2nd lecture

NOTES

Physiology

RT ♡

Transport across the cell membrane

Cell membrane

Lipid 42%

↓

Phospholipids (bilayer)

The head is charged

→ semi permeable membrane

2 factors → lipid solubility
→ not charged

→ كلما زادوا بتزيد قدرتهم على المرور

* CO_2 is more lipid than the O_2

CO_2 يمر بسهولة أفضل من O_2

* not charged VS charged

غير المشحون يمر بشكل أسهل

جزيء الماء صغير جدًا بقدر يمر

Protein 55 %

- Peripheral
  - outer → receptors
  - inner → receptors / enzymes
- Integral
  - channels
    - open → -no gate- → simple channel / Leak channel
    - gated → voltage gate → The gate open due to Δ in voltage
    - OR Ligand gate → opened by binding with chemical substance

البروتين ينقل اللي ما قدر يدخل عبر الـ lipid ....

مين؟ الـ charged

والـ water-soluble

* receptors could be → Proteins / Carbohydrates

Carriers
- 1 ion → Uniport
- 2 ions (coupled) → Symport [Same direction] / Antiport [opposite directions]

Carbohydrates 3%

Glycocalyx
- Glycolipids
- Glycoproteins

Acts as
- Cell receptor
- Cell adhesion
- Cell recognition

* Proteins > Lipids > Carbohydrates

Transport across cell membrane

Passive

No need for energy

With gradiant:

- concentration
- electrical
- pressure

Active

needs energy

Diffusion

Simple

No need for carrier

for very

small particles

tell equilibrium ★

Character:
- small
- non-polar
- lipid soluble

Facilitated

because of its size

by carrier (specially)

Has competitive inhibition

and maximum capacity (glucose / amino acids)

Carriers in FD:
- Speciality: each is specialized for specific substance
- Saturation property: has a maximum.
- Competition: Several compounds may compete for the same carrier

Osmosis

water + semi permeable membrane : شروطها

يسمح بمرور الماء وبعض الأيونات

the H2O move from the low concentration to high concentration

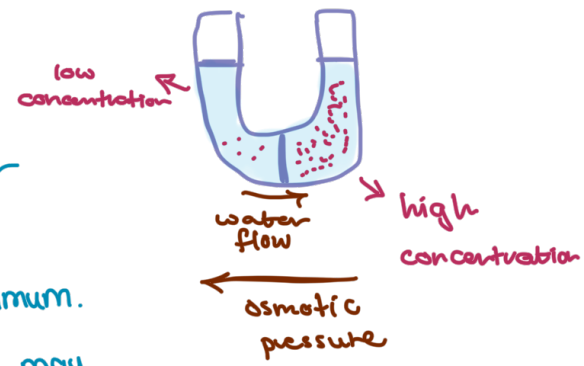
- Water passes through channels (aquaporins)

Osmotic pressure

الضغط اللازم لمنع الـ osmosis

كل ما زادت الـ particles زاد الضغط من جهته

الضغط الأسموزي يكون دائمًا في جهة تركيز المواد المذابة الأعلى، لأنها الجهة اللي تجذب الماء نحوها



Flow rate at equilibrium = Zero

Mechanism of facilitated:

molecule attaches to binding site

↓

carrier opens the opposite side

↓

molecule deattaches and leave the carrier

Tonicity (slide 29/32)