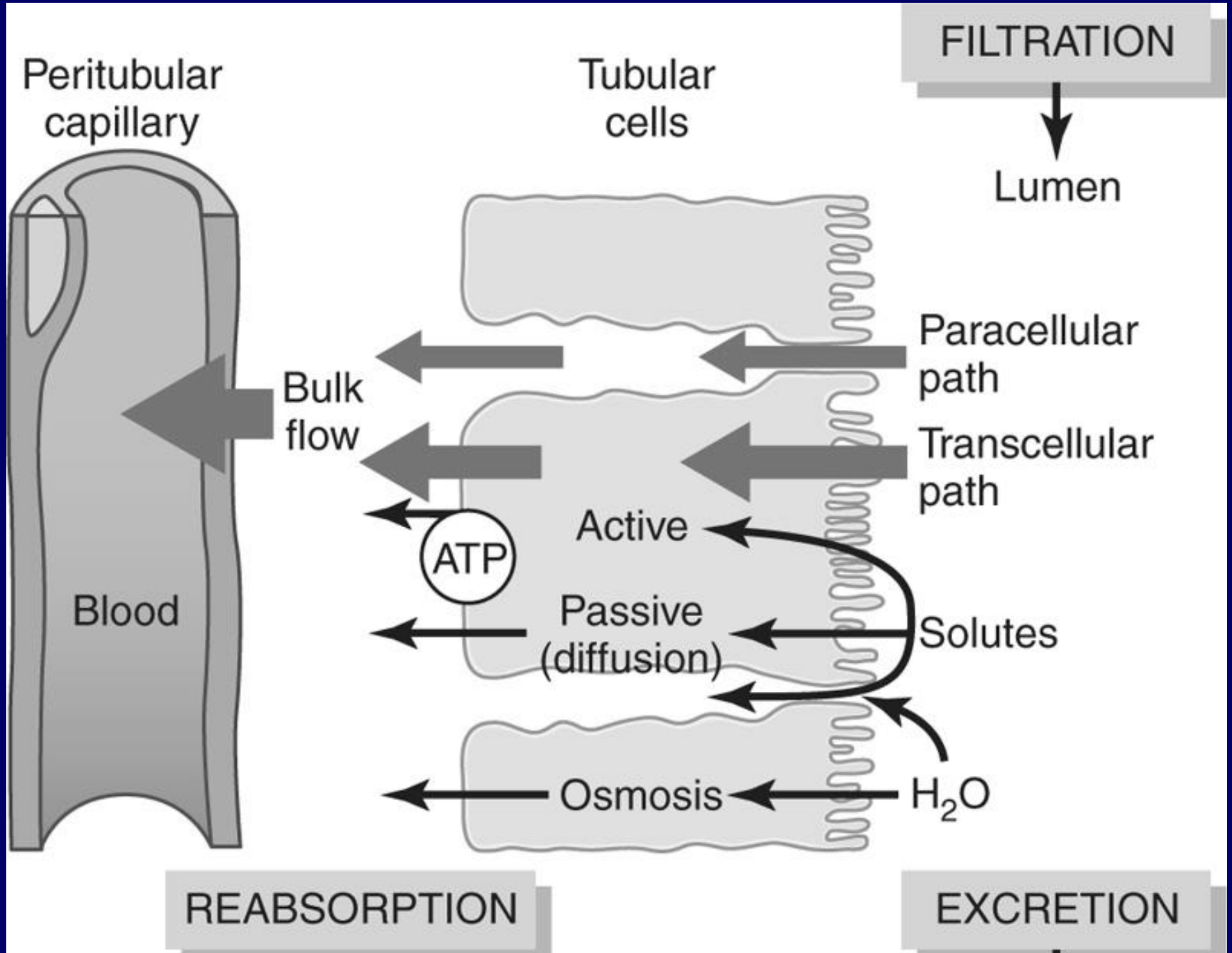


# Tubular Reabsorption and Secretion

Dr Jayanti Pant

# Tubular reabsorption

- It is quantitatively large and highly selective
- It includes both active and passive mechanisms
- Primary active transport
- Secondary active transport



# Substances actively reabsorbed and follow transport maximum

- Glucose
- Phosphates
- Sulfate
- Amino acids
- Urate
- Lactate
- Plasma proteins

# Substances actively secreted and follow transport maximum

- Creatinine
- Para-amino Hippuric Acid (PAH)

Na<sup>+</sup> reabsorption

H<sub>2</sub>O reabsorption

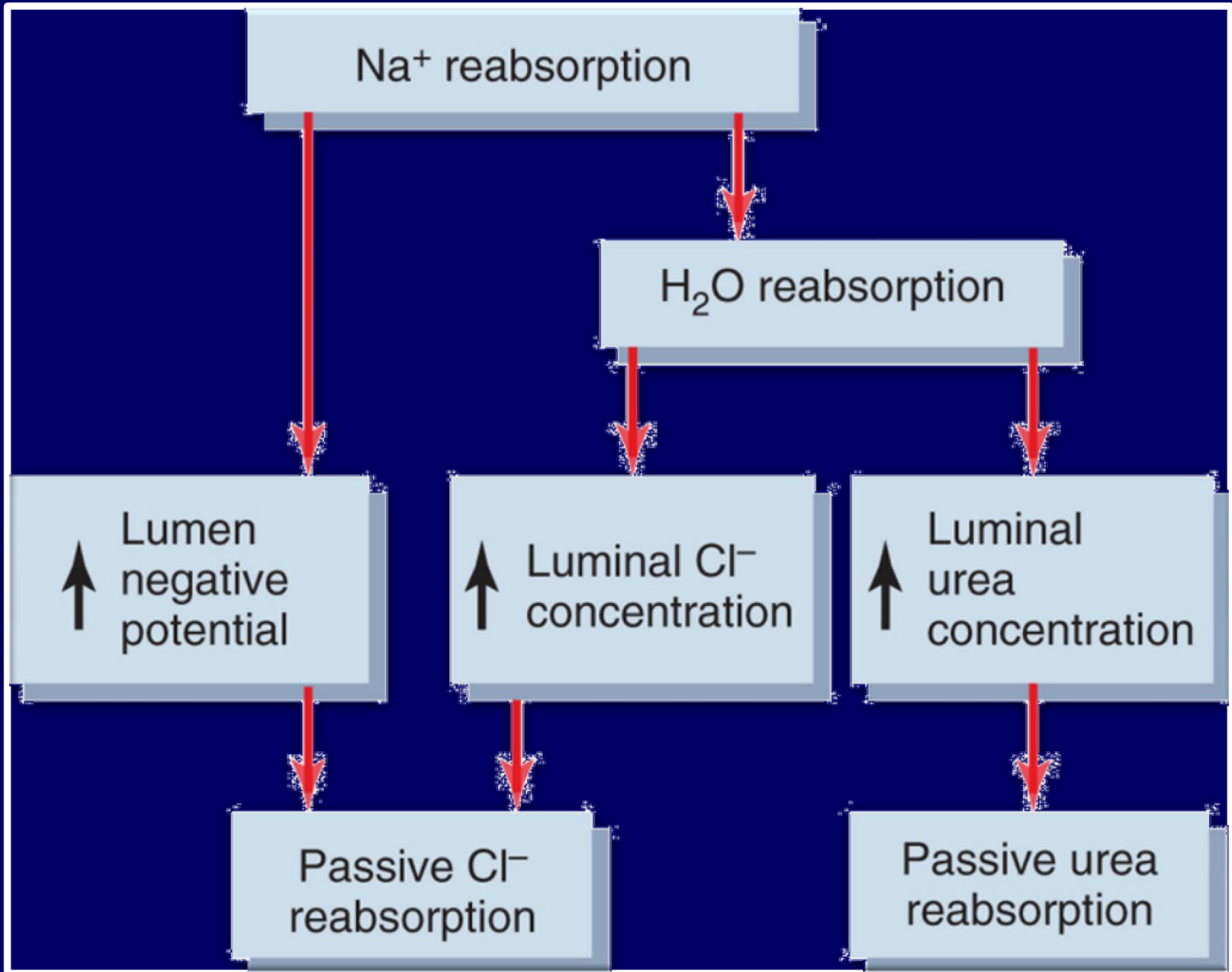
↑  
Lumen  
negative  
potential

↑  
Luminal Cl<sup>-</sup>  
concentration

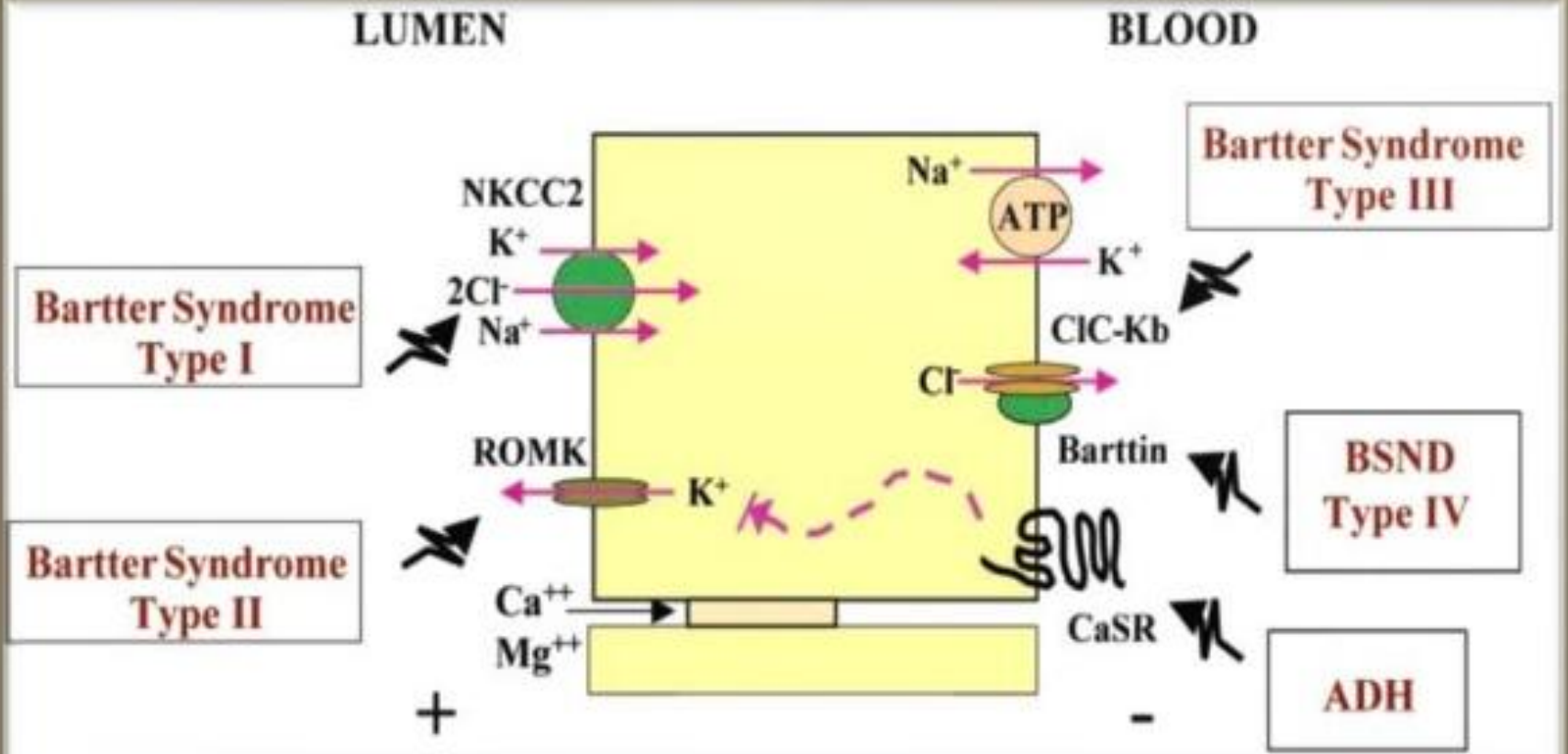
↑  
Luminal  
urea  
concentration

Passive Cl<sup>-</sup>  
reabsorption

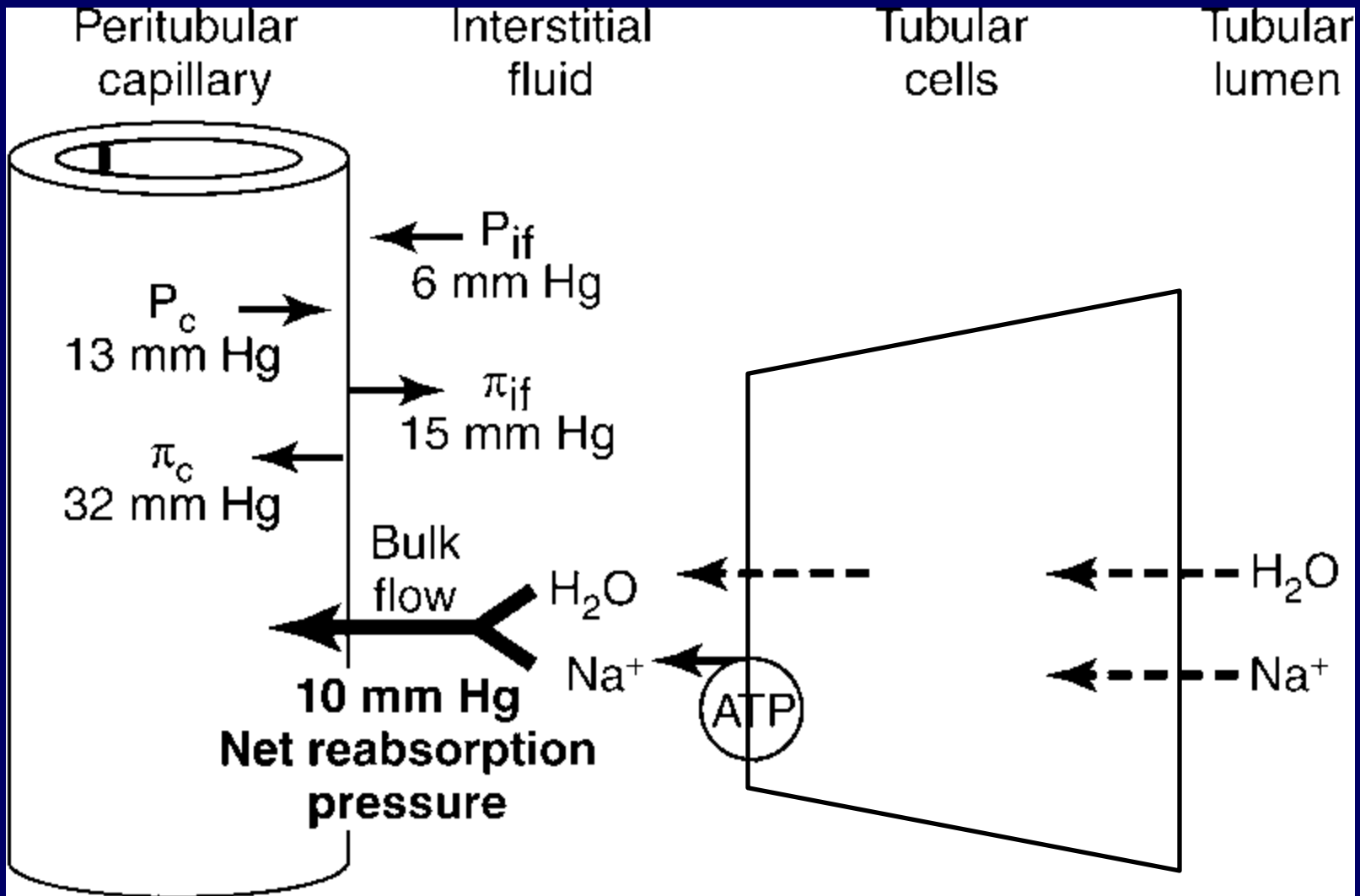
Passive urea  
reabsorption

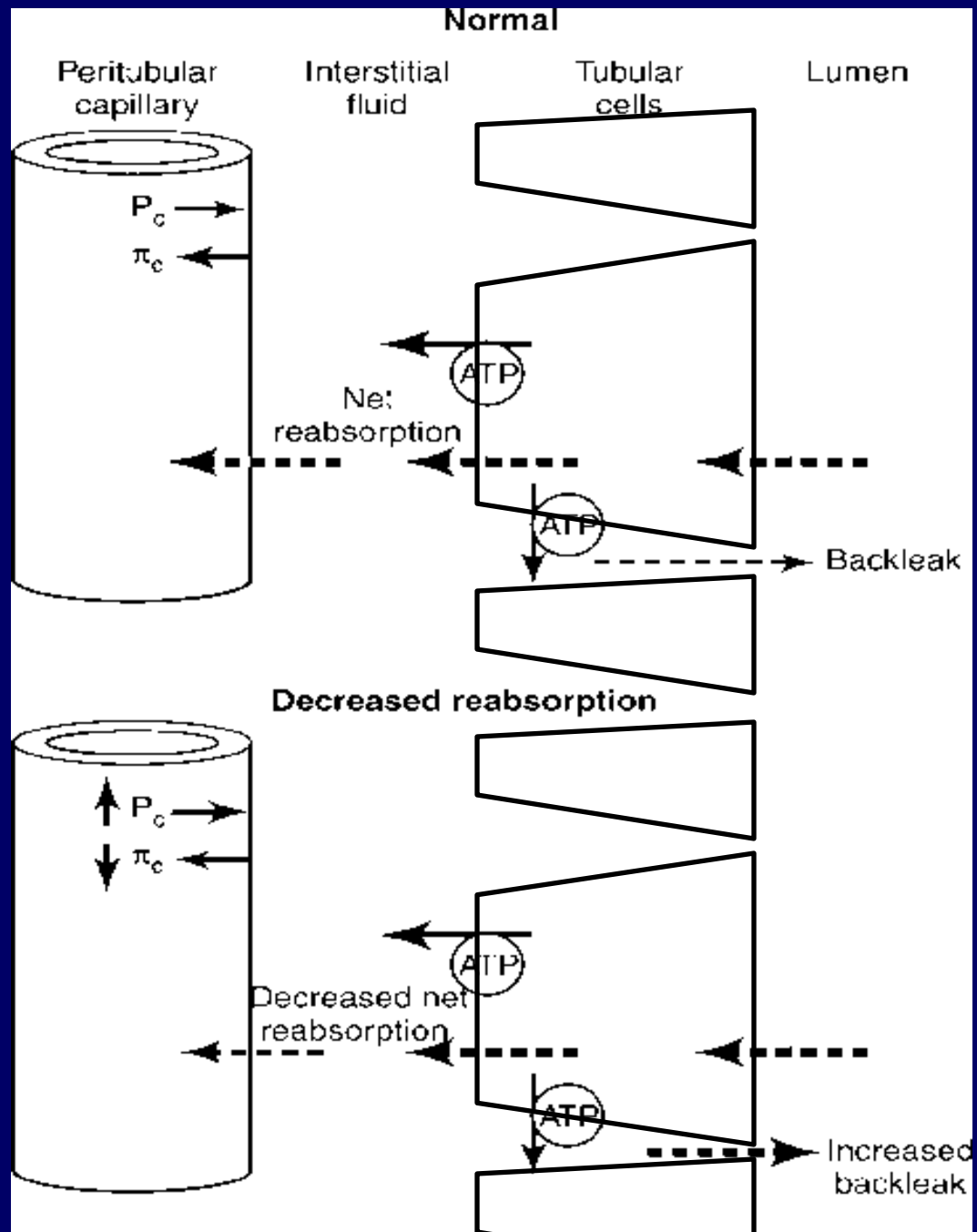


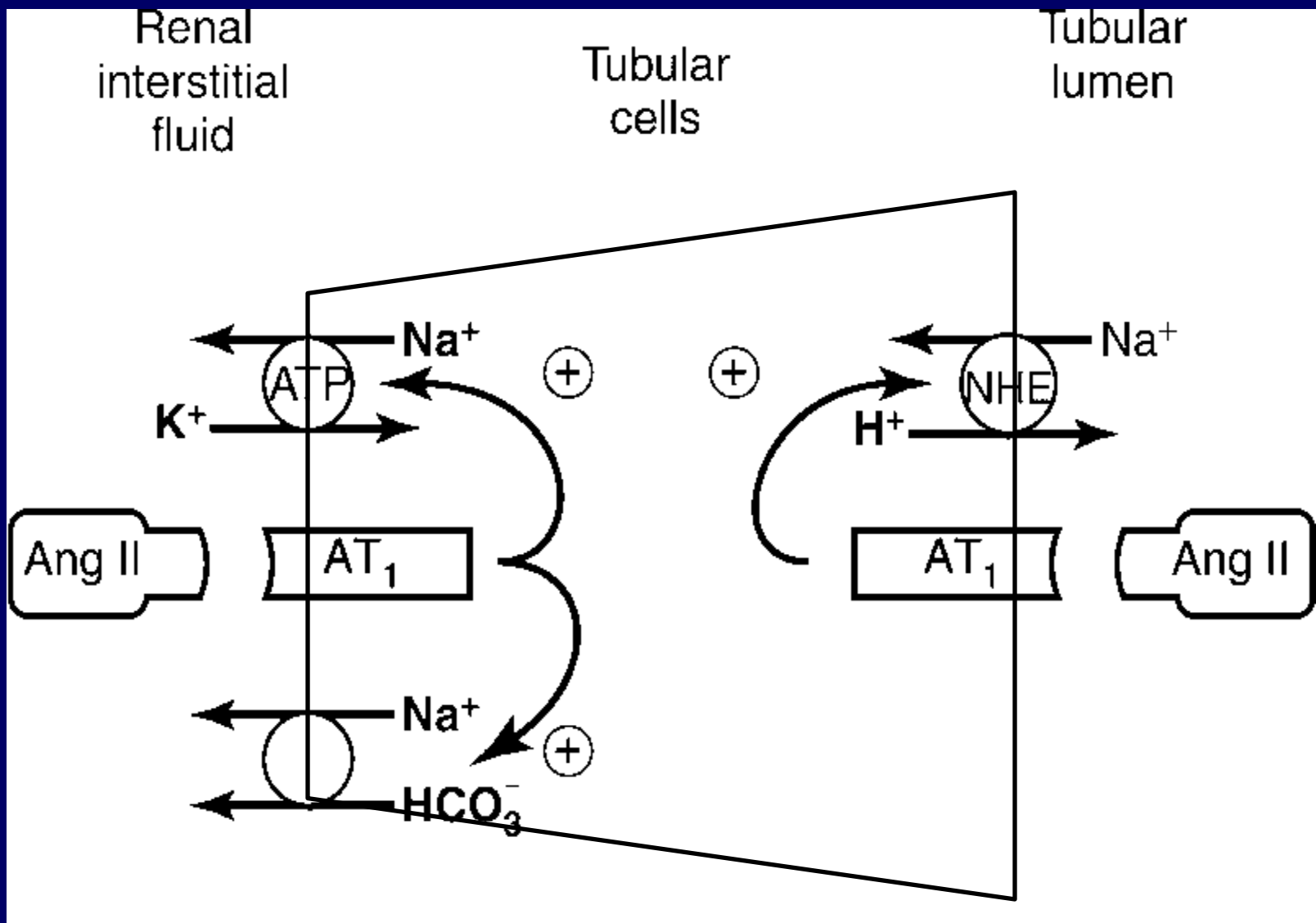
- PCT secretes
  - Bile acids
  - Oxalate
  - Urate
  - Catecholamines

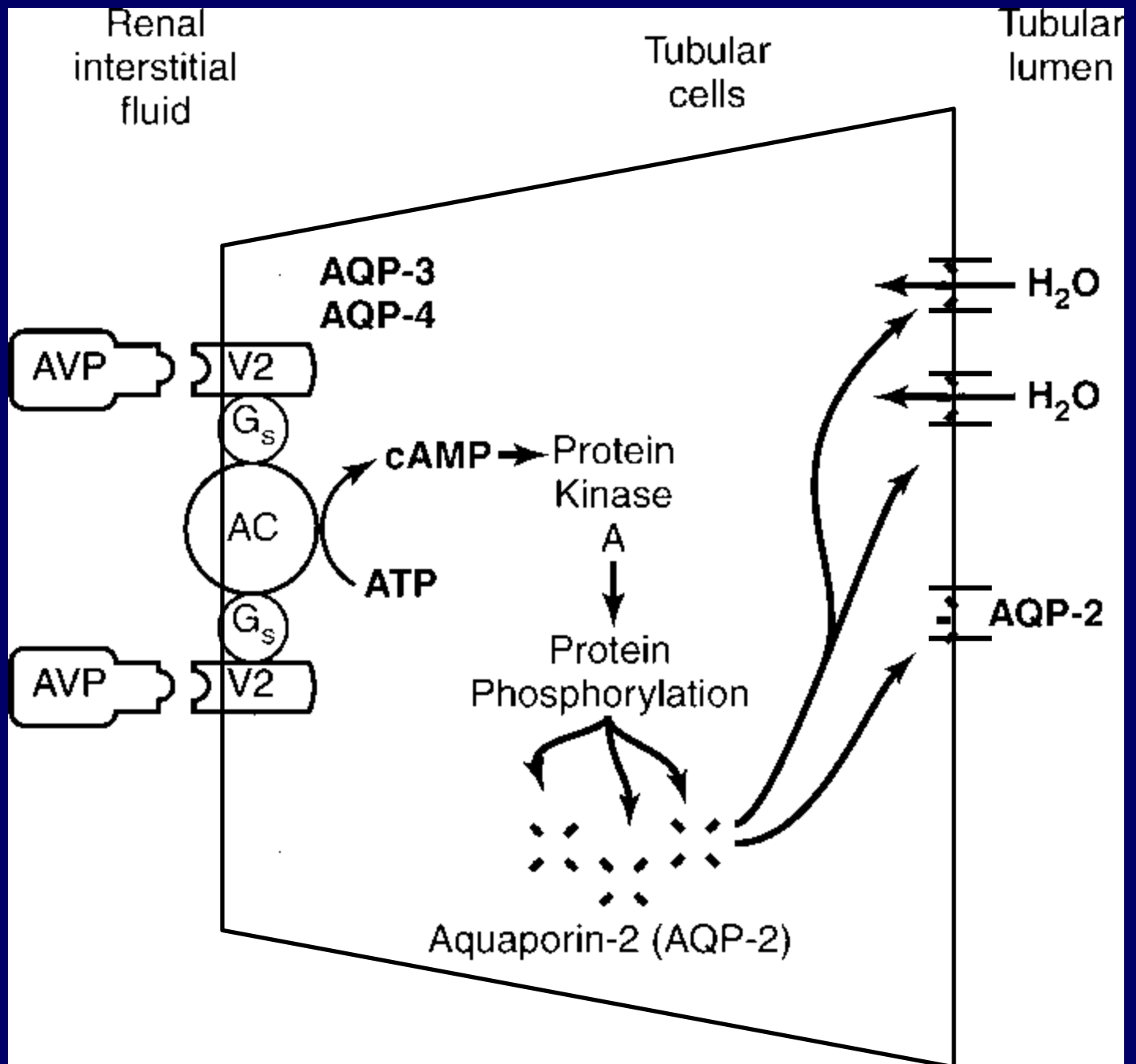




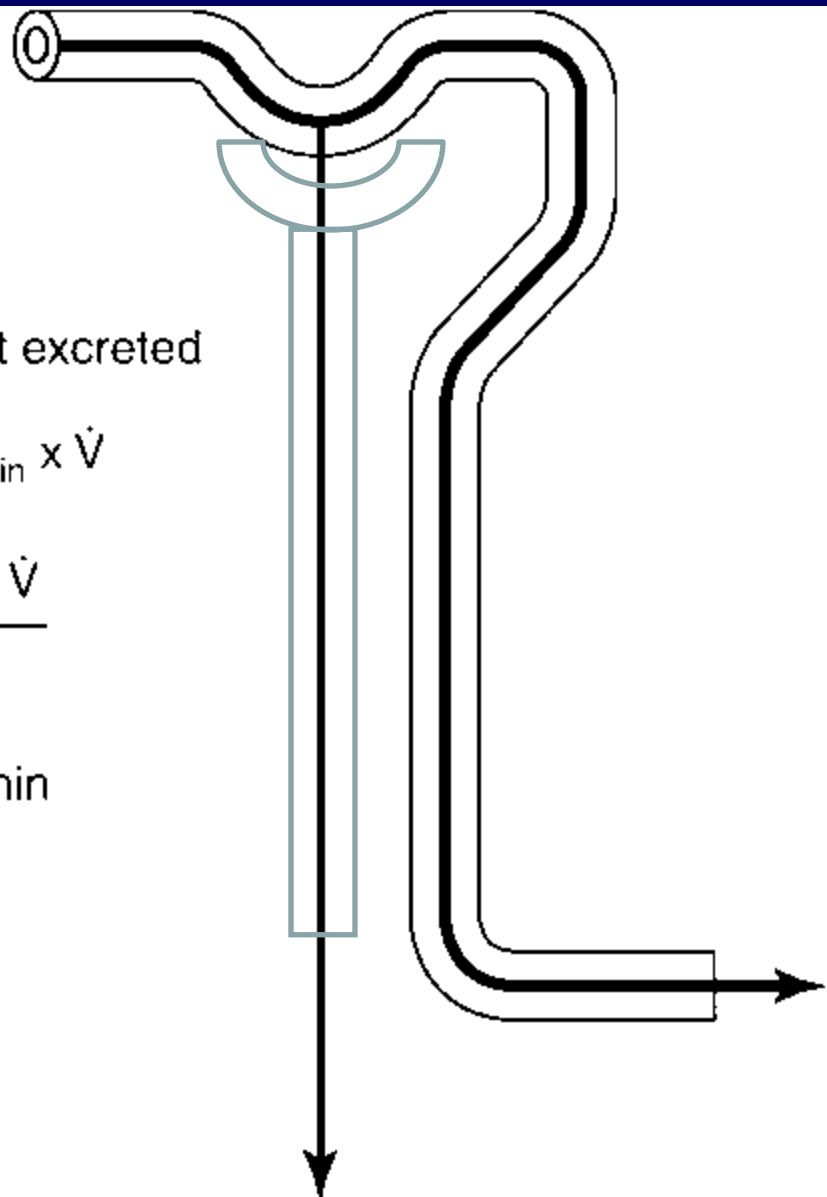








$$P_{\text{inulin}} = 1 \text{ mg/ml}$$



Amount filtered = Amount excreted

$$\text{GFR} \times P_{\text{inulin}} = U_{\text{inulin}} \times \dot{V}$$

$$\text{GFR} = \frac{U_{\text{inulin}} \times \dot{V}}{P_{\text{inulin}}}$$

$$\text{GFR} = 125 \text{ ml/min}$$

$$U_{\text{inulin}} = 125 \text{ mg/ml}$$

$$\dot{V} = 1 \text{ ml/min}$$

# Clearance tests to quantify renal function

- Clearance rate ( $C_S$ ) =  $U_S \times V / P_S$
- GFR =  $U_{\text{inulin}} \times V / P_{\text{inulin}}$
- Clearance ratio =  $C_S / C_{\text{inulin}}$
- ERPF =  $C_{\text{PAH}}$
  
- RBF = RPF / (1 - Hematocrit)
- Excretion rate =  $U_S \times V$