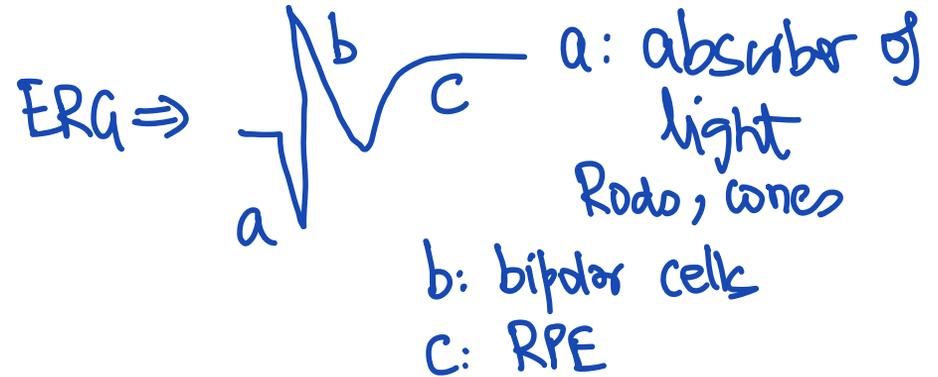
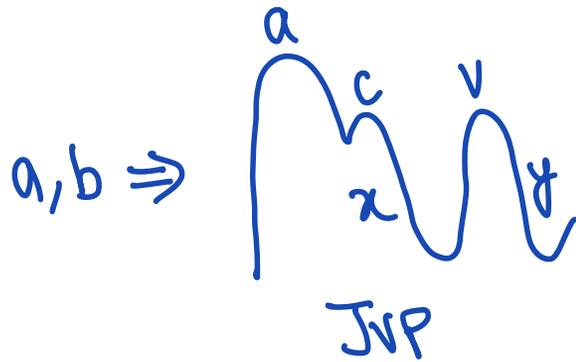
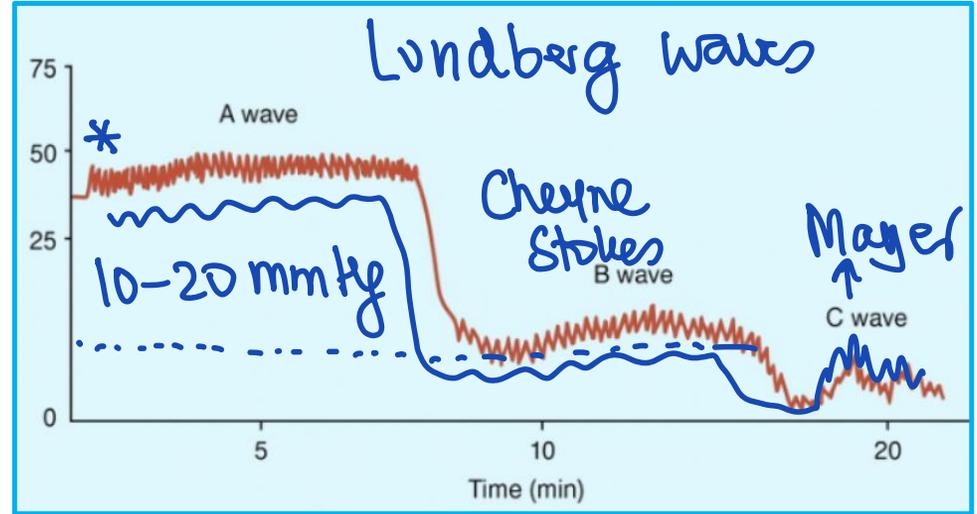


PHYSIOLOGY

1. The following pressure monitoring graph is used for assessment of which of the following conditions?

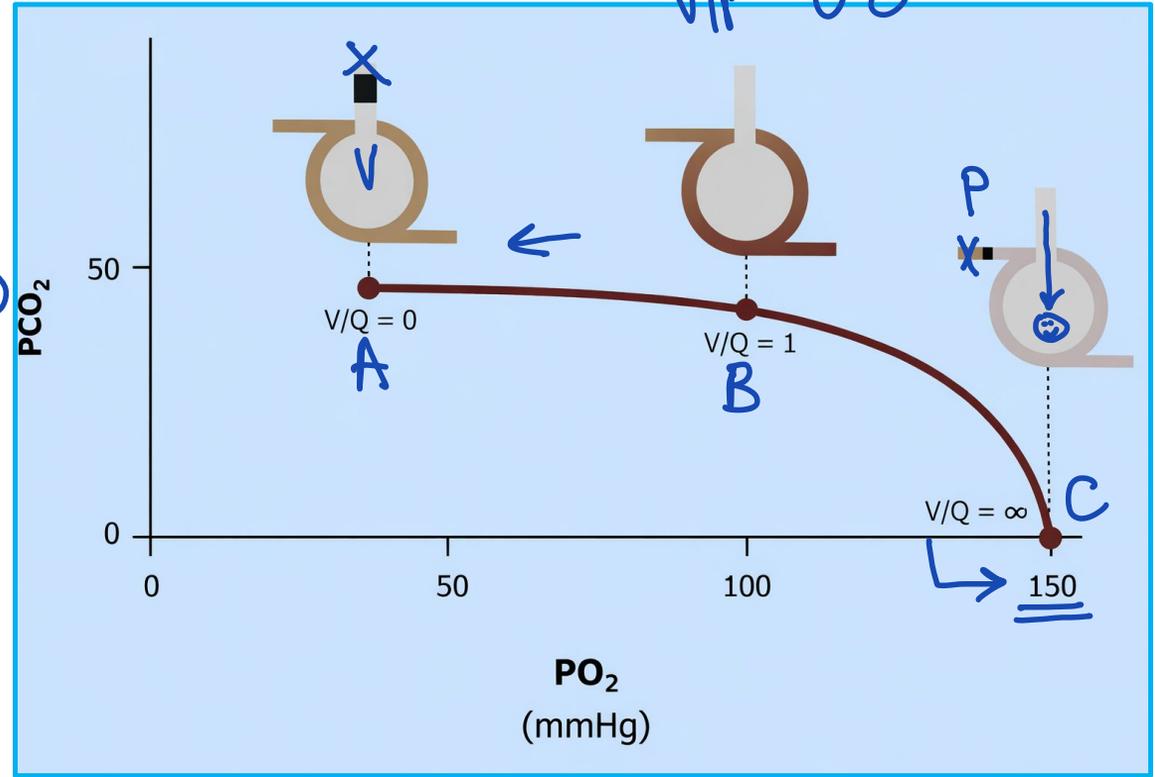
- a. Pulmonary artery hypertension
- b. Heart failure
- c. Raised ICP
- d. Photoreceptor stimulation in retina



2. The V/Q ratio of patient was found to be infinity as shown in this graph. Which of the following is not a cause of this value

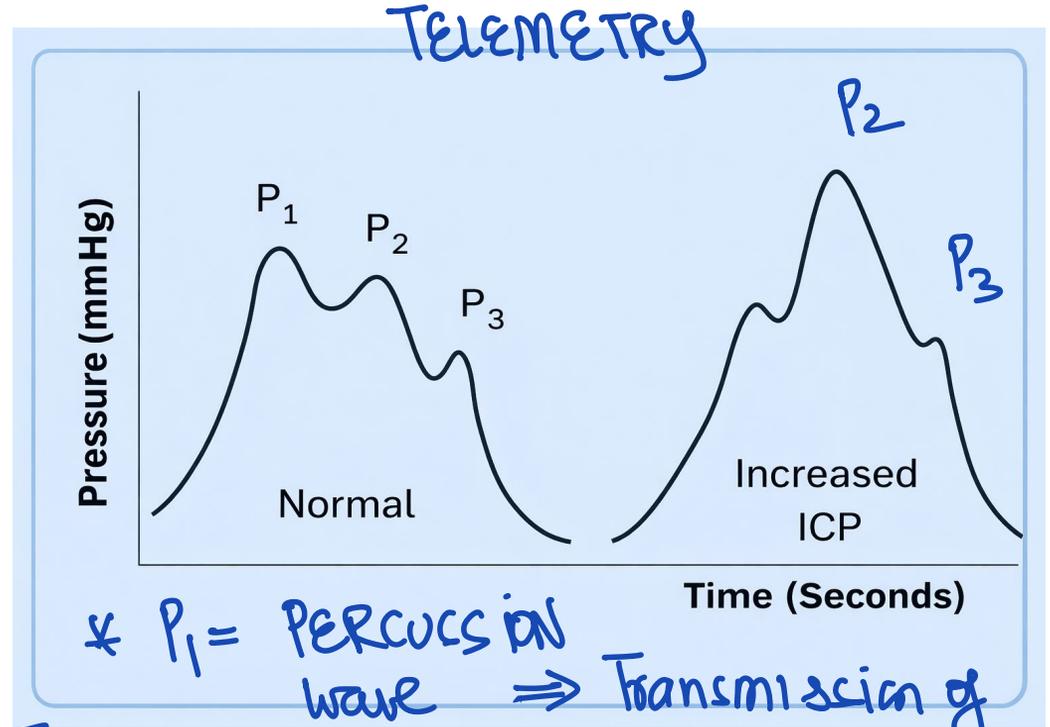
- a. Pulmonary embolism ✓
- b. Cardiogenic shock ✓
- c. Distributive shock ✓
- d. ARDS

$0/V = \infty$



3. You are monitoring a critically sick patient in Intensive care unit. Which is of the following is correct about this graph of patient with impending brain herniation?

- a. Percussion wave > Tidal wave
- b. Tidal wave > Percussion wave**
- c. Tidal wave > Dicrotic wave
- d. Percussion wave > Dicrotic wave



P₂ = Tidal wave
 = Compliance / elasticity of Brain
 P₃ = dicrotic wave

4. In a patient with chronic anaemia, the oxy-hemoglobin dissociation curve is shifted to the right. If the normal P50 for adult hemoglobin is 26 mm Hg, what is the most likely P50 value in this patient?

- a. 18 mm Hg
- b. 22 mm Hg
- c. 26 mm Hg
- d. 32 mm Hg

50% Hb is saturated @ P_{O_2} : 26 mm Hg

CADET - RIGHT -

$CO_2 \uparrow$ ACIDOSIS

2,3 DPG

Exercise

Temp \uparrow

MONGE'S

5. Which of the following is a characteristic feature found in patients of chronic mountain sickness?

- a. Cheyne stokes breathing
- b. Apneusis
- c. Cerebral oedema
- d. Polycythaemia, PAH, clubbing

Hypobaric Hypoxia
Epo ↑

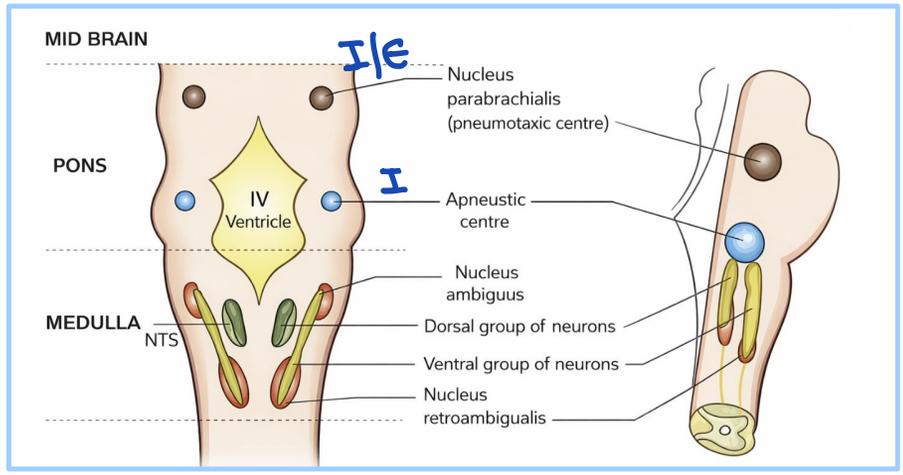
AMS $\left\{ \begin{array}{l} \text{HAFE : Nifedipine} \\ \text{(immediate descent), gammow Bag} \\ \text{HACE : dexamethasone} \end{array} \right.$ $\text{SpO}_2 \downarrow$

6. Regulation of respiration is a complex interplay of multiple respiratory centres in the brain stem. Which of the following is a correct description?

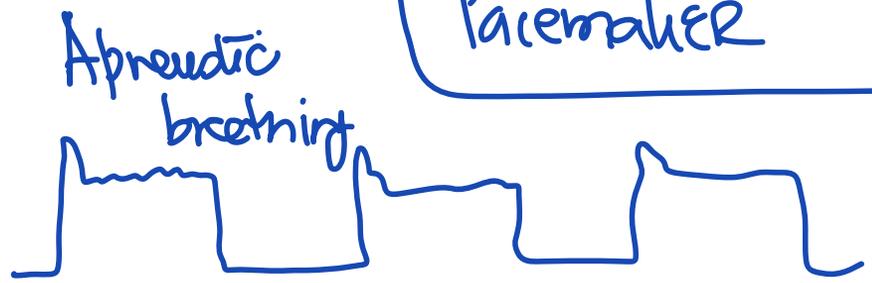
- a. Dorsal respiratory centre is in medulla and regulates expiration
- b. Ventral respiratory centre is in medulla and regulates inspiration
- c. Apneustic centre in pons stimulates respiration
- d. Pneumotaxic centre in pons stimulates ~~expiration~~

DIVE

switching between I/E



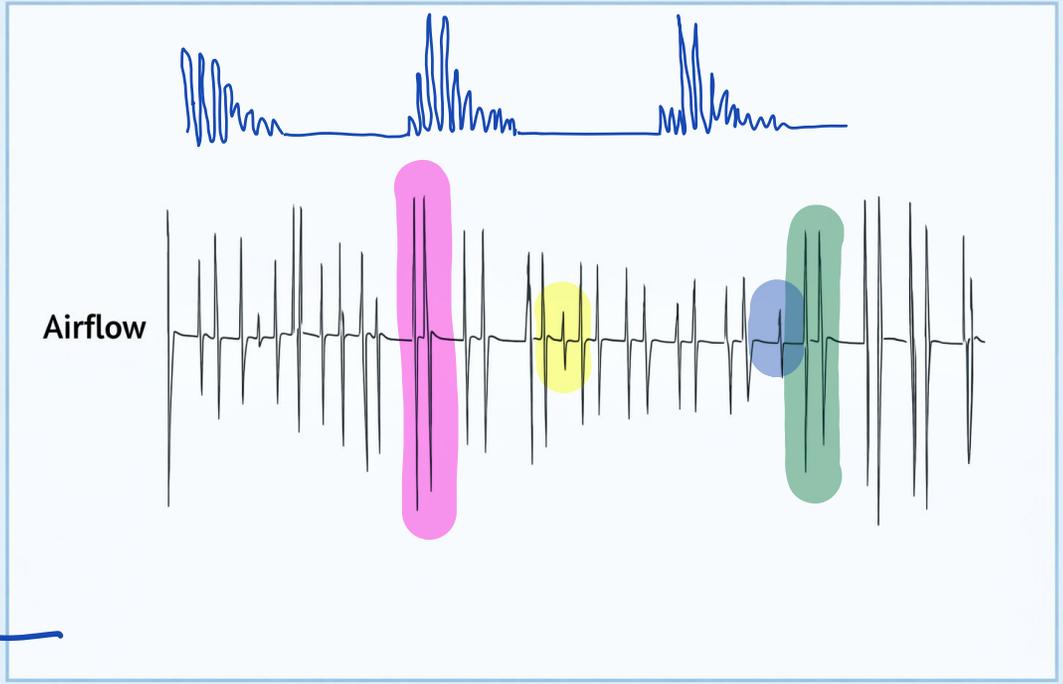
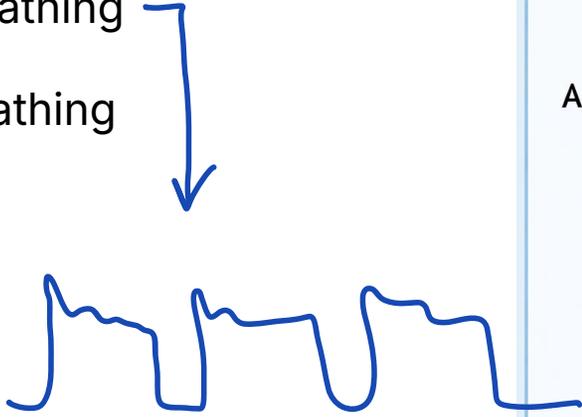
Prebotzinger complex
Pulse generator
Pacemaker



7. Which of the following is correct description of breathing pattern seen in this patient in the ER?

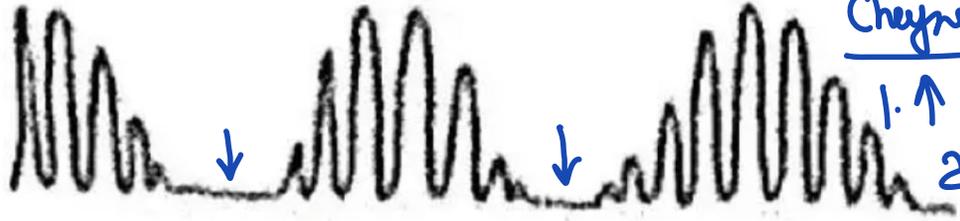
- a. Cheyne stokes breathing
- b. Biot's breathing
- c. Apneustic breathing
- d. Kussmaul breathing

b.





Biots: ↑ ICP



Cheyne Stokes

1. ↑ ICP

2. HF

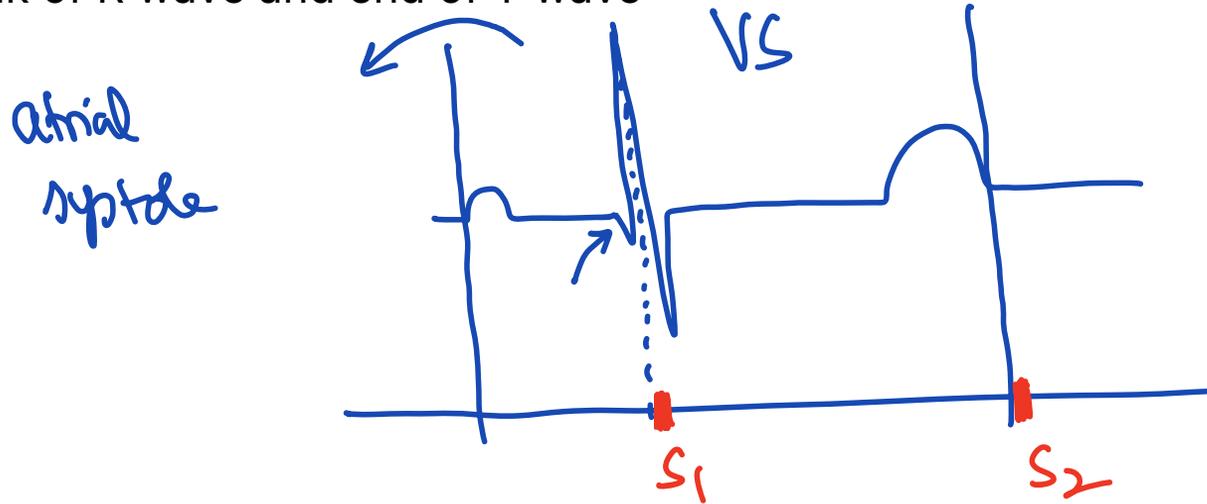
3. HAPE

8. Which of the following is correct description of electromechanical systole?

- a. Start of q wave and end of S wave
- b. Start of q wave and end of S2 heart sound**
- c. Peak of R wave and end of S2 heart sound
- d. Peak of R wave and end of T wave

START of systole : q
end " " : A₂P₂

q, S₂



* electromechanical dissociation \Rightarrow cardiac Puffin: C-Tamporade

* AV dissociation \Rightarrow 3rd degree H.B, V.T

9. Which of the following is correct about diffusion coefficient in the lung? =

- a. Directly proportional to surface area of gas exchange
- b. Inversely proportional to surface area of gas exchange
- c. Directly proportional to solubility and inversely related to molecular weight
- d. Directly proportional to molecular weight and inversely related to solubility

DLco

* DLco Capacity = $\frac{\text{gas exchange}}{\text{Surface Area, Hb}}$

diffusion coefficient = $\frac{\text{gas solubility}}{\text{Mol. weight}}$

Asthma: \uparrow

emphysema: \downarrow

PAH: \downarrow

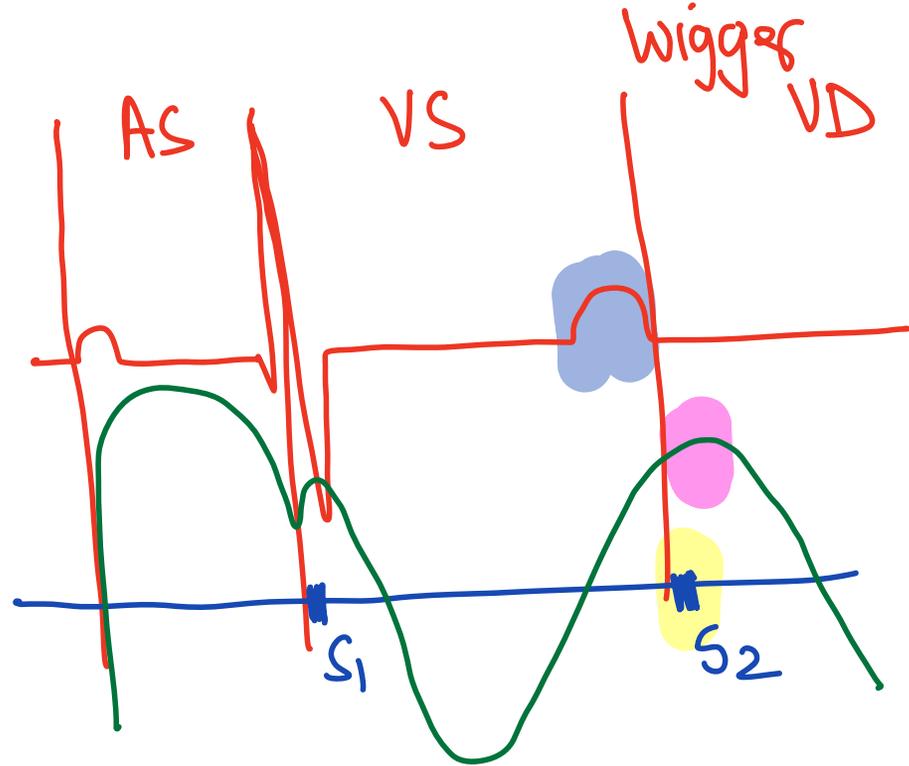
CHF: \uparrow

Cardiopulmonary syn: \uparrow

respiratory

10. Which of the following is correct about the sequence as per wiener diagram?

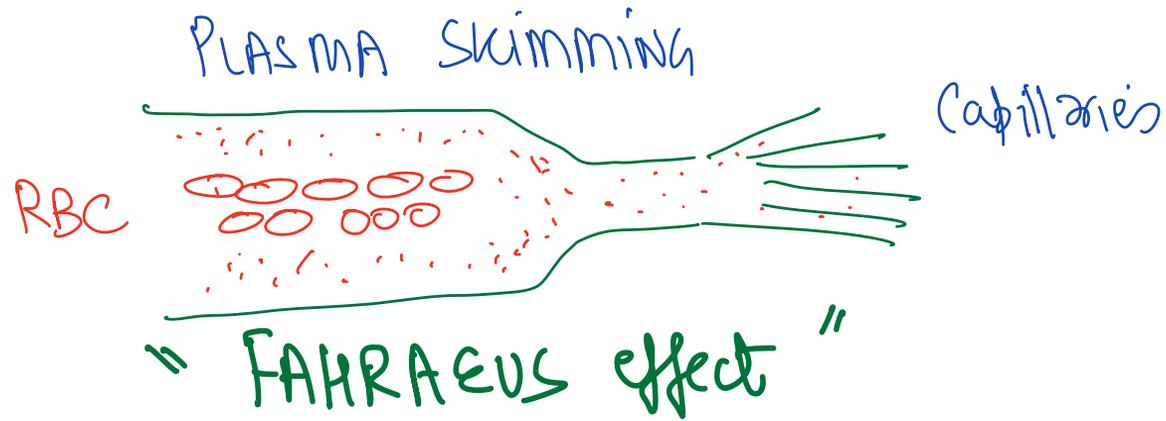
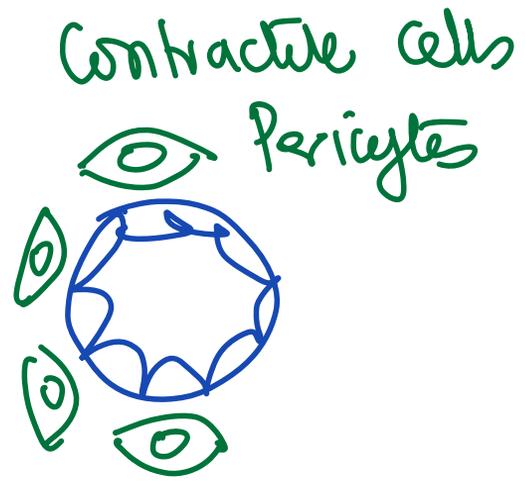
- a. T wave- S2-v wave
- b. S2- T wave- v wave
- c. T wave- Opening snap-y descent
- d. Opening snap-T wave – y descent



Act \Rightarrow 3 x Hb

11. Which of the following is **not** correct about capillaries?

- a. Haematocrit is lower than whole blood ✓
- b. Lack Tunica interna **INTIMA**
- c. Most permeable in glomerulus ✓
- d. Pericytes are seen in capillaries of skeletal muscle ✓



12. Correct about diving reflex?

- a. Bradycardia with apnea and decreased vascular resistance
- b. Bradycardia with apnea and increased vascular resistance
- c. Tachycardia with apnea and decreased vascular resistance
- d. Tachycardia with apnea and increased vascular resistance

vagus (+) : Face impact
epigastrium impact
↓
Cold H₂O

13. Which of the following features is seen in autonomic dysreflexia?

- a. Bradycardia with hypertension
- b. Tachycardia with hypotension
- c. Bradycardia with hypotension
- d. Tachycardia with hypertension

* Spinal cord injury
above T6



loss of ⊖ descending

control over sym ⊕

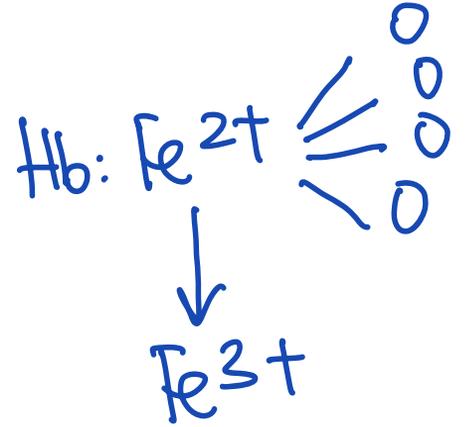
* BP ↑

HR ↓

Brainbridge	IVF:	RA ⊕ : HR ↑
Cushing		HR ↓ BP ↑ PERIODIC Breathing
Bezold- Jarisch (Coronary chemoreflex)		Bradycardia and hypotension as seen in inferior wall MI Receptors: Cardiac <u>ventricular C-fiber receptors</u>
Pulmonary Chemoreflex pulm edema		Bradycardia, apnea, hypotension Receptors: Pulmonary <u>C-fiber (J) receptors</u>
Autonomic dysreflexia		HR ↓ BP ↑

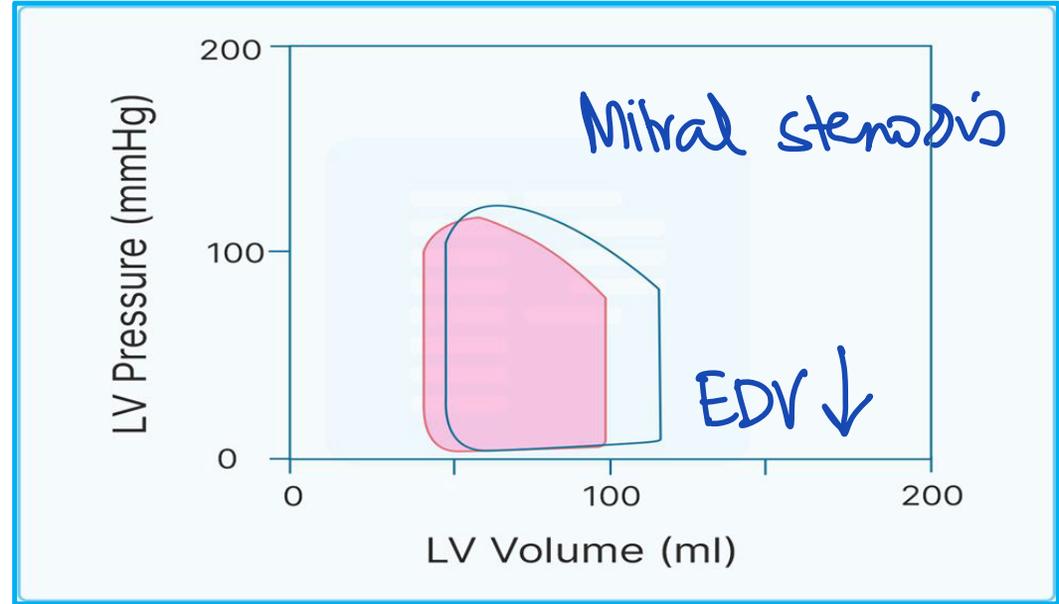
14. Industrial plant worker is found unconscious and unresponsive. His Sao2 on room air is 85%. Blood sample drawn and shows chocolate discoloration of blood. Diagnosis is?

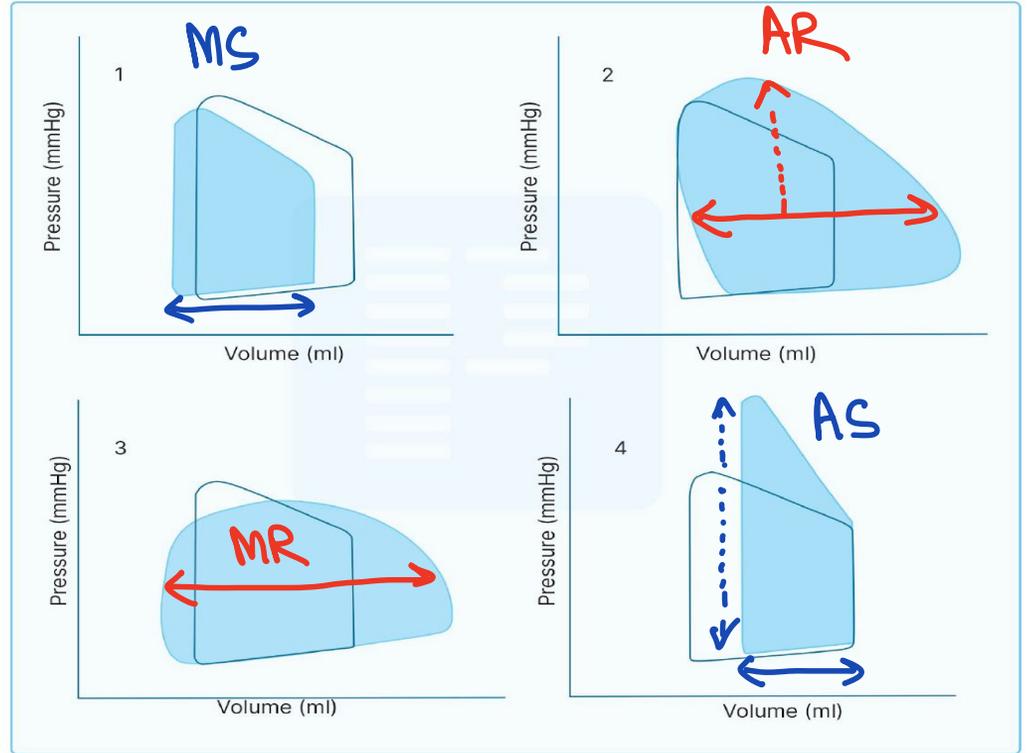
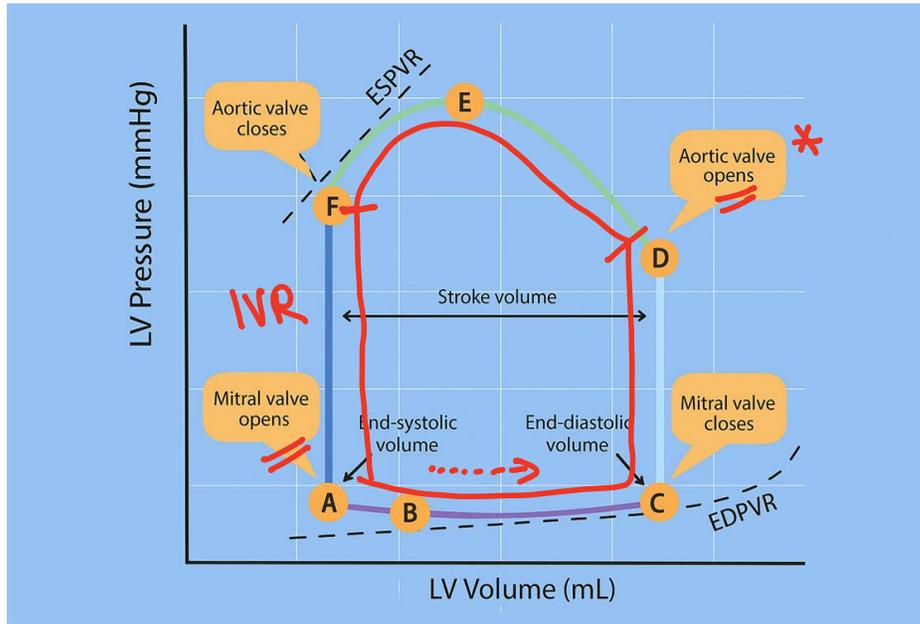
- a. Methemoglobinemia .
- b. CO poisoning
- c. Cyanide poisoning
- d. Hydrogen sulphide



15. Which murmur will be heard in the condition shown below in pressure volume graph of heart?

- a. Mid diastolic murmur
- b. Pansystolic murmur
- c. Ejection systolic murmur
- d. Decrescendo diastolic murmur





- 1: MDM
- 2: EDM
- 3: PSM
- 4: ESM

16. Highest AV difference is seen in which type of hypoxia?

- a. Ischemic → Cells will extract max O₂: V_{O₂} Reduce $A-V = \uparrow$
↓
- b. Hypoxic || A.O₂ ↓: A-V: ↓
- c. Anaemic ||
- d. Histotoxic → Cells cannot extract O₂: V_{O₂} Rise
 $A-V = \downarrow$
↑

A: Shock

B: COPD

C: CO poisoning, Meth-Hb

D: Cyanide poisoning

Cyanosis: deoxy Hb > 4

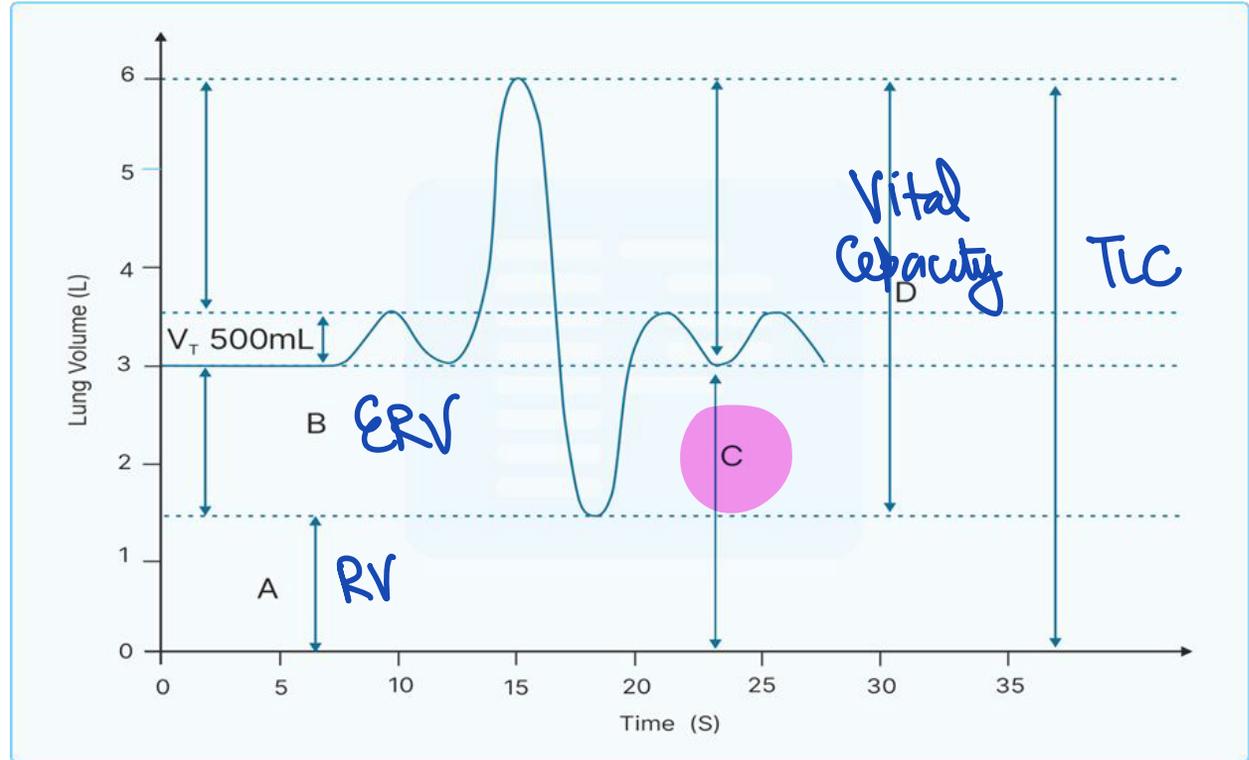
↓
⊖

ANEMIC HYPOXIA

17. Mark the correct functional residual capacity

ERV + RV

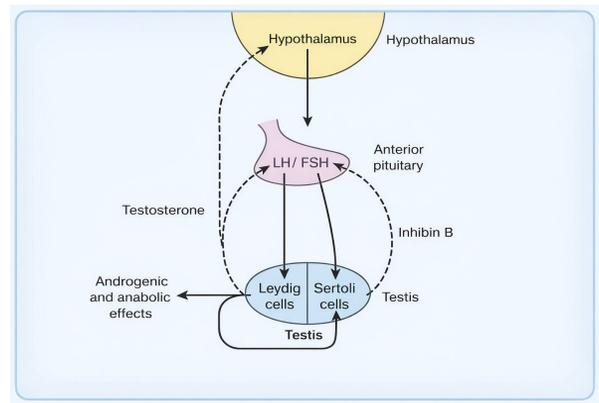
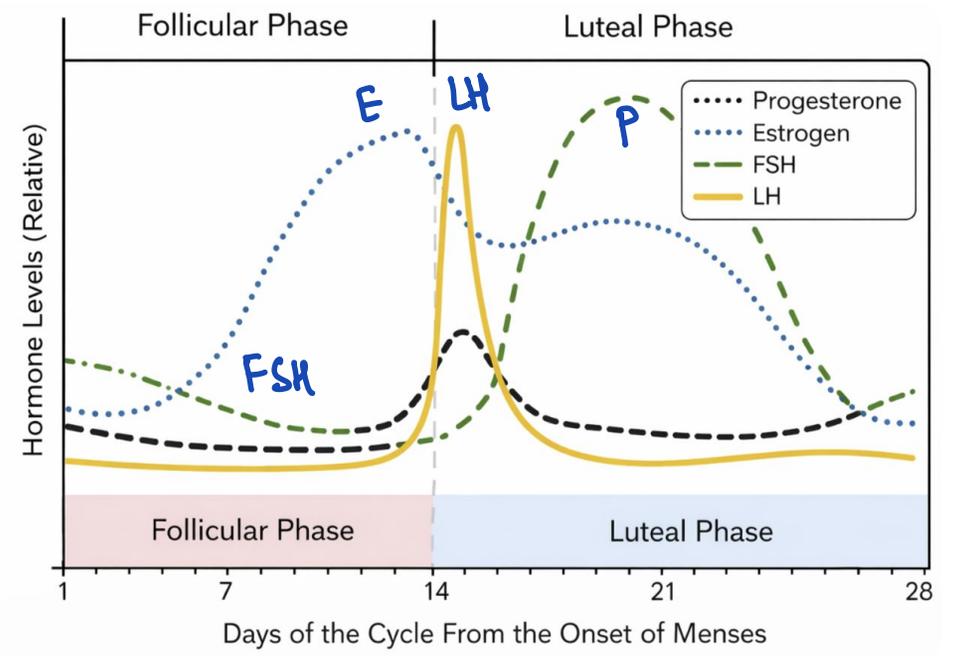
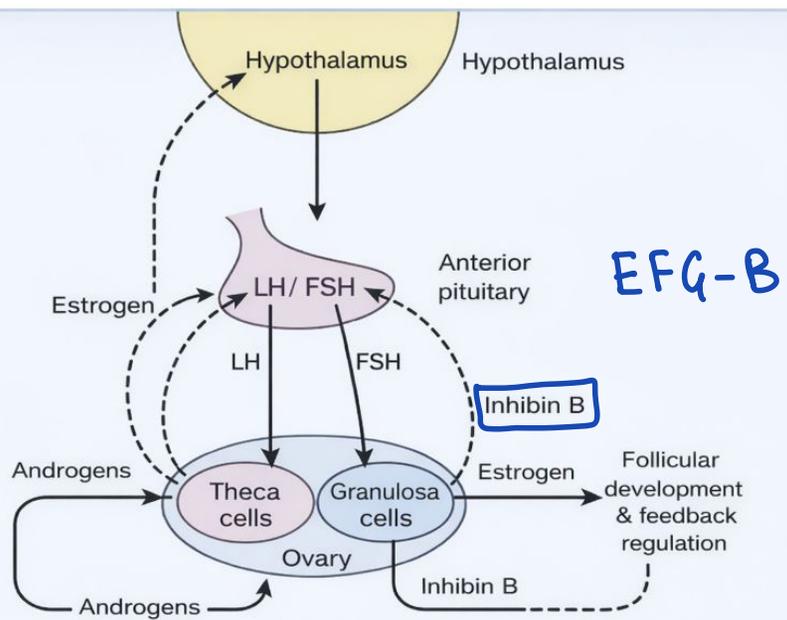
- a. A
- b. B
- c. C
- d. D



18. Which hormone will decrease with aging in a female?

- a. LH ↑
- b. FSH ↑
- c. Testosterone
- d. Epinephrine

ESTROGEN ↓
progesterone ↓

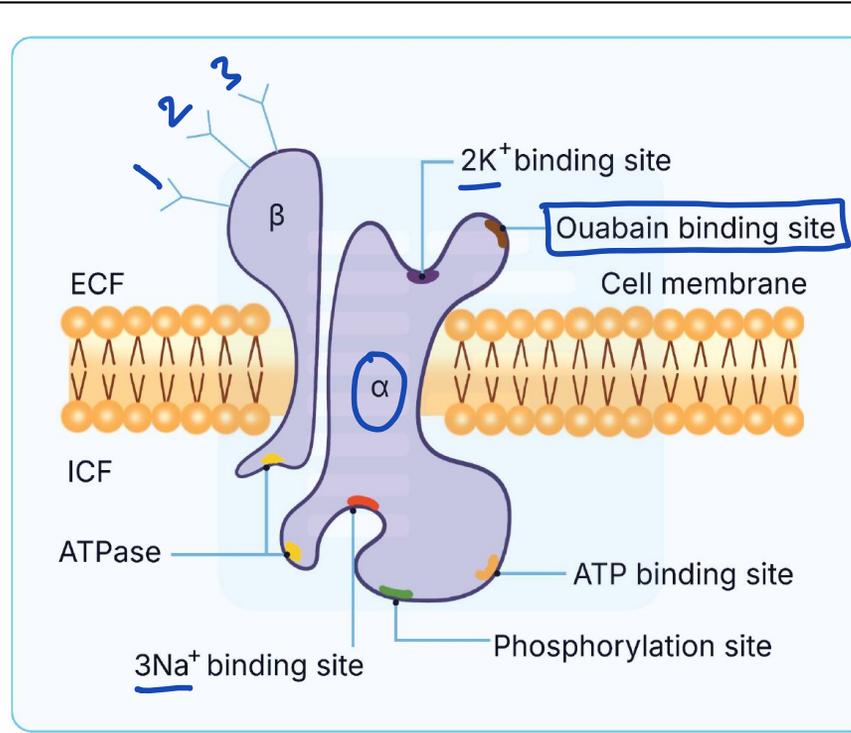


19. Which of the following is correct about Na-K ATPase pump?

- a. Alpha subunit has 5 binding sites and beta subunit has 3 extracellular glycosylation sites
- b. Alpha subunit has 2 binding sites and beta subunit has 3 binding sites
- c. Alpha subunit has 3 binding sites and alpha subunit has 2 binding sites
- d. Alpha subunit has 3 extra cellular glycosylation sites and beta subunit has 5 binding sites

Alpha subunit (catalytic unit) has 5 binding sites: 3 Na^+ sites (intracellular side) and 2 K^+ sites (extracellular side). It also binds ATP and cardiac glycosides (e.g., digoxin).

Beta subunit (glycoprotein unit) has 3 extracellular glycosylation sites. It is important for structural stability and membrane localization, but not catalysis.



digoxin

20. Child from slums went for open air defecation and was attacked by pack of stray dogs. He subsequently developed rabies. The rabies will attack the nervous system using _____ in axonal transport system?

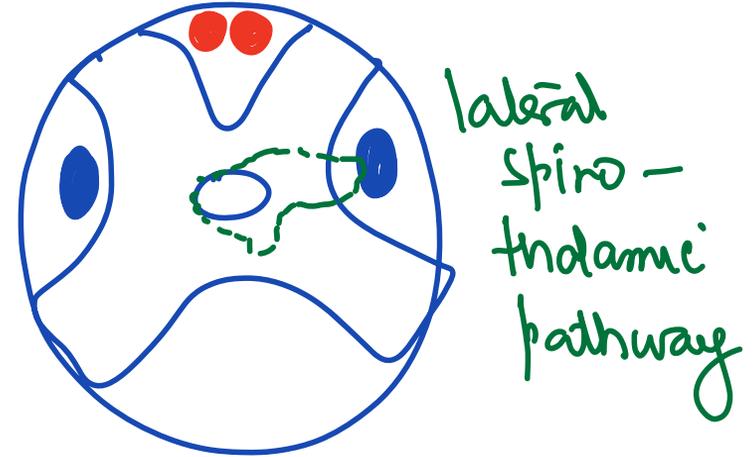
- a. Kinesin
- b. Dynein
- c. Actin
- d. Myosin

Tetanus toxin
* Retrograde : Rabies : dynein

* Anterograde : H2O : ← kinesin
HERPES
Simplex

21. Patient fell down from stairs and sustained ankle sprain. Detailed examination shows loss of pain and temperature and sparing of touch and vibration affecting arms, shoulders. This is seen in which of the following conditions?

- a. Brown Sequard syndrome
- b. Syringomyelia ← Arnold Chiari Type 1
- c. Subacute combined demyelination of spinal cord
- d. Tabes dorsalis



22. Which of the following will inhibit SGLT1?

- a. Empagliflozin SGLT2i
- b. Phlorizin SGLT1 ⊖ SGLT2 ⊖
- c. Dapagliflozin SGLT2i
- d. Moxifloxacin DNA gyrase ⊖

SGLT1 ⊖ : GLUT
SGLT2 ⊖ : PCT

SOTAGLIFLOZIN

* SGLT1 : ORS

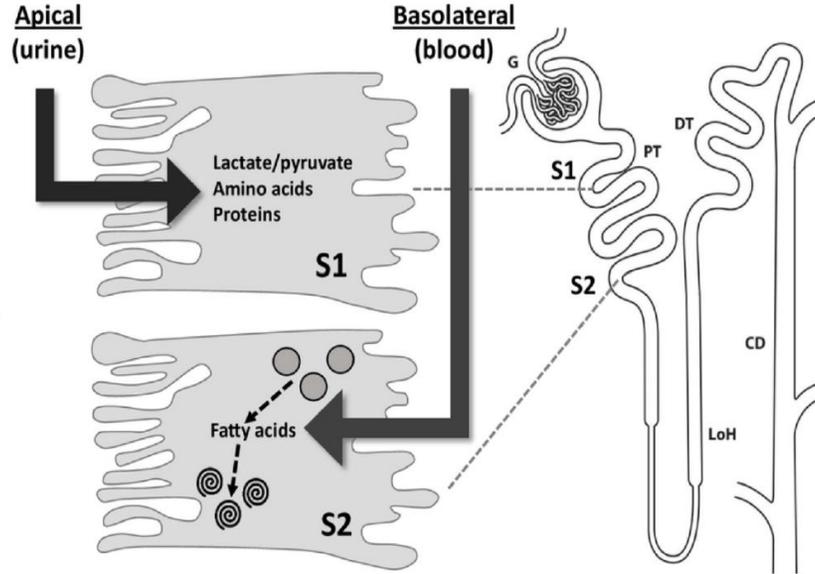
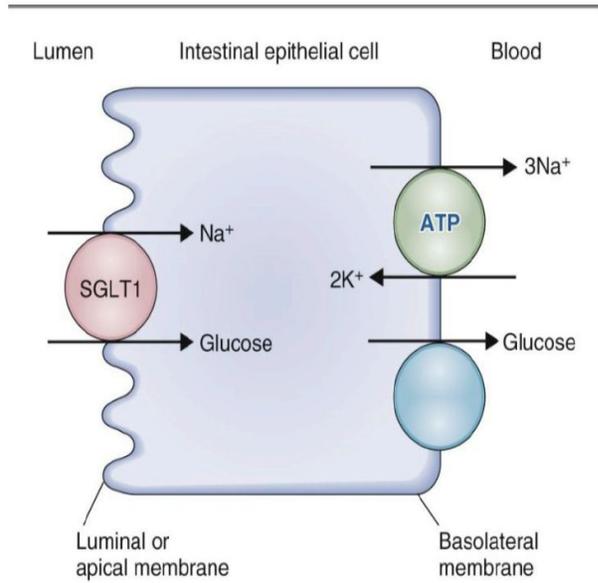
→ CONTROL PP spike
→ ↑ urinary loss of sugar

- HFpEF
1. ARNI
 2. SGLT2i

- HF rEF major mortality ↓
1. ARNI or ACEi .
 2. β blocker
 3. SGLT2i

4 **SGLT** = sprindectone
MRA = spindectone

Phlorizin is a non-selective SGLT inhibitor (inhibits both SGLT1 and SGLT2).



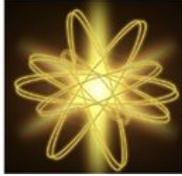
23. Which of the following is an example of secondary active transport?

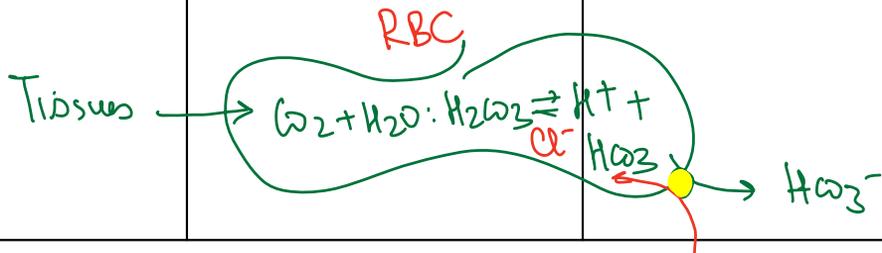
a. H-K-ATPase

b. Na-K pump

c. Ca ATPase

d. Na- Ca exchanger **ANTI**PORT

Type	Definition	Direction of Transport	Energy source	Examples
<p>Primary Active Transport</p> 	<p>Directly uses ATP hydrolysis to pump ions/ molecules against gradient</p>	<p>Solute moves against gradient</p>	<p>ATP (Direct)</p> 	<ul style="list-style-type: none"> • Na⁺-K⁺ ATPase (3Na⁺ out, 2K⁺ in) • Ca²⁺ ATPase (SERCA in SR) • H⁺-K⁺ ATPase (parietal cells, renal tubules)
<p>Secondary Active transport</p> 	<p>Uses ion gradient created by primary pumps to move other solutes</p>	<p>One solute moves down gradient, another moves against</p>	<p>Ion gradient (usually Na⁺ or H⁺) maintained by ATP pumps</p>	<p>Cotransport: symport</p> <ul style="list-style-type: none"> • Na⁺- glucose cotransporter (SGLT1, SGLT2) • Na⁺ - Amino acid cotransporters <p>Exchange (antiport):</p> <ul style="list-style-type: none"> • Na⁺ - Ca²⁺ exchanger (NCX) • Cl⁻ - HCO₃⁻ exchanger (AE 1 in RBCs) <p><i>Amion exchange</i></p>

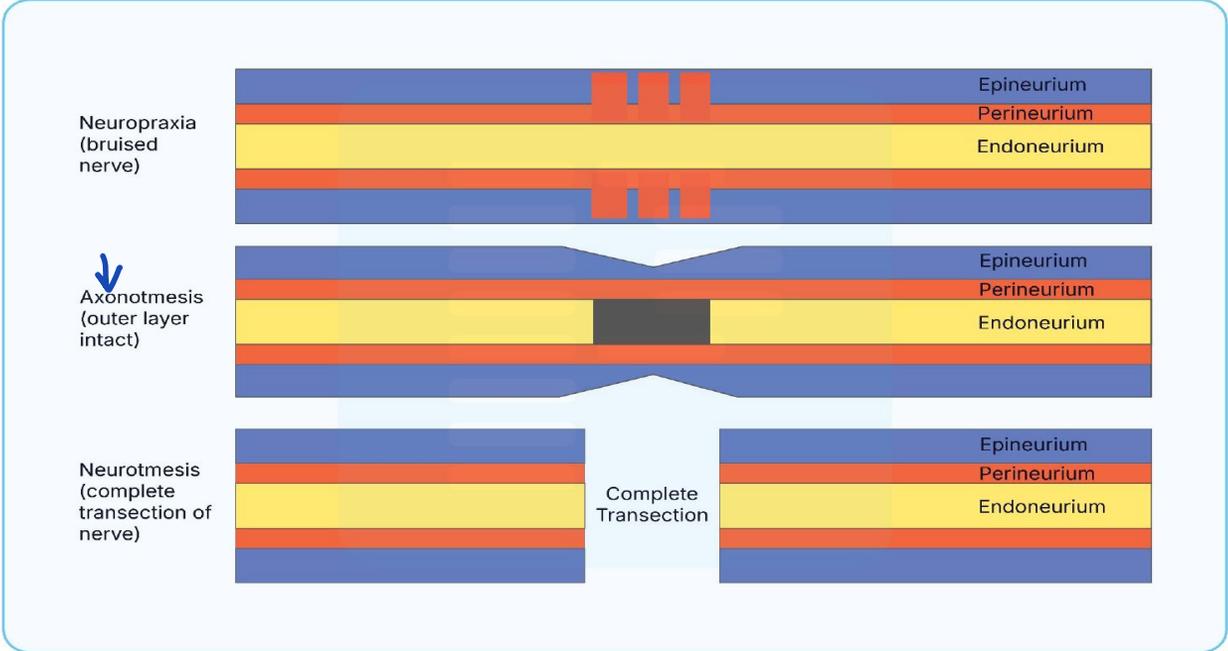


24. 30-year-old man falls asleep after heavy alcohol intake with his arm draped over a chair. The next morning, he develops weakness of wrist extension with wrist drop. Examination reveals intact triceps strength but weakness of extensors of the wrist and fingers. Nerve conduction studies show a transient conduction block at the spiral groove of the humerus. Which of the following best describes the structural status of the nerve in this condition?

- a. Both axon and endoneurium are ~~disrupted~~
- b. Axon is ~~disrupted~~ but endoneurium is intact
- c. Lack of wallerian degeneration
- d. Extensive ~~wallerian~~ degeneration

↓
NEUROPRAXIA

Saturday night palsy = compression neuropathy of radial nerve = neuropraxia.



Nerve Injury Comparison

Feature	Neuropraxia	Axonotmesis	Neurotmesis
Pathology	Conduction block only (myelin Injury) ✓	Axon disrupted, endoneurium intact	Complete disruption of axon + supporting structures
Continuity of axon	Intact normal		
Endoneurium/ perineurium/ epineurium	Preserved	Preserved (endoneurium), higher layers intact	
Wallerian degeneration	No	Yes ✓	Yes ✓
Recovery	Complete, spontaneous (days – weeks)	Possible, by axonal regeneration (mm/day) ✗	Poor needs surgery
Examples	Saturday night palsy/ pressure palsy CRUTCH palsy	Crush injury Tight plaster cast Fracture compression, road traffic accident	Laceration, <u>penetrating trauma</u>

25. All of the following increase the activity of Na-K pump except?

a. Thyroxine

b. Aldosterone

c. Insulin

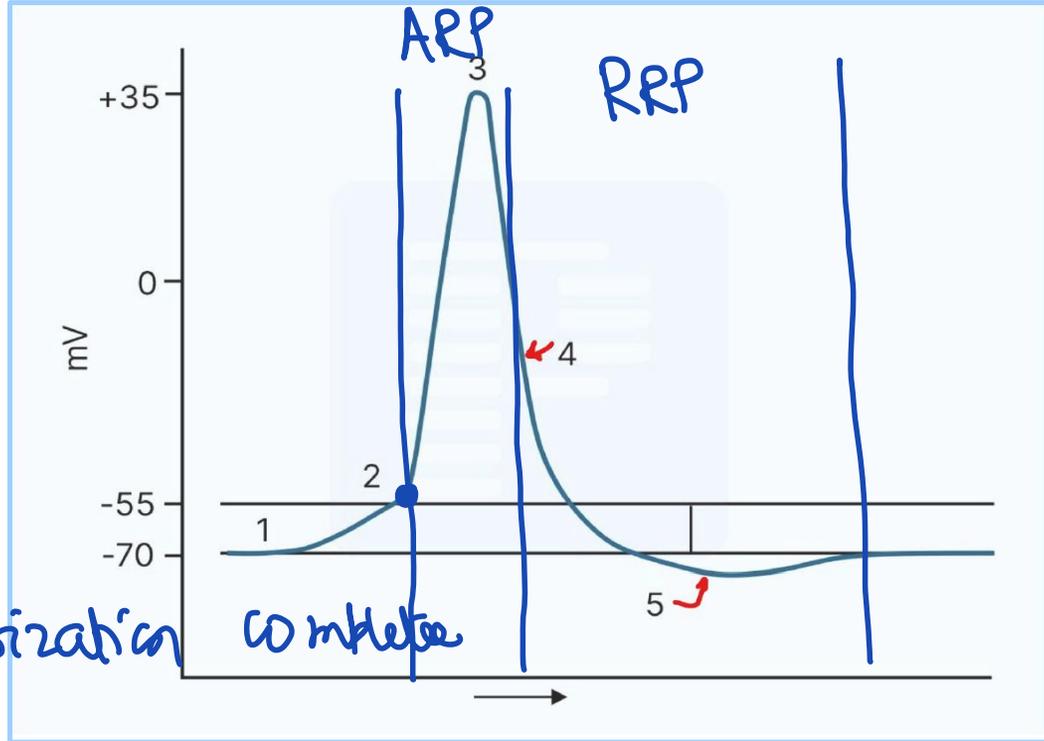
d. Oligomycin ATP ↓

26. Which of the following markings is correct about absolute refractory period of a nerve?

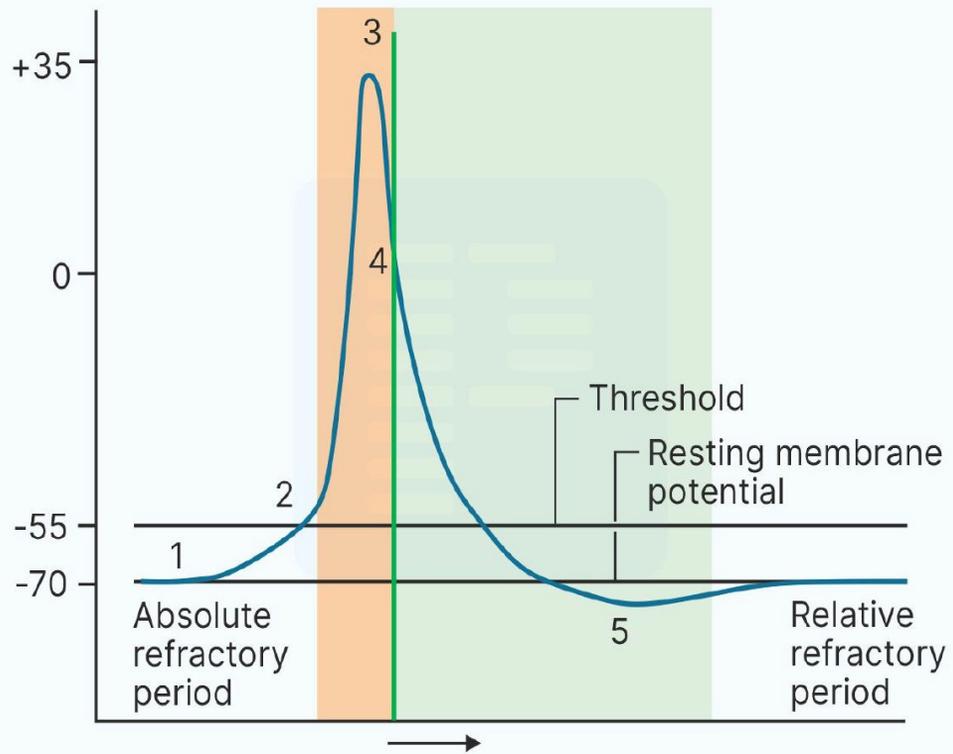
- a. 1 to 2
- b. 1 to 4
- c. 2 to 3

d. 2 to 4
ARP

⇒ Threshold potential -
1/3 rd of Repolarization complete



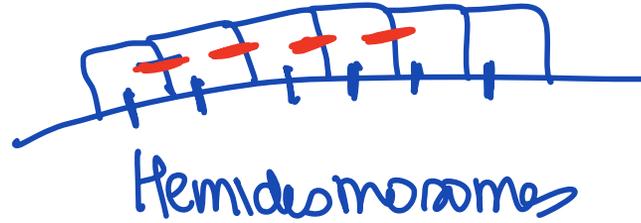
Refractory Periods

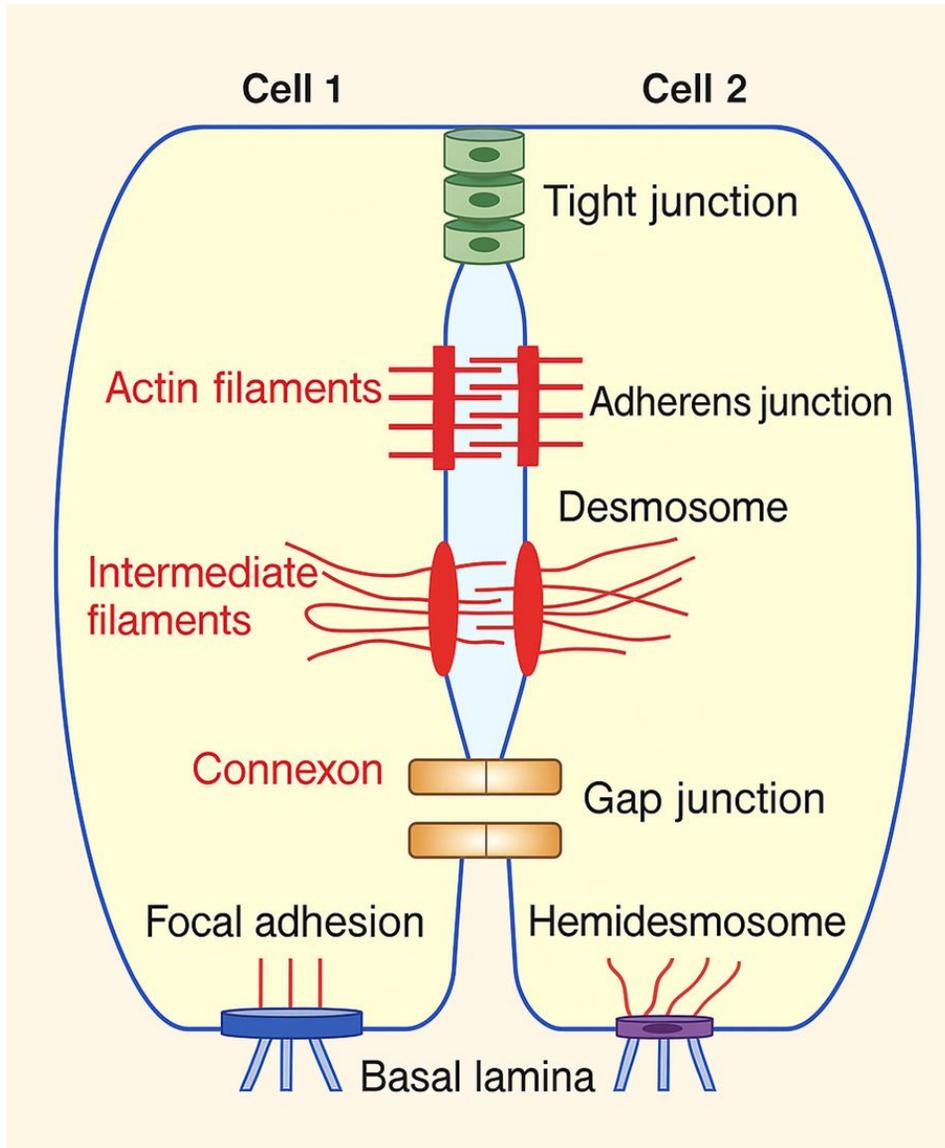


27. Cell to basal lamina junction is by which of the following?

- a. Desmosomes
- b. Hemidesmosomes
- c. Tight junctions
- d. Gap junctions

- Desmosomes





28. A 24-year-old male presents with rapidly progressive flaccid paralysis, areflexia, and impaired vibration and position sense. LP report shows cyto-albuminological dissociation. He is diagnosed with Acute Inflammatory demyelinating polyradiculoneuropathy. Which of the following nerve fiber types are predominantly affected in this condition?

- a. $A\alpha$ and $A\beta$ fiber
- b. $A\delta$ and B fibers
- c. $A\delta$ and C fibers
- d. B and C fibers

demyelination of P. nerves
nerve root

$A\alpha$ = Motor to skeletal muscles
 proprioception from " ← muscle Spindle: Tone

$A\beta$
 ↳ Touch, pressure
 Vibration

↑
 golgi Tendon organ: Tension

A α fibers (large myelinated motor): responsible for paralysis and areflexia.

A β fibers (large myelinated sensory): carry vibration and proprioception → sensory ataxia.

A δ fibers (small myelinated): pain, temperature → not the main fibers in AIDP.

C fibers (unmyelinated): autonomic, slow pain → involvement is secondary, not primary.

B fibers: preganglionic autonomic → usually spared.

29. A 55-year-old man with a 10-year history of **type 2 diabetes mellitus** presents with burning pain in both feet, numbness, and occasional dizziness on standing. On examination, he has impaired pain and temperature sensation in a "stocking distribution," reduced ankle reflexes, and postural hypotension. Which of the following nerve fibers are predominantly affected in this patient's condition?

a. $A\alpha$ and $A\beta$ fibers

b. $A\delta$ and C fibers

c. B fibers and $A\gamma$ fibers

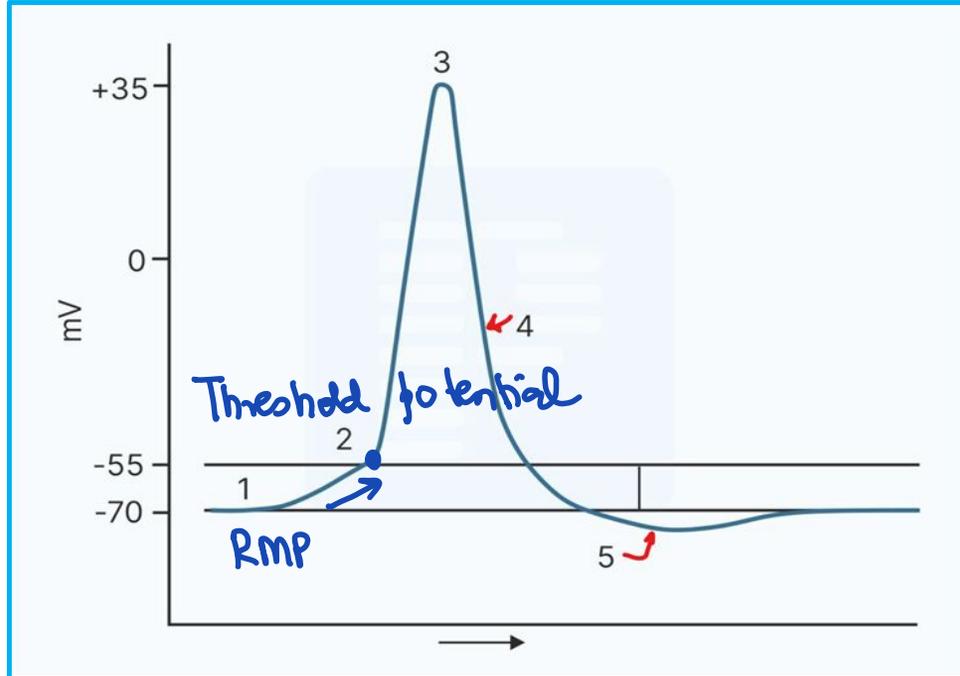
d. $A\alpha$ and $A\delta$ fibers

* $A\delta$ = epinothic : sharp prick pain

* C = propathic : dull ache

30. Which of the following markings is correct about Hodgkin cycle seen during nerve AP? ✓

- a. 1 to 2
- b. 1 to 4
- c. 2 to 3
- d. 2 to 4

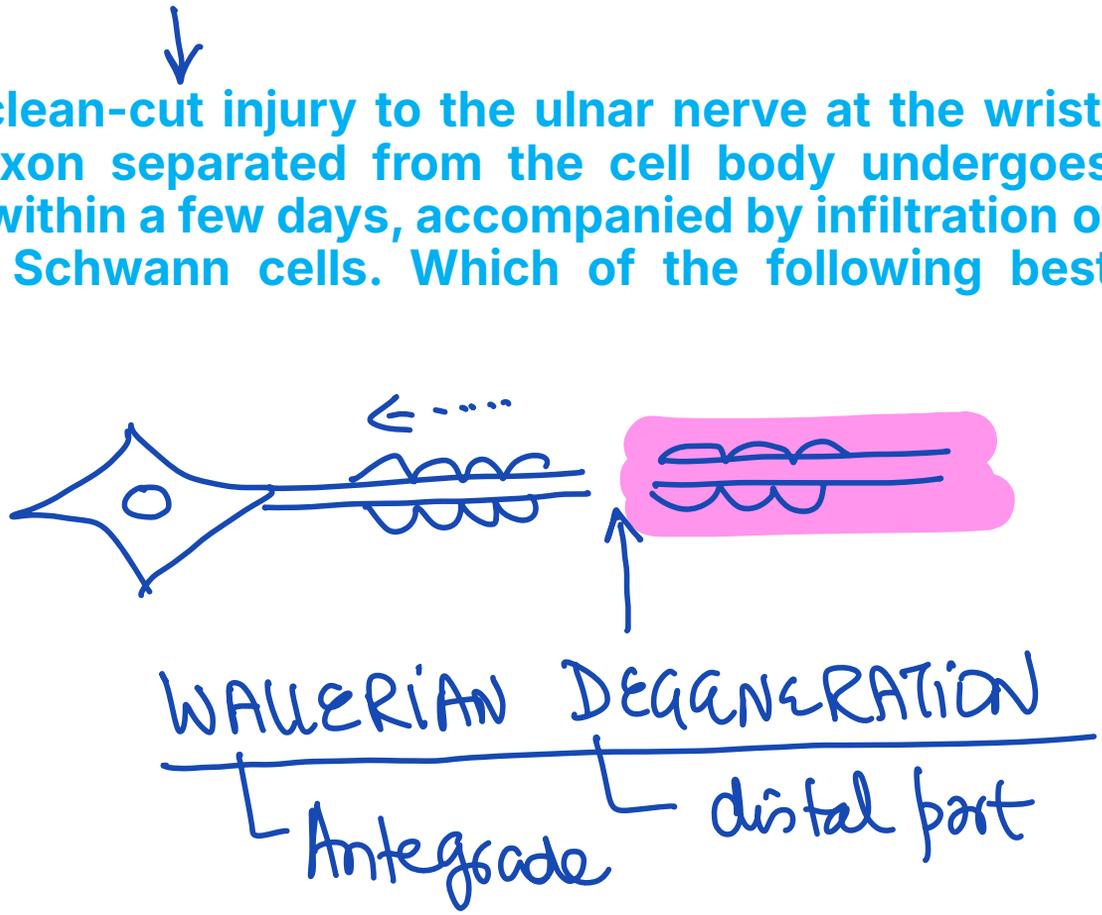


⊕ feedback opening of Na^+
↓
more opening of Na^+



31. A 22-year-old man sustains a clean-cut injury to the ulnar nerve at the wrist. After the injury, the part of the axon separated from the cell body undergoes fragmentation of axons and myelin within a few days, accompanied by infiltration of macrophages and proliferation of Schwann cells. Which of the following best describes this process?

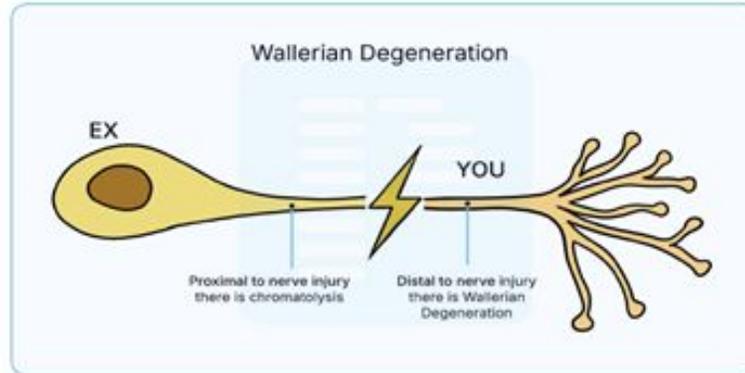
- a. Retrograde degeneration
 - b. Chromatolysis
 - c. Anterograde degeneration
 - d. Nissl body degeneration
- RER





BREAK UP STORY

1. You create a wall from the Ex
2. The distal part is YOU moves forward anterograde
3. This move on is called Wallerian degeneration
WAD = Wallerian **anterograde** degeneration



4. What happens to EX is the proximal part due to lack of attention will suffer chromatolysis

32. 10-year-old child is having Gower sign and Pseudohypertrophy of calf muscles. He is diagnosed as having defect of dystrophin protein in skeletal muscles. Which of the following best describes dystrophin?

- a. Structural proteins
- b. Regulatory protein
- c. Contractile protein
- d. Relaxation protein

↓

T = Titin
N = Nebulin
D = dystrophin
A = α-actinin
D = Desmin
M = myomesin

Largest protein
Titin
Largest gene
dystrophin

* Trop I : ⊖

* Trop T : binds To
Troponin

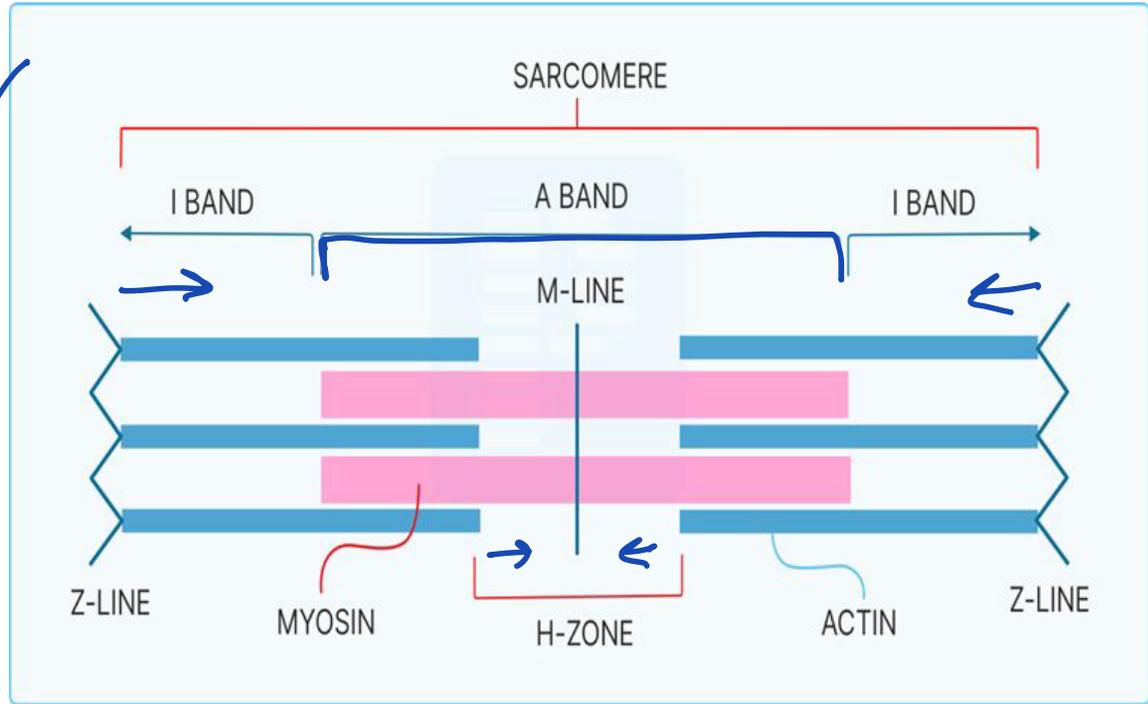
33. Which of the following is not correct about sarcomere contraction?

a. Z lines comes closer ✓

b. Length I band decreases ✓

c. A band increases

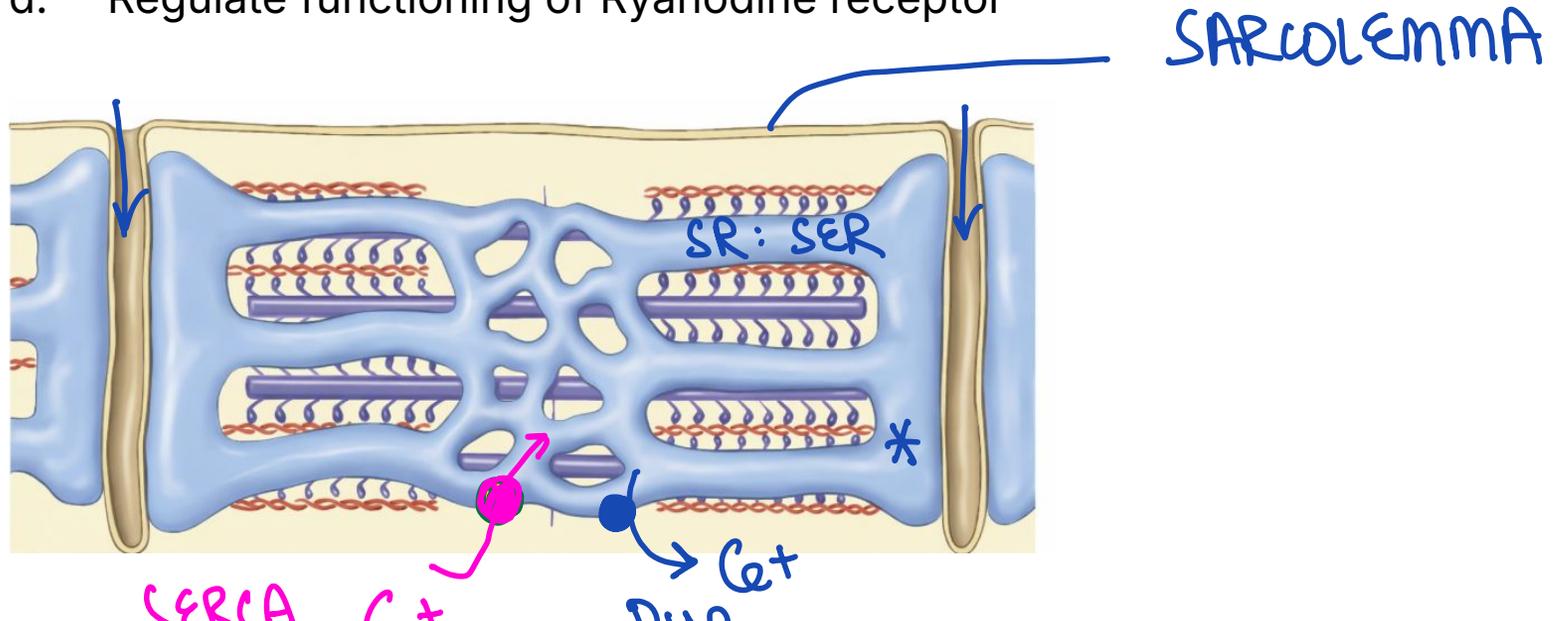
d. H zone decreases ✓



Brand/ Line	Memory Hack
Z line	Zips in
I band	I = it shrinks
H zone	H= Hides away
A band	A = Always same

34. What is correct about T tubules that play role in excitation contraction coupling?

- a. Present in sarcoplasmic reticulum
- b. Present in sarcolemma**
- c. Regulate functioning of SERCA
- d. Regulate functioning of Ryanodine receptor



35. A 25-year-old man develops generalized muscle rigidity, hyperthermia, tachycardia, and metabolic acidosis shortly after administration of halothane and succinylcholine during surgery. Malignant hyperthermia is suspected. Which of the following gene–chromosome combinations is most commonly implicated in this condition?

- a. RYR1 gene on chromosome 19
- b. CACNA1S gene on chromosome 1
- c. DMD gene on chromosome Xp21 ✓
- d. CFTR gene on chromosome 7 CF

→ Hypokalemic periodic paralysis

36. Which of the following is correct about Sarco-endoplasmic reticulum Ca- ATP Ase?

- a. Skeletal muscle contraction
- b. Skeletal muscle relaxation
- c. Smooth muscle contraction
- d. Smooth muscle tetanisation

37. Which is not correct about cardiac muscle?

a. Intercalated disc ✓

SYNCTIVIM

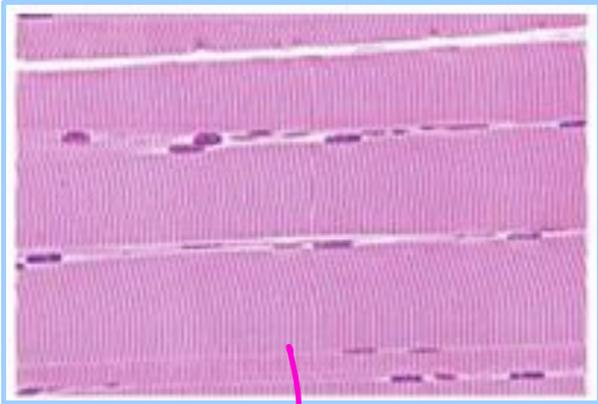
b. Dense bodies

Smooth muscle

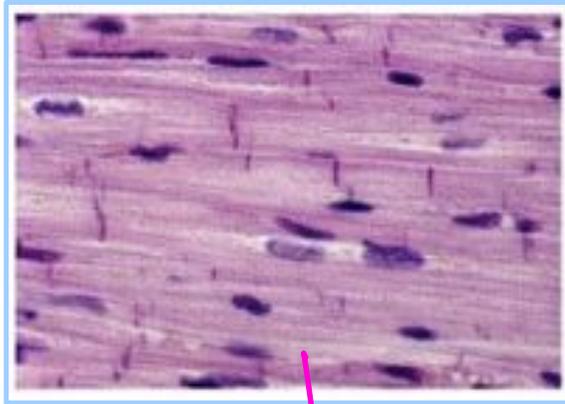
c. High myoglobin content

O₂

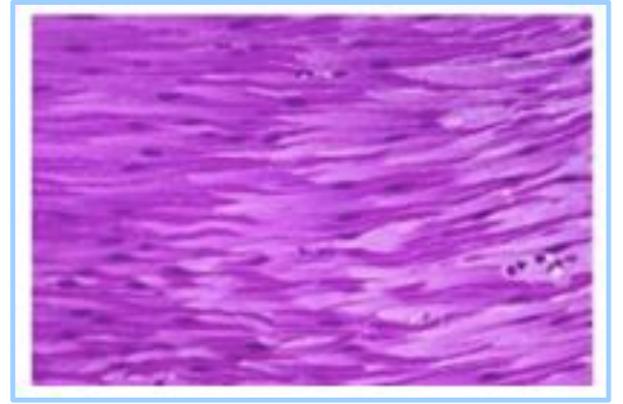
d. Alpha MHC isoform predominates in atria and beta MHC isoform predominates in ventricles ✓



↓
Skeletal



↓
Cardiac

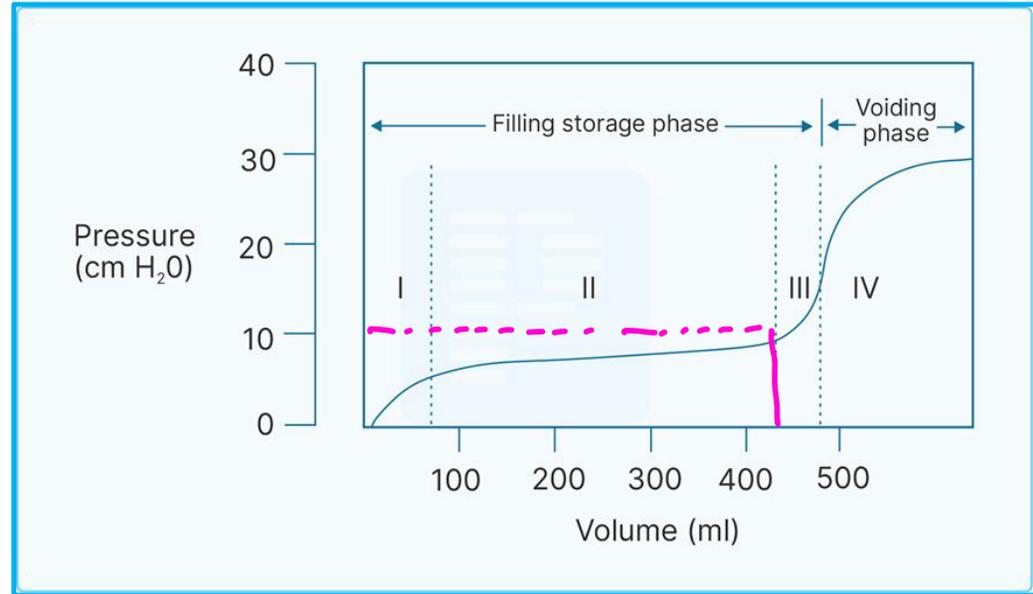


Smooth muscle

38. Shown below is a cystometrogram that shows which of the following?

- a. Latch bridge mechanism
- b. Elasticity
- c. Plasticity
- d. Tetanic potentiation

$\Delta P : \Delta Volume$



39. Actin active site is covered by?

- a. Troponin T
- b. Tropomyosin
- c. Troponin I
- d. Troponin C

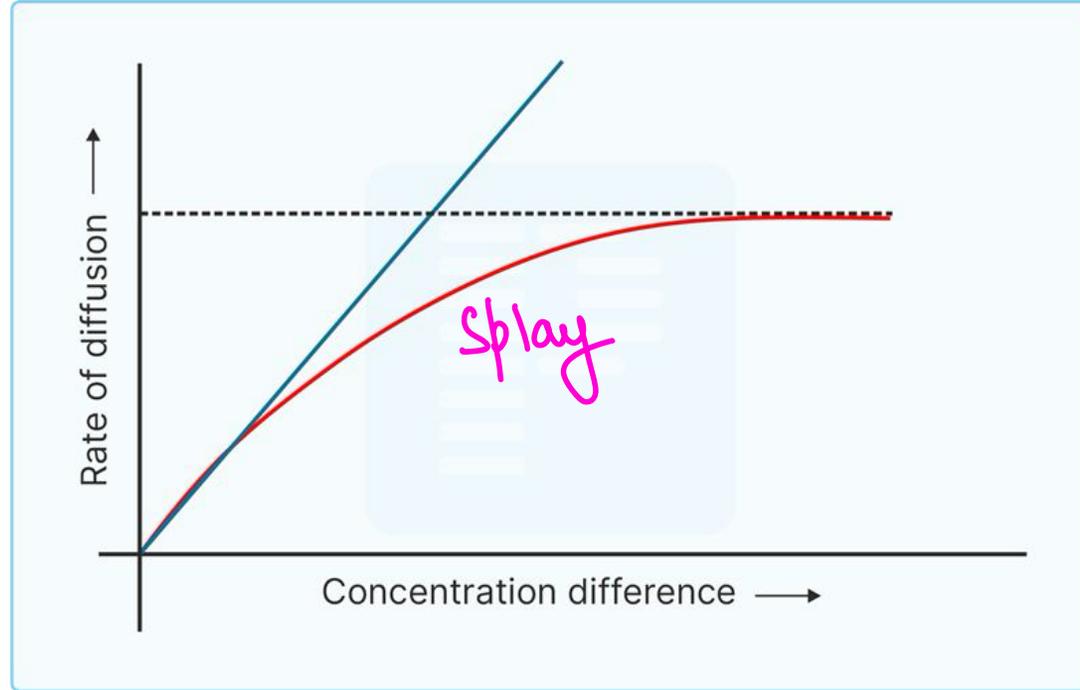
40. Which of the following is absent in smooth muscle?

- a. Actin
- b. Myosin
- c. Troponin
- d. Tropomyosin

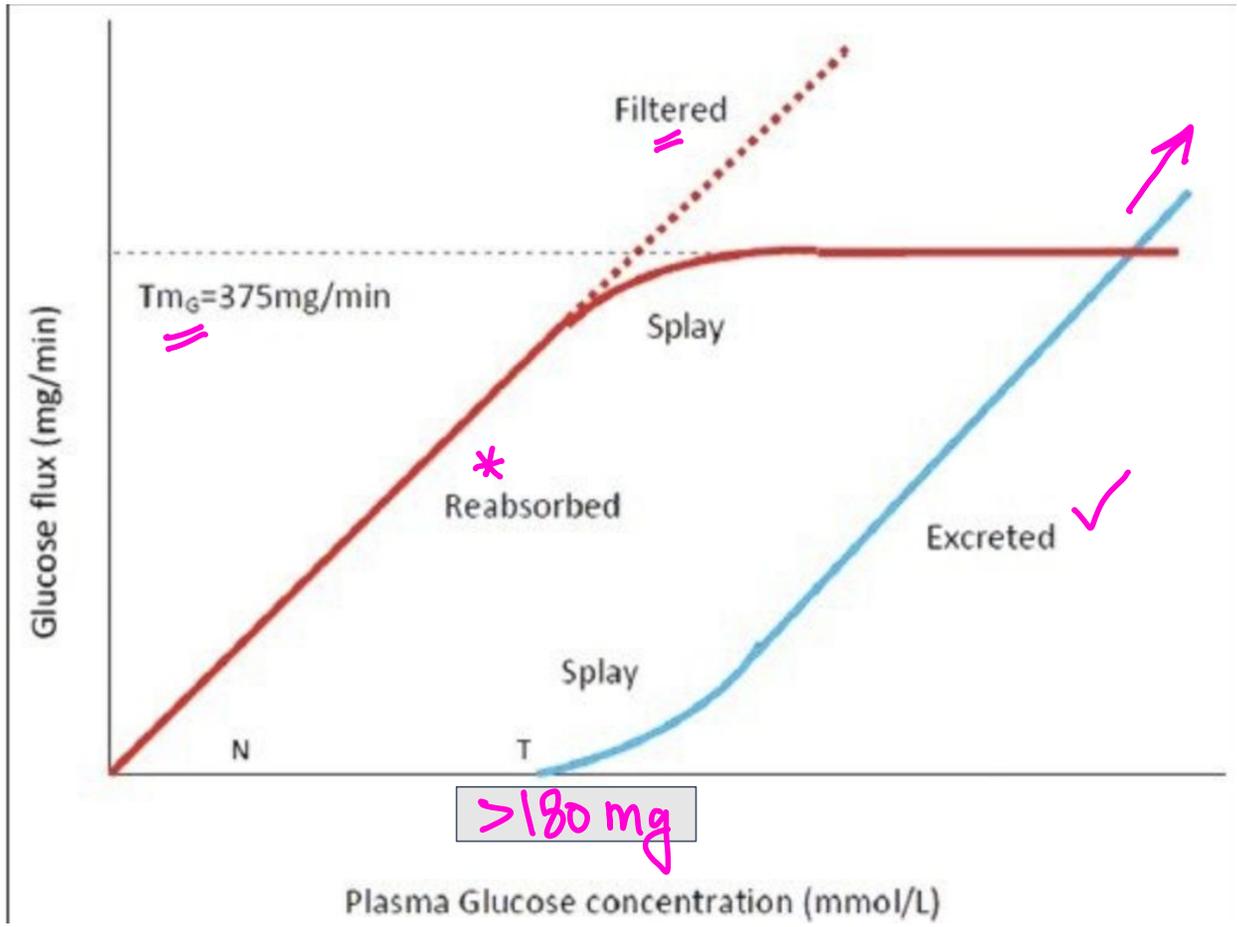
Smooth muscle: ^{*}Calm guy
Calmodulin *

41. The red graph shown below is representation of which of the following?

- a. Simple Diffusion
- b. Facilitated diffusion**
- c. Non-ionic diffusion
- d. Osmosis



Since a plateau is being obtained it implies that carrier protein is being used and can hit a limit due to carrier proteins are limited.



42. Adipose tissue contains _____?

a. GLUT 1

b. GLUT 2 *PANCREAS*

c. GLUT 3

d. GLUT 4

43. Which of the following is correct about Fick's Law?

- a. Directly proportional to membrane surface area and inverse relation to thickness of membrane
- b. Directly proportional to thickness of membrane and inverse relation to membrane surface area
- c. Directly proportional to both thickness of membrane and membrane surface area
- d. Inversely proportional to both thickness of membrane and membrane surface area

Celiac sprue

Dlco ↑ Emphysema

vs ↓ pulmonary fibrosis

$$\text{Rate of diffusion} \propto \frac{(\text{Surface Area}) \times (\text{Concentration Gradient}) \times (\text{Diffusion coefficient})}{\text{Membrane Thickness}}$$

44. Na Cl cotransporter is present in distal convoluted tubule. Gain of function of this transporter leads to

- a. Gitelman syndrome LOF Na Cl T
- b. Bartter syndrome LOF Na Cl K^+ cotransporter
- c. Gordon syndrome gain Na Cl T
- d. Liddle syndrome gain ENaC

45. Band 3 protein is located in?

- a. RBC
- b. WBC
- c. Platelets
- d. All of the above

Anion exchanger

[HAMBURGER phenomenon
or Chloride shift

46. Correct about Botulinum toxin is?

↓ Ach Release in Nm cleft

- a. Cleave SNARE proteins involved in endocytosis
- b. Activate SNARE proteins involved in exocytosis
- c. Activate SNARE proteins involved in endocytosis
- d. Cleave SNARE proteins involved in exocytosis

=

loss of

47. Tetanospasmin acts by which of the following mechanisms?

- a. Cleaving synaptobrevin that inhibits release of GABA and glycine
- b. Cleaving synaptobrevin that stimulates the release of GABA and glycine
- c. Activating synaptobrevin that inhibits release of GABA and glycine
- d. Activating synaptobrevin that stimulates the release of GABA and glycine

Inhibitory
INTERNEURONS

Spastic
paralysis

48. Endocytosis is mediated all of the following except?

a. Clathrin

b. Cubilin

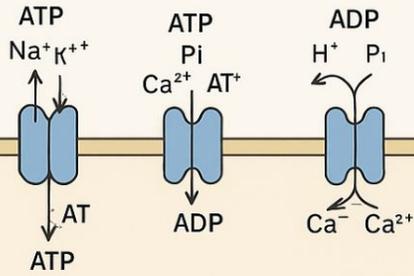
c. Caveolin

d. SNAP 25

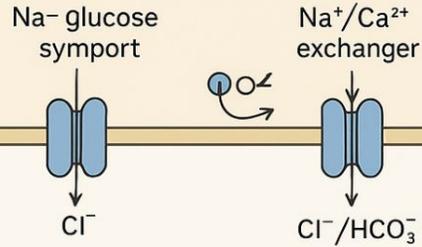
Exocytosis

Transport Systems

Primary Active Transport



Secondary Active Transport

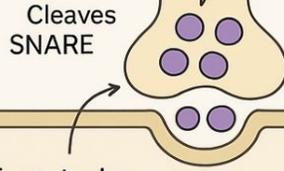


Band 3 Protein (RBC)



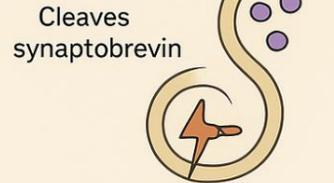
Toxins

Botulinum tevin



Exocytosis of ACh (blocked)

Tetanospasmin



Inhibity GABA/glycin release

Spastic paralysis

Endocytosis Pathways

Clathrin-mediated

(eg., LDL receptor uptake)



Vesicle budding

Caveolin-mediated

Signal transduction, on some ipids

Caveolin-mediated

Signal transuction, endocytos's of of some lipids



Cubilin-mediated

Intestinal uptake of intrinsic factor - B₁₃ complex



Cubilin-mediated

Intestinal uptake of intrinsic factor - B₁₂ complex

49. Most reactive oxygen derived free radical?

a. Superoxide



b. Hydroxyl

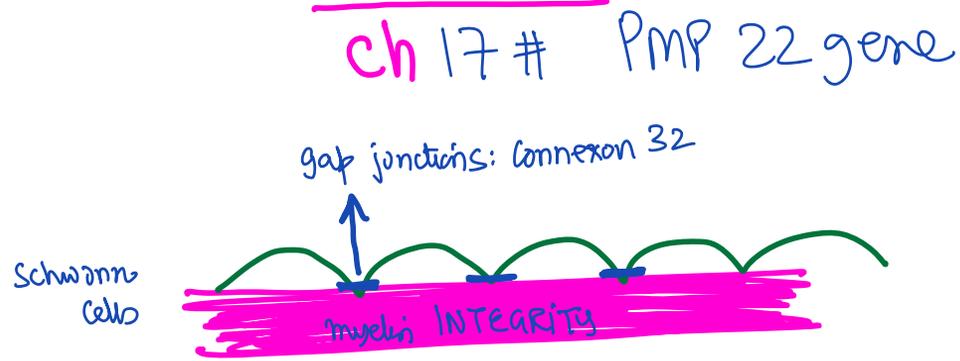


c. Hydrogen peroxide

d. Peroxynitrite

50. Child comes with difficulty in walking. Stork leg appearance of legs with contractures is noted. Gene sequencing shows CMT1 defect. This disease occurs due to defect of:

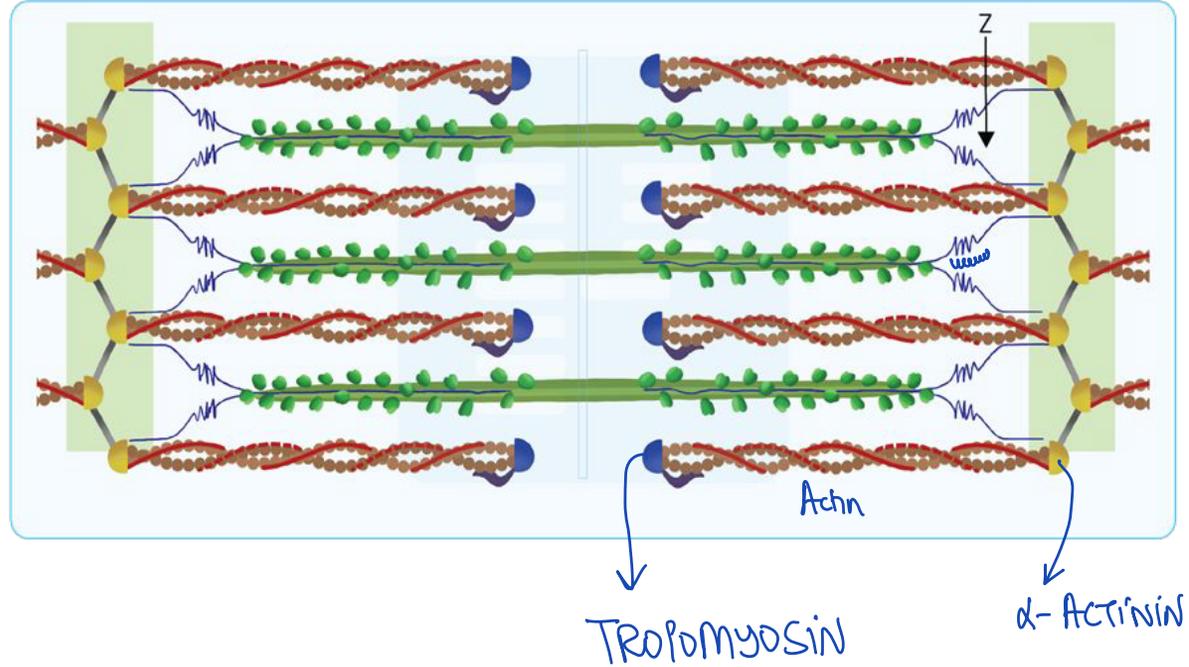
- a. Gap junction
- b. Tight junctions
- c. Desmosomes
- d. Hemidesmosomes

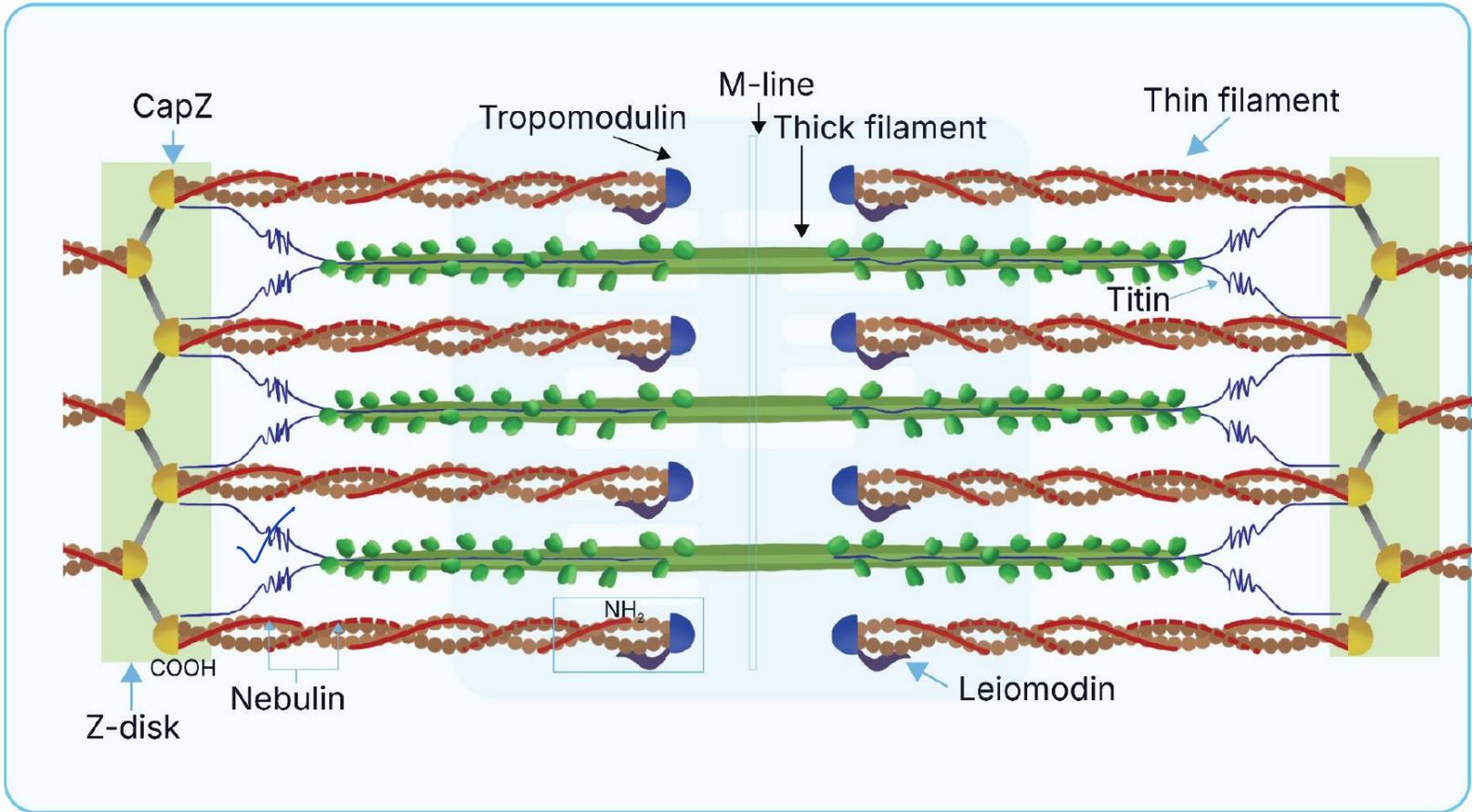


- The classical **“stork leg” deformity** = distal muscle wasting (inverted champagne bottle legs).
- CMT1 is most often caused by a **defect in the PMP22 gene** (peripheral myelin protein 22) or duplication on chromosome 17.
- The pathology involves **defective myelin sheath maintenance** leading to impaired **gap junction communication between Schwann cells** demyelinating neuropathy.

51. Identify the Z marked structure in the sarcomere:

- a. Nebulin
- b. Tropomyosin
- c. Titin
- d. Actinin





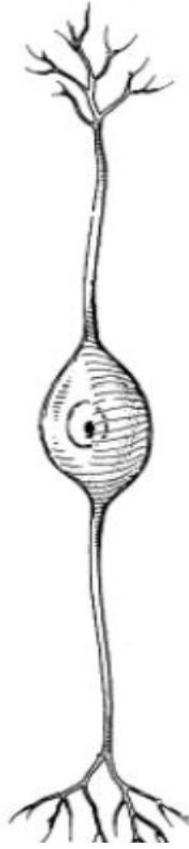
52. Purkinje cells of cerebellum are?

- a. Unipolar neurons
- b. Bipolar neurons
- c. Pseudo-unipolar neurons
- d. Multipolar neurons

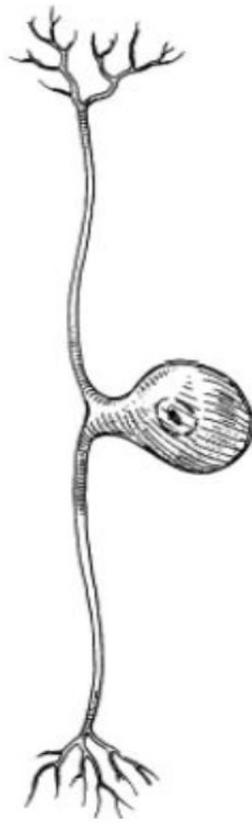
Unipolar



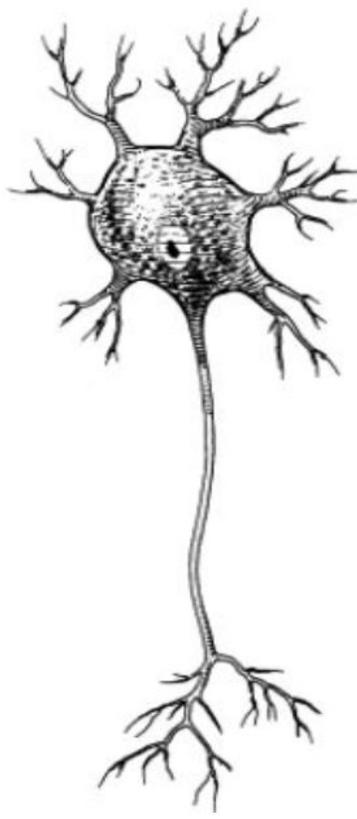
Bipolar



Pseudounipolar



Multipolar



53. Which of the following is correct about astrocytes

PG

- a. Fibrous astrocytes are seen in gray matter
- b. Protoplasmic astrocytes are seen in white matter

c. Perform myelination of axons *oligodendrocytes : CNS* *COPC*

d. Target cells affected in neuromyelitis optica

ASTROCYTOPATHY

54. Renshaw cells are located in?

- a. Heart
- b. Gray matter of brain
- c. White matter of brain
- d. Spinal cord

55. Which of the following areas in brain acts as osmoreceptor:

- a. Anterior pituitary
- b. Posterior pituitary
- c. Organ vasculosum lamina terminalis
- d. Area postrema

O.V.L.T: Hypothalamus

List of Circumventricular Organs

Sensory CVOs (detect blood –borne signals):

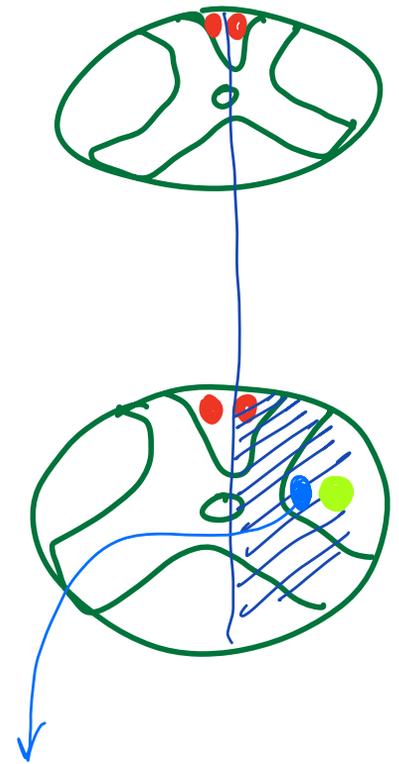
1. Area postrema – in medulla, chemoreceptor trigger zone for vomiting
2. Subfornical organ(SFO) – involved in fluid balance, thirst regulation
3. Vascular organ of the lamina terminalis (OVLT) – detects osmolarity, involved in thirst and fever regulation

Secretory CVOs (release hormones into blood / CSF):

4. Median eminence – release hypothalamic hormones to pituitary
5. Posterior pituitary (neurohypophysis) – release oxytocin, vasopressin
6. Pineal gland – secretes melatonin

56. A 35-year-old man develops Brown-Séquard syndrome after a penetrating spinal injury. Which of the following will not be seen in this condition

- a. Ipsilateral loss of proprioception and vibration sensation ❌
- b. Ipsilateral upper motor neuron signs ✓
- c. Ipsilateral Band of hyperesthesia and LMN findings ✓
- d. Ipsilateral loss of crude touch

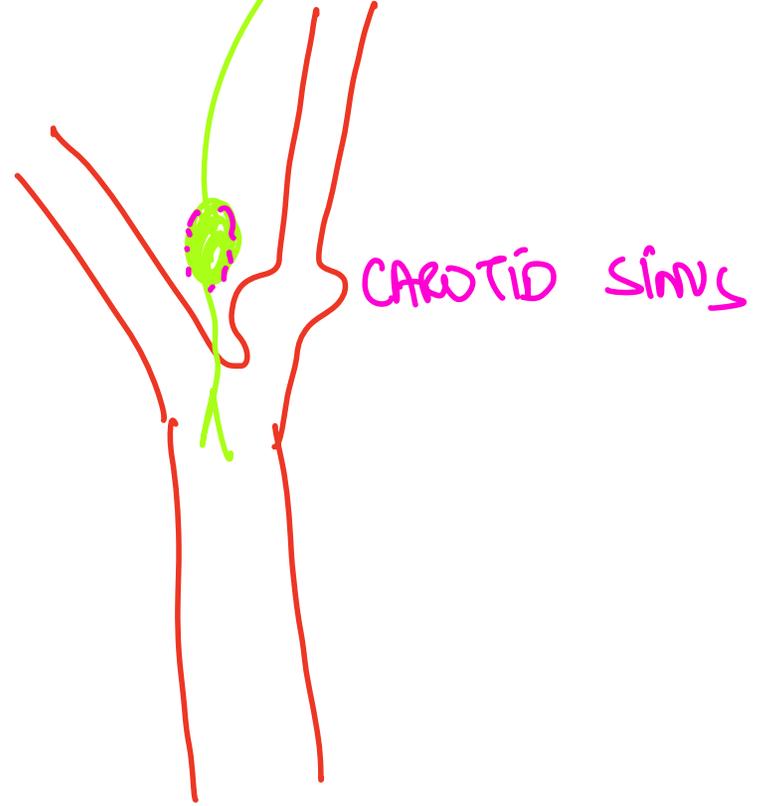


Side of lesion	Findings	Tracts/ structures involved
Ipsilateral (below lesion)	<ul style="list-style-type: none"> • UMN signs – weakness, spasticity, hyperreflexia • Loss of proprioception, vibration, fine touch, 2-point discrimination 	<ul style="list-style-type: none"> • Corticospinal tract • Dorsal column
Ipsilateral (at level of lesion)	<ul style="list-style-type: none"> • LMN signs –flaccid paralysis, fasciculations, atrophy • Band of segmental anesthesia/ hyperesthesia 	<ul style="list-style-type: none"> • Anterior horn cells • Dorsal root
Contralateral (below lesion)	<ul style="list-style-type: none"> • Loss of pain and temperature 	<ul style="list-style-type: none"> • Spinothalamic tract (crosses 1-2 levels above)
Preserved	<ul style="list-style-type: none"> • Crude touch & pressure 	Anterior spinothalamic tract (bilateral representation)
I can't feel properly: ipsilateral corticospinal, flaccidity and proprioception loss		

IX

57. Which is not correct about the carotid body?

- a. Peripheral chemoreceptor ✓
- b. Innervated by Vagus nerve**
- c. lined by Glomus cells ✓
- d. Not stimulated in Carbon monoxide poisoning ✓



58. Which of the following is component of visual pigment rhodopsin?

a. Retinal

b. Retinol *Transport*

c. Retinoic acid

d. All-trans- retinoic acid

59. Color vision and texture of an object is carried by which of the following:

- a. Parvocellular pathway → Paint color, pixels, PATTERN
- b. Magnocellular pathway → Movement, flickering
- c. Medial ~~geniculate~~ body Auditory
- d. Bipolar cells

60. Which of the following is not correct about scala media in cochlea?

a. Contains stria vascularis that produces perilymph

b. Middle cochlear chamber ✓

c. Contains organ of corti ✓

d. Contains potassium rich fluid ✓

endolymph

V

M

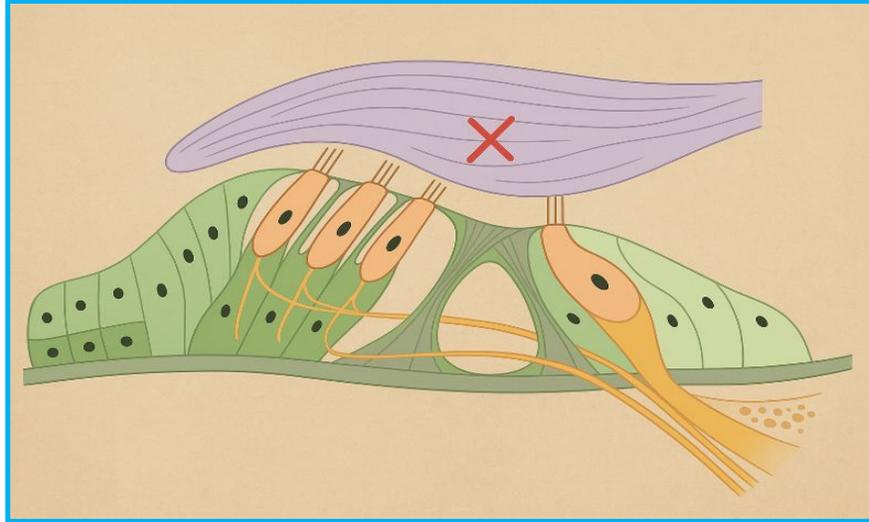
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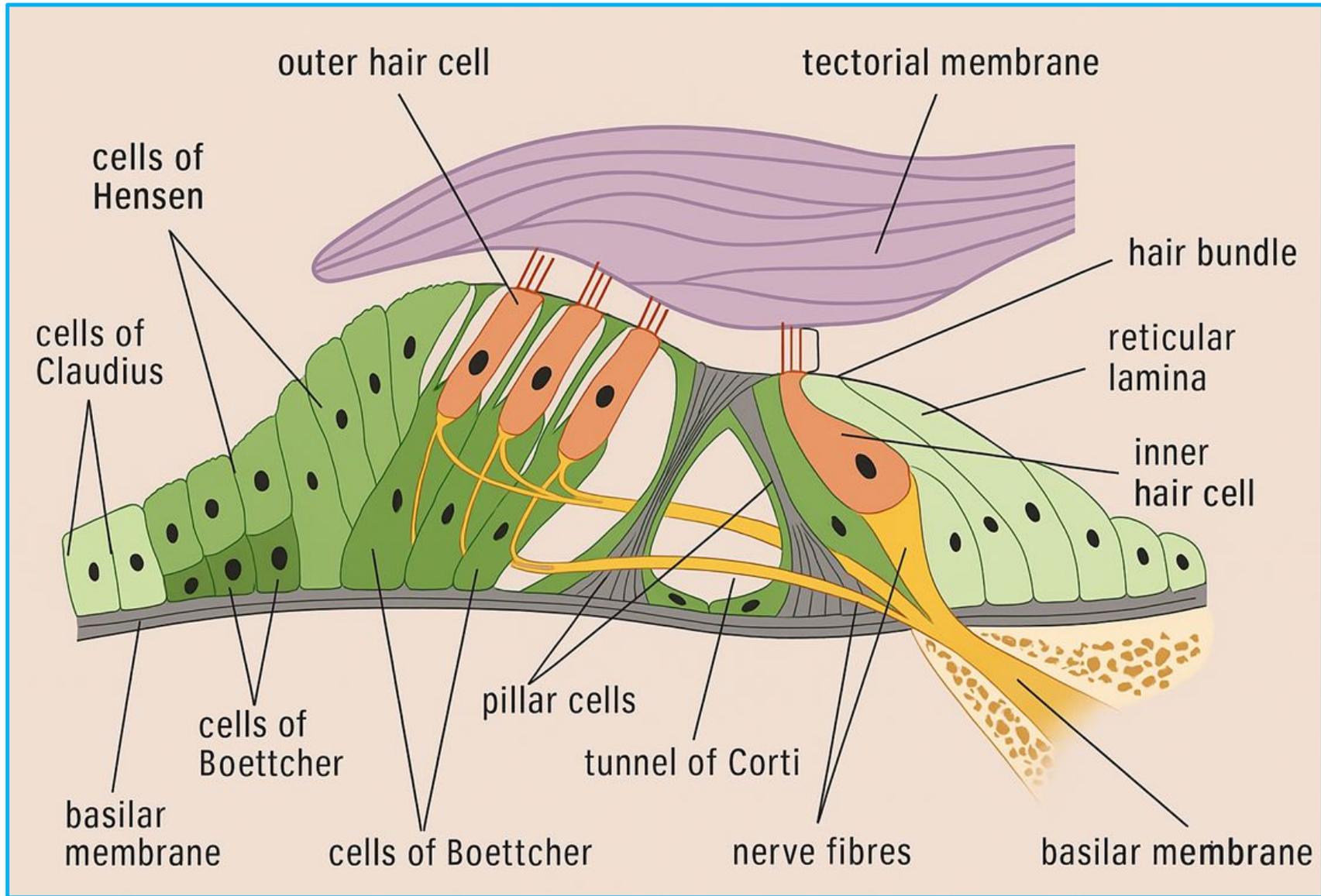
The stria vascularis (in the lateral wall of scala media) **produces endolymph** (K^+ -rich), not perilymph.

True statements: scala media is the middle chamber, contains the Organ of Corti, and has potassium-rich fluid (endolymph).

61. Which is correct about the structure marked as X?

- a. Tectorial membrane
- b. Basilar membrane
- c. Pillar cell
- d. Striae vascularis





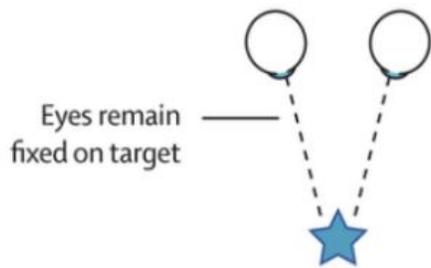
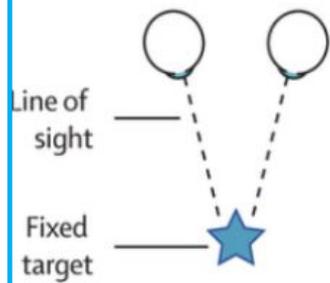
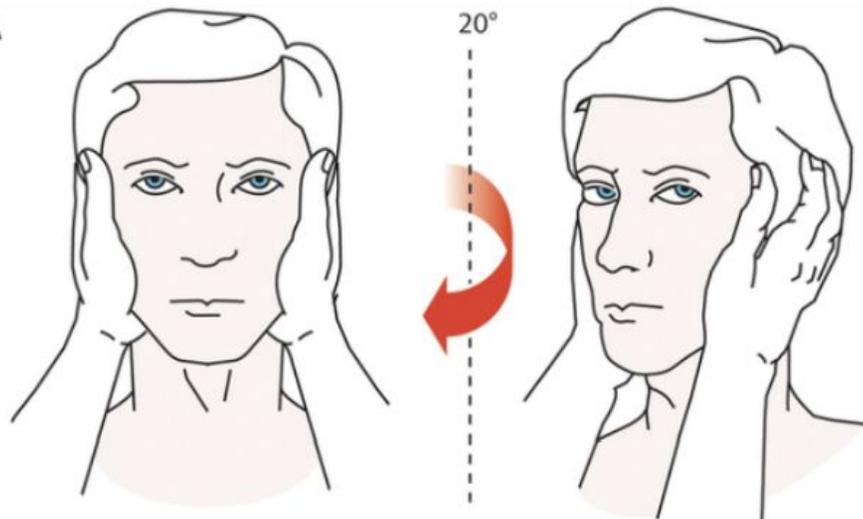
62. Kanamycin is a nephrotoxic aminoglycoside. What is correct about its ototoxicity?

- a. Damage to inner hair cells
- b. Damage to outer hair cells**
- c. Damage to auditory cortex
- d. Damage to medial geniculate body

63. Which is correct about vestibulo-ocular reflex

- a. Eyes move left in response to turning head to right side and vice versa
- b. Eyes move right in response to turning head to right side and same for other eye
- c. Cold water causes eyes to move to opposite and hot water to same side
- d. Cold water causes eyes to move to same side and hot water to opposite side

A



64. Receptor for Umami sensation on tongue?

a. Epithelial sodium channel salt | sour

b. GPCR T1R2 SWEET

c. GPCR 2 BITTER

d. GPCR mGluR4 UMAMI

65. Which of the following is bi-synaptic reflex

a. Golgi tendon reflex

b. withdrawal reflex

c. Crossed extensor reflex

d. Myotactic reflex

| Polysynaptic R

— Monosynaptic Reflex

66. Which of the following is correct about the peripheral heart?

- a. Soleus, Type 1 fibers
- b. Soleus, Type 2 fibers
- c. ~~Gastrocnemius, Type 1 fibers~~
- d. ~~Gastrocnemius, Type 2 fibers~~

67. A wave in JVP occurs due to:

- a. Atrial contraction
- b. Atrial relaxation
- c. Ventricular contraction
- d. Ventricular relaxation

68. Which of following is correct site of lesion in kluger Lucy syndrome:

- a. Caudate nucleus
- b. Lenticular nucleus
- c. Amygdala
- d. Ventromedial thalamus

M: More **Eating** (hyperphagia)

O: More **Orality** (Hyperorality)

R: More **Reproduction** (hypersexuality)

E: More **Exploration** (hypermetamorphosis)

A: **Agnosia**

P: **Placidity**

69. Which of the following is responsible for planning and programming of movements:

a. Cerebellum

b. Basal ganglia

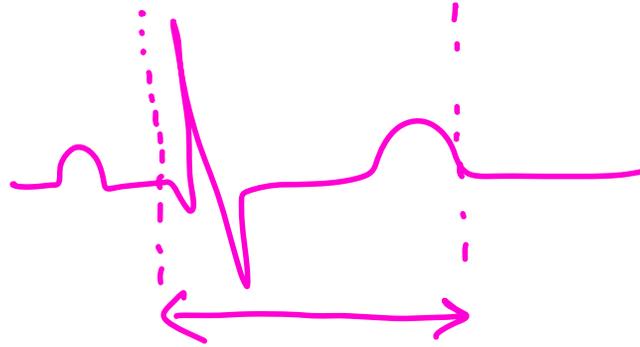
c. corticospinal pathway

d. Reticulospinal pathway

- **Basal Ganglia** → responsible for planning programming and initiation of movements (especially complex, learned motor activity)
- **Cerebellum** → Coordinates movements, maintains balance, posture, and ensure precision by comparing intended vs actual performance.
- **Corticospinal pathway** → Executes voluntary movements by sending final motor command from cortex to spinal cord.
- **Reticulospinal pathway** → controls posture and locomotion, modulates reflexes.

70. Normal duration of QT interval is:

- a. 0.04- 0.08 sec
- b. 0.08 -0.12 sec
- c. 0.12-0.20 sec
- d. 0.36 -0.44 sec**



71. Which of the following is called the gate keeper of heart?

a. SA node

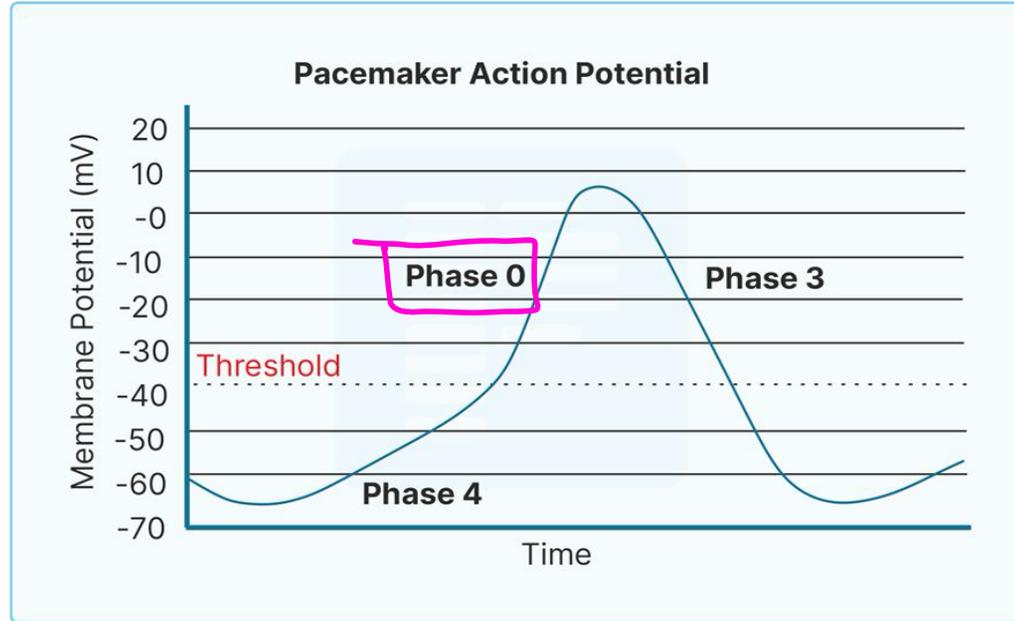
b. AV node

c. Bundle of his

d. Pukinje fiber

72. Schematic is shown for SA node pacemaker action potential. Which of the following ions play a role in phase 0 depolarization:

- a. Sodium
- b. Calcium**
- c. Potassium
- d. Chloride



73. In which phase of Pacemaker action potential is "Funny Current" seen?

- a. Depolarization
- b. Plateau
- c. Repolarization
- d. Hyperpolarization

74. A healthy adult is given a drug that paralyzes all skeletal muscles, including the diaphragm, but mechanical ventilation is immediately started. Which of the following changes is most likely to occur in the oxygen consumption (VO_2) of the body?

- a. VO_2 increases due to stress response
- b. VO_2 remains unchanged
- c. VO_2 decreases
- d. VO_2 becomes zero

75. The dicrotic notch seen on the arterial pressure waveform corresponds to which of the following events?

- a. Opening of the aortic valve at the onset of systole
- b. Peak systolic ejection of blood from the left ventricle
- c. Closure of the aortic valve due to brief retrograde blood flow**
- d. Rapid ventricular filling during early diastole



THANK YOU