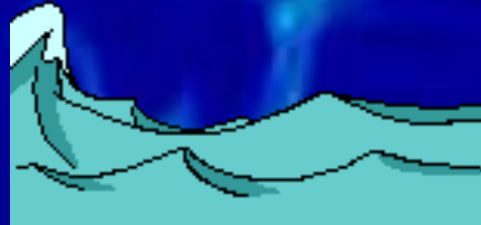


REGOLAZIONE DELL' EQUILIBRIO IDRO-ELETTROLITICO

Prima, prima...c' era solo acqua



Poi siamo incominciati ad uscire...



Poi siamo usciti...





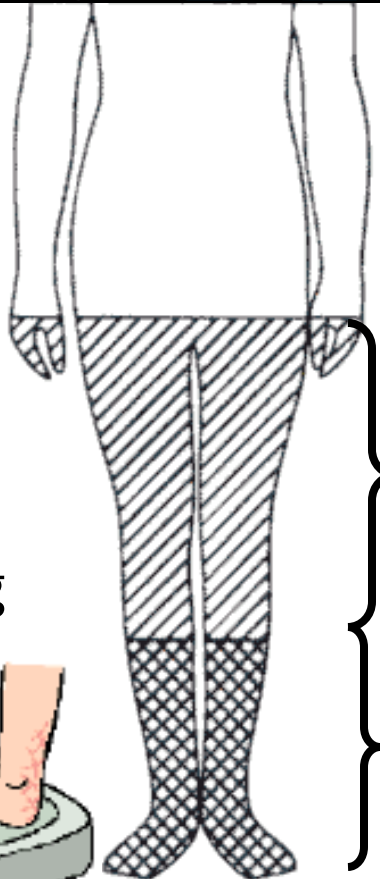
E da quando siamo usciti...



...dell' acqua abbiamo sempre bisogno



perché siamo fatti di acqua...



= 70 Kg

FIS=3/4
LEC
(10,5 L)

FIV=1/4
LEC
(3,5 l)

Na=500

LIC=2/3
(28 L)

K=2840

Na=2300

LEC=1/3
(14 L)

K=60

Acqua
60% peso=
42 litri

Osmolarità = soluti (osmoli)/acqua (litri)

$$P_{\text{osm}}(\text{mOsm/Kg H}_2\text{O}) = 2 \times [\text{Na}^+] (\text{mEq/L}) + \text{glucosio} (\text{mg/dl})/18 + \text{azotemia} (\text{mg/dL})/2.8$$

$$P_{\text{osm}}(\text{mOsm/Kg H}_2\text{O}) = 2 \times 140 + 70 / 18 + 10 / 2.8$$

$$P_{\text{osm}}(\text{mOsm/Kg H}_2\text{O}) = 280 + 3.88 + 3.5$$

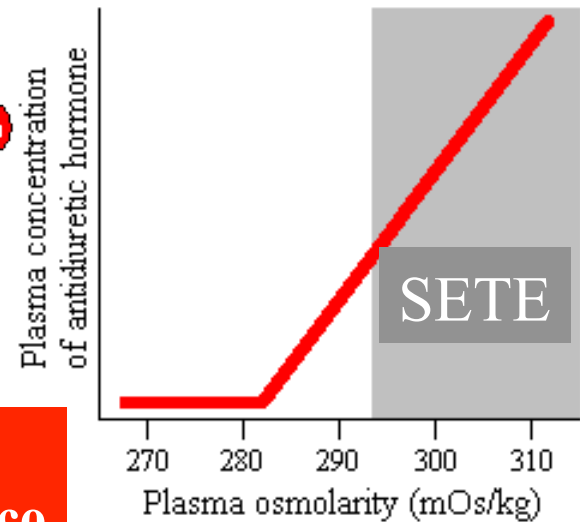
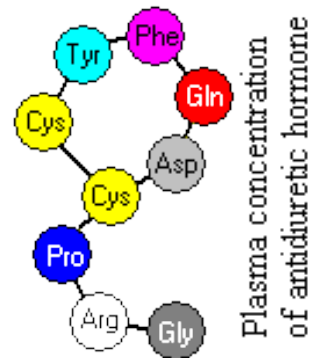
$$P_{\text{osm}}(\text{mOsm/Kg H}_2\text{O}) = 287$$



**Ma non si
può stare
sempre a bere**



Bisogna risparmiare l' acqua



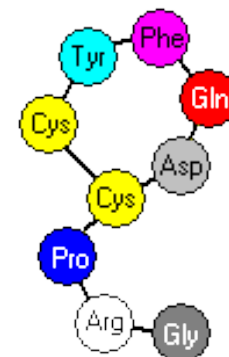
**Ormone
Antidiuretico
(ADH; AVP)**



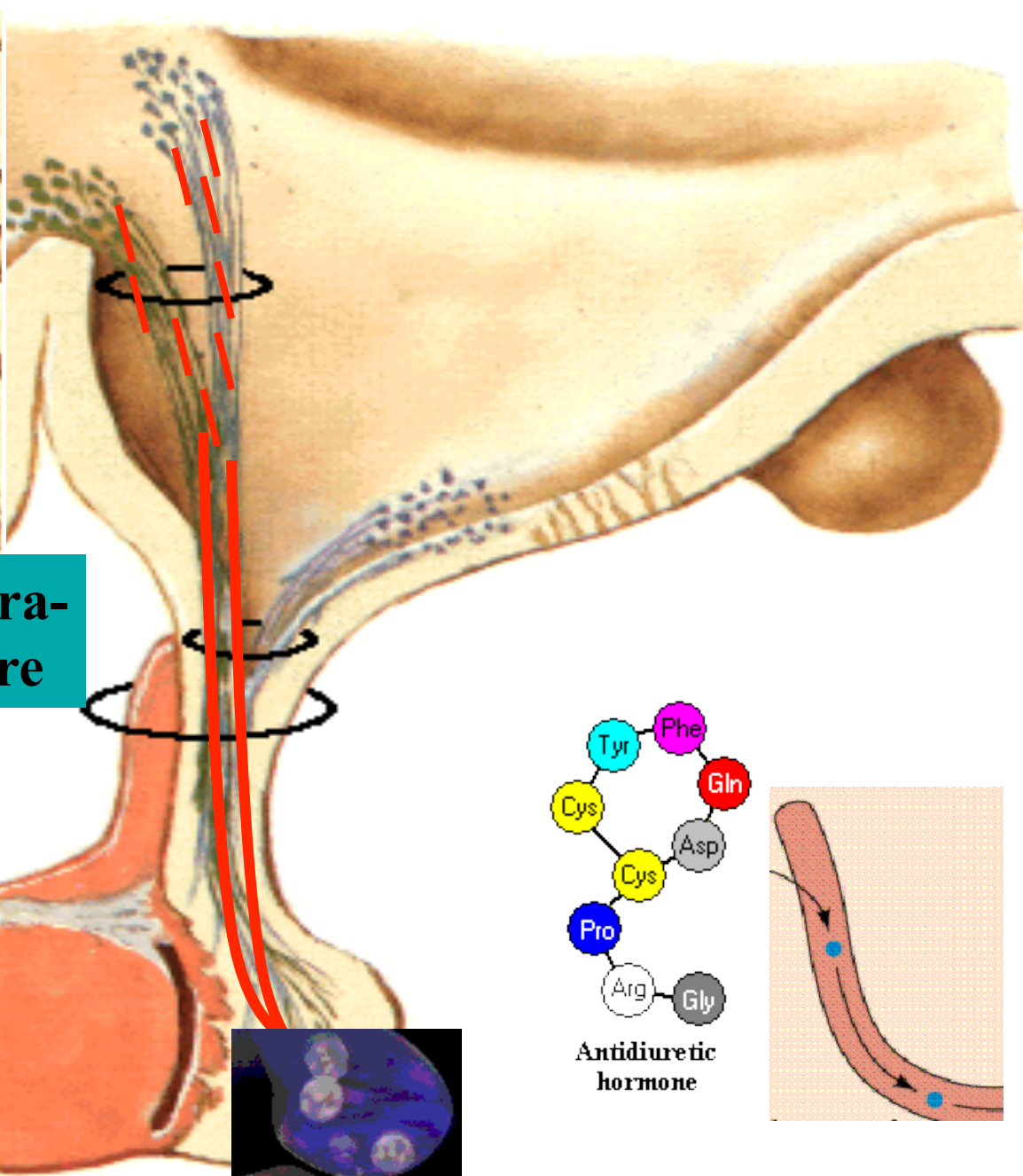
Per esempio: nel deserto ci possiamo andare perché...



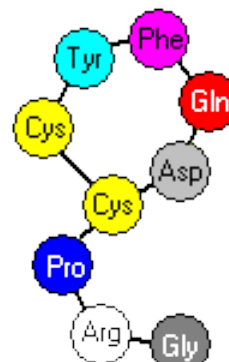
**Grazie a Dio
c'è l'ADH**



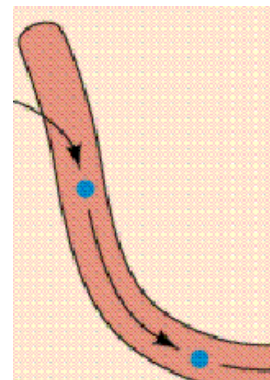
**Antidiuretic
hormone**



Nucleo Sovraottico



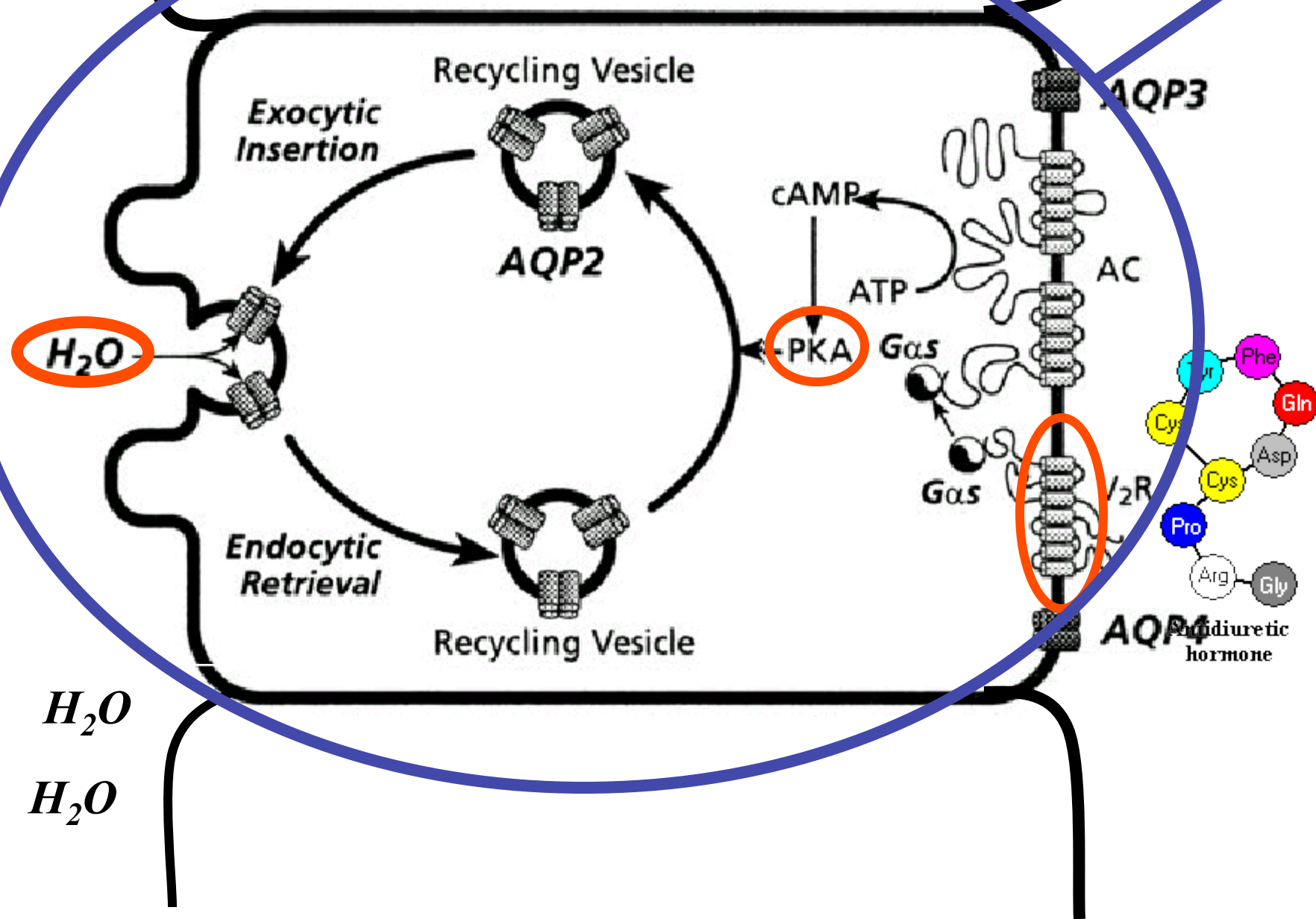
Antidiuretic hormone



Da dove viene l'ADH?

H_2O

Tubulo
collettore



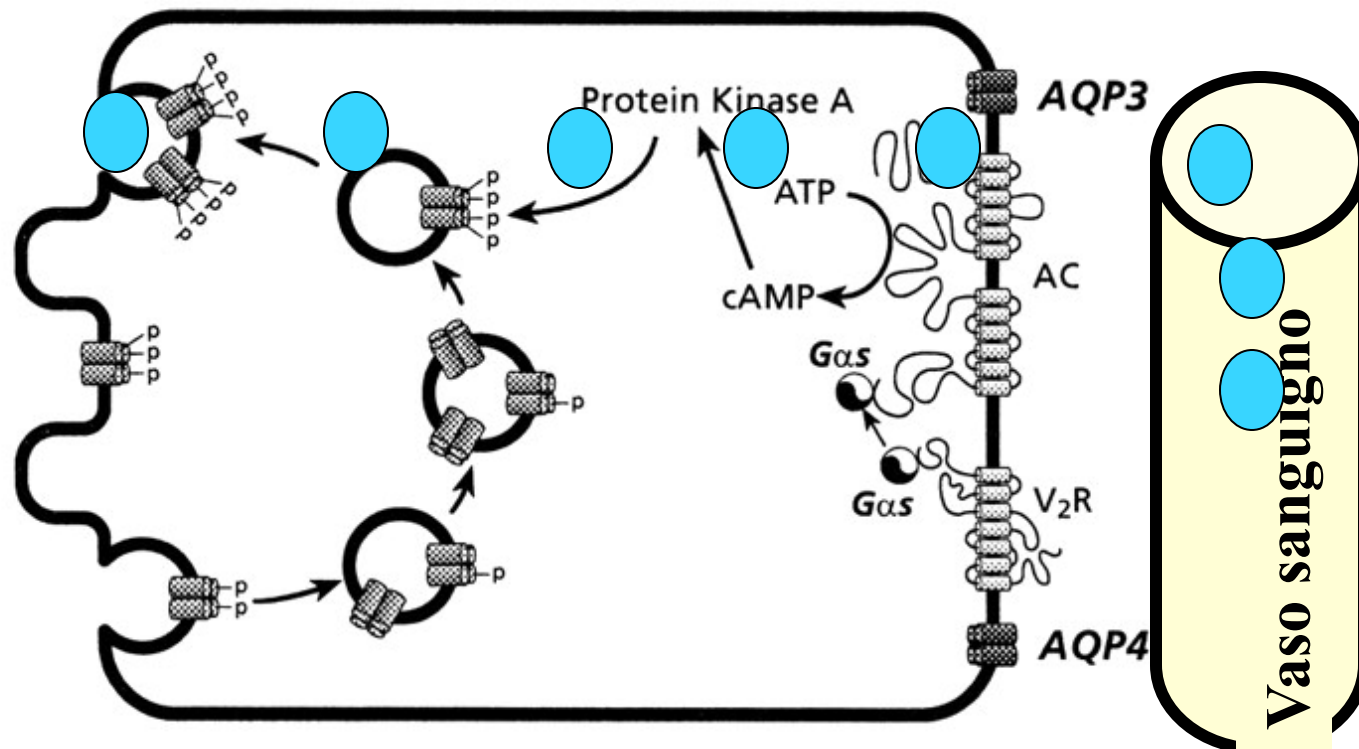
H_2O

H_2O

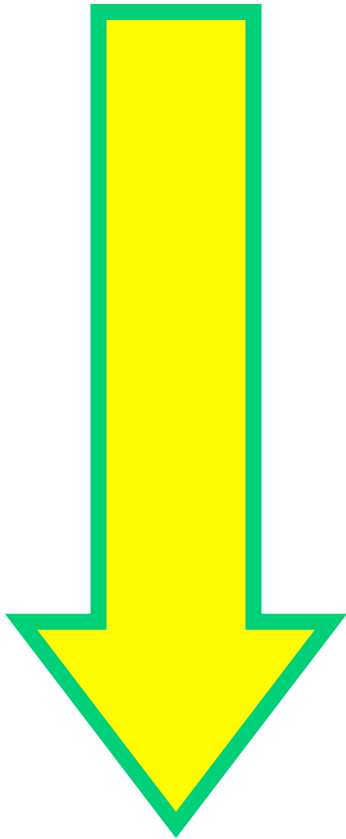
Versante luminale

H₂O

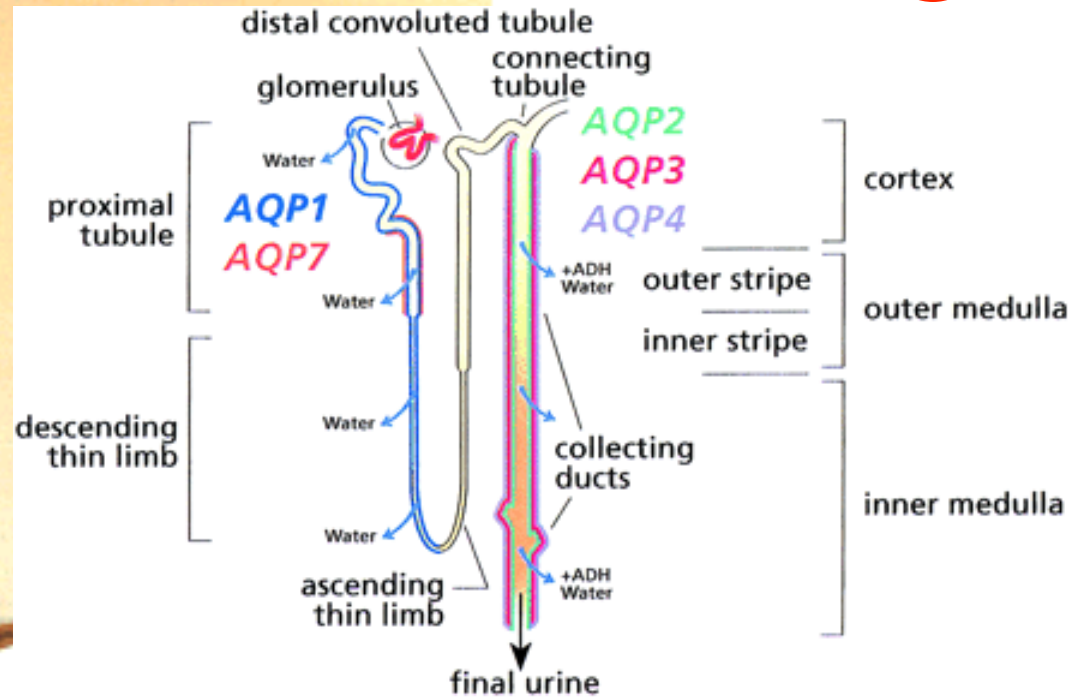
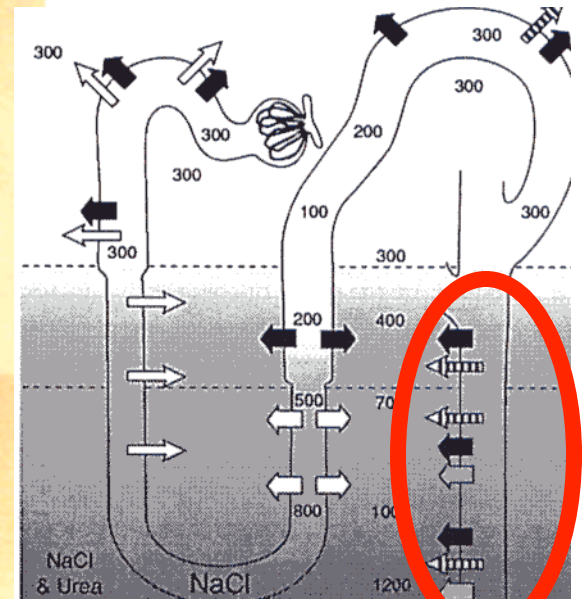
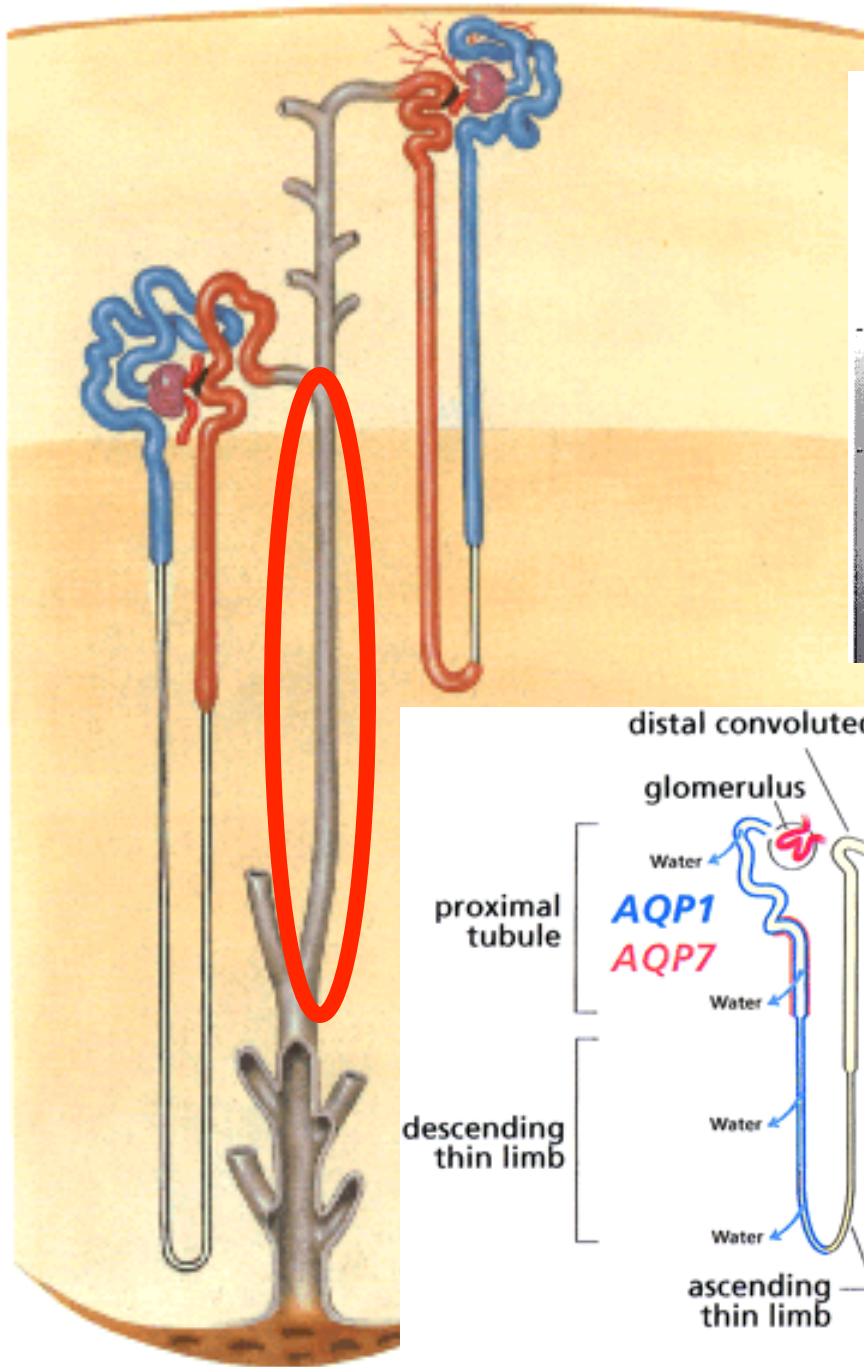
Versante intracellulare



180 litri/die



1 litro/die

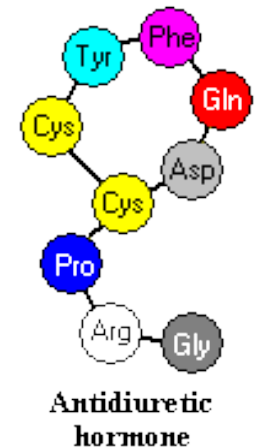
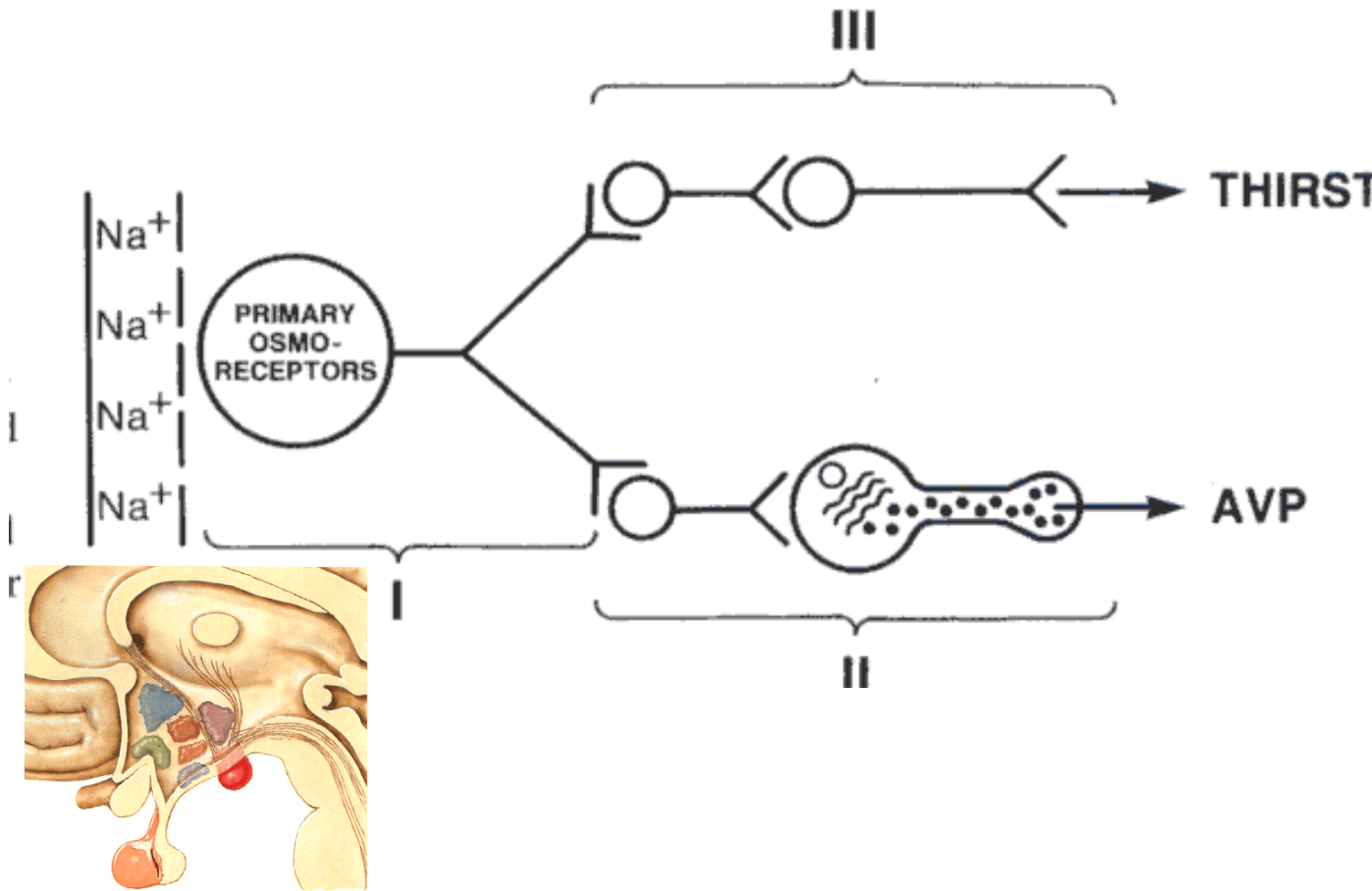


Osmolarità = soluti (osmoli)/acqua (kilogrammi)

Osmolarità = Na^+ /acqua

$\uparrow$ Osmolarità = Na^+ /acqua

$\uparrow$ Osmolarità = Na^+ /acqua



↑ SETE

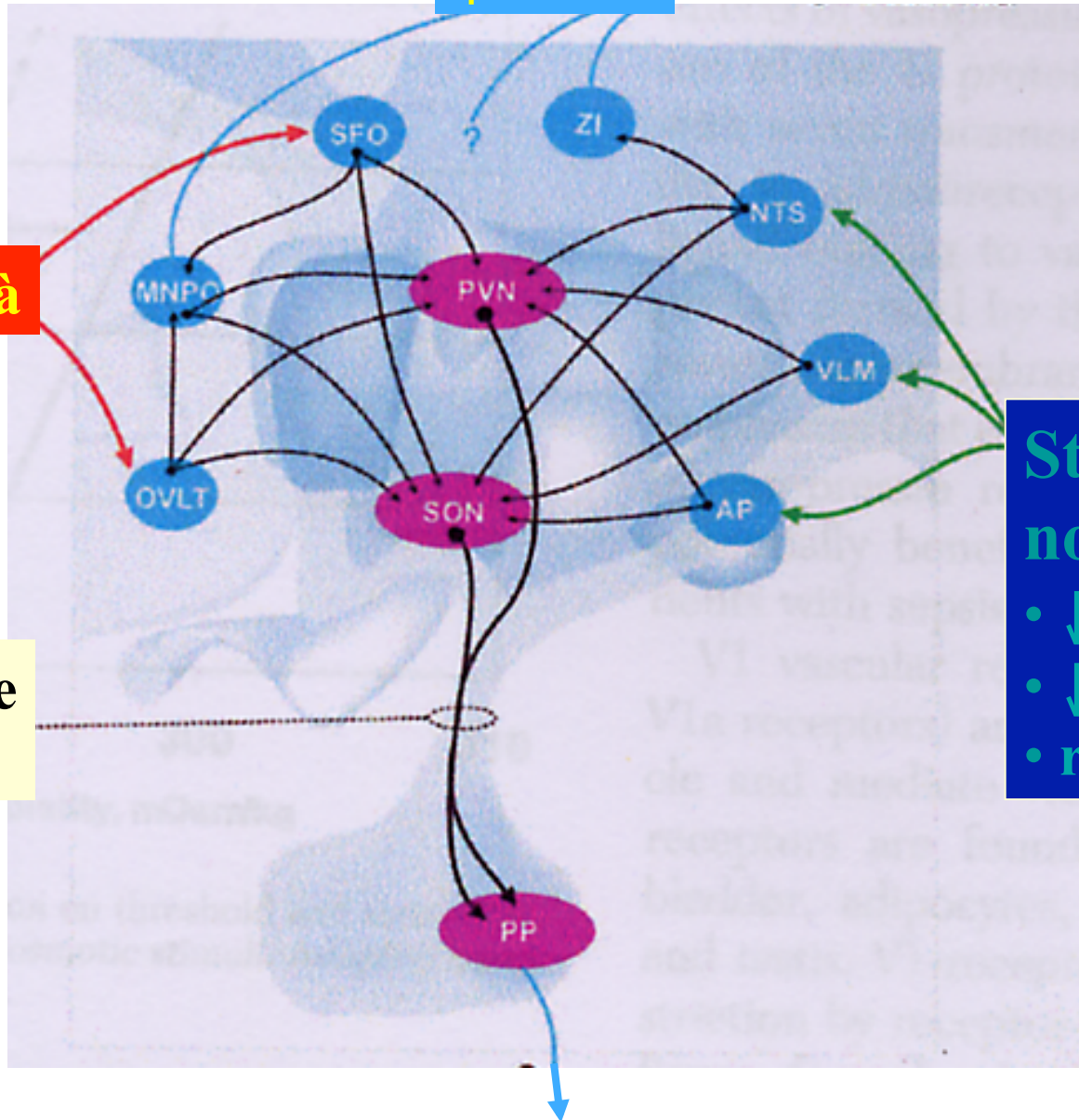
↑ Osmolarità

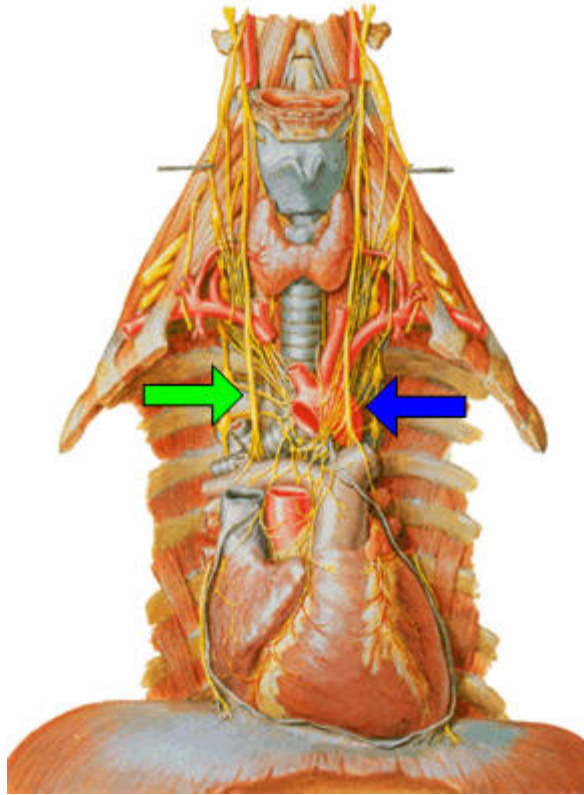
via finale
comune

**Stimoli
non osmotici**

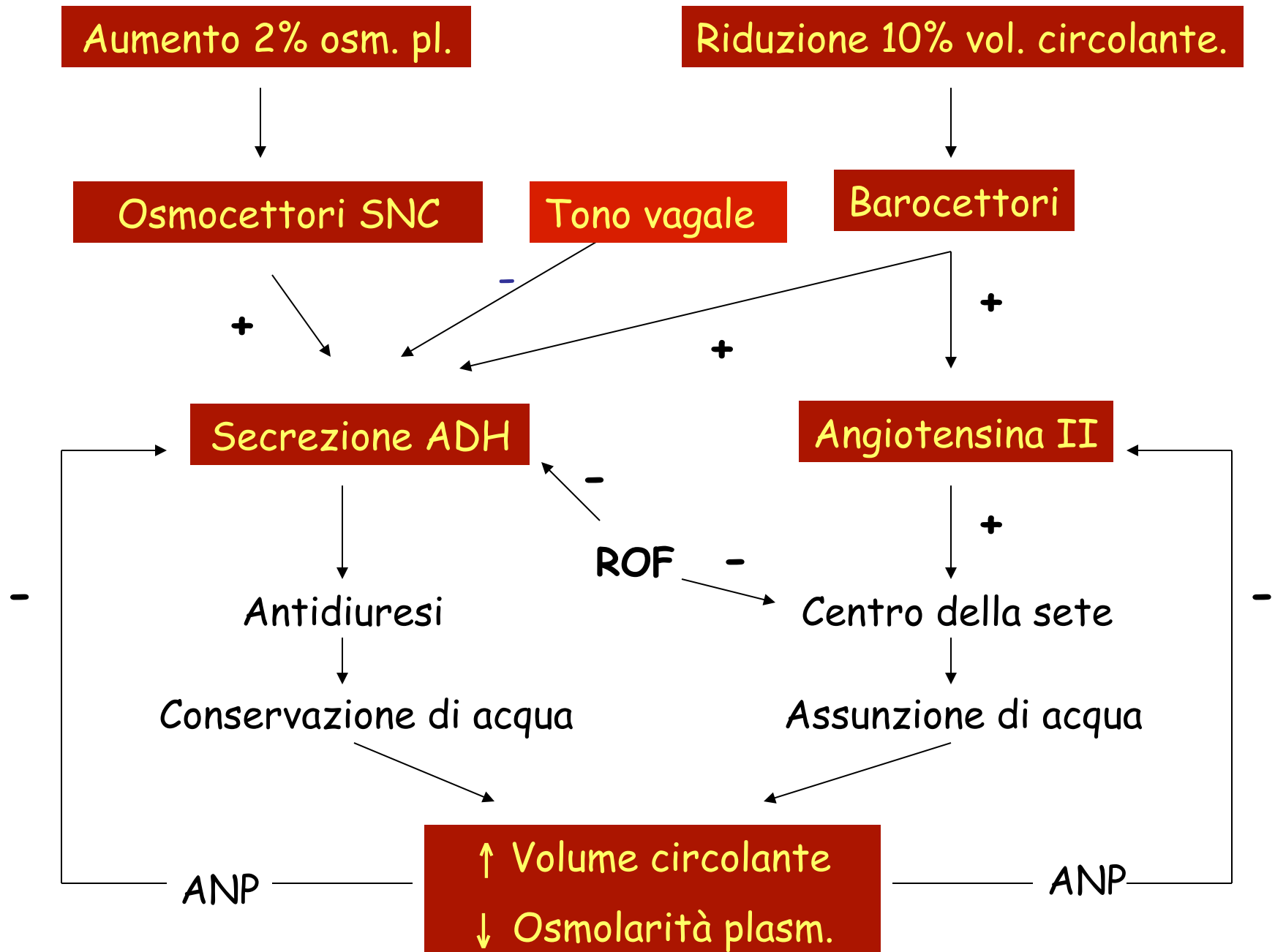
- ↓ stretch atrio s
- ↓ PA
- rec. orofaringee

ADH

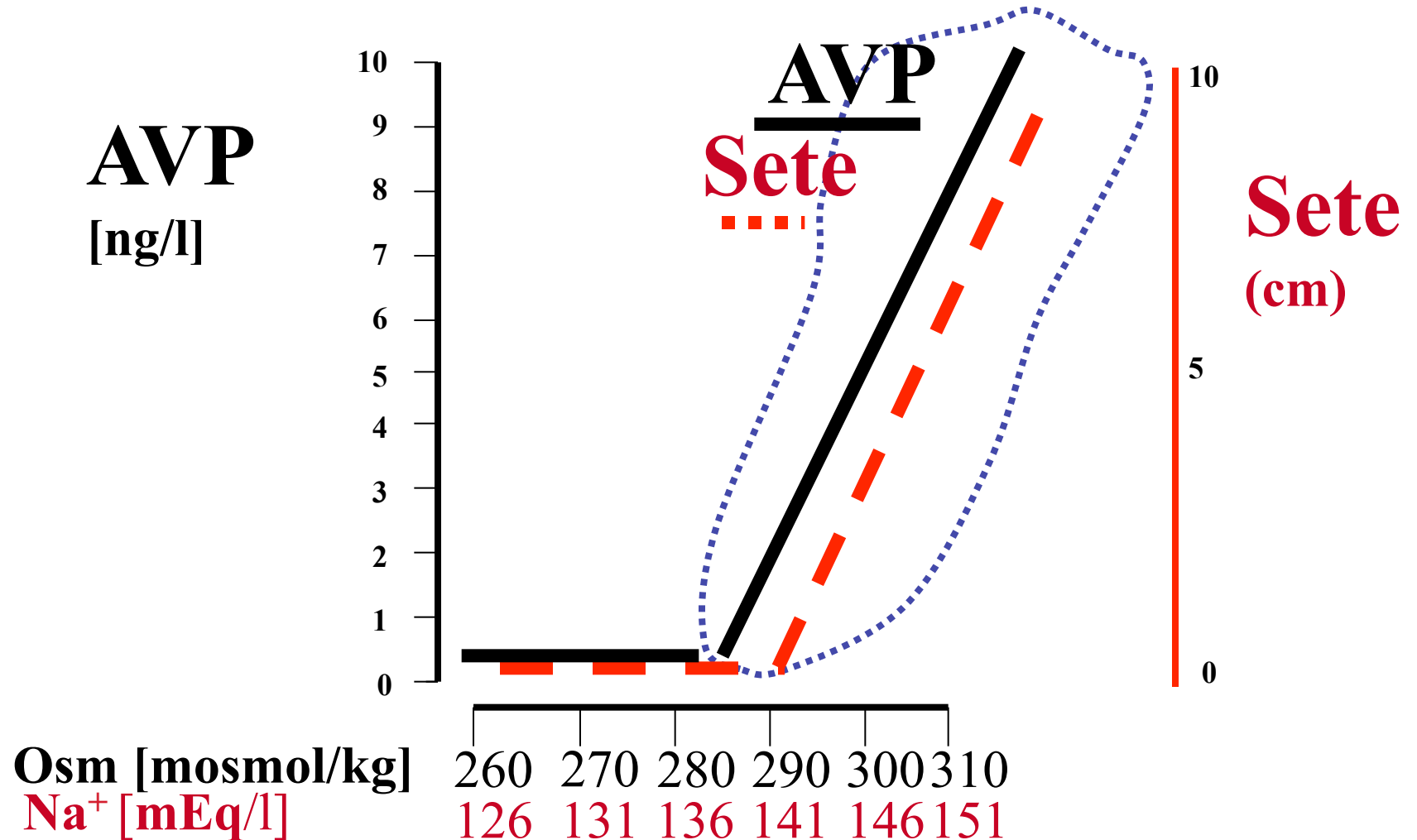


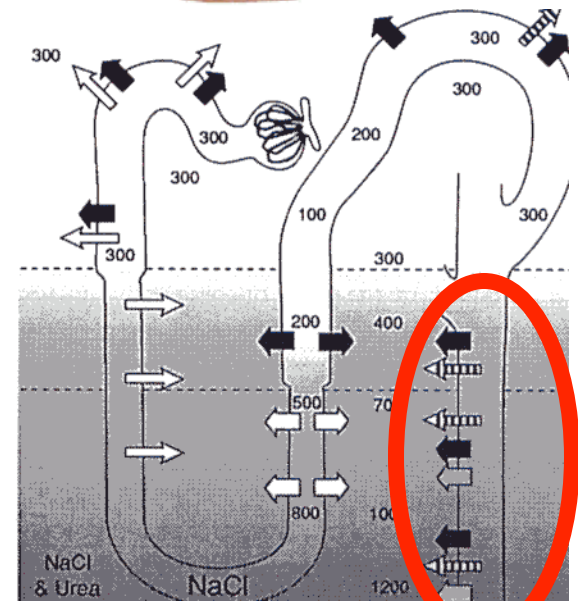
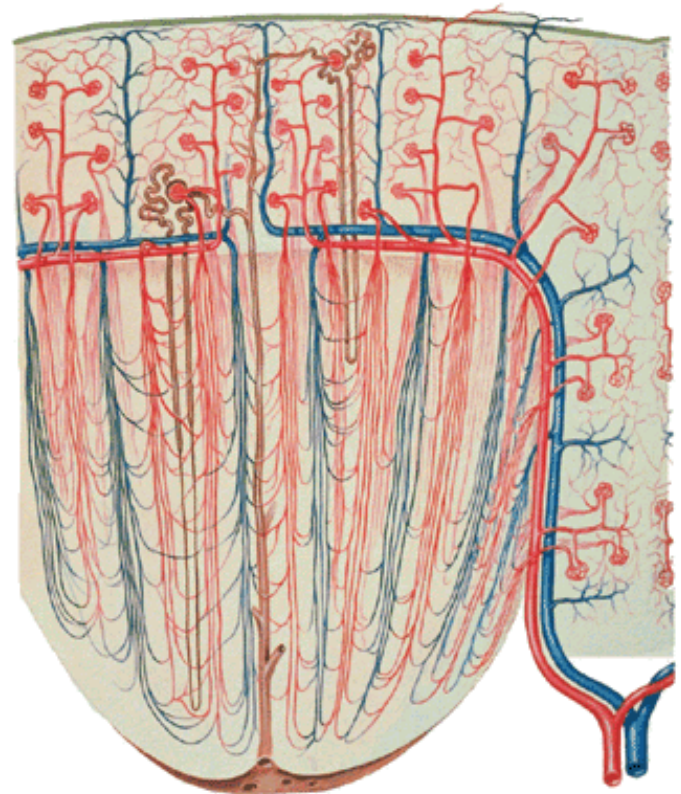
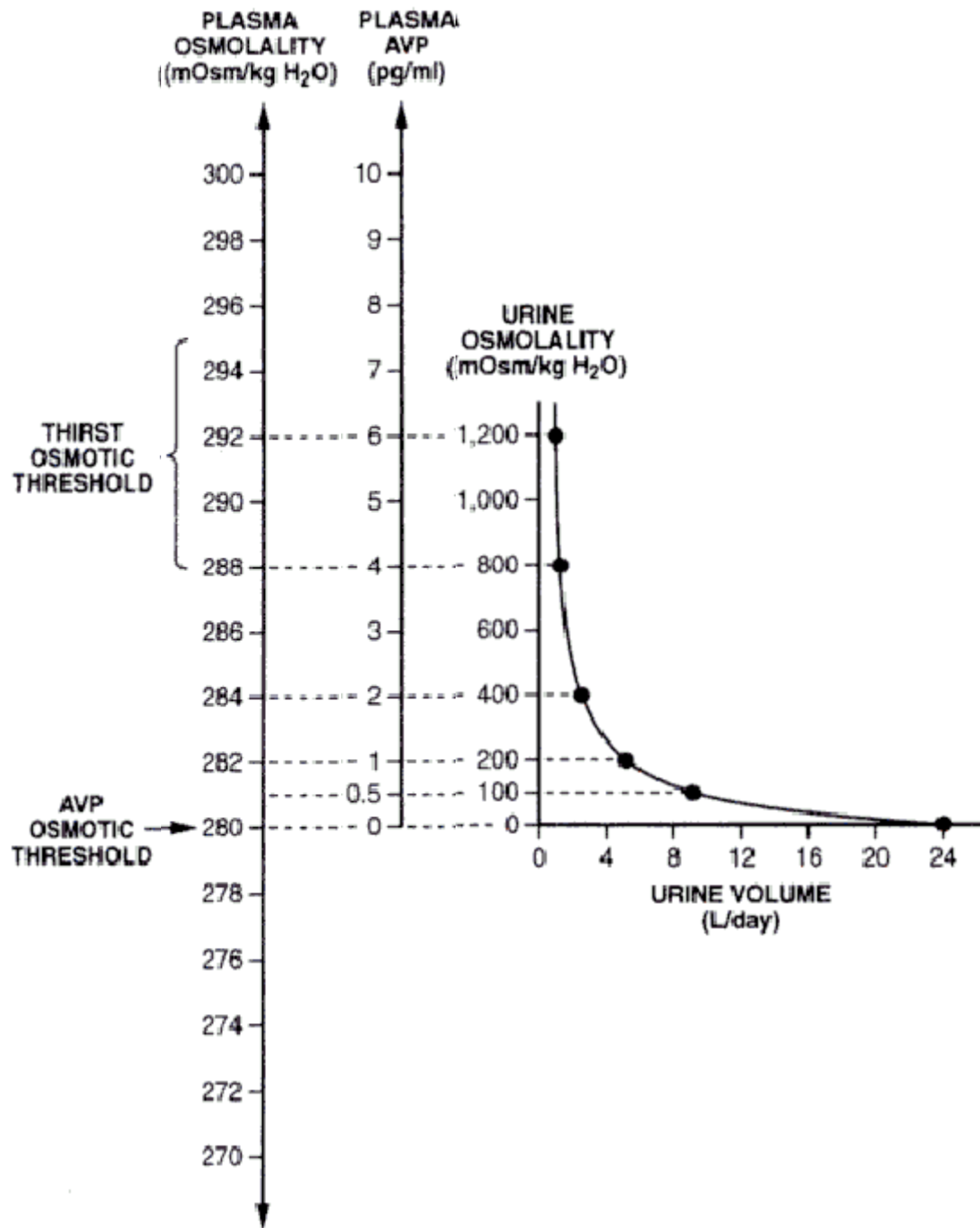


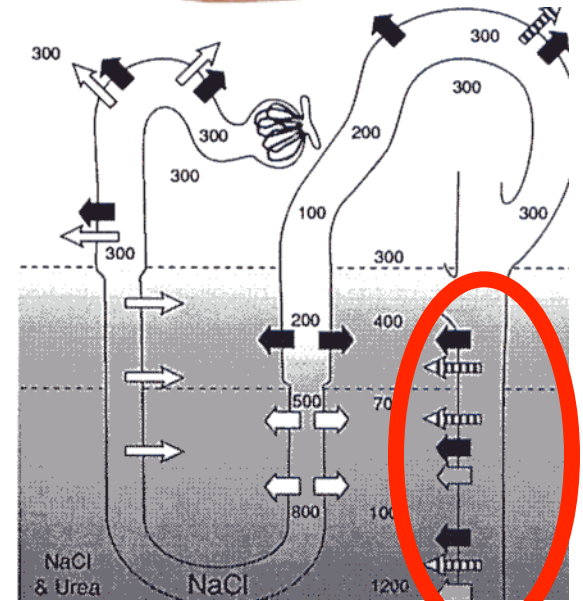
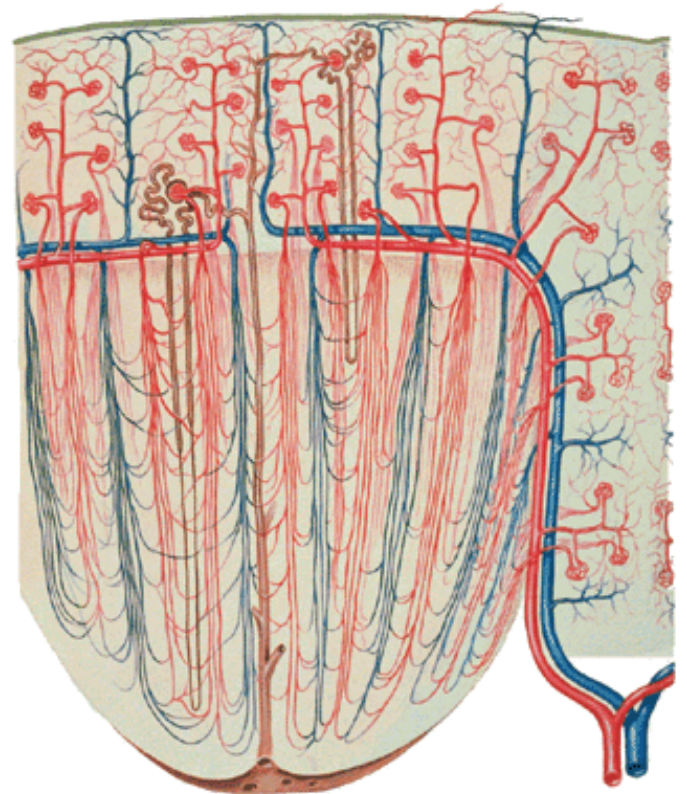
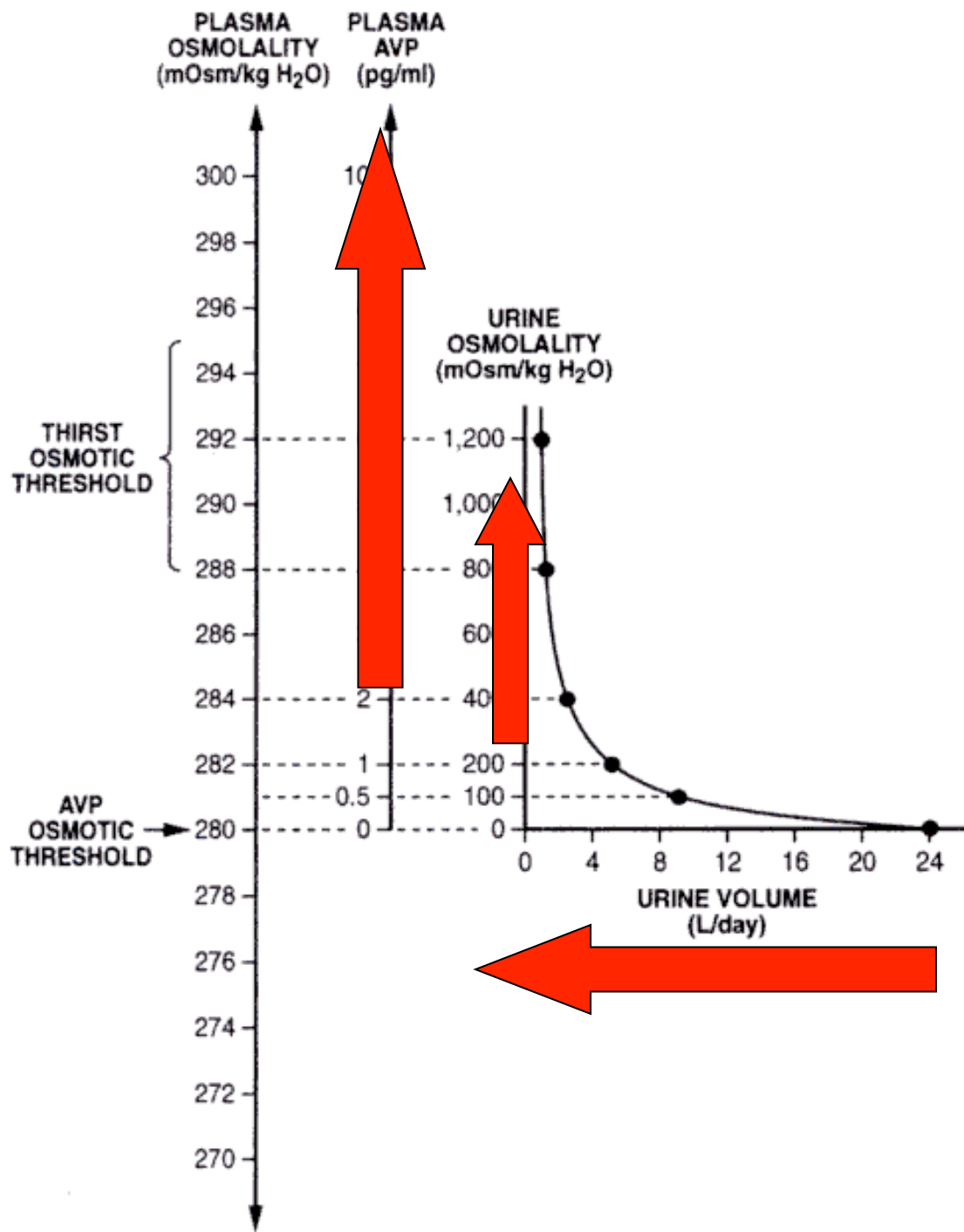
Se NON si è in condizione di riduzione del volume circolante i barocettori (atrio, seno carotideo, arco aortico) esercitano un tono inibitorio sulla secrezione di ADH mediante il nervo vago. Pertanto, lesioni di questo nervo possono determinare aumento di secrezione di ADH, per rimozione del tono inibitorio

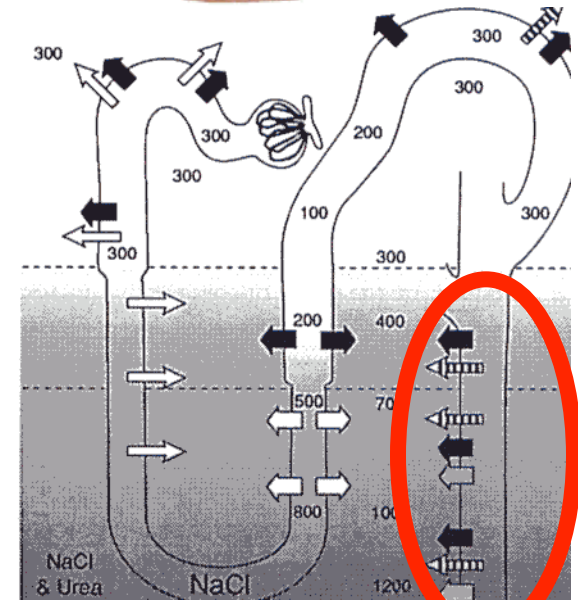
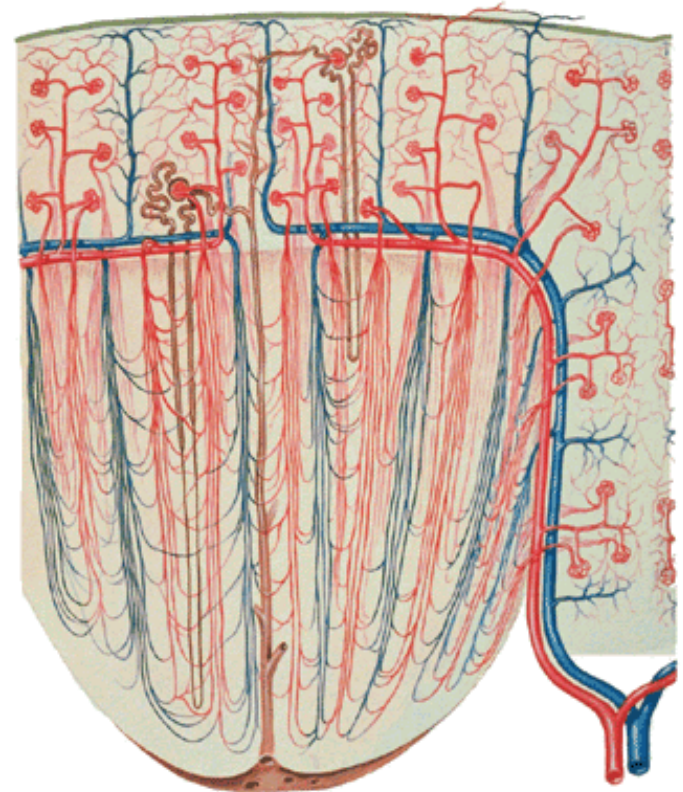
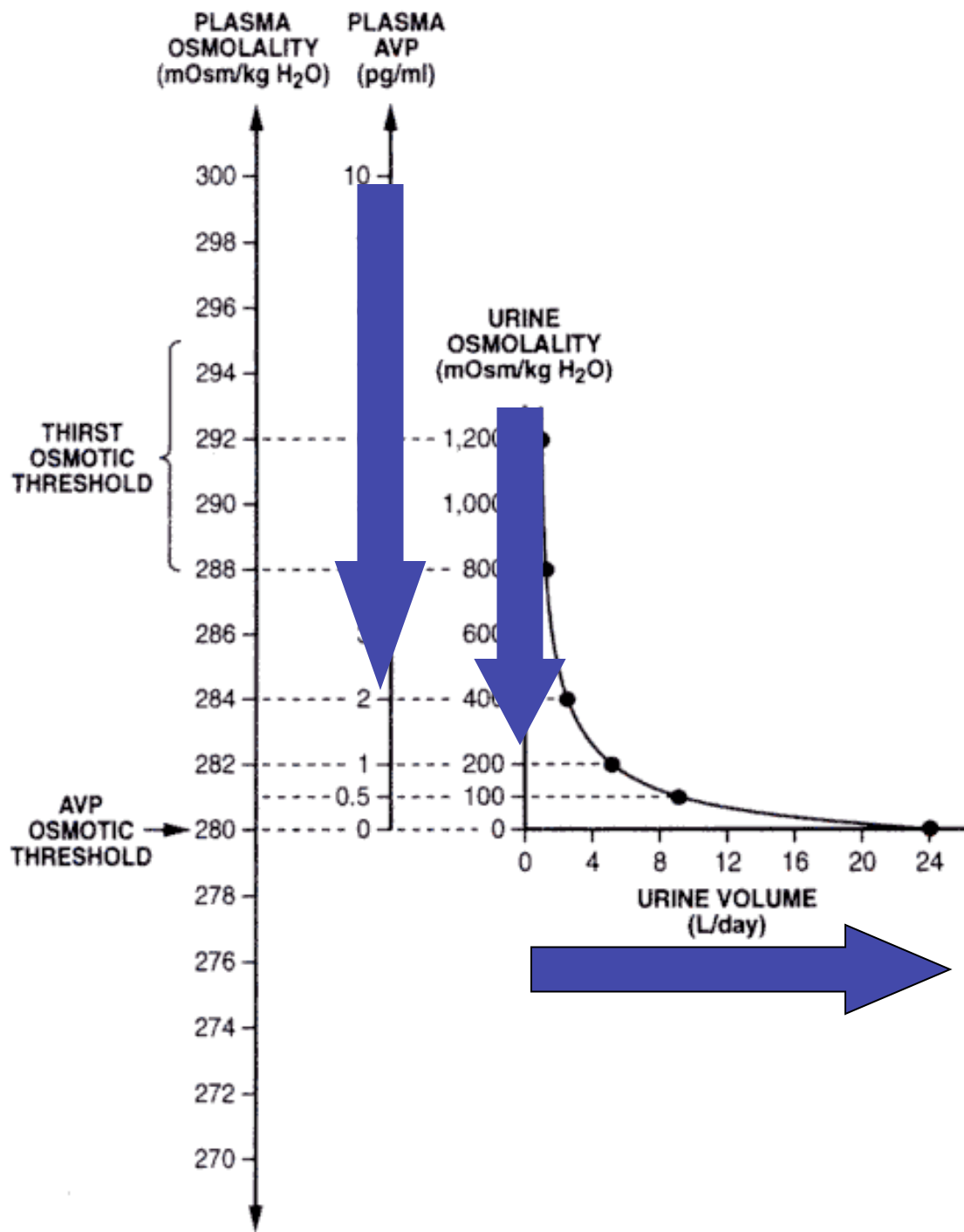


↑ Osmolarità = ↑ Na⁺









PLASMA
OSMOLALITY
(mOsm/kg H₂O)

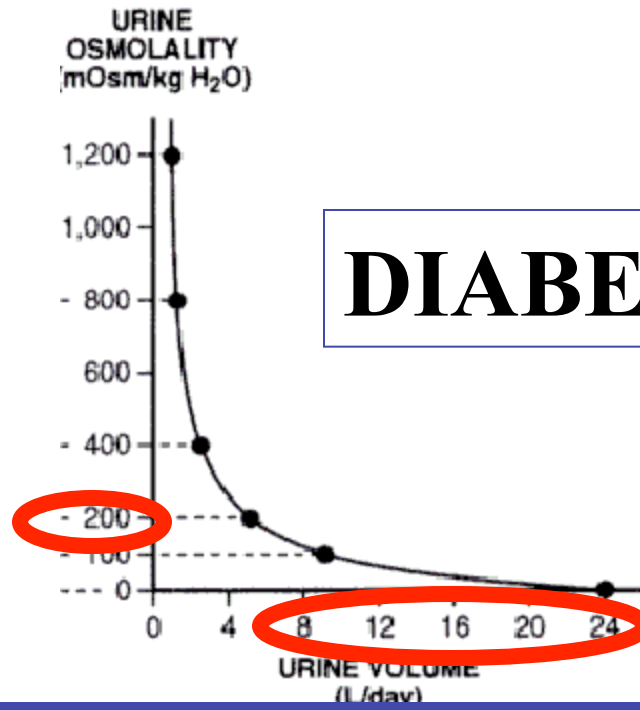
Quando l'ADH
non funziona....

POLIDIPSIA



DIABETE **INSIPIDO**

POLIURIA
(>40 ml/Kg/24h)



~~ADH~~
~~V2~~
~~ACQUAPORINA2~~



POLIURIA

DIABETE ~~INSIPIDO~~

POLIDIPSIA

~~ADH~~
~~V2~~
~~ACQUAPORINA2~~

~~ADH~~

- DI centrale
- DI neurogenico
- DI craniale
- DI ipofisario
- DI neuroipofisario

~~V2~~
~~ACQUAPORINA2~~

- DI renale
- DI nefrogenico
- DI pitressina-resistente

DI totale = incapacità assoluta a concentrare le urine

DI parziale = incapacità relativa a concentrare le urine

Acqua ed esercizio fisico

Aumento del volume circolante effettivo

**Aumento della temperatura e della sudorazione:
perdita di acqua (>) e di elettroliti (<).**

Perdite in relazione a: tipo di esercizio

durata esercizio

intensità esercizio

Risposta ormonale:

aumento ADH

aumento NA e A

aumento PRA-Angio II-Aldo

L' ACQUA VA REINTEGRATA !!!!!

ASSIEME AI SALI !!!!!

Effetti delle variazioni di osmolarità sul SNC

