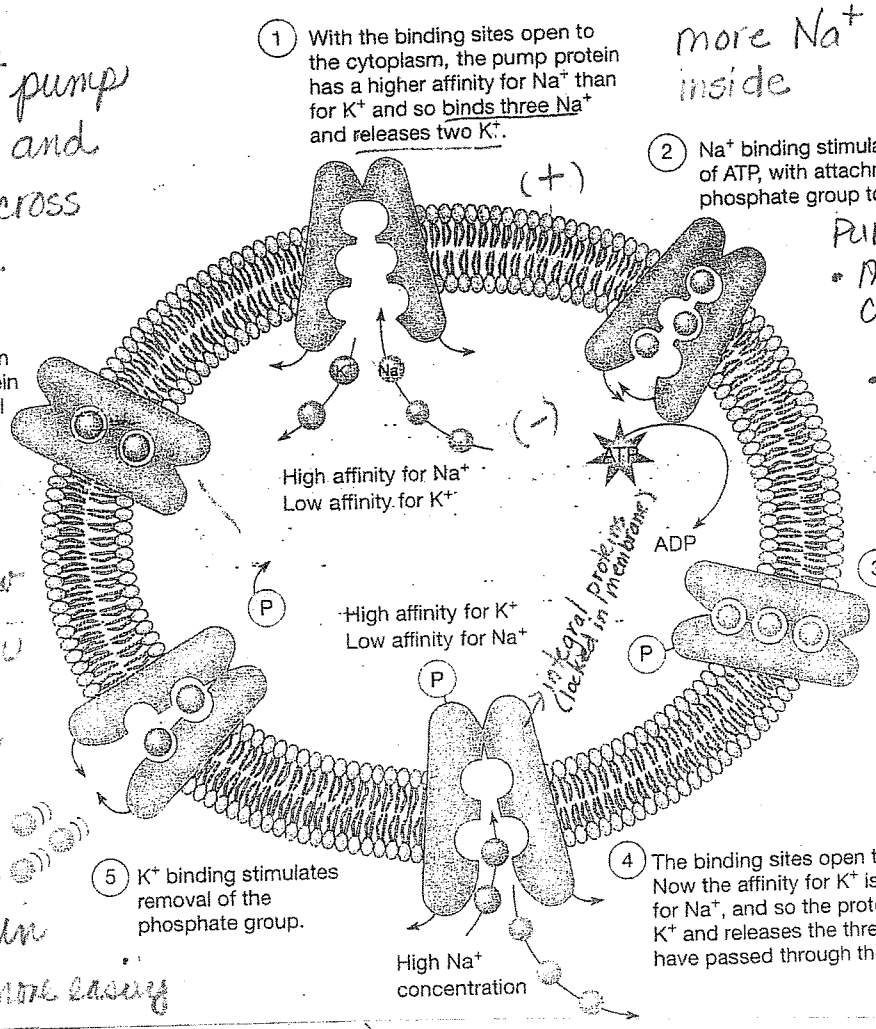
Sodium - Potassium Pump

uses ATP to transfer Na^+ out of cell and K^+ in, both ions against concentration gradient

more Na^+ outside cell than inside

(Ea) time Na^+-K^+ pump cycles, 3 Na^+ ions and 2 K^+ ions move across plasma membrane



PURPOSE:

- maintain electrically charged membrane
- concentration of ions outside is different from inside, by doing that allows work to be done so

to set up electrical differences to allow proteins to function

sets up electrical gradient

- Substances can go in/out of cell via membrane

→ more work to pump Na^+ is pumped out/in

K^+ can go in/out more easily

- K^+ (potassium ions) are pumped from outside to inside cell
- Na^+ (sodium ions) binds stimulating production of ATP via hydrolysis (splitting of H_2O to make ATP)
- Loses phosphate group (ADP) which makes protein change shape
- Binding site opens to outside cell releasing Na^+ and taking in 2 K^+
- K^+ stimulates removal of a phosphate group
- Loss of phosphate changes protein back to original shape