

List of Mnemonic Devices for OAT Biology: Cell & Molecular Biology

Biomolecules: Carbohydrates

CELL & MOLECULAR BIOLOGY

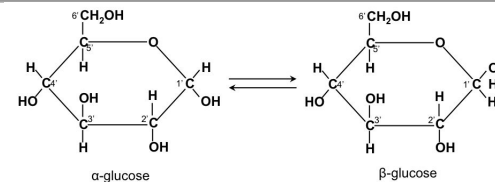


Mnemonic for Disaccharides

- LACTOSE = glucose + galACTOSE
 - The word “lactose” is in “galactose,” so that’s how you can remember that lactose is made of galactose
- SUCrose = glucose + FRUCTose
 - “Suc” and “ fruc” sound very similar

Mnemonic for Alpha vs Beta Glucose

- Alpha glucose: OH points DOWN because alphas look DOWN on people
- Beta glucose: OH points UP because life gets “beta” (better)

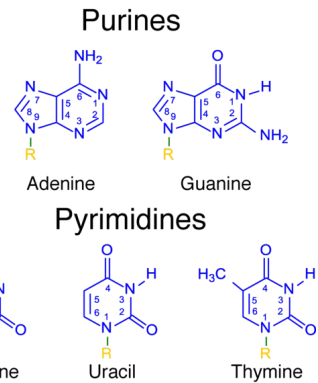


Biomolecules: Nucleic Acids

CELL & MOLECULAR BIOLOGY

Mnemonic for Purines and Pyrimidines

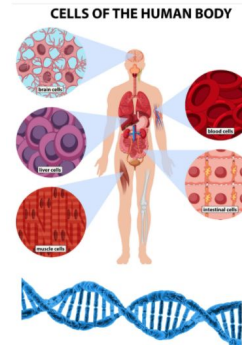
- **PUR** As **G**old: **PUR**ines are **A**denine and **G**uanine
- **CUT** the **PY**: **C**ytosine, **U**racil, and **T**hymine are **PY**rimidines



Fundamentals of Biology

CELL & MOLECULAR BIOLOGY

Cell Theory & Mnemonic



IMPORTANT BCDE

Independent cells' activity make up total activity of organism

Made of cells: All living things are made of cells

Pre-existing cells: all cells come from preexisting cells

Basic unit: cells are the basic unit of structure, function, and organisms

Chemical composition: all cells have the same chemical composition in similar species

DNA: cells contain hereditary information.

Energy flow: Energy flow & metabolism occurs in cells.

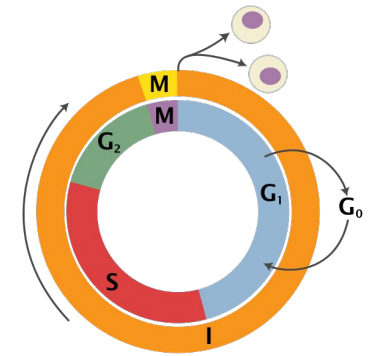
Cell Division

CELL & MOLECULAR BIOLOGY

Mnemonic for Cell Cycle

Go Sam Go Make Cake

- G₁ Phase
- Synthesis (S Phase)
- G₂ Phase
- Mitosis (M Phase)
- Cytokinesis (M Phase)



List of Mnemonic Devices for OAT Biology: Genetics

Molecular Genetics

GENETICS



Mnemonic for Ribosome Subunits

Eukaryotic ribosome: 60S + 40S = 80S

- Remember “b4 8pm” (before 8pm)
 - “6” looks like “b”

Prokaryotic ribosome: 50S + 30S = 70S

- When you write out 70, or “SEventy,” the S kinda looks like a “5” and the “E” looks like a backwards “3”

Mnemonic for Stop Codons

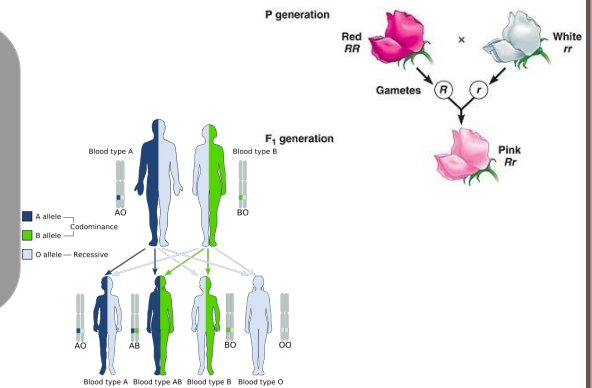
		Second Letter											
		U		C		A		G					
1st letter	U	UUU	Phe	UCU	Ser	UAU	Tyr	UGU	Cys	U	C		
		UUC		UCC		UAC		UGC		A		A	
		UUA		UCA		UAA		UGA		G			G
		UUG		UCG		UAG		UGG					
	C	CUU	Leu	CCU	Pro	CAU	His	CGU	Arg	U	C		
		CUC		CCC		CAC		CGC		A		A	
		CUA		CCA		CAA		CGA		G			G
		CUG		CCG		CAG		CGG					
	A	AUU	Ile	ACU	Thr	AAU	Asn	AGU	Ser	U	C		
		AUC		ACC		AAC		AGC		A		A	
		AUA		ACA		AAA		AGA		G			G
		AUG		ACG		AAG		AGG					
G	GUU	Val	GCU	Ala	GAU	Asp	GGU	Gly	U	C			
	GUC		GCC		GAC		GGC		A		A		
	GUA		GCA		GAA		GGG		G			G	
	GUG		GCG		GAG								

Hereditary

GENETICS

Mnemonic for Incomplete vs Codominance

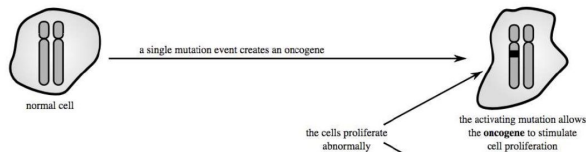
- Incomplete dominance is intermediate
- Codominance means NO dominance



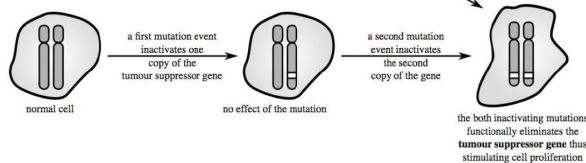
Crack OAT

Mnemonic for Haploinsufficiency vs Haplosufficiency

(A) overactivity mutation (gain-of-function)



(B) underactivity mutation (loss-of-function)



- Haploinsufficiency: one copy ("haplo") of the wild type gene is "insufficient"
- Haploinsufficiency: one copy ("haplo") of the wild type gene is "sufficient"

Mnemonic for Mendel's Laws

1. Law of Dominance: DOMINANT alleles mask recessive alleles
2. Law of Segregation: homologous gene copies will SEGREGATE during gamete formation
3. Law of Independent Assortment: homologous chromosomes will line up on the metaphase plate INDEPENDENT of one another. Separation of alleles is random.

Mnemonic for Genetic Diseases

“Turn X Down, Kline [3X]”

Imagine that you have to tell your friend Kline to turn the music/light/whatever “X” is down, 3 separate times.

- Turner - X chromosome monosomy
- Down Syndrome - trisomy 21
- Klinefelter - sex chromosome trisomy

Microscopy

GENETICS



Mnemonic for High Magnification Microscopes: TEM vs SEM

- Transmission Electron Microscope: Two D (2D)
- Scanning Electron Microscope: 3D
 - Think of a 3D printer: You need to scan the whole thing to get a 3D image.

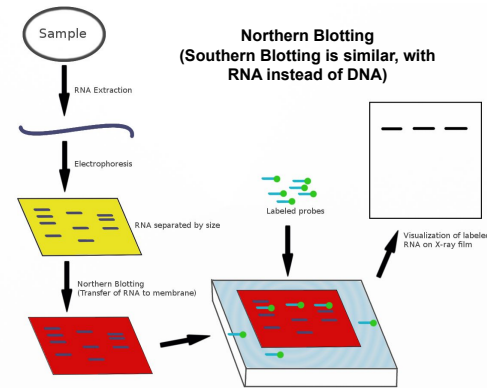
Lab Techniques

GENETICS

Mnemonic for Steps in Southern & Northern Blot

Come Get The Right Visuals

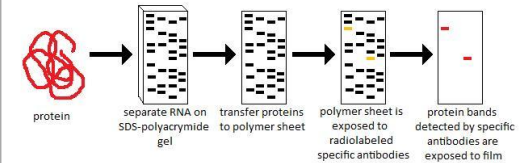
1. Cleave DNA
2. Gel electrophoresis
3. Transfer fragments onto membrane
4. Radioactively labeled DNA probe
5. Visualize DNA probe with X-ray



Mnemonic for Steps in Western Blot

Please Send My Detective

1. Prepare protein sample
2. SDS-PAGE
3. Protein transfer to membrane
4. Detection by antibody (1st and 2nd)



Mnemonic for Southern, Northern, Western Blots

Southern Blot - DNA
Northern Blot - RNA
Western Blot - Proteins

List of Mnemonic Devices for OAT Biology: Diversity of Life

Plant Biology

DIVERSITY OF LIFE

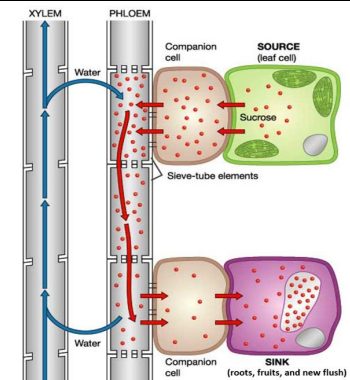


Mnemonic for Plant Ground Tissues

- Parenchyma is the filler tissue and the bulk of the plant
 - Remember this by: PARENts buy groceries in BULK to SUPPORT their kids
- Collenchyma provides extra support, esp. In areas where the plant is growing; has irregular cell walls
 - Remember this by: COLLEN is a GROWING teen and has IRREGULAR moods
- Sclerenchyma: main support, thickest wall
 - Remember this by: S for structural support

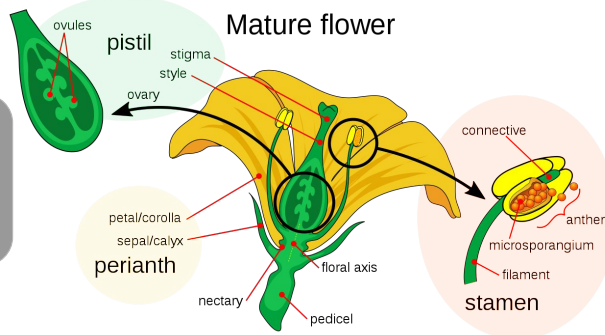
Mnemonic for Pressure Flow Hypothesis

Pressure Flow Hypothesis: add **PRESSURE** to the phloem in the leaves, and the sugar/water will **FLOW** to the roots



Mnemonic for Male Part of Flower

StaMEN is the
MALE part of
the flower.



Taxonomy & Diversity of Life

DIVERSITY OF LIFE

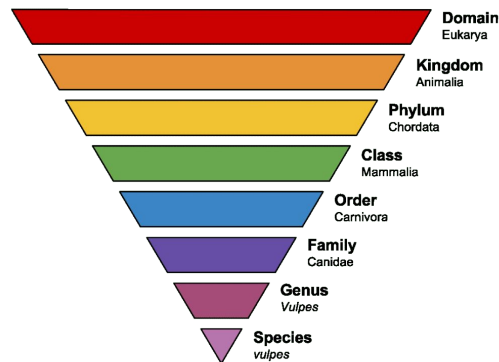


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Mnemonic for Taxonomy Hierarchy

King Phillip Came
Over for Good Soup

- Kingdom
- Phylum
- Class
- Ord
- Family
- Genus
- Species



Mnemonic for Phyla of Kingdom Animalia

Privileged Children Play Nicely,
Respectfully, And Maturely;
Arthur Ensures Cooperation

- Porifera
- Cnidaria
- Platyhelminthes
- Nematoda
- Rotifera
- Annelida
- Mollusca
- Arthropoda
- Echinodermata
- Chordata

Reproduction & Developmental Biology

DEVELOPMENTAL BIOLOGY

Mnemonic for Capacitation

Capacitation:

- “Ca” in Capacitation should remind you that the sperm’s increase in Ca²⁺ leads to hyperactivity of the sperm
- “Citation:” A citation is a reference to something, just how the lipids and proteins are a label for the sperm; sperm membrane lipid and proteins destabilizes during capacitation
- “Prince Caspian:” a prince matures into a king, just how capacitation is the final maturation step for the sperm



Mnemonic for Acrosomal Reaction

Acrosomal Reaction

- Acrosomal enzymes that will digest the zona pellucida are released when the sperm’s acrosome membrane fuses with the sperm head

Mnemonic for Polyspermy Block

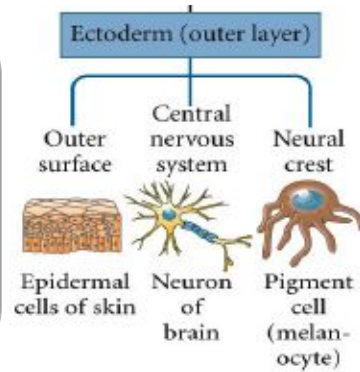
Polyspermy Block: “Slow Cats take Fast Naps”

- Slow Block
 - Ca²⁺ (calcium) is released into the egg, simulating cortical reaction
- Fast Block:
 - Na⁺ (sodium) diffuses into the egg and depolarizes egg membrane, repelling other sperm

Mnemonic for Ectoderm

Ectoderm = attractoderm

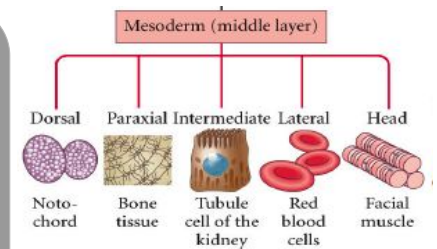
- Pretty skin + health
 - Epidermis (skin, nails, hairs)
 - Jaws & teeth
- Smart: Brain + CNS + PNS
- Smell good: sensory parts of skin, nails, hair
- Makes you sweat: adrenal medulla, mammary and sweat glands



Mnemonic for Mesoderm

Mesoderm = means of having sex

- Gonads
- Bone + skeleton
- Muscle
- Cardiovascular system (blood needs to be pumped)
- Spleen sounds like "mean" from "meansoderm"

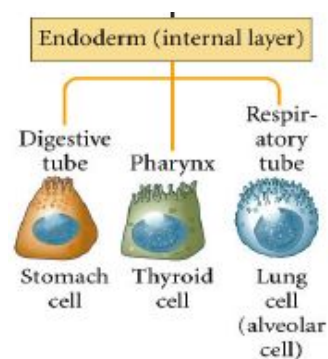


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Mnemonic for Endoderm

Endoderm = endermals + PLTT

- Epithelial lining of internal organs
- PLTT
 - Pancreas
 - Liver
 - Thyroid + Parathyroid
 - Thymus



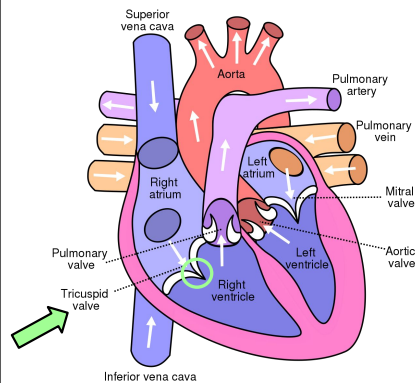
List of Mnemonic Devices for OAT Biology: Structure & Function of Systems

Circulatory System

STRUCTURE AND FUNCTION OF SYSTEMS

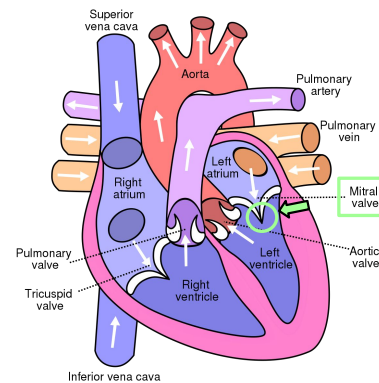


Right atrium accepts deoxygenated blood.



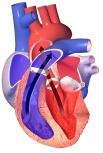
Mnemonic:
The Right AV valve =
Tricuspid valve

Left atrium pumps oxygenated blood into left ventricle.

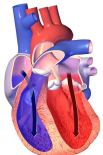


Mnemonic:
The Left AV valve =
Bicuspid valve
because it has 2
("bi") flaps.

Mnemonic: Systole vs Diastole



Systole
(pumping)

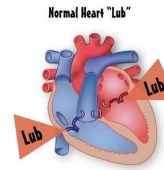


Diastole
(filling)

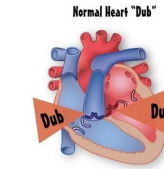
SystoLE = right after ventricLE
contract to fill arteries

DIAstole = right after atrIA contract
to fill ventricles

Mnemonic: Lub vs Dub



Normal Heart "Lub"



Normal Heart "Dub"

Lub (looks like "Luy") = ventricles
contract, semilunar valves open as
AV valves close

Dub (looks like "Dua") = atria
contract, AV valves open as
semilunar valves close



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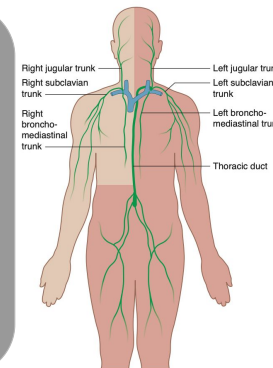
Lymphatic System

STRUCTURE AND FUNCTION OF SYSTEMS

Mnemonic for Lymphatic Duct Drainage

THAT Right
Lymphatic Duct
drains lymph
collected from:

- Right Torso
- Right Head
- Right Arm
- Right Thorax

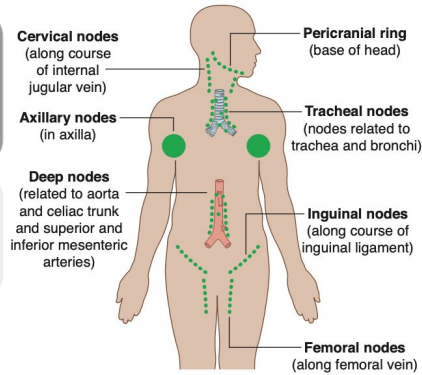


*Study tip: If you just remember
where the THAT right lymphatic
system drains lymph from, you won't
need to remember all the locations
where the thoracic duct drain from
(which is everywhere else).
"Remembering the exception" can
help trigger your memory of related
facts.

Mnemonic for Immune Cells in Lymph Nodes

Lymph nodes contain lymphocytes and macrophages.

*Study tip: The word "lymph" in "lymph nodes" should remind you of "lymphocytes," one type of immune cell. When you think of immune cells, you should also be reminded of macrophages, another type of immune cell.



Respiratory System

STRUCTURE AND FUNCTION OF SYSTEMS

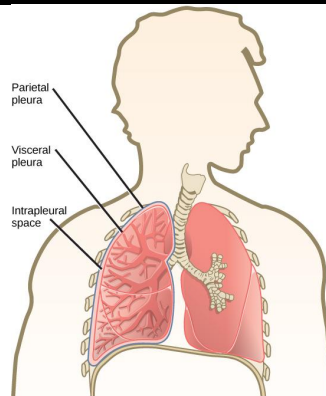


Crack OAT

Mnemonic: Visceral vs Parietal Pleura

Parietal pleura, the **OUTSIDE** layer, covers the visceral pleura, the **INSIDE** layer.

Just like how: **PARENTS** ("parietal") protect their children from **VISCERAL** images.

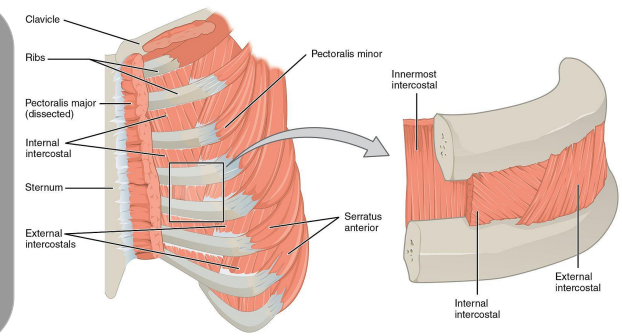


Mnemonic: External vs Internal Intercostals

Ex's do NOT belong together. In does NOT go with In.

External intercostals do NOT expire (exhale); they inspire.

Internal intercostals do NOT inspire; they expire.

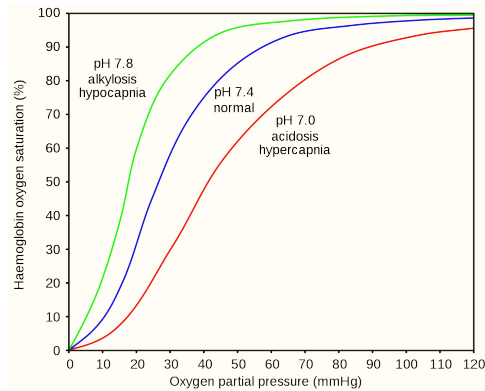


Mnemonic for Factors that Shift the Curve

CADET, face Right!

Carbon dioxide
Acidty
2,3-Diphosphoglycerate
Exercise
Temperature

***INCREASING** these factors
will shift the curve **RIGHT**.
***DECREASING** these factors
shift the curve **LEFT**.



Immune System

STRUCTURE AND FUNCTION OF SYSTEMS

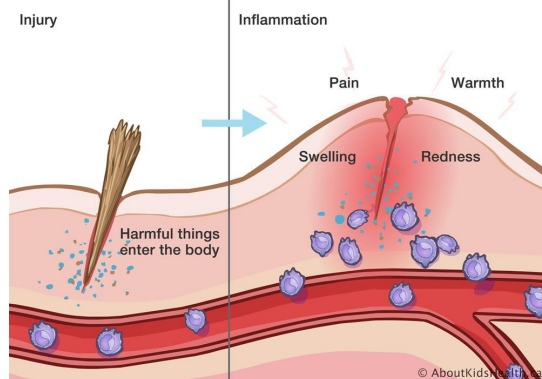


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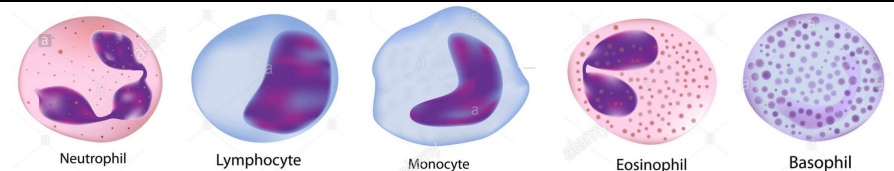
Mnemonic for Signs of Inflammatory Response

SLIPR:

Swelling
Loss of Function
Increased heat
Pain
Redness



Mnemonic for Relative Count of White Blood Cells



Never Let Monkeys Eat Bananas

- Neutrophils (*most, 40-60%)
- Lymphocytes
- Monocytes/Macrophages
- Eosinophils
- Basophils (*least, <1%)

*Percentages based on <https://www.ucsfhealth.org/medical-tests/003457>

Mnemonic for Complement System Functions

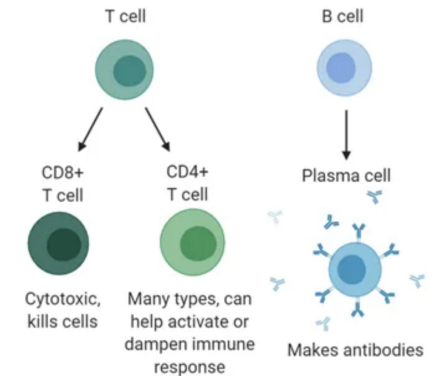
HI COM, (like you're saying "Hi, Complement System!")

- Increase Histamine release
- Clear Immune complexes
- Release Cytokines to activate 30 proteins
- Opsonization: enhance phagocytosis
- Membrane Attack Complex: 5 proteins that puncture the cell membrane

Mnemonic for B Cells & T Cells

B cells mature in bone marrow.

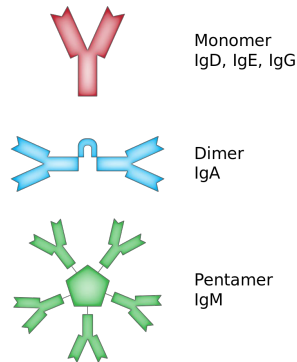
T cells mature in the thymus.



Mnemonic for Immunoglobulin Antibodies

Me And Eve Don't Go

- IgM - think of IgMost because it takes up the most space
- IgA - think of IgAnd because it is a dimer, including left part and right part.
- IgE - think of IgEve because Eve has allergies.
- IgD - think of IgDon't because we don't have much info on it
- IgG - think of IgGo because it is the only antibody that can go through the placenta.

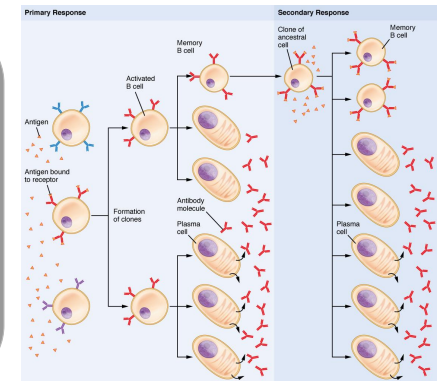


Mnemonic for B Cell Role

B-cell function: BCBG - compliment coat tag

- Activate Complement System
- Coat/neutralize Ag
- Tag antigen for removal

*BCBG is a high-end fashion company. The fashion style is so trendy that even people compliment the coat tags.

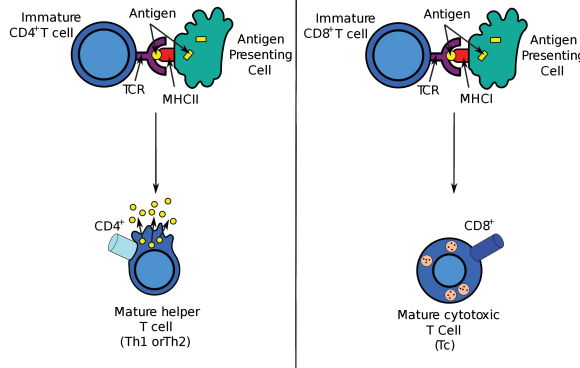


Mnemonic for ????

Product of 8

CD8 - MHC1 ($8 \times 1 = 8$)

CD4 - MHC2 ($4 \times 2 = 8$)



Nervous System

STRUCTURE AND FUNCTION OF SYSTEMS



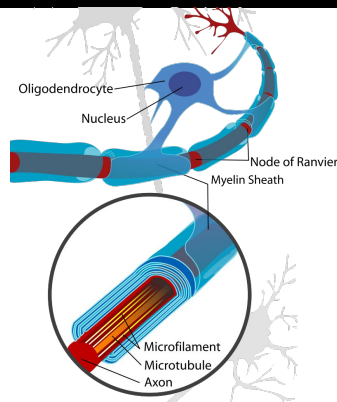
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Mnemonic for Glial Cells that Form Myelin Sheath

Dr. Schwann is at the PERIPHERY of town. He wants to GO to the CENTER of town.

Oligodendrocytes form myelin sheath in the center of town.

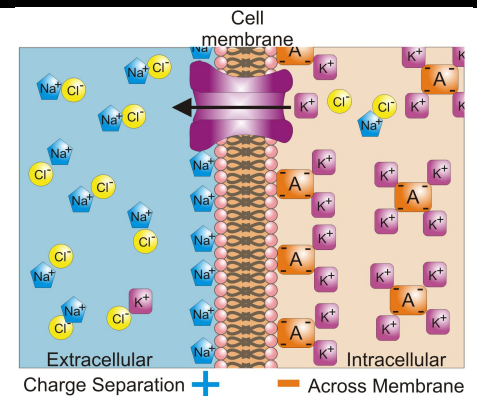
Schwann cells form myelin sheath in the peripheral nervous system.



Mnemonic for Relative Na⁺ and K⁺ Cell Concentration

Salty Banana: Think of a banana, source of K⁺, sprinkled with salt, Na⁺.

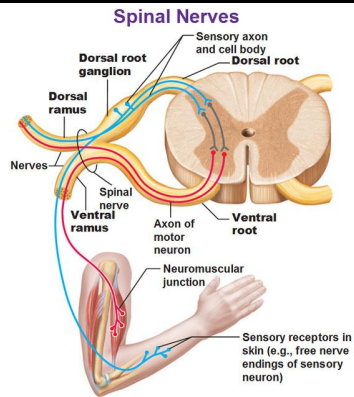
Na⁺ is higher on the OUTSIDE
K⁺ is higher on the INSIDE



Mnemonic for Sensory & Motor Neuron Organization

SAME DAVE

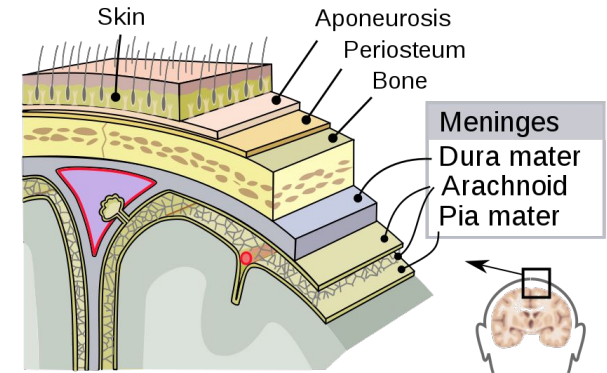
- SA = Sensory Afferent (afferent neurons = sensory neurons)
- ME = Motor Efferent (efferent neurons = motor neurons)
- DA = Dorsal Afferent (afferent neurons emerge from dorsal root of spinal nerves)
- VE = Ventral Efferent (efferent neurons emerge from ventral root of spinal neurons)



Mnemonic for Meninges

DAP (outer → inner layer)

Dura mater
Arachnoid mater
Pia mater

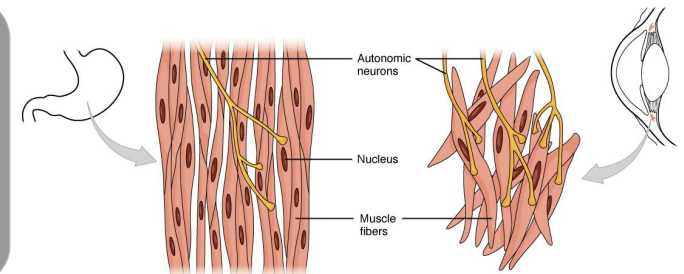


Muscular System

STRUCTURE AND FUNCTION OF SYSTEMS

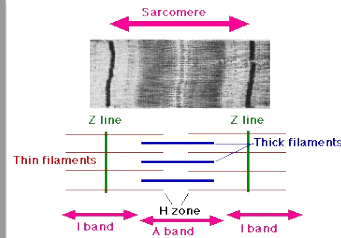
Mnemonic for Smooth Muscle

Smooth muscle is smooth because it is not striated.



Mnemonic for Parts of a Sarcomere

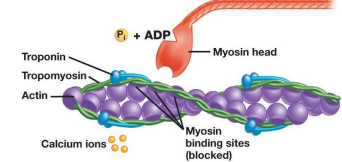
Part	Description	How You Can Remember
Z line	<u>End</u> of sarcomere	Z is at the <u>end</u> of the alphabet
M line	Midpoint of sarcomere	<u>M</u> line = <u>M</u> idpoint
H zone	Part of sarcomere where there is only myosin, a thick filament	H is a <u>thick</u> letter, so the H zone only has <u>thick</u> filaments (myosin).
I zone	Part of sarcomere where there is only actin, a thin filament	I is a <u>thin</u> letter, so the I zone only has <u>thin</u> filaments (actin)
A band	Area where actin and myosin overlap	<u>A</u> band is the area where there is actin <u>AND</u> myosin.



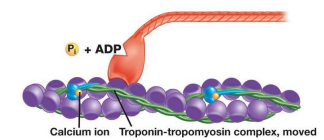
Mnemonic for Troponin Binding Sites

A Site: troponin binds action
C site: troponin binds calcium
I site: troponin binds tropomyosin

(a) Tropomyosin and troponin work together to block the myosin binding sites on actin.



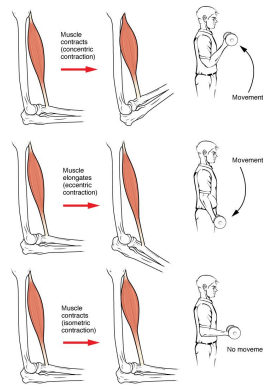
(b) When a calcium ion binds to troponin, the troponin-tropomyosin complex moves, exposing myosin binding sites.



Mnemonic for Isotonic vs Isometric Contraction

Isotonic Contraction: same tension, muscle length changes
 “Iso” = same; “tonic” = tension

Isometric Concentration: same muscle length
 “Iso” = same, “metric” = length

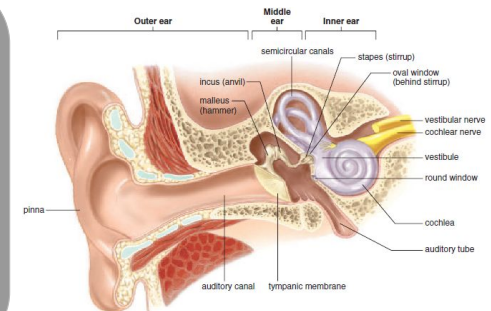


Mnemonic for Pathway of Sound Through the Ear

Atmisocra or “ATMosphere IS Of Course Raining Again”

*Atmisocra is all the first letters combined, and it looks like “atmosphere,” the first word in the phrase

- Auditory Canal
- Tympanic membrane
- Malleus
- Incus
- Stapes
- Oval Window
- Cochlea
- Round Window
- Auditory Nerve



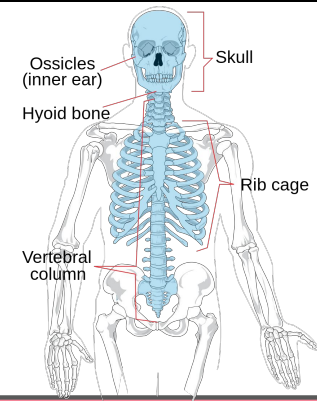
Skeletal System

STRUCTURE AND FUNCTION OF SYSTEMS

Mnemonic for Axial Skeleton Parts

HORSV (like horses)

- Hyoid bone
- Ossicles (Inner Ear)
- Rib cage
- Skull
- Vertebral Column



Crack OAT

Mnemonic for Types of Bones in Endoskeleton

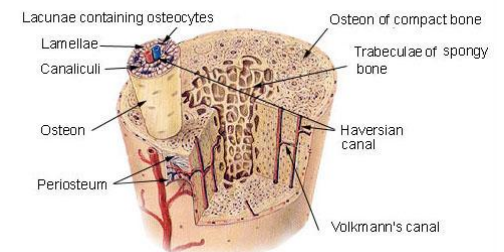
- Lone bones - are long
- Short bones - are short & fat
- Flat bones - have a cortical bone layers that sandwich the cancellous bone layer
 - Think of oreos, which are flat and have two hard layers that sandwich the soft creamy layer
- Sesamoid bones - are embedded within tendons to
 - Think of sesame seeders. "Sesame" for "sesamoid" and "tenders" for "tendons"
- Irregular bones - are irregular because they don't fit any other category

Mnemonic for Cortical Bone

Cortical bone is the hard, outer layer of bone.

Think of: Tennis courts because they are hard and outside.

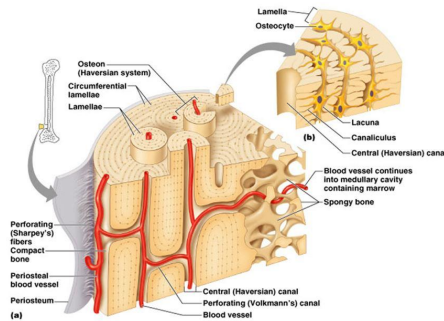
Compact Bone & Spongy (Cancellous Bone)



Mnemonic for Lamellae vs Lacunae

In a Haversian System:

- Lamellae are layers of an osteon.
 - "ll" look like layers
- Lacunae connect to each other and central Haversian canals via smaller canals, canaliculi.
 - Lacuna resembles "canal," so it should remind you that they connect to each other and other canals.

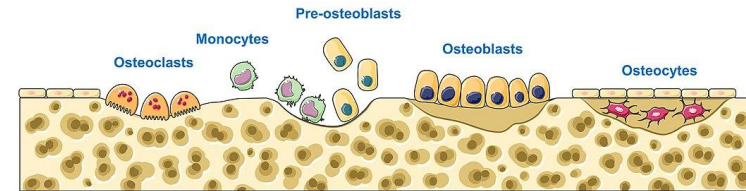


Mnemonic for Bone Modeling

Osteoblasts build bone

Osteoprogenitors → Osteoblasts → Osteocytes

Osteoclasts chew bone



Crack OAT

Mnemonic for Embryonic Ossification

Intramembranous ossification - bone created directly WITHIN a MEMBRANE

Endochondral ossification - bone created from CARTILAGE

*Chondrocytes make cartilage

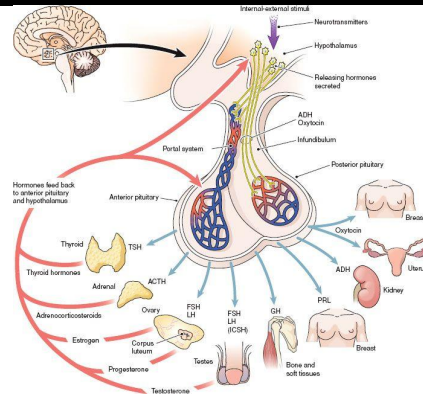
Endocrine System

STRUCTURE AND FUNCTION OF SYSTEMS

Mnemonic for Anterior Pituitary Gland Hormones

Anterior pituitary gland secretes FLAT PiG hormones:

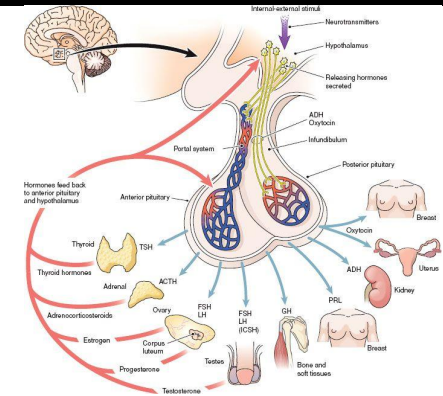
- Follicle Stimulating Hormone (FSH)
- Luteinizing Hormone (LH)
- Adrenocorticotrophic (ACTH)
- TSH
- Prolactin
- i (space filler)
- Growth Hormone



Mnemonic for Follicle Stimulating Hormone (FSH)

Follicle Stimulating Hormone (FSH) contributes to follicle growth in females and sperm maturation in males.

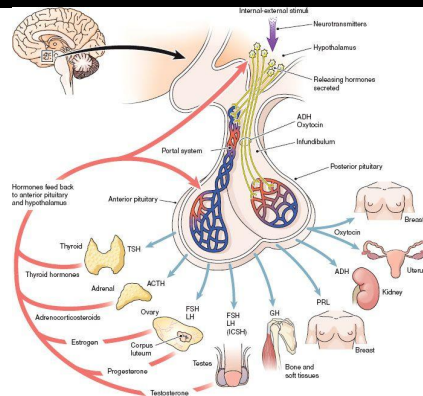
*"FSH" looks like "fish," which should remind you that in males, FSH stimulates production of sperm, which swim like "fish")



Mnemonic for Luteinizing Hormone (LH)

Luteinizing Hormone maintains the corpus luteum and produces testosterone.

LH produce testosterone, which make men "Large & Hairy"

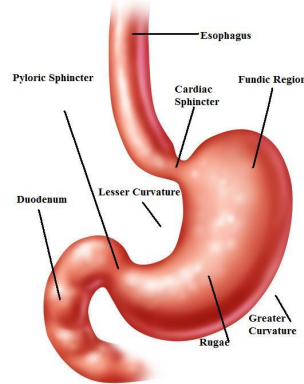


Digestive System

STRUCTURE AND FUNCTION OF SYSTEMS

Mnemonic for Cardiac Sphincter

The area between the esophagus and stomach is where the heart is, so you can think of the cardiac sphincter as being located close to the heart.

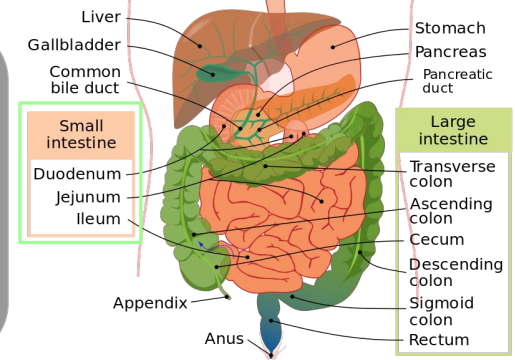


Mnemonic for Small Intestine Parts

Think of a music DJ named Eye (I)

- Duodenum
- Jejunum
- Ileum

*Digestion occurs in duodenum. Absorption occurs in jejunum and ileum.



Mnemonic for What Cholecystokinin Secretes

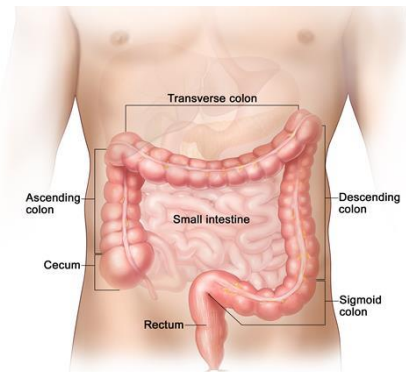
Bi (by) the way, Amy's Lips Try Chyme

- Secrete bicarbonate ions
- Secrete pancreatic amylase
- Secrete pancreatic lipase
- Secrete trypsin and chymotrypsin

Mnemonic for Role of Large Intestine

"Salt Water is Vital"

- Salt absorption
- Water absorption
- Vitamin production & absorption

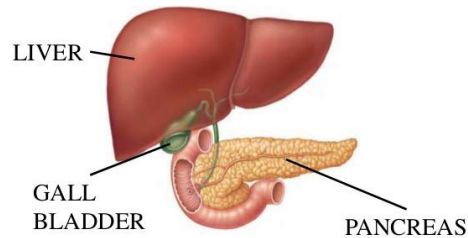


Mnemonic for Accessory Organs

Gail Olivia's Pans

- Gallbladder
- Liver
- Pancreas

*Think of your friend Gail Olivia's cooking pans



Mnemonic for Islets of Langerhan in the Pancreas

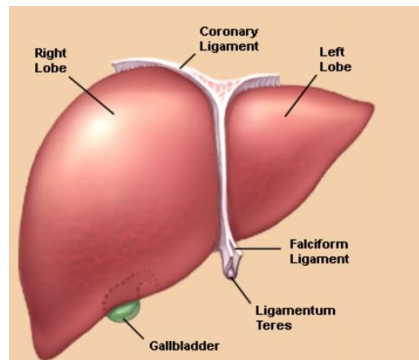
- Beta cells secrete insulin to make diabetics feel bettah (better)
- Alpha cells secrete glucagon when "glucose-is-gone"



Mnemonic for Role of Liver

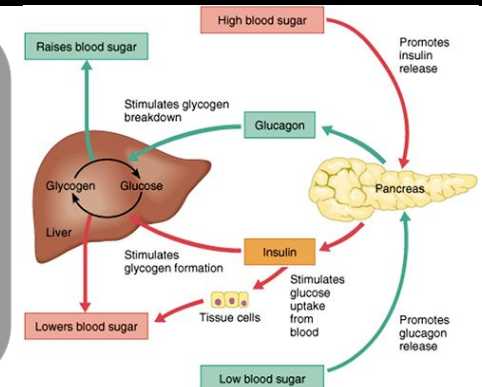
Bloody Globins Protect

- Blood maintenance: store, detox, destroy
- Glucose metabolism
 - Glycogenesis
 - Glycogenolysis
 - Gluconeogenesis
- Protein metabolism



Mnemonic for Glucose Metabolism by the Liver

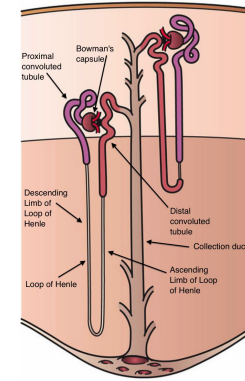
- Glycogenesis: create glycogen
 - "Glyco" for glycogen, "genesis" for create
- Glycogenolysis: breaks down glycogen
 - "Glyco" for glycogen, "lysis" for break down
- Gluconeogenesis: create new glucose
 - "Gluco" for glucose, "neo" for new, "genesis" for create



Excretory System

STRUCTURE AND FUNCTION OF SYSTEMS

Mnemonic for Kidney Processes in Nephron



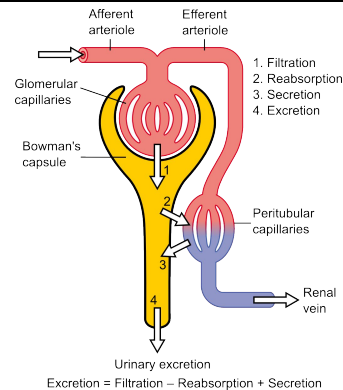
- Fat Rats See
- Filtration
 - Reabsorption
 - Secretion
 - Excretion



Crack OAT

Mnemonic for Afferent vs Efferent Arteriole in Kidney

A comes before E in the alphabet, so Afferent arteriole comes before Efferent arteriole in the kidney.



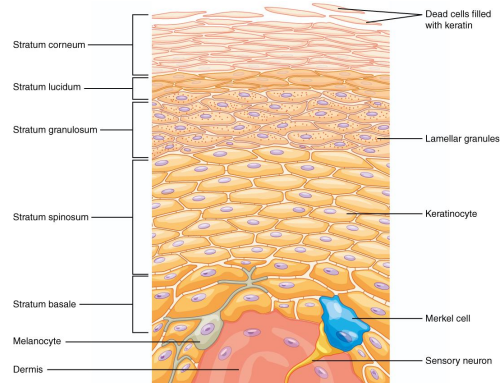
Integumentary System

STRUCTURE AND FUNCTION OF SYSTEMS

Mnemonic for Layers of Epidermis

Come Let's Get
Some Boba

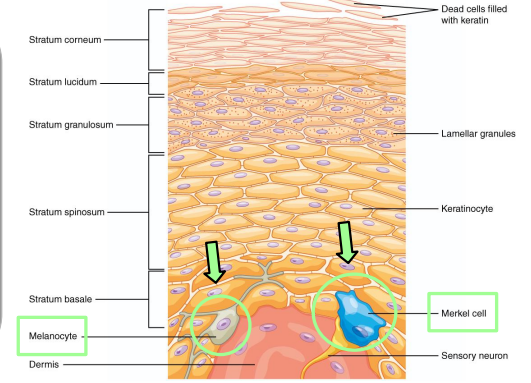
- Corneum
- Lucidum
- Granulosum
- Spinosum
- Basale



Mnemonic for Cells in the Stratum Basale

Stratum Basale
consists of Merkel
cells and
Melanocytes

Angela Merkel and
First Lady Melania
were at home base
(their home
countries).

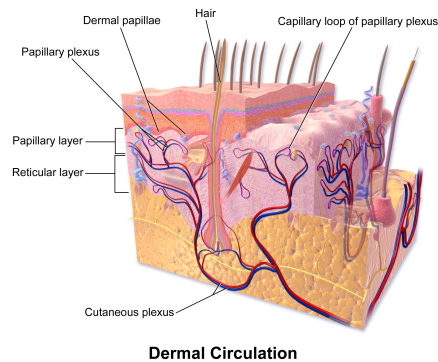


Mnemonic for Layers of the Dermis

Papillary dermis is the
layer on top of the
rectangular dermis.

Pap (Papa) lies on top of a
rectangular bed

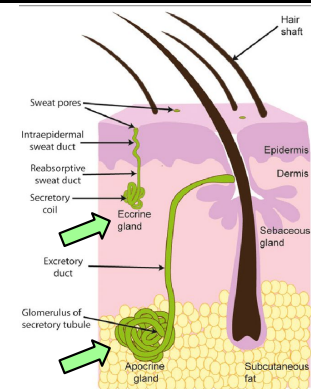
- Papillary dermis:
- Rectangular dermis



Dermal Circulation

Mnemonic for Types of Sudoriferous Glands

- Eccrine are
everywhere, but
especially the
armpits, hands, and
feet
- Apocrine are more
oily; hair follicle,
armpit, nipple, ear
canal, eyelid, nostril

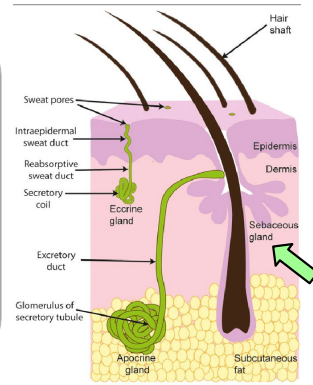


Mnemonic for Sebaceous Glands

Sebaceous glands secrete sebum that lubricate and waterproof hair and skin.

*Think of the Little Mermaid movie with Sebastian and Ariel. Ariel, who lives in the water, combs her hair with a fork.

*("Sebaceous" sounds like "Sebastian")



List of Mnemonic Devices for OAT Biology: Developmental Biology

Mnemonic for Capacitation

Capacitation:

- “Ca” in Capacitation should remind you that the sperm’s increase in Ca²⁺ leads to hyperactivity of the sperm
- “Citation:” A citation is a reference to something, just how the lipids and proteins are a label for the sperm; sperm membrane lipid and proteins destabilizes during capacitation
- “Prince Caspian:” a prince matures into a king, just how capacitation is the final maturation step for the sperm



Mnemonic for Acrosomal Reaction

Acrosomal Reaction

- Acrosomal enzymes that will digest the zona pellucida are released when the sperm’s acrosome membrane fuses with the sperm head

Mnemonic for Polyspermy Block

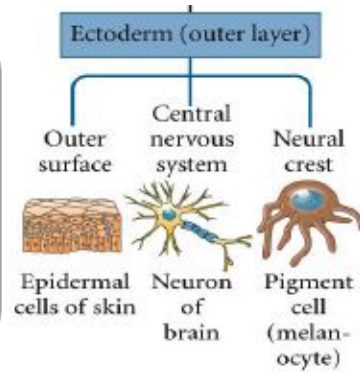
Polyspermy Block: “Slow Cats take Fast Naps”

- Slow Block
 - Ca²⁺ (calcium) is released into the egg, stimulating cortical reaction
- Fast Block:
 - Na⁺ (sodium) diffuses into the egg and depolarizes egg membrane, repelling other sperm

Mnemonic for Ectoderm

Ectoderm = attractoderm

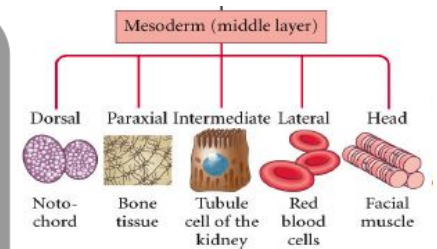
- Pretty skin + health
 - Epidermis (skin, nails, hairs)
 - Jaws & teeth
- Smart: Brain + CNS + PNS
- Smell good: sensory parts of skin, nails, hair
- Makes you sweat: adrenal medulla, mammary and sweat glands



Mnemonic for Mesoderm

Mesoderm = means of having sex

- Gonads
- Bone + skeleton
- Muscle
- Cardiovascular system (blood needs to be pumped)
- Spleen sounds like "mean" from "meansoderm"

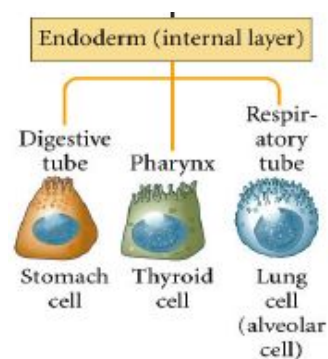


Crack OAT

Mnemonic for Endoderm

Endoderm = endermals + PLTT

- Epithelial lining of internal organs
- PLTT
 - Pancreas
 - Liver
 - Thyroid + Parathyroid
 - Thymus



List of Mnemonic Devices for OAT Biology: Evolution, Ecology, & Behavior

Evolution

EVOLUTION, ECOLOGY, & BEHAVIOR



Mnemonic for Evidence of Evolution

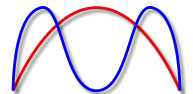
Emily Compares Biochemistry grades,
biography reports, and fossils

- Embryology
- Comparative anatomy
- Biochemical
- Biogeography
- Fossils

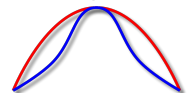
Mnemonic for Types of Natural Selection

- Stabilizing Selection: bell curve, MAINSTREAM is favored
 - “Being mainstream gives you a stable life”
- Directional Selection - one extreme is favored
 - Go in one direction
- Disruptive Selection
 - Mountains are split from disruption, which is why there are now two peaks
 - (the graph looks like a mountain)

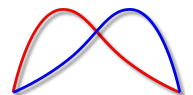
Disruptive selection



Stabilizing selection



Directional selection



Mnemonic for Hardy-Weinberg Equilibrium Requirements

Large Random M&M

- Large populations minimizes effects of genetic drift
- Random Mating
- No mutations are introduced to new alleles
- No natural selection so that allele frequencies are not impacted
- No migration so that population is isolated

*"n" sounds like "&"

Mnemonic for Bottleneck Effect vs Founder Effect

- Bottleneck effect: think of a bottle with marbles
- Founder effect: individuals migrate and settle in a new location
 - "Founder of a new location"



Mnemonic for Prezygotic Isolation

Gimme (give me) Mechanical Hawks That Behave

- Gamete isolation
 - "Gamete" kinda sounds like "gimme"
- Mechanical isolation
- Habitat isolation
- Temporal isolation
- Behavioral isolation

Mnemonic for Postzygotic Isolation

Morton Sterilizes Furniture [that is about] 2 breakdown.

- Hybrid MORTality: hybrid zygote is not viable, dies before reaching reproductive age
- Hybrid STERILity: hybrid zygote is sterile and can't reproduce
- Hybrid F2 BREAKDOWN: even if hybrid can reproduce, their offspring has decreased fitness

Mnemonic for Sources of Genetic Variation

Must Balance Many Sex

- Mutation
- Balanced polymorphism
- Polyploidy (“many” pairs of chromosomes)
- Sexual Reproduction

Mnemonic for Batesian vs Mullerian Mimicry

- Batesian mimicry: HARMLESS animal mimics color of harmful animal
 - Think of how your “BAE is harmless.” “Bae” sounds like the beginning of “batesian.”
- Mullerian mimicry: different poisonous species resemble each other
 - “Muller looks sullen (like a mean person) and we want to stay away.” (just like how you want to stay away from poisonous animals!)



Ecology

EVOLUTION, ECOLOGY, & BEHAVIOR

Mnemonic for Types of Competition

Think of “A-E-I” (like the vowels)

- Apparent competition
- Exploitation
- Intraspecific competition

Animal Behavior

EVOLUTION, ECOLOGY, & BEHAVIOR

Mnemonic for Innate Animal Behavior

FIIR (like "fir")

- Fixed action pattern
- Instinct
- Imprinting
- Reflexes



Mnemonic for Kinesis vs Taxis

- Taxis is change of movement in a specific direction. Think of how taxis (the car) drive in a certain direction.
- Kinesis is change in rate of movement in random directions. Think of kinetics of gas particles and how they move randomly.

Mnemonic for Animal Communication

VACT

- Visual
- Auditory
- Chemical
- Tactile