conventional repair surgery (closure of VSD and widening of RV outflow tract)</li> </ul> </li> </ul>  <p><b>Figure 53. Tetralogy of Fallot [Lecturer's PPT]</b></p>
76. Which structure in fetal circulation provides a shunt from the left pulmonary artery to the descending aorta?	A. Foramen ovale B. Ductus venosus C. Ductus arteriosus	<b>C</b>	Allow oxygenated blood in right atrium to flow into the left atrium (pressure in utero is greater in the right than in the left, blood will flow from the right atrium to the left atrium) Shunts oxygenated blood directly from the left umbilical vein to the IVC in fetal circulation? -
77. The sinus venarum is the smooth part of which structure?	A. Right atrium B. Right ventricle C. Left ventricle	<b>A</b>	Derived from Sinus Venosus The smooth part of RV is the <b>CONUS ARTERIOSUS/INFUNDIBULUM</b> derived from Bulbus Cordis The smooth part of LV outflow is the <b>AORTIC VESTIBULE</b> also derived from <b>CONUS ARTERIOSUS/INFUNDIBULUM</b>
78. The muscular parts of the diaphragm are derived from?	A. ingrowths from dorsal body walls B. myoblasts from C3-C5 somites C. Pleuroperitoneal membrane	<b>B</b>	Peripheral rim of diaphragm Muscular components Central tendon of diaphragm
<b>CHEST RADIOLOGY</b>			
	A. <0.5	<b>A</b>	Normal for PA view

79. What is the normal cardiothoracic ratio in PA view?	B. <0.6 C. >0.5 D. >0.6		Normal for AP view - -
80. Which structure is NOT normally seen in chest PA view?	A. Right atrium B. Right ventricle C. Left atrium D. Left ventricle	B	 <p>Figure 20. Aortic arch (red) and Pulmonary artery (blue) [Dr. Yap's lecture]</p> <ul style="list-style-type: none"> <li>• <b>Right ventricle</b> is not seen on PA view but can be easily seen in lateral view → Lies immediately behind the sternum</li> </ul>
81. The ___ chest radiograph is most commonly done in bedridden patients.	A. Anteroposterior B. Posteroanterior		<div> <b>POSTERO-ANTERIOR VIEW</b> <ul style="list-style-type: none"> <li>• Standard chest x-ray</li> <li>• The x-ray beams <u>enter the back</u> and <u>exit the front</u></li> <li>• Done in patients who can stand upright and who can walk (<b>ambulatory</b>) ! → Patient can easily retract the scapula</li> <li>• <b>Cardiac shadow:</b> the front of the patient is near the cassette so the heart is not as magnified</li> <li>• <b>Pulmonary vessels:</b> the amount of inspiration is better than a patient who is lying down so there is better spread of the pulmonary vessels</li> </ul> </div> <div> <b>ANTERO-POSTERIOR VIEW</b> <ul style="list-style-type: none"> <li>• X-ray beams <u>enter the front</u> and <u>exit the back</u></li> <li>• Done in patients who are bedridden, unable to stand or get out of bed (<b>non-ambulatory</b>) ! → Supine position (patient is lying down) → Patient cannot easily retract the scapula</li> <li>• Heart is farther away from the film so it appears more <b>magnified</b></li> <li>→ Among the first structures to be hit by an x-ray beam</li> <li>• Other superficial anterior structures also appear larger compared to PA view</li> <li>• Portable chest x-rays are almost always done AP</li> </ul> </div>
	C. Lateral decubitus	A	<div> <b>A. LATERAL DECUBITUS RADIOGRAPH</b>  <p>Figure 10. Lateral decubitus radiograph with red arrows pointing at the accumulation of pleural fluid [Dr. Yap's lecture]</p> <ul style="list-style-type: none"> <li>• Helpful in detecting pleural fluid !</li> <li>• Visualizes:               <ul style="list-style-type: none"> <li>→ Small effusions, free flowing effusions</li> <li>→ Small pneumothorax</li> </ul> </li> <li>• Patient is lying on the <u>affected side</u> → If there is a suspicious fluid in the chest cavity, the fluid will flow to the dependent portion → Free flowing pleural effusions will pool into the dependent area due to gravity</li> </ul> </div>




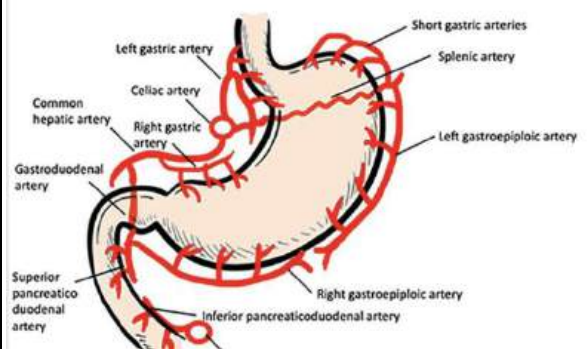
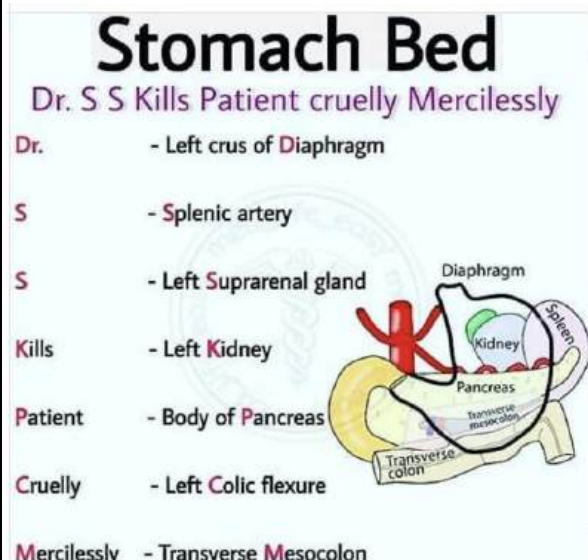
	D. Apicolordotic		<p><b>C. APICAL LORDOTIC RADIOGRAPH</b></p>  <p><b>Figure 12.</b> Positioning for Apical Lordotic Radiograph [Dr. Yap's lecture]</p> <ul style="list-style-type: none"> <li>For visualization of the <b>lung apices</b> <ul style="list-style-type: none"> <li>→ Sometimes when evaluating the chest PA view, it is hard to visualize the upper portion of the lungs</li> <li>→ Ribs and clavicles are obstructing the apex so an additional view is requested</li> </ul> </li> </ul>
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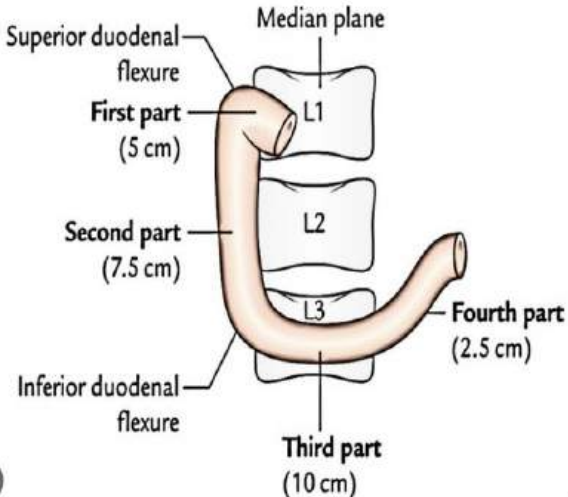
## GIT HISTOLOGY

82. Which cell in the stomach has an eosinophilic cytoplasm and produces hydrochloric acid?	A. Mucous neck cell	<b>B</b>	Secretes <b>MUCUS</b>
	B. Parietal cell		"OXYNTIC CELLS"; secretes <b>HCl and Intrinsic Factor</b>
	C. Chief cell		"ZYMOGENIC CELLS"; secretes <b>PEPSINOGEN, LEPTIN and GASTRIC LIPASE</b>
	D. Enteroendocrine cell		Secretes <b>Serotonin</b> at <u>Fundus</u> and <b>Gastrin</b> at <u>Pylorus</u> of stomach
83. Which structure is found in the muscularis externa of the small intestine?  <b>**UNRECALLED QUESTION – this item is just added (HIGH YIELD)**</b>	A. Auerbach plexus	<b>A</b>	"MYENTERIC PLEXUS"; functions for motility of the GIT
	B. Meissner plexus		"SUBMUCOSAL PLEXUS"; functions for secretions of the GIT
	C. Brunner's glands		Found in the Duodenum; secretes mucus to neutralize the chyme from stomach
84. Von Ebner glands empty their secretions in the deep grooves of which papillae of the tongue?  <b>**UNRECALLED QUESTION – this item is just added (HIGH YIELD)**</b>	A. Filiform papillae	<b>B</b>	Very numerous; heavily keratinized
	B. Vallate papillae		Contains TASTE BUDS and Salivary (Von Ebner) glands; forms a V-shaped row anterior to the sulcus terminalis
	C. Fungiform papillae		Mushroom shaped; lightly keratinized

## ABDOMEN IN GENERAL

85. Which muscle of the anterior wall flexes, compresses and rotates the abdomen?	A. Internal oblique	A	<table><tr><th>Muscle</th><th>Origin</th><th>Insertion</th><th>Innervation</th><th>Main Action</th></tr><tr><td>External oblique (A)</td><td>External surfaces of 5th-12th ribs</td><td>Linea alba, pubic tubercle, and anterior half of iliac crest</td><td>Thoraco-abdominal nerves (T7-T11 spinal nerves) and subcostal nerves</td><td rowspan="4">Compresses and supports abdominal viscera; flexes and rotates trunk</td></tr><tr><td>Internal oblique (B)</td><td>Thoracolumbar fascia, anterior ilio crest of iliac crest, and connective tissue deep to lateral third of inguinal ligament</td><td>Inferior borders of 10th-12th ribs, linea alba, and pecten pubis via conjoint tendon</td><td>Thoraco-abdominal nerves (anterior rami of T6-T12 spinal nerves) and first lumbar nerve</td></tr><tr><td>Transversus abdominis (C)</td><td>Anterior surfaces of 10th-12th costal cartilages, thoracolumbar fascia, iliac crest, and connective tissue deep to lateral third of inguinal ligament</td><td>Linea alba with aponeurosis of internal oblique, pecten crest, and pecten pubis via conjoint tendon</td><td>Thoraco-abdominal nerves (anterior rami of T6-T12 spinal nerves) and first lumbar nerve</td></tr><tr><td>Rectus abdominis (D)</td><td>Pubic symphysis and pubic crest</td><td>Xiphoid process and 5th-7th costal cartilages</td><td>Thoraco-abdominal nerves (anterior rami of T6-T12 spinal nerves)</td></tr></table>	Muscle	Origin	Insertion	Innervation	Main Action	External oblique (A)	External surfaces of 5th-12th ribs	Linea alba, pubic tubercle, and anterior half of iliac crest	Thoraco-abdominal nerves (T7-T11 spinal nerves) and subcostal nerves	Compresses and supports abdominal viscera; flexes and rotates trunk	Internal oblique (B)	Thoracolumbar fascia, anterior ilio crest of iliac crest, and connective tissue deep to lateral third of inguinal ligament	Inferior borders of 10th-12th ribs, linea alba, and pecten pubis via conjoint tendon	Thoraco-abdominal nerves (anterior rami of T6-T12 spinal nerves) and first lumbar nerve	Transversus abdominis (C)	Anterior surfaces of 10th-12th costal cartilages, thoracolumbar fascia, iliac crest, and connective tissue deep to lateral third of inguinal ligament	Linea alba with aponeurosis of internal oblique, pecten crest, and pecten pubis via conjoint tendon	Thoraco-abdominal nerves (anterior rami of T6-T12 spinal nerves) and first lumbar nerve	Rectus abdominis (D)	Pubic symphysis and pubic crest	Xiphoid process and 5th-7th costal cartilages	Thoraco-abdominal nerves (anterior rami of T6-T12 spinal nerves)
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Rectus abdominis (D)	Pubic symphysis and pubic crest	Xiphoid process and 5th-7th costal cartilages	Thoraco-abdominal nerves (anterior rami of T6-T12 spinal nerves)																						
B. Pyramidalis																									
C. Rectus abdominis																									
D. Transversus abdominis																									
86. Superficial inguinal ring is formed by the aponeurosis of which structure?	A. Rectus abdominis	B	Forms the rectus sheath																						
	B. External oblique		The superficial inguinal ring is an opening formed in the aponeurosis of the external oblique muscle. It can be described as being slit-like or diagonal.																						

	C. Internal oblique		Laterally, it is muscular and medially it forms an aponeurosis that merges into the linea alba at the midline
	D. Transversus abdominis		Forms the transversalis fascia
87. Which structure may be involved when there is tenderness upon directly palpating at the hypogastric area?	A. Gallbladder	B	
	B. Sigmoid colon		
	C. Cecum		
UPPER GIT			
88. The superior part of the lesser curvature is supplied by which blood vessel?	A. Left gastric artery	A	
	B. Common hepatic artery		
	C. Splenic artery		
89. Which structure forms part of the stomach bed?	A. Hepatic flexure	B	
	B. Left dome of diaphragm		
	C. Splenic flexure		

90. What esophageal constriction lies at the T10 vertebral level?	A. Aortic	D	<b>Cervical constriction</b> → At the <b>upper esophageal sphincter</b> at the <u>pharyngo-esophageal junction</u> → About <u>15 cm</u> from the incisors → Formed by the <b>cricopharyngeus muscles</b> <b>Thoracic/Broncho-aortic constriction</b> → Caused by the <b>arch of the aorta</b> , <u>22.5 cm</u> from the incisors → Caused by the <b>left main bronchus</b> , <u>27.5 cm</u> from the incisors <b>Diaphragmatic constriction</b> → Passes through the <b>esophageal hiatus of the diaphragm</b> , about <u>40 cm</u> from the incisors at the <b>T10 level</b>
	B. Bronchial		
	C. Cervical		
	D. Diaphragmatic		
LOWER GIT			
91. Lesser splanchnic nerve is in which vertebral levels?	A. T5-T9	B	<b>Greater</b> Splanchnic - Celiac ganglion (Foregut)
	B. T10-T11		<b>Lesser</b> Splanchnic - Superior Mesenteric Ganglion (Midgut)
	C. T12		<b>Least</b> Splanchnic - Aorticorenal ganglion (T12)
	D. L1-L5		-
92. What differentiates the large intestine from the small intestine?	A. Circular folds	B	<b>"PLICAE CIRCULARES"</b> ; numerous permanent circular folds of mucous membrane found in the small intestine especially in the lower part of the duodenum and the jejunum
	B. Epiploic appendages		Epiploic appendages, also referred to as Appendices epiploicae, are between 50–100 fatty appendages originating in two rows (anterior and posterior) parallel to the external surface of the three longitudinal muscle bands of the <b>large intestine</b> known as <u>taenia coli</u> .
	C. Vasa recta		These are straight arteries arising from arterial arcades (anastomoses of the jejunal and ileal arteries, branches of superior mesenteric artery) in the mesentery of the jejunum and ileum that supply the jejunum and ileum.
93. Which part of duodenum lies anterolateral to L1 vertebra and has a mesentery?	A. Superior	B	 <p>[From 1st→4th: "<b>S-D-H-A</b> : <b>St. Dominic Hospital of Asia</b>"] 1st Part: <b>Superior</b> (L1); does not have mesentery 2nd Part: <b>Descending</b> (L1-L3) 3rd Part: <b>Horizontal</b> (L3) 4th Part: <b>Ascending</b> (L3-L2)</p>
	B. Descending		
	C. Horizontal		
	D. Ascending		

## ACCESSORY GLANDS OF GIT

94. Which of the following structures of the liver emphasizes its endocrine function wherein blood passes from hepatocytes to the central vein?

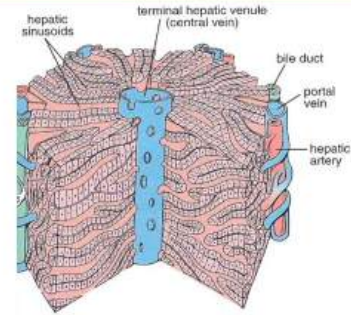
A. Classic hepatic lobule

B. Portal lobule

C. Hepatic acinus

A

### CLASSIC HEPATIC LOBULE

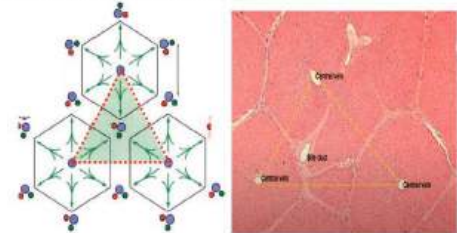


**Figure 45.** Concepts of structure-function relationships in liver [Lecturer's PPT]

- Drains blood from the portal vein and hepatic artery to the hepatic or central vein
- **Hexagon** in shape
  - Center: **Central Vein (A.K.A Terminal Hepatic Venule)**
  - **Corners:** hepatic artery, portal vein
  - **Angles** represents the **portal canals**
  - where the sinusoids drain

### PORTAL LOBULE

- Emphasizes exocrine function of liver
- Drains blood from the hepatocytes to the bile duct in the portal triad
- Morphological access is the interlobular bile duct of the portal triad of the classic lobule

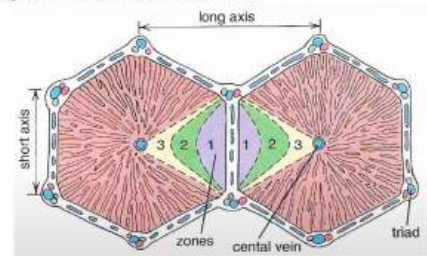


**Figure 47a & 47b.** Portal Lobule [Lecturer's PPT]

- Triangular in shape
  - Center: **Portal triad**
  - **Angles:** **Central vein** at each tip

### HEPATIC ACINUS

- Represents smallest functional unit of hepatic parenchyma
- Area irrigated by a terminal branch of the distributing vein
- Supply oxygenated blood to the hepatocytes
- **Diamond or rhomboid-shaped**
  - **Short axis:** defined by the terminal branches of two portal triads that lie along the border between two classic lobules
  - **Long axis:** line drawn between two central veins closest to the short axis giving it a diamond or a rhomboid shape.
  - Emphasizes the nature of the bloody supply to the hepatocytes and oxygen gradient from the hepatic artery branch to the central vein.



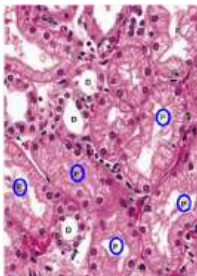
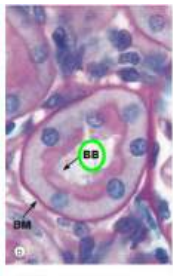
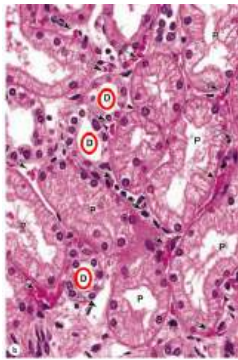
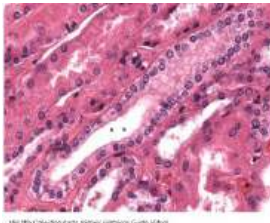
**Figure 48.** Portal Triads in **Diamond or rhomboid-shaped** [Lecturer's PPT]

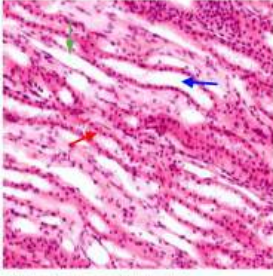


95. Which gland opens into the sublingual caruncle?	A. Sublingual gland	B	<table><tr><th colspan="2">Table 3. Summary of Sublingual Gland</th></tr><tr><th colspan="2">Sublingual Gland</th></tr><tr><td>Type of Secretion</td><td>Mixed, predominantly mucous Serous only in demilunes</td></tr><tr><td>Name of Duct</td><td>Ducts of Rivinus/Sublingual Duct</td></tr><tr><td>Opening of Duct</td><td>Sublingual Fold</td></tr><tr><td>Innervation</td><td>Parasympathetic secretomotor: Facial Nerve (CN VII)</td></tr><tr><td>Histological Appearance</td><td>Branched Tubuloacinar</td></tr></table>	Table 3. Summary of Sublingual Gland		Sublingual Gland		Type of Secretion	Mixed, predominantly mucous Serous only in demilunes	Name of Duct	Ducts of Rivinus/Sublingual Duct	Opening of Duct	Sublingual Fold	Innervation	Parasympathetic secretomotor: Facial Nerve (CN VII)	Histological Appearance	Branched Tubuloacinar
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B. Submandibular gland	<table><tr><th colspan="2">Table 2. Summary of Submandibular Gland</th></tr><tr><th colspan="2">Submandibular Gland</th></tr><tr><td>Type of Secretion</td><td>Mixed, predominantly serous</td></tr><tr><td>Name of Duct</td><td>Wharton's Duct/ Submandibular duct</td></tr><tr><td>Opening of Duct</td><td>Sublingual Caruncle</td></tr><tr><td>Innervation</td><td>Parasympathetic secretomotor: Facial Nerve (CN VII)</td></tr><tr><td>Histological Appearance</td><td>Branched Tubuloacinar</td></tr></table>	Table 2. Summary of Submandibular Gland		Submandibular Gland		Type of Secretion	Mixed, predominantly serous	Name of Duct	Wharton's Duct/ Submandibular duct	Opening of Duct	Sublingual Caruncle	Innervation	Parasympathetic secretomotor: Facial Nerve (CN VII)	Histological Appearance	Branched Tubuloacinar		
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C. Parotid gland	<table><tr><th colspan="2">Parotid Gland</th></tr><tr><td>Type of Secretion</td><td>Purely serous</td></tr><tr><td>Name of Duct</td><td>Stensen's Duct/ Parotid duct</td></tr><tr><td>Opening of Duct</td><td>Parotid Papilla opposite the upper 2nd molars</td></tr><tr><td>Innervation</td><td>Glossopharyngeal Nerve (CN IX)</td></tr><tr><td>Histological Appearance</td><td>Branched Acinar</td></tr></table>	Parotid Gland		Type of Secretion	Purely serous	Name of Duct	Stensen's Duct/ Parotid duct	Opening of Duct	Parotid Papilla opposite the upper 2nd molars	Innervation	Glossopharyngeal Nerve (CN IX)	Histological Appearance	Branched Acinar				
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96. A patient was rushed to the Emergency Room and vomited fresh blood. To which portocaval anastomosis did the bleeding originate?	A. Paraumbilical anastomosis	B	(+) <b>Caput Medusae</b> d/t engorged superficial epigastric vein														
	B. Esophageal anastomosis		(+) <b>Esophageal hemorrhages</b> d/t persistence of portal HTN														
	C. Rectal anastomosis		(+) <b>Hemorrhoids</b> d/t persistence of portal HTN														
GIT RADIO																	
97. In a normal radiographic shadow, what structure is normally NOT visible?	A. Pancreas	D	<table><tr><th colspan="3">Table 1. Observed Structures in an Abdominal X-ray !</th></tr><tr><th>Normally Visible</th><th>Not Visible</th><th>Sometimes Visible</th></tr><tr><td>1. Liver (hepatic shadow) 2. Spleen (splenic shadow) 3. Psoas muscles 4. Kidneys (renal shadow) 5. Flank stripes 6. Bone 7. Calcifications</td><td>1. Gallbladder (unless it's full of stones) 2. Pancreas 3. Ureter (unless contrast is used) 4. Adrenal glands 5. Veins</td><td>1. Stomach and colon (if filled with air / gas) 2. Bladder (if urine-filled / fully distended) 3. Arteries (if calcified) 4. Small bowel (unless pathological, w/ gas)</td></tr></table>	Table 1. Observed Structures in an Abdominal X-ray !			Normally Visible	Not Visible	Sometimes Visible	1. Liver (hepatic shadow) 2. Spleen (splenic shadow) 3. Psoas muscles 4. Kidneys (renal shadow) 5. Flank stripes 6. Bone 7. Calcifications	1. Gallbladder (unless it's full of stones) 2. Pancreas 3. Ureter (unless contrast is used) 4. Adrenal glands 5. Veins	1. Stomach and colon (if filled with air / gas) 2. Bladder (if urine-filled / fully distended) 3. Arteries (if calcified) 4. Small bowel (unless pathological, w/ gas)					
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C. Jejunum																	

	D. Stomach		<b>Gas Pattern</b> → <b>Stomach</b> <ul style="list-style-type: none"> <li>Always has gas</li> <li><u>Patient in Supine position</u>: Air/Gas will go to the anterior position of the stomach (body and antrum)</li> </ul>
99. Which of the following radiographic measures is initially requested for detecting gallstones?	A. MRI	<b>D</b>	Gives detailed information of soft tissues, muscles, ligaments, as well as staging of cancer; Does not use radiation
	B. CT		Like X-rays, it uses radiation to form an image; combines a series of X-ray images taken from different angles around the body
	C. Plain radiograph		Plain films of the abdomen are still used primarily to assess intestinal perforation (intraperitoneal air) or bowel obstruction or assessment for catheter placement.
	D. Ultrasound		Ultrasound of the gallbladder is requested when problems of the gallbladder are suspected

### URINARY

100. Long microvilli lining the cell apices are found filling the lumen of which of the following renal tubules?	A. Proximal convoluted tubule	<b>A</b>	  <div> <b>Proximal convoluted tubule (PCT)</b> <ul style="list-style-type: none"> <li>"Dirty-looking" lumen compared with the lumen of the distal convoluted tubule</li> <li>Lumen is lined by several <b>brush borders</b> or microvilli</li> <li>Nuclei are widely-spaced</li> </ul> </div> <p>Proximal convoluted tubules, HP. Junqueira's Basic Histology, 6th Ed., p.398</p> <p>Proximal convoluted tubules, HP. Wheater's Functional Histology, 6th Ed., p.305</p>
	B. Distal convoluted tubule		 <div> <b>Distal convoluted tubule (DCT)</b> <ul style="list-style-type: none"> <li>With <u>uniform lumen</u> and indistinct boundaries between cells</li> <li>Lumen is <u>more visible</u></li> <li>Lighter staining compared to the eosinophilic PCT</li> </ul> </div> <p>Distal convoluted tubules, X400; H&amp;E. Junqueira's Basic Histology, 6th Ed., p.398</p>
	C. Collecting duct		 <div> <b>Collecting Ducts</b> <ul style="list-style-type: none"> <li>Distinguished from the other tubules by the distinct borders separating its cells</li> </ul> </div> <p>Collecting ducts, HP. Junqueira's Basic Histology, 6th Ed., p.398</p>

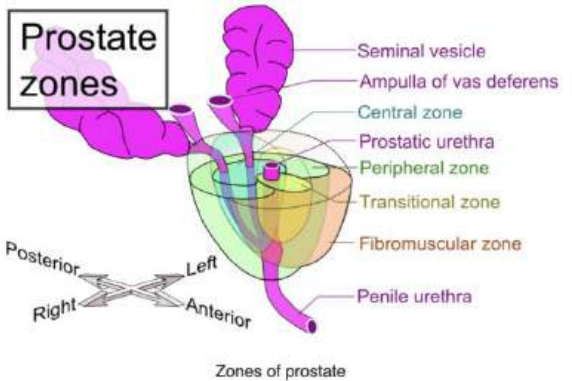
	D. Loop of Henle		 <div data-bbox="1219 107 1495 380"> <p><b>Thin limb of the Loop of Henle</b></p> <ul style="list-style-type: none"> <li>- Lined by <b>simple squamous epithelium</b></li> </ul> <p><b>Thick limb of the Loop of Henle</b></p> <ul style="list-style-type: none"> <li>- Lined by <b>simple cuboidal epithelium</b></li> </ul> <p><b>Collecting ducts</b></p> <ul style="list-style-type: none"> <li>- Lined by <b>simple cuboidal to simple columnar epithelium</b></li> </ul> </div>
101. Which part of the glomerular filtration membrane prevents escape of large proteins from circulation?	A. Basement membrane B. Capillary endothelium C. Glomerular capsule D. Podocytes	A	<p><b>GLomerular Filtration Membrane</b></p> <ul style="list-style-type: none"> <li>• Part of visceral layer of the glomerular capsule that envelops the glomerulus <ul style="list-style-type: none"> <li>→ Made up of stellate epithelial cells called <b>podocytes</b> with <u>several primary processes</u></li> <li>→ Each primary process gives rise to interdigitating processes called <b>pedicels</b> that cover the capillary surface which is in direct contact with the basal lamina</li> <li>→ In between the pedicels are <b>filtration slits</b> which are specialized tight junctions that are important for filtration</li> </ul> </li> <li>• Surrounds capillaries within the glomerulus <ul style="list-style-type: none"> <li>→ Functions: <ul style="list-style-type: none"> <li>▪ Allows ultrafiltration of blood</li> <li>▪ Allows primary urine to cross glomerular filter</li> </ul> </li> </ul> </li> <li>• Formed by: <ul style="list-style-type: none"> <li>→ <b>Fenestrations of the capillary endothelium</b> <ul style="list-style-type: none"> <li>▪ Block blood cells and platelets</li> <li>▪ Freely permeable to water and small solutes only</li> <li>▪ Functions: ultrafiltration, prevents escape of protein and macromolecules [2024B Trans]</li> </ul> </li> <li>→ <b>Glomerular basement membrane</b> <ul style="list-style-type: none"> <li>▪ in between the fenestrated endothelial of the capillaries and podocytes</li> <li>▪ Formed by the fusion of the fenestrated endothelium, basement membrane of capillary, and filtration slits</li> <li>▪ Has podocytes and pedicels</li> <li>▪ Thick, combined basal laminae</li> <li>▪ Restricts large proteins and some organic anions</li> </ul> </li> <li>→ <b>Filtration slit diaphragms</b> <ul style="list-style-type: none"> <li>▪ Separates the pedicels</li> <li>▪ Restricts some small proteins and organic anions</li> </ul> </li> </ul> </li> </ul>
102. Which part of the renal fascia is the weakest?	A. Medial B. Lateral C. Inferior D. Superior	C	<p><b>RENAL / GEROTA'S FASCIA</b></p> <ul style="list-style-type: none"> <li>• Membranous condensation of the extraperitoneal fascia <u>enclosing the perirenal / perinephric fat</u></li> <li>• Layer of connective tissue encapsulating the: <ul style="list-style-type: none"> <li>→ <b>Suprarenal glands and kidneys</b> <ul style="list-style-type: none"> <li>▪ Separated from each other by a thin septum</li> </ul> </li> </ul> </li> <li>• Two layers: <ul style="list-style-type: none"> <li>→ <b>Anterior and posterior</b> fascia which encloses: <ul style="list-style-type: none"> <li>▪ Kidneys</li> <li>▪ Suprarenal glands</li> <li>▪ Perinephric fats</li> </ul> </li> </ul> </li> <li>• <b>Superiorly</b> <ul style="list-style-type: none"> <li>→ <b>Fused</b> anterior and posterior renal fascia</li> <li>→ Continuous with the <b>diaphragmatic fascia</b> encapsulating both kidneys and suprarenal glands <ul style="list-style-type: none"> <li>▪ Thus, the <b>primary attachment of the suprarenal gland is to the diaphragm</b> [2024B Trans]</li> </ul> </li> </ul> </li> <li>• <b>Medially</b> <ul style="list-style-type: none"> <li>→ The renal fascia continues to <b>ensheath the renal vessels</b> blending with its vascular sheaths <ul style="list-style-type: none"> <li>▪ Prevents fluid from the kidney to spread to the contralateral side</li> </ul> </li> </ul> </li> <li>• <b>Inferiorly</b> <ul style="list-style-type: none"> <li>→ <b>Unfused</b> (loosely attached) anterior and posterior renal fascia</li> <li>→ The <b>perinephric space</b> between the anterior and posterior layers of the renal fascia narrows inferiorly and medially then joins the iliac fascia <ul style="list-style-type: none"> <li>▪ The <b>inferomedial angle</b> (of perinephric space) <ul style="list-style-type: none"> <li>- <u>Weakest point</u> of the renal fascia</li> <li>- Makes the <b>extension of fluid collection</b> within the space across the midline and into the pelvis possible</li> </ul> </li> </ul> </li> </ul> </li> </ul>



ENDOCRINE SYSTEM			
103. Which cells can be seen at the thyroid gland?	A. Beta	B	Seen in the Pancreas; secretes Glucagon
	B. Clear		"Parafollicular/C cells"; seen in Thyroid gland; secretes Calcitonin
	C. Chief		"Principal cells"; seen in Parathyroid gland; secretes PTH
	D. Oxyphil		"Acidophilic cells"; seen in Parathyroid gland
104. Corpus arenacea is an excellent histologic marker for which structure?	A. Adrenal	C	-
	B. Pituitary		-
	C. Pineal		Corpus Arenacea (Brain sand) is the DISTINCT HISTOLOGIC MARKER for Pineal Gland
	D. Prostate		Corpus Amylacea - is the DISTINCT HISTOLOGIC MARKER for PROSTATE GLAND
105. A patient from a vehicular accident suffered brain injury and has been producing 15 L of urine. What is the most possible effect?	A. Deficient ADH secretion	A	The patient suffers from <b>Diabetes Insipidus</b> (DI) = " <i>Damit!</i> " <ul style="list-style-type: none"><li>- This possibly affected the <b>POSTERIOR PITUITARY GLAND (NEUROHYPOPHYSIS)</b> which is responsible for <u>releasing ADH</u> (synthesized from the Hypothalamus)</li><li>- DI is manifested by INCREASED URINE OUTPUT due to deficiency of ADH secretion.</li><li>- <b>Excess ADH secretion</b> would result to Syndrome of Inappropriate ADH (<b>SIADH</b>) wherein there would be DECREASED URINE OUTPUT</li></ul>
	B. Excess ADH secretion		
	C. Deficient Oxytocin secretion		
	D. Excess Oxytocin secretion		
106. Which hormone is secreted at the posterior pituitary gland?	A. Serotonin	C	Secreted by the <b>RAPHE NUCLEUS</b> distributed near the midline of the brainstem
	B. Melatonin		Secreted by the <b>PINEAL GLAND</b>
	C. Vasopressin		Produced by the <b>SUPRAOPTIC NUCLEUS of the HYPOTHALAMUS</b> ; only released/secreted by the PPG.
PELVIS & PERINEUM			
107. Which structure is used to measure the midpelvis?	A. ischial tuberosities	C	<b>ISCHIUM</b> <ul style="list-style-type: none"><li>• <b>Posteriorinferior</b> portion</li><li>• Parts:<ul style="list-style-type: none"><li>→ <b>Body</b>: Participates in the formation of the <u>acetabulum</u></li><li>→ <b>Ramus</b>: Forms part of the <u>obturator foramen</u></li><li>→ <b>Ischial Spine</b>: Between <u>body and ramus</u><ul style="list-style-type: none"><li>▪ Small, pointed protuberance that projects posteromedially</li><li>▪ Important for determination of the pelvic cavity capacity before and during labor 📅</li></ul></li><li>→ <b>Ischial Tuberosity</b><ul style="list-style-type: none"><li>▪ Large, posteriorinferior protuberance below the ischial spine</li><li>▪ The weight of the body rests on this when in a sitting position</li></ul></li></ul></li></ul>
	B. ischial rami		
	C. ischial spines		<b>MIDPELVIS</b> <ul style="list-style-type: none"><li>• The diameters of the plane of the midpelvis are measured at the level of the <b>ischial spines</b></li></ul>
108. Which pair of anastomoses provides collateral blood flow to pelvic viscera if the right internal iliac artery is ligated?	A. Iliolumbar and Lateral Sacral Artery	A	<div>On additional information: 📅</div> <ul style="list-style-type: none"><li>• In obstetrical hemorrhage, the <b>internal iliac artery</b> is ligated to decrease pressure and blood flow by 40%<ul style="list-style-type: none"><li>→ <u>Iliolumbar artery</u> goes superiorly and anastomose with lumbar arteries from abdominal aorta</li><li>→ <u>Lateral sacral artery</u> anastomose with medial sacral artery</li></ul></li></ul>

	B. Inferior Vesical and Superior Vesical Artery C. Middle Rectal and Internal Pudendal Artery D. Uterine and Vaginal Artery		All of these blood vessels are part of the anterior division of the Internal Iliac Artery.
109. Which of the following is the FLOOR of Superficial perineal pouch?  <b>**UNRECALLED QUESTION – this item is just added (HIGH YIELD)**</b>	A. Colles Fascia B. Pelvic Diaphragm C. Perineal Membrane D. Urogenital Diaphragm	<b>A</b>	<b>SUPERFICIAL PERINEAL POUCH</b> Floor: Colles Fascia Roof: Perineal Membrane Contains: <b>BARTHOLIN'S GLANDS</b>  <b>DEEP PERINEAL POUCH</b> Floor: Perineal Membrane Roof: Inferior fascia of Urogenital diaphragm Contains: <b>BULBOURETHRAL GLANDS</b>


#### MALE REPRODUCTIVE SYSTEM (GROSS & HISTO)

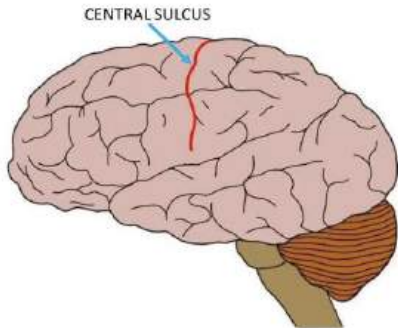
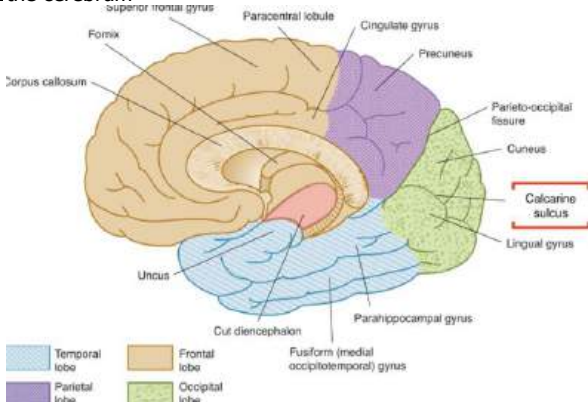
110. Which of the following group of lymph nodes will enlarge if the scrotal wall is inflamed?	A. Superficial inguinal B. Deep inguinal C. External iliac D. Internal iliac	<b>A</b>	Lymphatic drainage of the Scrotum Lymphatic drainage of Spongy urethra Lymphatic drainage of Vas deferens, Epididymis, Ejaculatory duct and inferior part of Seminal vesicle Lymphatic drainage of Prostatic duct, Intermediate & Proximal urethra and superior part of Seminal vesicle
111. The large pyramidal shaped cells extending from the basement membrane up to the lumen of the seminiferous tubules produce which of the following substances?	A. Citrate B. Fructose C. Inhibin D. Testosterone	<b>C</b>	Produced by Prostate gland Produced by Seminal vesicles The question describes <b>SERTOLI CELLS</b> – produces INHIBIN and Anti-Mullerian Hormone/Mullerian Inhibiting Factor Secreted by Leydig cells
112. The penile urethra is contained in which zone of the prostate gland?	A. Central B. Peripheral C. Transitional	<b>C</b>	 <p><b>Prostate zones</b></p> <p><b>CENTRAL ZONE:</b> surrounds the ejaculatory duct  <b>TRANSITIONAL ZONE:</b> surrounds the proximal prostatic urethra [affected in Benign Prostatic Hyperplasia]  <b>PERIPHERAL ZONE:</b> bulk of the Prostate Gland (70%); usually involved in prostate carcinoma</p>

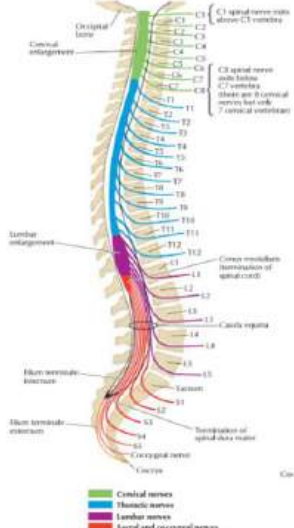
#### FEMALE REPRODUCTIVE SYSTEM (GROSS AND HISTO)

113. Which embryologic structure is the origin of the lower vagina?	A. Wolffian duct B. Mullerian duct C. Urogenital sinus	<b>C</b>	"MESONEPHRIC DUCT"; Forms the male genitalia Upper portion of vagina Lower portion of vagina
	A. Endocervix		Lined by Mucin-secreting columnar cells



114. Which of the following is lined with mucin-secreting columnar epithelium?	B. Vagina	<b>A</b>	Lined by Stratified Squamous epithelium, Non-keratinizing
	C. Fallopian tubes		Mucosa is lined by ciliated columnar cells and secretory peg cells (columnar but non-ciliated)
115. Ovarian follicle is found in which part of the ovary?	A. Corpus luteum	<b>B</b>	<u>The ovaries have 2 layers:</u> → <b>Cortex</b> <ul style="list-style-type: none"> <li>Layer where the developing ovarian follicles are found</li> </ul> → <b>Medulla</b> <ul style="list-style-type: none"> <li>Mainly loose connective tissue layer in the center of the ovary</li> <li>Contains the blood vessels, lymphatic channels, and nerves</li> </ul> 
	B. Cortex		
	C. Medulla		
116. Which of the following structures does NOT make up the terminal duct lobular units (TDLUs)?	A. Acinus	<b>C</b>	<b>TDLUs</b> include: <ul style="list-style-type: none"> <li>Intralobular stroma</li> <li>Intralobular duct</li> <li>Secretory acinus</li> </ul> >IntraLOBAR duct is <b>NOT</b> included in TDLU.
	B. Intralobular duct		
	C. Intralobar duct		
	D. Intralobular sinus		
117. Which of the following structures must be identified during the Cesarean section to gain access to the lower uterine segment?	A. Pouch of Douglas	<b>D</b>	<b>ANATOMIC RELATIONS OF THE UTERUS</b> <ul style="list-style-type: none"> <li><b>Anteriorly</b> <ul style="list-style-type: none"> <li>The uterine body is separated from the urinary bladder by the <b>vesicouterine pouch</b></li> </ul> </li> <li><b>Posteriorly</b> <ul style="list-style-type: none"> <li>The <u>uterine body</u> and the <u>supravaginal portion</u> of the cervix are: <ul style="list-style-type: none"> <li>Separated from the <u>sigmoid colon</u> by a layer of <b>peritoneum</b></li> <li>Peritoneal cavity is separated from the <u>rectum</u> by the <b>rectouterine pouch</b> or <b>pouch of Douglas</b></li> </ul> </li> </ul> </li> </ul>
	B. Pubovesical fold		This is a ligament that extends from the neck of the urinary bladder to the inferior aspect of the pubis bones.
	C. Transverse ligament		<b>CARDINAL LIGAMENT</b> <ul style="list-style-type: none"> <li>aka <b>Transverse cervical ligament</b> or <b>Mackenrodt's ligament</b></li> <li>Composed of connective tissue medially united firmly to the <b>supravaginal</b> portion of the cervix</li> <li>Forms the <b>thick base of broad ligament</b></li> <li>Extends from the supravaginal cervix and lateral parts of the fornix of the vagina to the lateral walls of the pelvis</li> </ul>
	D. Uterovesical fold		<b>3 Layers of the corpus:</b> <ul style="list-style-type: none"> <li>→ <b>Perimetrium / serosa</b> <ul style="list-style-type: none"> <li>Consists of peritoneum supported by a thin layer of connective tissue</li> <li>Covers whole uterus <b>EXCEPT</b> the lower portion of the anteroinferior portion of the uterine wall !</li> <li>Lower portion is connected by <b>vesicouterine serosa</b> <ul style="list-style-type: none"> <li><b>Clinical significance:</b> the vesicouterine serosa is the one being opened up during C-section</li> <li>Bladder must be separated from the uterus prior to cesarean section to avoid injury</li> </ul> </li> </ul> </li> </ul>
118. Blood vessels of the ovary courses through which ligament?	A. Infundibulopelvic ligament	<b>D</b>	" <b>SUSPENSORY LIGAMENT OF THE OVARY</b> "; contains the neurovasculature of the ovaries
	B. Broad ligament		Assists in keeping the uterus in position
	C. Round ligament		Below and anterior to the origin of the uterus; landmark for the anterior surface of the uterus

	D. Cardinal ligament		<b>"TRANSVERSE CERVICAL/MACKENRODT'S LIGAMENT"</b> ; contains the neurovasculature of the uterus
INTRO TO NEUROANATOMY			
119. The arcuate fasciculus is best classified as which fiber?	A. Commissural	B	Examples: Corpus callosum, Anterior/Posterior commissure, Crura of the fornix, Habenular commissure
	B. Association		Examples: Arcuate fasciculus, Superior Longitudinal fasciculus, Inferior occipitofrontal fasciculus, Inferior Longitudinal fasciculus, Uncinate fasciculus and Cingulum
	C. Projection		Examples: Internal capsule, External capsule, Corona radiata, Optic radiations
120. Which structure is best seen at the level of pons?	A. Red nucleus	B	Seen at the level of MIDBRAIN
	B. Facial colliculus		Seen at the level of PONS
	C. Olives		Seen at the level of MEDULLA OBLONGATA
121. Which among the following sulci/fissures is BEST appreciated on the lateral surface of the cerebrum?	A. Central	A	<b>"Central Sulcus of Rolando"</b> - seen in the <b>LATERAL</b> surface of cerebrum 
	B. Calcarine		All of these sulci/fissures are seen in the <b>MEDIAL</b> surface of the cerebrum 
	C. Cingulate		
	D. Parieto-occipital		
CEREBRAL CORTEX			
122. What is the major function of the archicortex?	A. Motor	B	<b>Archicortex</b> is a type of cortical tissue that consists of three laminae (layers of neuronal cell bodies). Archicortex is most prevalent in the olfactory cortex and the hippocampus, which are responsible for processing smells and forming <b>memories</b> , respectively.
	B. Memory		
	C. Speech		
123. Which of the following structures is considered the	A. Homunculus	B	Schematic representation of the human body on a specific area of the CNS
	B. Cortical columns		Their role is best understood as 'functional units of information processing.' An important distinction is that the columnar

functional subunit of the cerebral cortex?			organization is functional by definition, and reflects the local connectivity of the cerebral cortex.
	C. Gyrus		The cerebral cortex is thrown into folds (gyri), which are separated from each other by fissures (sulci)
	D. Brodmann Area		They correspond with diverse functions including sensation, motor control, and cognition.
124. Normally, by what age in years is cerebral dominance fully established?	A. 1 y/o	D	Both hemispheres of a newborn have EQUIPOTENTIAL capabilities.
	B. 18 y/o		
	C. 21 y/o		
	D. 10 y/o		
ANS & PNS			
125. Which of the following cranial nerves are considered as PURELY SENSORY in function?  <b>**UNRECALLED QUESTION – this item is just added (HIGH YIELD)**</b>	A. CN VIII	A	Purely <b>SENSORY</b>
	B. CN III		Purely <b>MOTOR</b>
	C. CN IX		<b>MIXED</b> nerve (BOTH sensory and motor)
	D. CN IV		
126. Disruption of which spinal nerve structures would result in sensory and motor deficits related to the lower limbs?	A. Dorsal ramus	C	provide motor innervation to the deep (a.k.a. intrinsic or true) muscles of the back, and sensory innervation to the skin of the posterior portion of the head, neck and back.
	B. Dorsal root		It emerges directly from the spinal cord, and travels to the dorsal root ganglion.
	C. Ventral ramus		It supplies the antero-lateral parts of the trunk and the limbs. They are mainly larger than the dorsal rami.
	D. Ventral root		It is the efferent motor root of a spinal nerve; at its distal end, it joins with the dorsal root to form a mixed spinal nerve.
127. The C5 spinal nerve exits at which level of the C5 vertebra?  <b>**UNRECALLED QUESTION – this item is just added (HIGH YIELD)**</b>	A. Above	A	
	B. Below		
	C. Same level		
128. All of the following are manifestations of Horner Syndrome EXCEPT:  <b>**UNRECALLED QUESTION – this item is just added (HIGH YIELD)**</b>	A. Ptosis	D	<b>HORNER SYNDROME:</b> Interruption of cervical sympathetic trunk manifested by the absence of sympathetically stimulated functions on the <b><u>IPSILATERAL SIDE OF THE HEAD</u></b>
	B. Enophthalmos		<b>5 SYMPTOMS OF HORNER SYNDROME</b> <ul style="list-style-type: none"><li>- <b>MIOSIS:</b> pupillary constriction [NOT Mydriasis]</li><li>- <b>PTOSIS:</b> slight drooping of eyelids</li><li>- <b>ENOPHTHALMOS:</b> retraction of eyeballs</li><li>- <b>VASODILATION OF SKIN ARTERIOLES</b></li><li>- <b>ANHYDROSIS:</b> loss of sweating</li></ul>
	C. Anhydrosis		
	D. Mydriasis		

MENINGES & VENTRICULAR SYSTEM																			
129. Which of the following meningeal layers form the denticulate ligament?	A. Dura	B	Outermost covering of the meninges																
	B. Pia		Thickened on both sides between the nerve roots to form the Denticulate Ligament (Ligamentum Denticulatum)																
	C. Arachnoid		Between the pia and dura mater; delicate impermeable membrane covering the brain; houses the <b>ARACHNOID VILLI</b> for CSF absorption																
130. The choroid plexus is present in all of the following structures EXCEPT:  <b>**UNRECALLED QUESTION – this item is just added (HIGH YIELD)**</b>	A. 3 <sup>rd</sup> ventricle	C	<b>VENTRICULAR SYSTEM AND CHOROID PLEXUS (CP)</b> <ul style="list-style-type: none"><li>- LATERAL VENTRICLE<ul style="list-style-type: none"><li>o Anterior horn: without CP</li><li>o <b>Body and Inferior horn: WITH CP</b></li><li>o Posterior Horn: without CP</li></ul></li><li>- <b>3<sup>RD</sup> VENTRICLE: WITH CP</b></li><li>- CEREBRAL AQUEDUCT: without CP</li><li>- <b>4TH VENTRICLE: WITH CP</b></li></ul>																
	B. Body of Lateral ventricle																		
	C. Cerebral aqueduct																		
	D. 4 <sup>th</sup> ventricle																		
131. The Great cerebral vein and inferior sagittal sinus unite to form which structure?  <b>**UNRECALLED QUESTION – this item is just added (HIGH YIELD)**</b>	A. Straight sinus	A	The inferior sagittal sinus and great cerebral vein UNITE to form the Straight sinus																
	B. Occipital sinus		Small sinus occupying the attached margin of falx cerebelli																
	C. Sigmoid sinus		Direct continuation of transverse sinuses																
CNS DEVELOPMENT																			
132. Trigeminal nerve is derived from which secondary brain vesicle?	A. Metencephalon	A	Becomes the <b>PONS (origin of CN V)</b> and Cerebellum																
	B. Myelencephalon		Becomes the MEDULLA OBLONGATA																
	C. Diencephalon		Becomes the THALAMUS																
	D. Telencephalon		Becomes the CEREBRUM																
133. At which vertebral level does the spinal cord end at BIRTH?  <b>**UNRECALLED QUESTION – this item is just added (HIGH YIELD)**</b>	A. L5	C	At <b>BIRTH</b> : spinal cord ends at <b>L2-L3 vertebral level</b>																
	B. L1		In <b>ADULTS</b> : spinal cord ends at <b>L1-L2 vertebral level</b>																
	C. L3																		
134. Schwann cells originated from which of the following?  <b>**UNRECALLED QUESTION – this item is just added (HIGH YIELD)**</b>	A. Mantle layer	C	<b>Table 3. Neural Crest Derivatives</b> <small>(Langman's Medical Embryology, 13th Ed)</small> <table><tr><th>Neural Crest Derivatives</th></tr><tr><td>Connective tissue and bones of the face and skull</td></tr><tr><td>Cranial nerve ganglia</td></tr><tr><td>C cells of the thyroid gland</td></tr><tr><td>Conotruncal septum in the heart</td></tr><tr><td><b>Odontoblasts</b></td></tr><tr><td>Dermis in the face and neck</td></tr><tr><td><b>Spinal [dorsal root] ganglia</b></td></tr><tr><td><b>Sympathetic chain and preaortic ganglia</b></td></tr><tr><td><b>Parasympathetic ganglia of the gastrointestinal tract</b></td></tr><tr><td>Adrenal medulla</td></tr><tr><td>Schwann cells</td></tr><tr><td>Glial cells</td></tr><tr><td><b>Meninges [forebrain] (&amp; mesenchyme of pharyngeal arches)</b></td></tr><tr><td><b>Melanocytes (pigment cells)</b></td></tr><tr><td>Smooth muscle cells to blood vessels of the face and forebrain</td></tr></table> <p><i>Note: Those in bold texts are those enumerated by Doc Zeb in the lecture.</i></p>	Neural Crest Derivatives	Connective tissue and bones of the face and skull	Cranial nerve ganglia	C cells of the thyroid gland	Conotruncal septum in the heart	<b>Odontoblasts</b>	Dermis in the face and neck	<b>Spinal [dorsal root] ganglia</b>	<b>Sympathetic chain and preaortic ganglia</b>	<b>Parasympathetic ganglia of the gastrointestinal tract</b>	Adrenal medulla	Schwann cells	Glial cells	<b>Meninges [forebrain] (&amp; mesenchyme of pharyngeal arches)</b>	<b>Melanocytes (pigment cells)</b>	Smooth muscle cells to blood vessels of the face and forebrain
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<b>Melanocytes (pigment cells)</b>																			
Smooth muscle cells to blood vessels of the face and forebrain																			
B. Marginal layer																			
C. Neural crest cells																			

Table 7. Glioblast differentiation per layer

Layer	Differentiates Into	Cell Location & Function
Mantle	Protoplasmic and fibrillary astrocytes	Between blood vessels and neurons where they provide support and serve metabolic functions
Marginal	Oligodendroglia	Forms myelin sheaths around the ascending and descending axons

## CNS BLOOD SUPPLY

135. What artery supplies the lower two-third of the spinal cord?

- A. Adamkiewicz
- B. Basilar
- C. Posterior intercostal
- D. Vertebral

C

### Great Anterior Medullary Artery !

- Other names:
  - Major Anterior Segmental Medullary Artery
  - Anterior Medullary Artery of Adamkiewicz
- One **large feeder artery** coming from the **left posterior intercostal artery** that branches from the aorta
- A unilateral artery entering the spinal cord at the **thoracic or lumbar vertebral levels** from the **left side**
- Seen on the anterior part of the spinal cord
- Main source of arterial blood supply to the lower two-thirds of the spinal cord

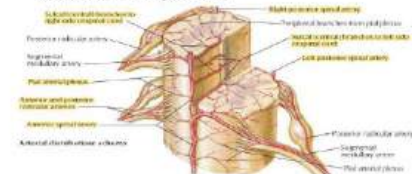
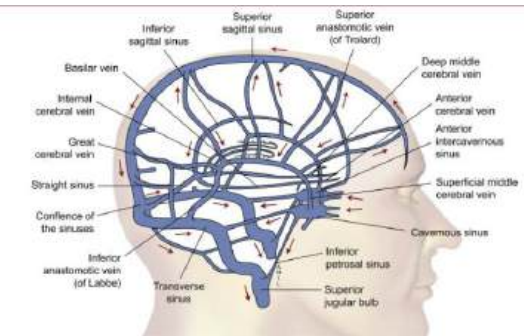


Figure 33. Arterial Distribution: Schema (Netter 2nd ed.)

136. The dural venous sinuses would eventually drain into?

- A. External Jugular Vein
- B. Internal Jugular Vein
- C. Subclavian Vein
- D. Retromandibular Vein

B



### → Deep Middle Cerebral Vein

- Drains the **insula**
- Joined by the **Anterior Cerebral Veins** and **Striate Veins** → forms the **Basal/Basilar Vein of Rosenthal** → joins the **Great Cerebral Vein** → drains into the **Straight Sinus** → drains to Internal Jugular Vein !

137. Which supplies the head of the caudate nucleus and is a branch the of anterior cerebral artery?

- A. Lateral striate artery
- B. Medial striate artery

B

### CENTRAL BRANCHES OF THE MCA

- Several branches collectively known as **Lateral Striate** or **Lenticulostriate Arteries** (see Figure 13)
- Enters anterior perforated substance **with medial striate artery** (recurrent artery of Heubner) to supply:
  - Putamen
  - Globus pallidus
  - Caudate nucleus
  - Internal capsule

### CENTRAL BRANCH OF THE ACA

- Helps supply the following:
  - Rostrum of corpus callosum
  - Septum pellucidum
- **Medial Striate Artery / Recurrent Artery of Heubner**
  - Pierces the **anterior perforated substance**
  - Single central branch of ACA which supplies the following:
    - Anterior part of head of **caudate nucleus**
    - Adjacent regions of **putamen and globus pallidus**
    - **Internal capsule**



C. Anterior Choroidal artery

#### ANTERIOR CHOROIDAL ARTERY

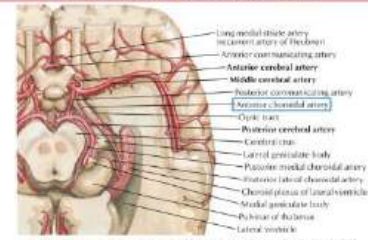


Figure 10. Anterior Choroidal Artery [Nolte, 7th Ed. Plate 15d]

- Small branch of the ICA originating close to the Posterior Communicating Artery (PCoMA)

#### GSA

138. Pain sensation from the body will decussate at what point?

A. Zone of Lissauer

B. Ventral White Commissure

C. Corpus Callosum

D. Internal Arcuate Fibers

B

#### N1: DRG

- Receptor is part of the distal axon of the neuron from the periphery such that there is no synapse between the receptor and the somatic sensory nerve
- Axon fibers enter the spinal cord via the lateral division of the dorsal root where the Zone of Lissauer is located
- Enter at the Zone of Lissauer with axon fibers running 1 to 2 segments up or down before synapsing with neuron 2

This pertains to the N1 of **Lateral Spinothalamic Tract**.

#### N2: DORSAL HORN CELLS

- Substantia gelatinosa** contain internuncial neurons to which the DRG axons synapse and would then synapse with the tract neurons
- Rexed laminae I to V** contain the tract cells, neurons whose axons comprise the axons of the ascending tract.
- Although these are at least 2 separate neurons, they are considered as only one neuron 2 with respect to the pathway
- Axons from neuron 2 would decussate/cross the midline via the **ventral white commissure**, going to the contralateral side of the spinal cord and then ascend at the **lateral funiculus** where they are arranged somatotopically or according to the body part where the stimulus originated
  - Fibers from lower cord levels (coccygeal, sacral): dorso/posterolaterally located
  - Fibers from higher cord levels: ventro/anteromedial
- Once it reaches the medulla, it continues as the **spinal lemniscus** once it is joined by the anterior spinothalamic tract to then synapse with neuron 3

This pertains to the N2 of **Lateral Spinothalamic Tract** → responsible for **PAIN AND TEMPERATURE SENSATION**.

This is a commissural fiber that connects the 2 cerebral hemispheres

This is the point of decussation for DCML Pathway

#### N2: NUCLEUS GRACILIS AND CUNEATUS IN MEDULLA OBLONGATA

- Nucleus gracilis**
  - Receives axons from the fasciculus gracilis
  - Carries sensations from T7 and below
- Nucleus cuneatus**
  - Receives axons from the fasciculus cuneatus
  - Carries sensations from the cervical and T1-T6 spinal cord levels
- Axons cross to **opposite side** as **internal arcuate fibers** at the middle medulla to form and ascend as the **medial lemniscus** in the **contralateral side**
- Decussation occurs in the **middle medulla**

139. Which nerve fibers are the largest and myelinated?

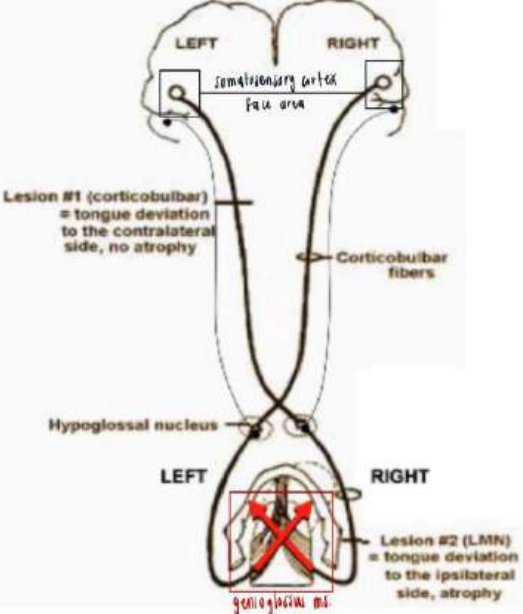
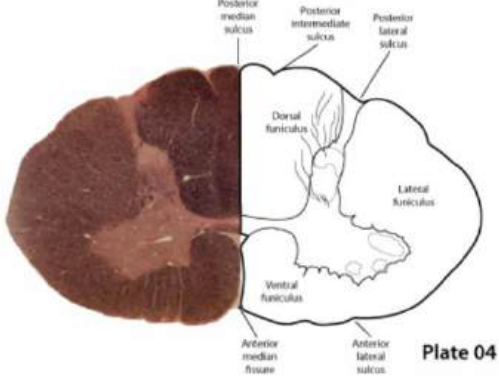
A. Annulospiral, GTO

B. Flowerspray, GTO

C. Intrafusal fibers

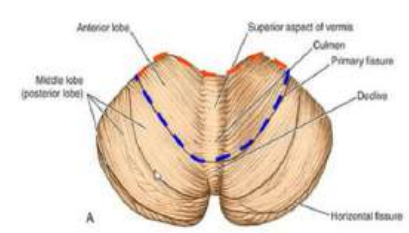
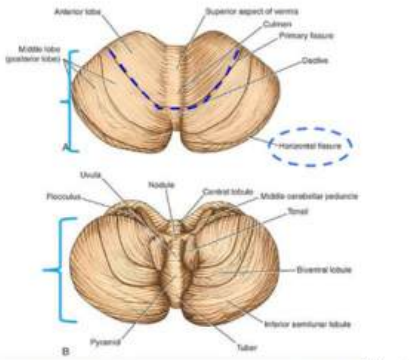
A

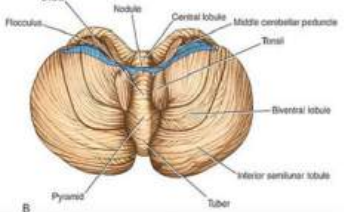
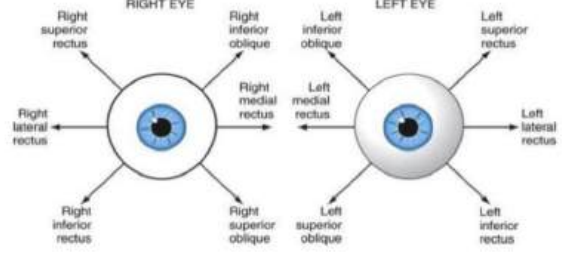
	MYELINATED			UNMYELINATED
	largest; fastest	→		smallest; slowest
MUSCLE	Ia (Aα) Annulospiral endings of NM spindles	Ib (Aα) Golgi tendon	II (Aβ) Flower spray endings of NM spindles	
NON-MUSCLE [skin/deep]	none	Aα-β (Ib & II) 2-point discrimination Vibration Conscious proprioception	Aδ (III) Fast (first, sharp) pain Cold Crude touch	C (IV) Slow (second, burning) pain Itch Warmth

<p>140. While studying, you felt your phone vibrate by your right elbow. The first-order neuron of this pathway arise from which of the following structures?</p>	<p>A. Dorsal horn</p> <p>B. Dorsal root ganglion</p> <p>C. Nucleus cuneatus</p>	<p><b>B</b></p>	<p>See ratio for #138</p> <p><b>N1: DORSAL ROOT GANGLION</b></p> <ul style="list-style-type: none"> <li>• Axons enter <b>ipsilateral dorsal funiculus</b> via the <u>medial division of dorsal root</u> and form:             <ul style="list-style-type: none"> <li>→ <b>Fasciculus gracilis</b>: fibers from <u>sacral, lumbar and lower 6 thoracic</u> segments</li> <li>→ <b>Fasciculus cuneatus</b>: fibers from <u>upper 6 thoracic and all cervical</u> segments</li> <li>→ The axons ascend the spinal cord until they reach the <u>middle medulla</u> to synapse with N2</li> </ul> </li> </ul> <p>See ratio for #138</p>
<p align="center"><b>PYRAMIDAL TRACTS</b></p>			
<p>141. A lesion in which of the following structures would result in tongue deviation to the right with atrophy?</p>	<p>A. Left hypoglossal nerve</p> <p>B. Left internal capsule</p> <p>C. Right hypoglossal nucleus</p> <p>D. Right internal capsule</p>	<p><b>C</b></p>	<p>This is a case of a <b>LOWER MOTOR NEURON LESION</b>.</p>  <p><b>Figure 20. Corticobulbar tract of CN XII</b> [Lecture PPT]</p>
<p>142. Which of the following grooves separates the fasciculus gracilis from the fasciculus cuneatus?</p>	<p>A. Dorsal intermediate</p> <p>B. Dorsolateral sulcus</p> <p>C. Ventral medial sulcus</p> <p>D. Ventrolateral sulcus</p>	<p><b>A</b></p>	 <p align="right"><b>Plate 04</b></p> <p><b>Dorsal (Posterior) Intermediate Sulcus:</b> divides Fasciculus Gracilis and Fasciculus Cuneatus</p> <p><b>Dorsolateral (Posterolateral) Sulcus:</b> Dorsal Root Entry Zone (DREZ)</p>
<p>143. A lesion in which of the following structures would</p>	<p>A. Corona radiata</p> <p>B. Internal capsule</p>		<p>Lesions in these structures would result to <b>UPPER MOTOR NEURON LESION</b></p>

result in lower motor neuron symptoms?	C. Lateral funiculus	<b>D</b>	<div>Upper motor neuron (UMN)</div> <div>N1 (1st order neuron) → N2 (internuncial neuron)</div> <div>Lesion causes <b>contralateral</b> defects</div>
	D. Ventral horn		Lesion in this structure would result to <b>LOWER MOTOR NEURON LESION</b> <div>Lower motor neuron (LMN)</div> <div>N3 (3rd order neuron) → Muscle</div> <div>Lesion causes <b>ipsilateral</b> defects</div>

### BASAL GANGLIA & CEREBELLUM

144. Which cerebellar lobe is responsible for equilibrium control and proper eye movement?	A. Anterior	<b>C</b>	<div><b>PALEOCEREBELLUM / ANTERIOR LOBE</b></div> <ul style="list-style-type: none"> <li>On the superior surface of the cerebellum → It is separated from the middle lobe by the primary fissure</li> <li>Input: <u>spinocerebellar</u> and <u>trigemino-cerebellar</u> pathways</li> <li>Function: involved in <b>stance</b> and <b>gait</b></li> </ul>  <p><b>Figure 29. Paleocerebellum/Anterior Lobe</b> [Lecturer's PPT]</p>
	B. Posterior		<div><b>NEOCEREBELLUM / POSTERIOR LOBE / MIDDLE LOBE</b></div> <ul style="list-style-type: none"> <li>It is the <b>largest part</b> of the cerebellum → Situated between the primary and uvulonodular fissures</li> <li>Input: <u>cerebral cortex</u></li> <li>Function: involved in <b>speech</b> and <b>coordinated movement</b></li> </ul>  <p><b>Figure 30. Neocerebellum/Posterior Lobe/Middle Lobe</b> [Lecturer's PPT]</p>

	C. Flocculonodular		<b>ARCHICEREBELLUM / FLOCCULONODULAR LOBE</b> <ul style="list-style-type: none"> <li>• <b>Oldest</b> portion out of the three (lobes) → Situated posterior to the uvulonodular fissure</li> <li>• Input: <b>vestibular nuclei</b></li> <li>• Function: involved in <b>equilibrium</b> (balance, posture, and eye movement)</li> </ul>  <p><b>Figure 31 Archicerebellum/Flocculonodular</b> [Lecturer's PPT]</p>
145. The efferent fibers of the cerebellum are mainly from?	A. Purkinje B. Stellate C. Basket	<b>A</b>	ONLY output fibers of the cerebellum Outer cells in the Molecular layer of cerebellum Inner cells in the Molecular layer of cerebellum
146. The neurotransmitter secreted by the substantia nigra?	A. Serotonin B. Dopamine C. Acetylcholine D. Glutamate	<b>B</b>	Secreted by the Raphe Nucleus Secreted by Substantia Nigra at the Caudal Midbrain Originated from the basal forebrain and mesopontine tegmentum area Secreted from the glial cells of the brain
<b>OPTICS &amp; EOM</b>			
147. The down and left gaze involves which of the following yoke muscles?	A. Left inferior rectus and Right superior oblique B. Right superior rectus and left inferior oblique C. Left lateral rectus and Right medial rectus D. Right superior oblique and left medial rectus	<b>A</b>	
148. Which visual pathway is involved when tracking slow moving objects?	A. Saccades B. Smooth Pursuit C. Convergence D. Vestibulo-ocular reflex	<b>B</b>	Lateral/Vertical gaze involving <b>RAPID EYE MOVEMENT (REM)</b> <b>SLOW eye movement</b> ; tracking/"keeping an eye" or pursuing an object Converging eyes from a target moving closer; utilizes accommodation reflex pathway <b>"Position Maintenance Reflex"</b> ; involves CN VIII for head rotation and balance
149. What is the third order neuron of the visual pathway?	A. Ganglion cells B. Bipolar cells C. Lateral Geniculate Body (LGB) D. Medial Geniculate Body (MGB)	<b>C</b>	<ol style="list-style-type: none"> <li>When the light strikes the eye, the photoreceptors in the retina would now communicate with the following cells: <ul style="list-style-type: none"> <li>→ <b>N1 bipolar neurons of the retina</b></li> <li>→ <b>N2 ganglion cells of the retina</b> <ul style="list-style-type: none"> <li>Form the <b>optic nerve (CN II)</b></li> <li>Light is being converted into electrical chemical impulses that are transferred along the optic nerve</li> </ul> </li> </ul> </li> <li>Optic nerve fibers pass directly to the <b>optic chiasm</b> <ul style="list-style-type: none"> <li>→ Located at the <i>anterior</i> part of the sella turcica</li> <li>→ There is <b>partial decussation</b> ! <ul style="list-style-type: none"> <li><b>Nasal</b> fibers of each retina cross</li> <li><b>Temporal</b> fibers of the retina <b>do not</b></li> </ul> </li> </ul> </li> <li>Optic fibers continue <b>posteriorly</b> without any interruption as the two <b>diverge in optic tracts</b> that go to the <b>N3 Left and Right LGB/LGN</b></li> <li>Until it reaches the <b>primary visual cortex (BA 17)</b> at the occipital lobe</li> </ol>



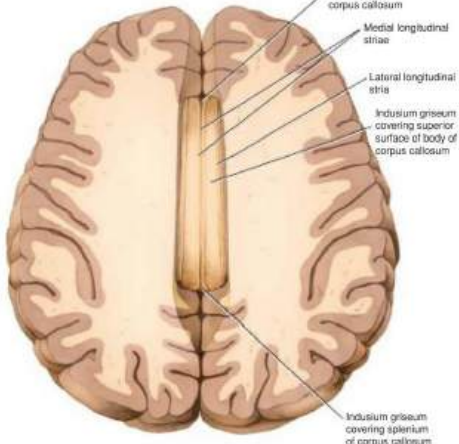
## AUDITORY & VESTIBULAR PATHWAYS

150. When looking upwards and to the left, which semicircular canal is involved?	A. Left anterior	<b>C</b>															
	B. Left posterior																
	C. Right anterior																
	D. Right posterior																
			<table> <tr> <th></th><th>ANTERIOR</th><th>HORIZONTAL</th><th>POSTERIOR</th></tr> <tr> <td>Eye movement</td><td>up + left</td><td>left</td><td>down + left</td></tr> <tr> <td>(+) canal</td><td>RAC</td><td>RHC</td><td>RPC</td></tr> <tr> <td>EOM</td><td>L SR + R IO</td><td>L LR + R MR</td><td>L IR + R SO</td></tr> </table>		ANTERIOR	HORIZONTAL	POSTERIOR	Eye movement	up + left	left	down + left	(+) canal	RAC	RHC	RPC	EOM	L SR + R IO
	ANTERIOR	HORIZONTAL	POSTERIOR														
Eye movement	up + left	left	down + left														
(+) canal	RAC	RHC	RPC														
EOM	L SR + R IO	L LR + R MR	L IR + R SO														
151. Where does neuron one of the auditory pathway originate from?	A. Internal acoustic meatus	<b>D</b>	The <b>bipolar cells of the spiral ganglion</b> , which are the N1 of the auditory pathway, are located in the <b>cochlea's modiolus</b> .														
	B. Lateral to the floor of 4th ventricle																
	C. Lateral to inferior colliculus																
	D. Modiolus of the cochlea																
152. Where is the lesion is the patient has partial deafness on both ears but more marked towards the right side?	A. Left Lateral lemniscus	<b>A</b>	<b>CENTRAL UNILATERAL LESION</b> <ul style="list-style-type: none"> <li>Lesions along the ascending pathway starting from the cochlear nuclei 🚩 <ul style="list-style-type: none"> <li>→ Involves lesions in the cortex, medial geniculate body or lateral lemniscus</li> <li>→ Central hearing loss may occur <ul style="list-style-type: none"> <li>This is on the dorsolateral surface of the brainstem at the junction of the medulla with the pons to the auditory cortex in the temporal lobe</li> </ul> </li> </ul> </li> <li>Results to the <b>impaired hearing on both ears</b> <ul style="list-style-type: none"> <li>→ <b>More marked on the opposite side of the lesion</b> <ul style="list-style-type: none"> <li>Because majority of the fibers that make up the auditory pathways cross to the other side 🚩</li> </ul> </li> </ul> </li> </ul>														
	B. Left organ of corti		<b>UNILATERAL LESION</b> <ul style="list-style-type: none"> <li>Involves the receptors, cochlear nerve/nuclei or sound conducting apparatus of the middle ear</li> <li>Results to <b>total deafness of the affected area</b> 🚩</li> </ul>														
	C. Left cochlea																
	D. Inner hair cells																


## HYPOTHALAMUS, LIMBIC SYSTEM, OLFACTORY & GUSTATORY PATHWAY


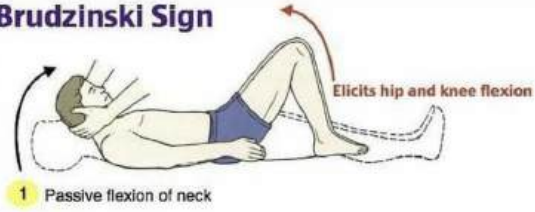
153. Anterior perforated substance belongs to which structure?	A. Rhinencephalon	<b>A</b>	<b>STRUCTURES OF THE RHINENCEPHALON</b> <ul style="list-style-type: none"> <li>Olfactory nerve</li> <li>Olfactory bulb</li> <li>Olfactory tract</li> <li>Olfactory striae (medial, intermediate, and lateral) <ul style="list-style-type: none"> <li>→ Lateral stria gives signals to the cortex, specifically to the septal nuclei and the anterior commissure</li> </ul> </li> <li>Anterior olfactory nucleus (within the olfactory bulb, tract, and striae)</li> <li>Anterior perforated substance</li> <li>Subcallosal area (or parolfactory area)</li> <li>Anterior portions of the parahippocampal area (including uncus) <ul style="list-style-type: none"> <li>→ The rhinal cortex is closely related to the hippocampus or parahippocampal gyrus</li> </ul> </li> <li>Hippocampal formations (beneath the parahippocampal gyrus)</li> <li>Pre-pyriform complex (extending from the olfactory stria to the rostral amygdaloid region)</li> <li>Part of the amygdaloid complex</li> </ul>



	B. Subiculum	<p><b>Hippocampal formation</b></p> <ul style="list-style-type: none"> <li>→ Located on the floor of the lateral ventricle</li> <li>→ Consists of the following: <ul style="list-style-type: none"> <li>▪ <b>Dentate gyrus</b></li> <li>▪ <b>Hippocampus proper (Ammon's horn)</b></li> <li>▪ <b>Subiculum</b> <ul style="list-style-type: none"> <li>– A part of the parahippocampal gyrus</li> </ul> </li> </ul> </li> </ul>
	C. Indusium griseum	
	D. Supracallosal gyrus	
154. The tuberomammillary nucleus is found in which zone of the hypothalamus	A. Periventricular	<p><b>INDUSIUM GRISEUM</b></p>  <p><b>Figure 20.</b> Dissection of both cerebral hemispheres showing the superior surface of the corpus callosum [Snell's Clinical Neuroanatomy]</p> <ul style="list-style-type: none"> <li>• Also known as <b>supracallosal gyrus</b></li> <li>• Thin, vestigial layer of gray matter that covers the <u>superior surface of the corpus callosum</u></li> <li>• On each side, consist of the <b>medial longitudinal striae</b> and <b>lateral longitudinal striae</b> <ul style="list-style-type: none"> <li>→ Slender bundles of white fibers</li> <li>→ Embedded in the superior surface of the indusium griseum</li> <li>→ Striae are remains of white matter of the vestigial indusium griseum</li> </ul> </li> </ul>
	B. Medial	
		<p><b>C</b></p> <p><b>PERIVENTRICULAR ZONE</b></p> <ul style="list-style-type: none"> <li>• Lies deep to the ependyma of the wall of the 3rd ventricle</li> <li>• <b>Continuous</b> and <b>homologous</b> with the periaqueductal gray of the midbrain !</li> <li>• <b>Dorsal longitudinal fasciculus</b> <ul style="list-style-type: none"> <li>→ Originates from the <u>periventricular system</u> !</li> <li>→ Descends via the periaqueductal gray to send collaterals into the reticular formation of the midbrain and pons and further caudally</li> <li>→ Important route by which the hypothalamus influences autonomic functions through sympathetic and parasympathetic nervous system outflows</li> </ul> </li> </ul> <p><b>MEDIAL ZONE</b></p> <ul style="list-style-type: none"> <li>• Contains the following nuclei (<i>from anterior to posterior</i>): <ul style="list-style-type: none"> <li>→ Preoptic nucleus</li> <li>→ Anterior nucleus - merges with preoptic nucleus</li> <li>→ Suprachiasmatic nucleus</li> <li>→ Paraventricular nucleus</li> <li>→ Dorsomedial nucleus</li> <li>→ Ventromedial nucleus</li> <li>→ Infundibular (arcuate) nucleus</li> <li>→ Posterior nucleus</li> </ul> </li> </ul>

	C. Lateral		<div>LATERAL ZONE</div> <ul style="list-style-type: none"><li>Contains <u>sparsely distributed neurons</u></li><li>Bounded laterally by the medial forebrain bundle</li><li>Contains the following nuclei (<i>from anterior to posterior</i>):<ul style="list-style-type: none"><li>→ <b>Preoptic nucleus</b></li><li>→ <b>Suprachiasmatic nucleus</b></li><li>→ <b>Supraoptic/anterior nucleus</b><ul style="list-style-type: none"><li>Acts as an <u>osmoreceptor</u></li><li>If the osmotic pressure of the blood circulating through the nucleus becomes too high, the nerve cells increase their production of vasopressin<ul style="list-style-type: none"><li>The <u>antidiuretic effect of vasopressin</u> will increase the reabsorption of water from the kidney, and return the blood osmotic pressure to normal limits</li></ul></li></ul></li><li>→ <b>Lateral nucleus</b></li><li>→ <b>Tuberomammillary nucleus</b></li><li>→ <b>Lateral tuberal nucleus</b></li></ul></li></ul>
155. Which structure is the cognitive basis of emotion and learning?	A. Papez circuit	A	<div>PAPEZ CIRCUIT</div> <ul style="list-style-type: none"><li>aka <b>medial limbic circuit</b></li><li>Major loop circuit of the limbic system</li><li>Suggests that the cingulate gyrus and its neocortical connections are the basis for experiencing emotions<ul style="list-style-type: none"><li>→ <u>Amygdala</u> - emotional experiences</li><li>→ <u>Hippocampus</u> - learning and memory</li></ul></li><li>Explains the connection of the hippocampus to the cingulate gyrus<ul style="list-style-type: none"><li>→ Hippocampus sends fibers to the cingulate gyrus and later sends it to the cerebral cortex</li></ul></li><li>Ties together the cerebral cortex and the hypothalamus which is a loop within the limbic system<ul style="list-style-type: none"><li>→ Convergence of cognitive activities, emotional experiences, and expression based on the stimulus !</li></ul></li></ul>
	B. Medial Forebrain Bundle		<div>MEDIAL FOREBRAIN BUNDLE (MFB)</div> <ul style="list-style-type: none"><li>Lateral border of the lateral nucleus in the preoptic area 📍</li><li>Connects the hypothalamus with the <b>brainstem</b> and <b>spinal cord</b></li><li>Projects ascending fibers through the tract rostrally to the septal region containing <i>both afferent and efferent connections</i></li></ul>
	C. Amygdalohypothalamic Fibers		<div>AMYGDALOHYPOTHALAMIC FIBERS (AHF)</div> <ul style="list-style-type: none"><li>Arranged in 2 bundles !<ul style="list-style-type: none"><li>→ <b>Stria terminalis</b><ul style="list-style-type: none"><li><u>Origin</u>: Dorsomedial division of the amygdala entering the hypothalamus anteriorly</li><li><u>Distribution</u>: Preoptic Area, anterior hypothalamic nucleus, supraoptic nucleus, and septal region</li></ul></li><li>→ <b>Ventral Amygdalofugal fibers</b><ul style="list-style-type: none"><li>The <u>amygdala</u> has the central medial nucleus and basal lateral nucleus that sends both afferent and efferent fibers</li><li>Major output projections of the amygdaloid nucleus</li></ul></li></ul></li><li><u>Termination</u>: Hypothalamic nuclei</li></ul>
NEURO EXAM			
156. Gerstmann syndrome is described as damage to which lobe of the brain?	A. Frontal	B	<div>FRONTAL LOBE</div> <p>The frontal lobe is responsible for executive function; organization, planning, logic, motor control, emotion and language</p> <ul style="list-style-type: none"><li>→ <b>Motor cortex (BA 4)</b><ul style="list-style-type: none"><li>Planning and coordinating movement</li><li>Origin of the corticospinal tract</li></ul></li><li>→ <b>Broca's area (BA 44, 45)</b><ul style="list-style-type: none"><li>Language production</li><li>Located in the inferior frontal gyrus</li></ul></li><li>→ <b>Frontal eye fields (BA 8)</b><ul style="list-style-type: none"><li>Conjugate gaze</li></ul></li></ul> <div>TEST FOR FRONTAL LOBE</div> <ul style="list-style-type: none"><li><b>Insight</b>: reason for consult</li><li><b>Judgment</b>: wallet on the floor</li><li><b>Fund of knowledge</b>: ask for the Philippine president, national hero<ul style="list-style-type: none"><li>→ Note: should be adjusted based on the context of patient</li></ul></li><li><b>Concentration</b>: serial 7s (subtract 7 from 100 onwards without prompting) or spelling WORLD backwards if patient is uneducated</li><li><b>Fluency</b>: give 5 objects that start with letter "A"</li></ul> <div>EXAMPLE OF FRONTAL LOBE LESION</div> <p>Prefrontal cortex lesion presents as:</p> <ul style="list-style-type: none"><li>→ Disinhibition / loss of impulse</li><li>→ Socially inappropriate behavior</li><li>→ Emotional dysregulation</li><li>→ Poor judgment</li><li>→ Inability to plan properly</li></ul>

	B. Parietal		<p><b>PARIETAL LOBE</b></p> <p>The parietal lobe is responsible for spatial and body awareness, where the sensory tracts terminate. Responsible for processing pain, temperature, pressure, vibration, and coordination of stimuli.</p> <ul style="list-style-type: none"> <li>→ <b>Primary somatosensory cortex (BA 3, 1, 2)</b> <ul style="list-style-type: none"> <li>Receives and processes sensory input</li> </ul> </li> <li>→ <b>Somatosensory association cortex (Superior Parietal Lobule)</b> <ul style="list-style-type: none"> <li>Spatial and body awareness</li> </ul> </li> <li>→ <b>Angular gyrus</b> <ul style="list-style-type: none"> <li>Lesion results in <u>Gerstmann syndrome</u></li> </ul> </li> <li>→ <b>Supramarginal gyrus</b> <ul style="list-style-type: none"> <li>Coordinates with Wernicke's area for speech</li> </ul> </li> </ul> <p><b>TEST FOR PARIETAL LOBE</b></p> <ul style="list-style-type: none"> <li>Use left index finger to touch right ear</li> <li>Have patient write his name and a sentence</li> <li>Agraphesthesia</li> <li>Astereognosis</li> <li>Apraxia</li> <li>Draw clock</li> <li>Neglect: ask the patient whose arm this is</li> <li>Sensory extinction</li> <li>Visuospatial orientation</li> <li>Music</li> <li><b>Gerstmann syndrome</b> <ul style="list-style-type: none"> <li>□ Involves lesions in the <b>angular gyrus (BA 39)</b> of the dominant (usually left) parietal lobe</li> <li>→ R-L disorientation, inability to write (agraphia), inability to count (acalculia), inability to name the fingers (finger agnosia)</li> </ul> </li> </ul>
	C. Occipital		<p><b>OCCIPITAL LOBE</b></p> <p>The occipital lobe integrates visual stimuli</p> <ul style="list-style-type: none"> <li>→ Primary visual cortex</li> </ul> <p><b>TEST FOR OCCIPITAL LOBE</b></p> <ul style="list-style-type: none"> <li>Color identification</li> <li>Familiar faces</li> </ul>
	D. Temporal		<p><b>TEMPORAL LOBE</b></p> <p>The frontal lobe is responsible for memory, comprehension and language</p> <ul style="list-style-type: none"> <li>→ <b>Superior temporal gyrus (BA 22)</b> <ul style="list-style-type: none"> <li>Speech comprehension</li> <li>Wernicke's aphasia</li> </ul> </li> <li>→ <b>Primary auditory cortex (BA 41 &amp; 42)</b></li> </ul> <p><b>TEST FOR TEMPORAL LOBE</b></p> <ul style="list-style-type: none"> <li><b>Orientation:</b> who they are, where they are, who they are with</li> <li><b>Memory:</b> ask them to name 3 objects</li> <li>Ask about remote events and details <ul style="list-style-type: none"> <li>→ Note: must be checked with companion</li> </ul> </li> <li><b>Comprehension:</b> have patient read instructions on paper and have them follow</li> <li>Ask patient to execute a <u>3-step command</u></li> <li>Ask patient something, ask them again after a few minutes to recall</li> </ul> <p><b>APHASIA</b></p> <ul style="list-style-type: none"> <li>Inability to produce accurate language <ul style="list-style-type: none"> <li>→ Fluency</li> <li>→ Comprehension</li> <li>→ Repetition</li> <li>→ Naming</li> </ul> </li> <li><b>Steps to check for aphasia:</b> <ul style="list-style-type: none"> <li>→ Is the patient fluent or non-fluent?</li> <li>→ Can the patient comprehend?</li> <li>→ Can the patient repeat?</li> </ul> </li> </ul>
157. You asked your patient to stand with feet together while closing her eyes. You noticed that there is visible swaying and the patient is about to fall. You would document this as Positive _____ Sign.	A. Brudzinski	C	<p><b>ROMBERG'S TEST</b></p> <ul style="list-style-type: none"> <li><b>Steps:</b> <ul style="list-style-type: none"> <li>→ Ask the patient to stand up with feet together, arms on the side, and eyes closed.</li> <li>→ Check for patient's imbalance and try to assist if the patient is falling towards one side</li> </ul> </li> </ul>  <p>Figure 25: Romberg's test with examiner assisting patient</p> <p><b>SIGNIFICANCE OF ROMBERG</b></p> <ul style="list-style-type: none"> <li><b>3 things to maintain balance:</b> <ul style="list-style-type: none"> <li>→ Visual cues</li> <li>→ Vestibular balance</li> <li>→ proprioception</li> </ul> </li> <li>By <b>closing eyes</b>, the <b>visual cue is removed</b>. The individual relies on vestibular and proprioception only, without the aid of visual cues. If there is a problem with proprioception, the feet are unable to sense position in space, resulting in impaired balance which may manifest as leaning to one side. (compare with cerebellar testing later)</li> </ul>
	B. Kernig		
	C. Romberg		
	D. Babinski		

158. You would elicit Kernig's sign by doing which maneuver?	A. Hip extension	<b>B</b>	<div> <h3>Kernig Sign</h3>  <ol style="list-style-type: none"> <li>1 Knee is flexed to 90 degrees</li> <li>2 Hip is flexed to 90 degrees</li> <li>3 Extension of the knee is painful or limited in extension</li> </ol> </div> <div> <h3>Brudzinski Sign</h3>  <ol style="list-style-type: none"> <li>1 Passive flexion of neck</li> </ol> </div>
	B. Knee flexion		
	C. Knee extension		
	D. Neck flexion		