

# First week

By: Nadine Allom

homeostasis (same state)

\* keeping every thing in balance

\* keeping internal environment of the body constant

Examples - water content - B.P - glucose  
- pH - hormones - temperature

\* it is important because cells and tissues can survive and function only in maintained internal conditions

\* \* Body functions are regulated by 3 systems:

\* Auto regulation

in heart, Brain and kidney

\* nervous system

rapid onset  
short duration

\* Endocrine system

slow onset  
long duration

(chemical, hormonal system)

acts as one system

Feed back control system

negative

A stimulate B  
B inhibit A

as temperature and thyroxine secreting

positive

A stimulate B  
B stimulate A

as labour

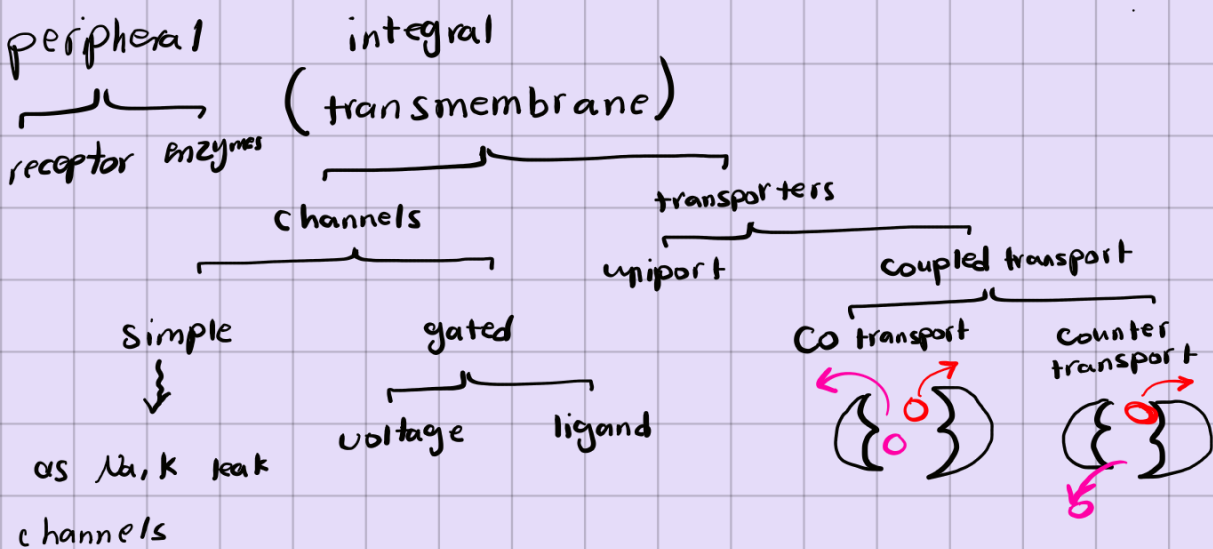
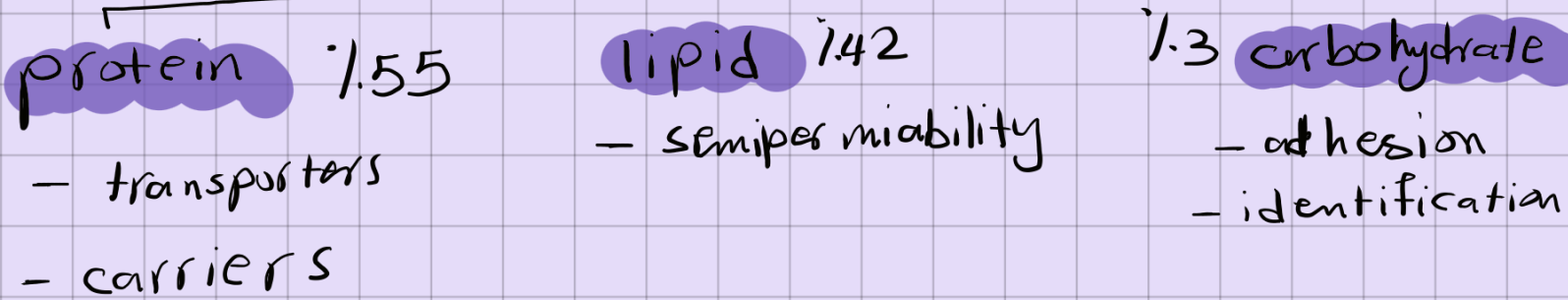
by oxytocin hormone

\* push levels out of normal ranges



# transport

## membrane



# Transport



**osmosis**  
 just for water  
 from low to high concentration  
 \* conditions:  
 - semipermeable membrane  
 \* water passes through channels called aquaporins

**diffusion**

- simple**
  - no need for energy or carrier
  - Small particles
  - \* when we reach equilibrium, the rate becomes zero
  - \* through channels as ions or lipid bilayer as CO<sub>2</sub>, O<sub>2</sub>

**facilitated**  
 no need for energy  
 need carrier  
 Large molecules  
**Mechanism:**  
 1- molecule attaches to binding site on the carrier protein on one side of membrane  
 2- carriers open the opposite side of membrane  
 3- molecule detaches from the carrier as glucose and amino acids

### Carrier

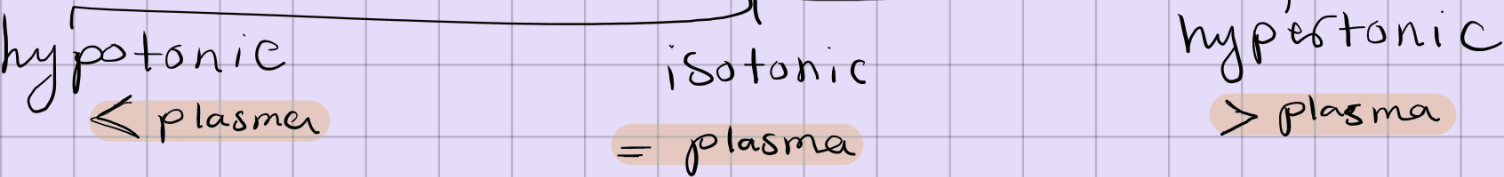


## Factors:

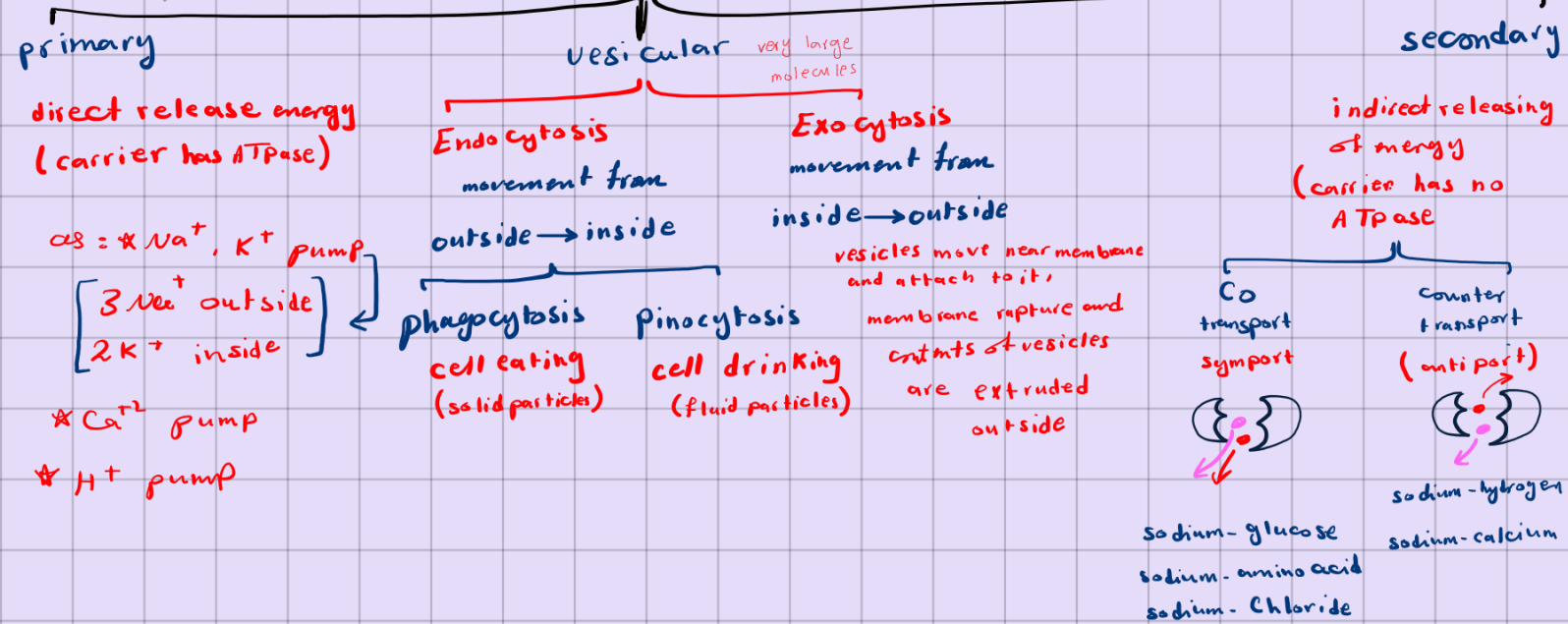
- 1- gradient
  - 2- temperature
  - 3- surface area
  - 4- lipid solubility
  - 5- number of protein channels
  - 6- thickness of membrane
  - 7- molecular weight
- Direct proportion: 1, 2, 3, 4, 5  
 Inverse proportion: 6, 7

# Tonicity

osmolality for fluid comparing with plasma



# Active transport



# Body fluids

- male  $\rightarrow$  60%
- Female  $\rightarrow$  50%
- Obese  $\rightarrow$  45%
- Child  $\rightarrow$  70%

## Factors:

- 1 - age  $\rightarrow$  inverse relation
- 2 - sex  $\rightarrow$  in males more than females because:
  - higher muscles
  - lower fats than females

3 - Body fat  $\rightarrow$  inverse relation

(TBW) Total Body water =

60% or 50% \* weight

