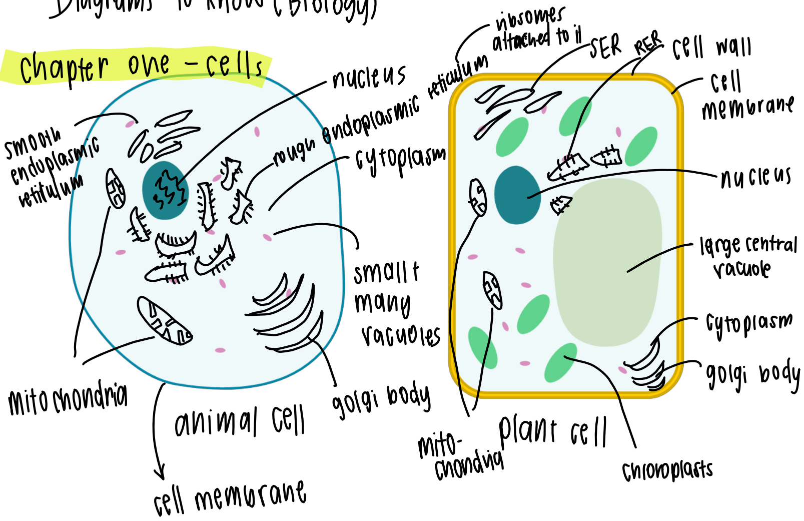
Diagrams to know (Biology)

chapter one - cells


smooth endoplasmic reticulum
nucleus
rough endoplasmic reticulum
cytoplasm
small + many vacuoles
mitochondria
golgi body
cell membrane
ribosomes attached to it
SER
RER
cell wall
cell membrane
nucleus
large central vacuole
cytoplasm
golgi body
mito-chondria
chloroplasts

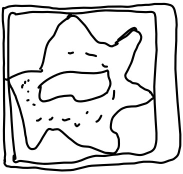
animal cell

plant cell

chapter 2 - movement of substances

plasmolysed cell

(vacuole, cytoplasm shrink, cell membrane pull away)

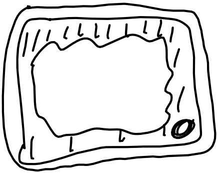


↓

look 'weaker'

turgid

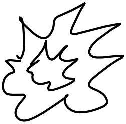
(a lot of water go in)



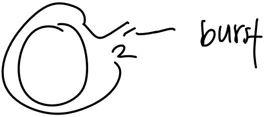
↓

look 'stronger'

crenated (water go out)



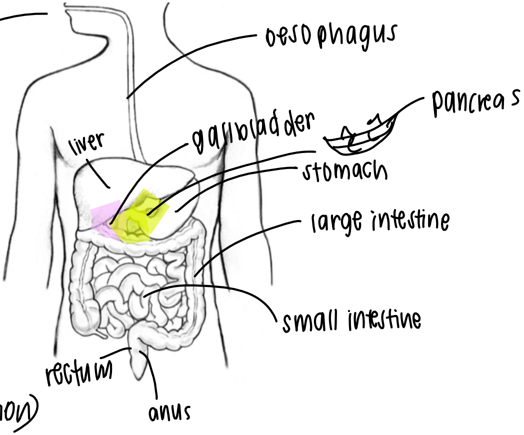
water go in



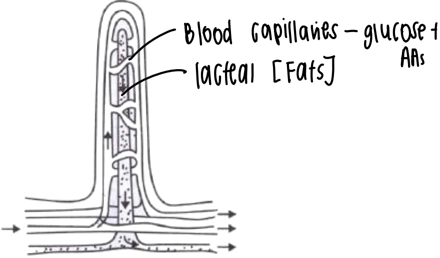
chapter 3 + 4 → don't have

chapter 5: Digestive system

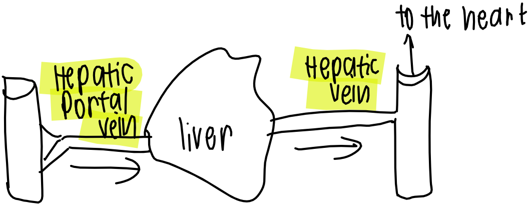
parts of a digestive system


mouth
oesophagus
pancreas
liver
gallbladder
stomach
large intestine
small intestine
rectum
anus

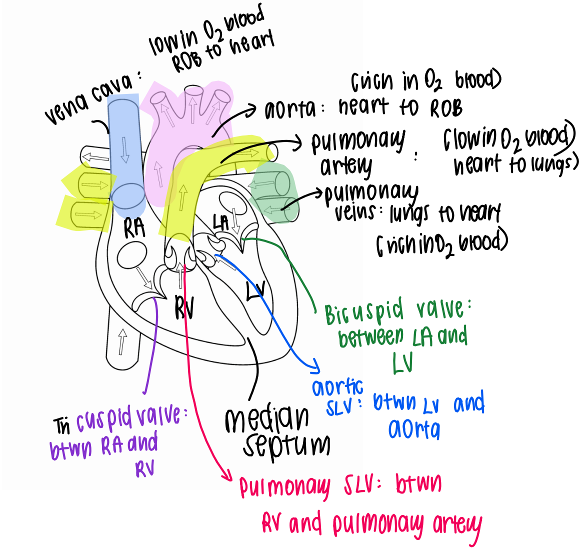
villus (very common)
esp for mcq


Blood capillaries – glucose + AAs
lacteal [Fats]

liver


Hepatic Portal vein
liver
Hepatic vein
to the heart

Chapter 6: Transport in humans


vena cava : low in O_2 blood ROB to heart
aorta : heart to ROB (rich in O_2 blood)
pulmonary artery : (low in O_2 blood heart to lungs)
pulmonary veins : lungs to heart (rich in O_2 blood)
RA
LA
RV
LV
Bicuspid valve : between LA and LV
aortic SLV : btwn LV and aorta
median septum
Tri cuspid valve : btwn RA and RV
Pulmonary SLV : btwn RV and pulmonary artery

Notes:

↳ right side [deoxygenated]

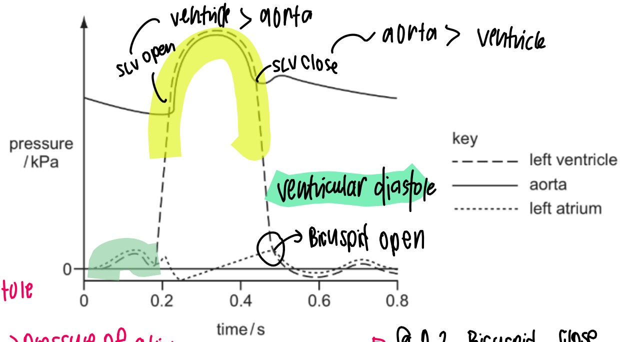
↳ left side [oxygenated]

↳ valves ④ Bicuspid, Tricuspid, Aortic SLV, pulmonary SLV

↓ prevent the backflow of blood

One cycle: 'lub', 'dub'

VERY, confirm tested pressure graph



0-0.2

→ atrial systole

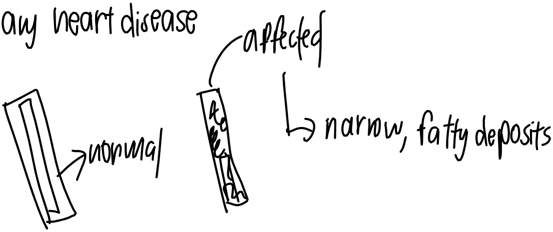
↳ pressure of atrium > ventricle → @ 0.2, Bicuspid close

To note:

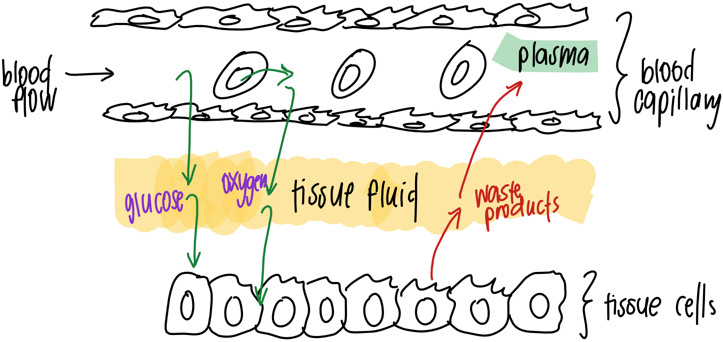
→ when valves close/open

→ atrial systole/ventricular systole and diastole

Coronary heart disease


affected
narrow, fatty deposits
normal

very common [exchange of substances btwn capillaries and tissue cells]


blood flow
plasma
blood capillary
glucose
oxygen
tissue fluid
waste products
tissue cells

① Direction of metabolic waste products

② Direction of O_2 and nutrients

glucose ⇒ blood, tissue fluid to tissue cells

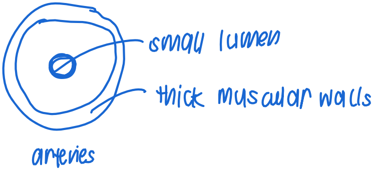
oxygen ⇒ RBC, blood plasma, tissue fluid, tissue cells

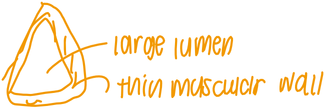
waste products ⇒ tissue cells, tissue fluid, blood capillaries, blood

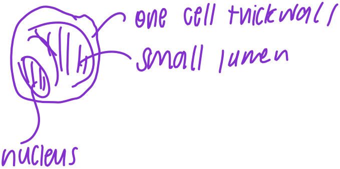
] all done by diffusion

blood vessels

[veins, arteries and capillaries]


small lumen
thick muscular walls
arteries

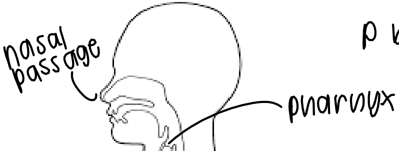

large lumen
thin muscular wall


one cell thick wall
small lumen
nucleus

commonly asked to identify in mcq qns

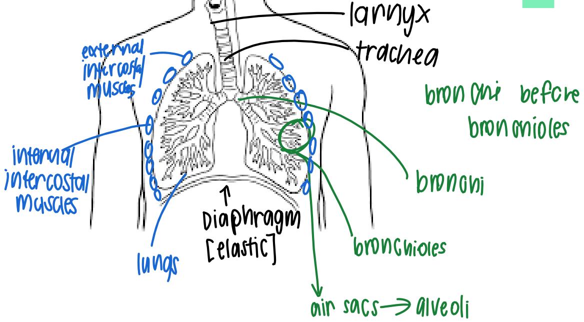
Chapter 7 - Respiration in Humans

parts of a respiratory system


nasal passage
pharynx

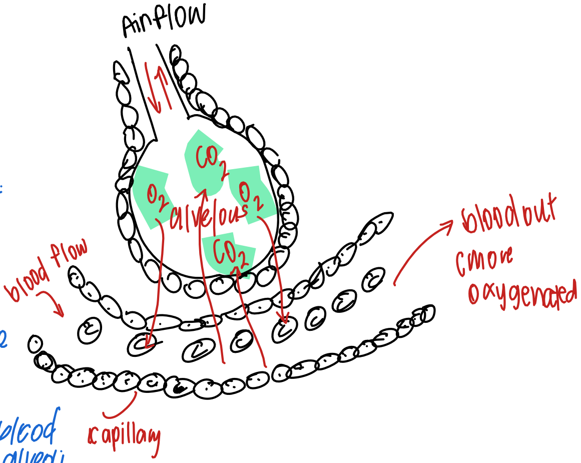
P before L

Paya Lebar


larnyx
trachea
external intercostal muscles
internal intercostal muscles
lungs
Diaphragm [elastic]
bronchi before bronchioles
bronchi
bronchioles
air sacs → alveoli

very important: exchange of substances in alveoli

common for MCQ

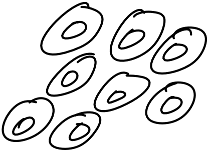

Airflow
CO2
O2
alveolous
O2
CO2
blood flow
blood out
(more oxygenated
capillary

just take note:

↳ oxygen from alveoli diffuses out of the alveoli to RBC

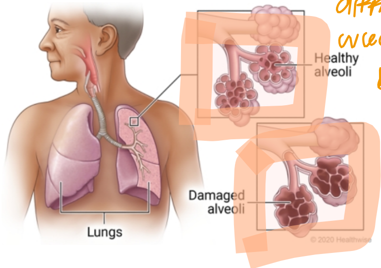
↳ CO_2 from blood go to alveoli

what does it look like for some respiratory diseases: understanding purposes lung cancer : uncontrolled cell division (too many cells)



Chronic bronchitis : air passages inflamed, excessive mucus secretion, cillia paralysed

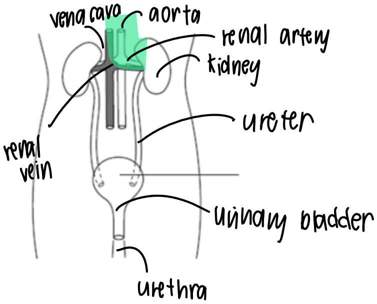
emphysema : partition walls btwn alveoli break down → breathing difficulties, wheezing, breathlessess

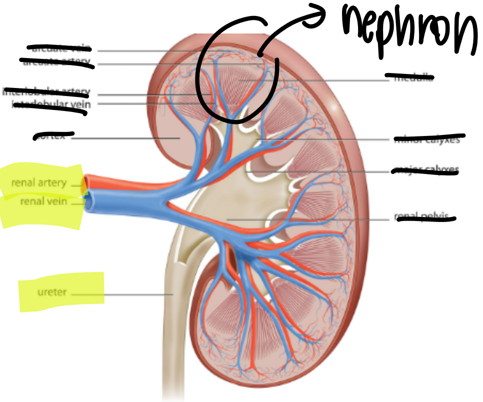

Healthy alveoli
Damaged alveoli
Lungs
© 2020 Healthwise

SA to V ratio affected

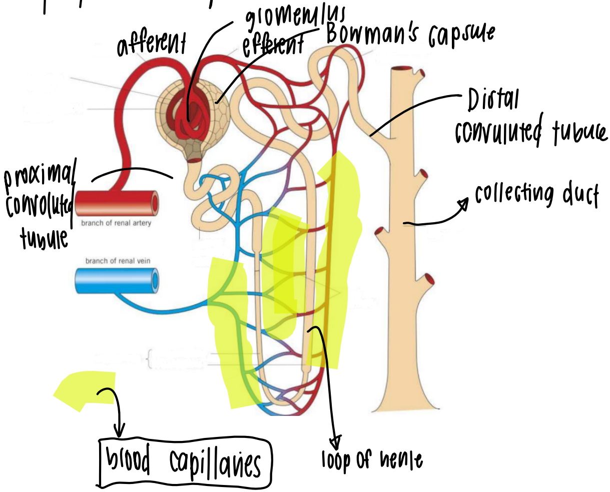
Chapter 8: excretion in humans

human urinary system

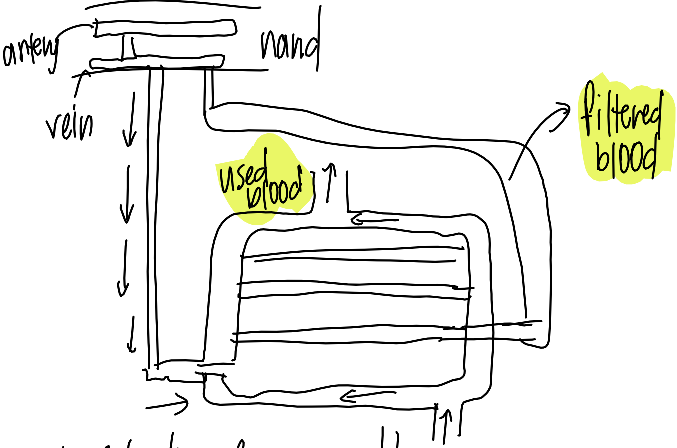

vena cava
aorta
renal artery
kidney
ureter
renal vein
urinary bladder
urethra


nephron
[redacted]
[redacted]
[redacted]
[redacted]
[redacted]
[redacted]
[redacted]
[redacted]
[redacted]
renal artery
renal vein
ureter

inside the structure of a nephron


afferent
glomerulus
efferent
Bowman's capsule
Distal convulted tubule
collecting duct
proximal convoluted tubule
branch of renal artery
branch of renal vein
blood capillaries
loop of henle

kidney dialysis (quite common + easy to score)

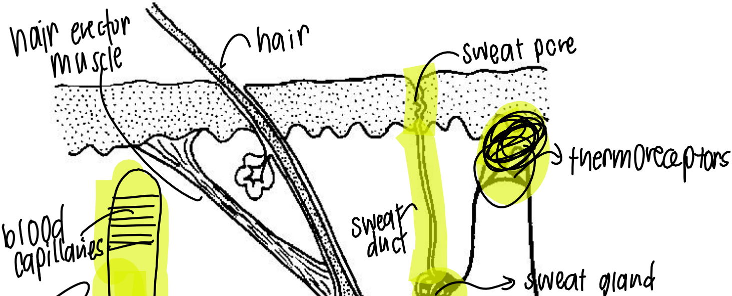

artery
hand
vein
used blood
filtered blood

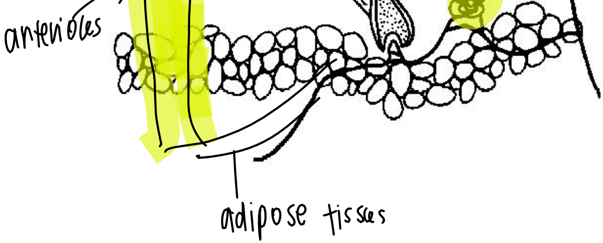
take note of direction of substances!!

↳ urea — diffuse into fluids
↳ protein, blood cells X X X

chaper 9: Homeostasis and Hormonal control

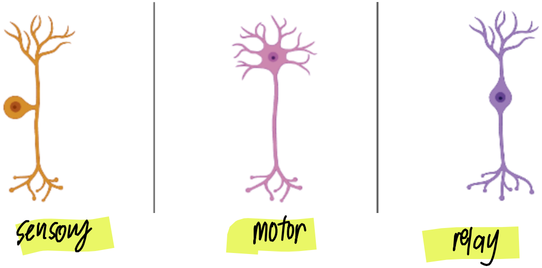
temperature regulation → structure of skin


hair erector muscle
hair
sweat pore
thermoreceptors
blood capillaries
sweat duct
sweat gland

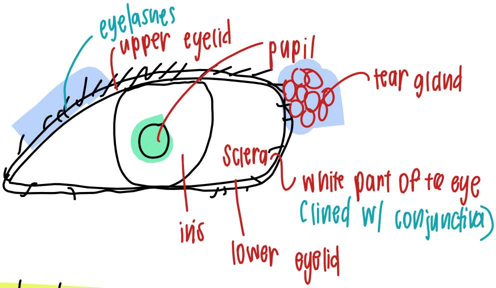

arterioles
adipose tissues

Chapter 10: nervous system and the eye

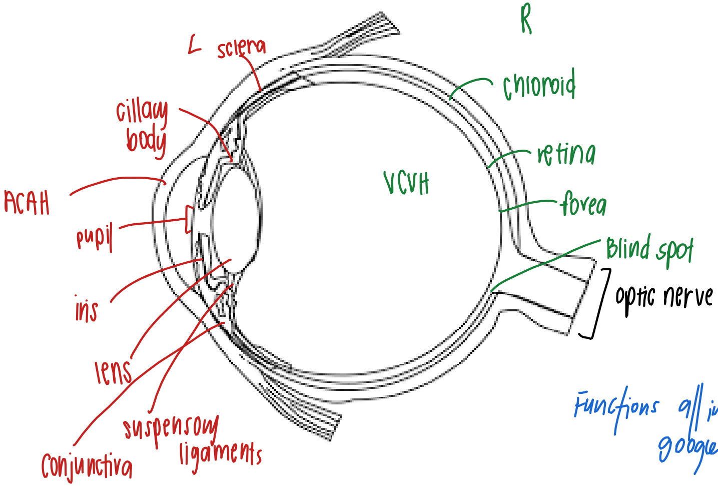
The 3 neurones: Sensory, relay, motor ☆ know cell structure


sensory
motor
relay

external eye structure

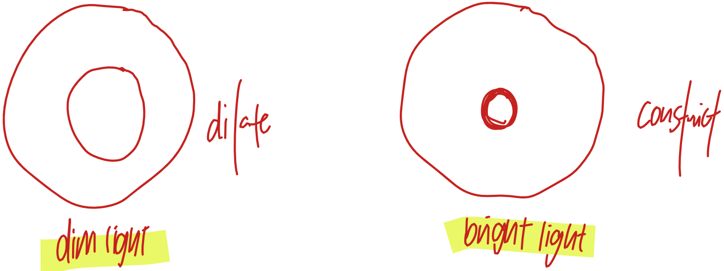

eyelashes
upper eyelid
pupil
tear gland
sclera
white part of the eye
(lined w/ conjunctiva)
iris
lower eyelid

internal eye structure


L
sclera
R
cillary body
chloroid
retina
VCVH
ACAH
fovea
pupil
Blind spot
optic nerve
iris
lens
suspensory ligaments
conjunctiva

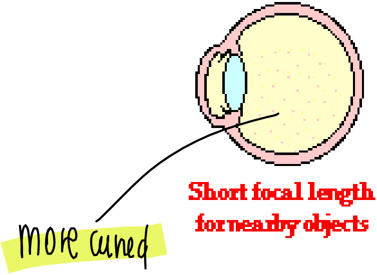
Functions all in google docs!

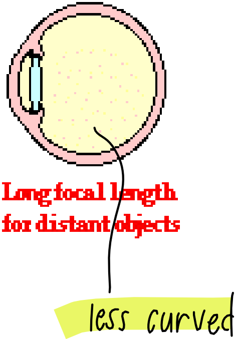
pupil reflexes


dilate
constrict
dim light
bright light

near and far [cillary body + suspensory ligaments + lens]

Accomodation

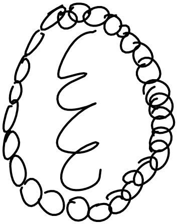

Short focal length for nearby objects
more curved

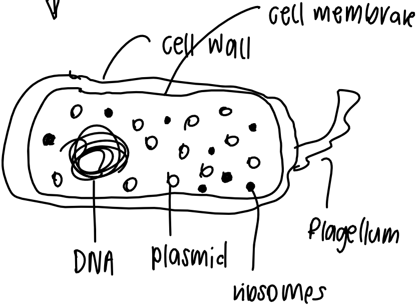

Long focal length for distant objects
less curved

Chapter 11: Infectious diseases

virus vs bacteria

genetic material covered w/ a protein coating

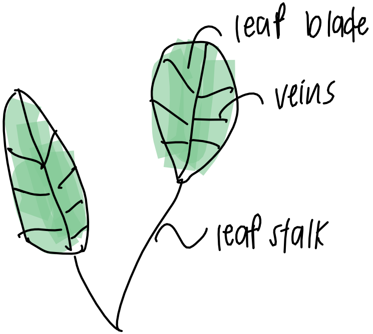



cell membrane
cell wall
DNA
plasmid
ribosomes
flagellum

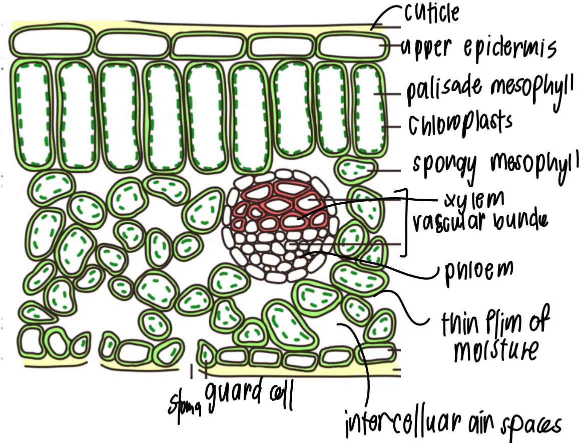
common qns: to compare structure of bacterial cell vs virus

Chapter 12: nutrition and transport in flowering plants

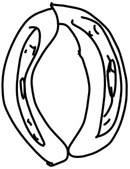
external structure

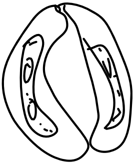

leaf blade
veins
leaf stalk

internal structure:


cuticle
upper epidermis
palisade mesophyll
chloroplasts
spongy mesophyll
xylem
vascular bunde
phloem
thin flim of moisture
Stoma
guard cell
intercolluar air spaces

guard cells + stomata:

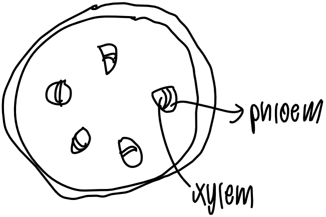

turgid open

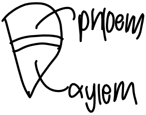

flaccid, shrink

xylem + phloem very common

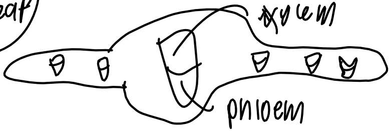
to remember xylem always inside!!

in stem


phloem
xylem

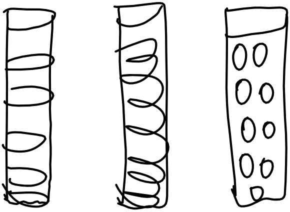

phloem
xylem

in leaf


xylem
phloem

Inside of a xylem and phloem :

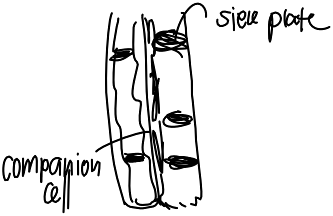
xylem



can come in this few patterns

also common for MCQ!!

phloem


sieve plate
companion cell

chapter 13: ecology

pyramid of numbers & biomass:

→ usually the same pattern throughout

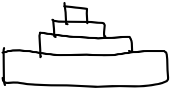
→ producer most → most energy

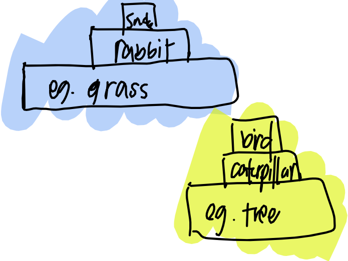
[due to the 90% energy lose every trophic level]

-depends.

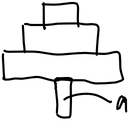
some ex,

normal one:



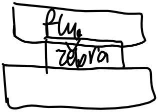

Snk
rabbit
eg. grass
bird
caterpillar
eg. tree

①



eg. a tree can support many caterpillars

②



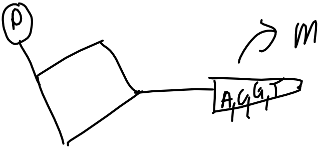
parasitism RS, many flies can feed on one zebra

Chapter 4: Molecular genetics

One nucleotide

↓

→ sugar
→ phosphate group
→ nitrogenous base (A, C, G, T)

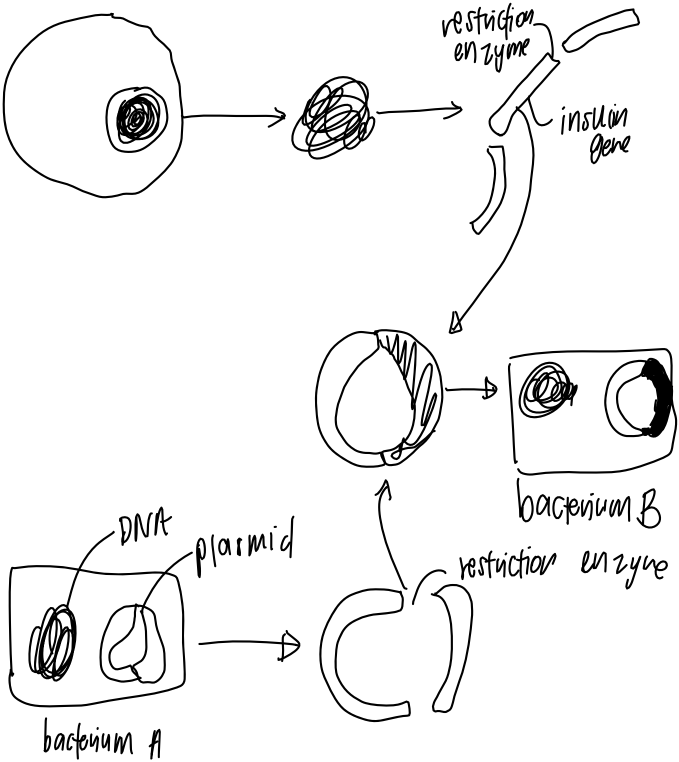


→ many of this (polynucleotides)

gene → sequence of polynucleotides

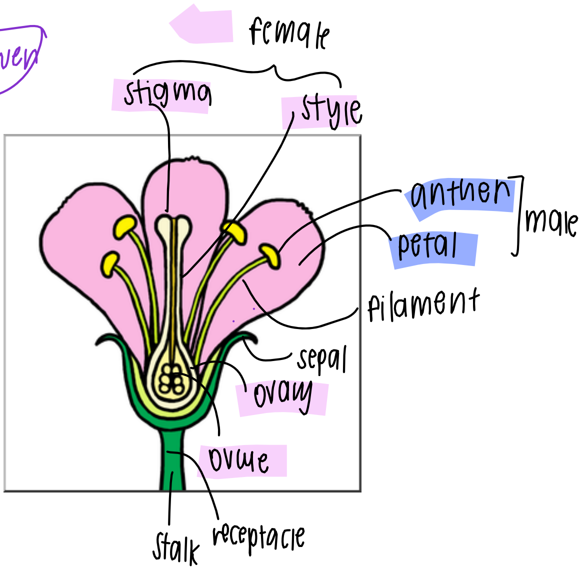
two strands of polynucleotides ← DNA

exampe of genetic engineering (making insulin)

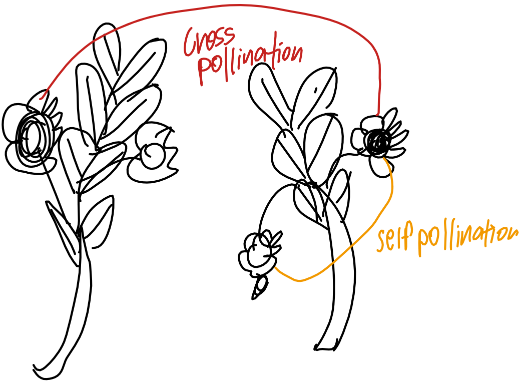

restriction enzyme
insulin gene
bacterium B
DNA
plasmid
restriction enzyme
bacterium A

Chapter 14: Reproduction in Plants

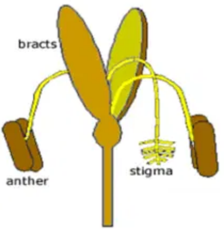
Parts of a flower

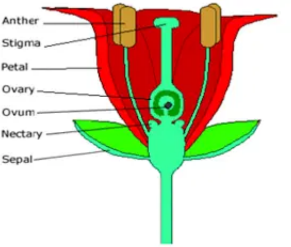

female
stigma
style
anther
petal
male
filament
sepal
ovary
ovule
stalk
receptacle

pollination [self pollination + cross pollination]

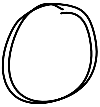

Cross pollination
self pollination

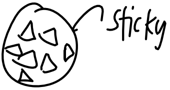
Wind vs insect pollinated flower ☆


bracts
anther
stigma


Anther
Stigma
Petal
Ovary
Ovum
Nectary
Sepal

pollen grains:

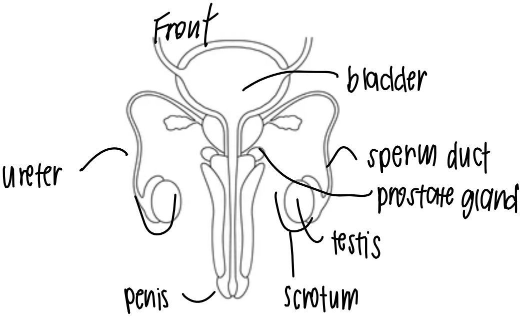




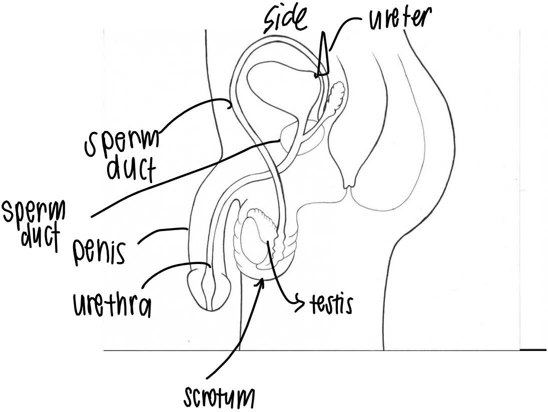
Chapter 16: Reproduction in Humans

male + female RSs [must know front + side]

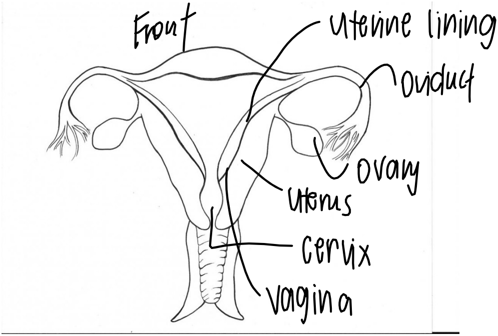
Male

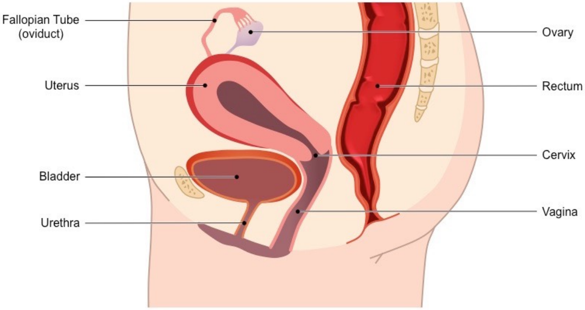

Front
bladder
sperm duct
prostate gland
ureter
testis
penis
scrotum

shutterstock.com · 2041502837


side
ureter
sperm duct
sperm duct
penis
urethra
testis
scrotum

Female


Front
uterine lining
oviduct
ovary
uterus
cervix
vagina


Fallopian Tube (oviduct)
Ovary
Uterus
Rectum
Cervix
Bladder
Vagina
Urethra

chapter 17: Inheritance, don't have
just remember, punnet square/cross