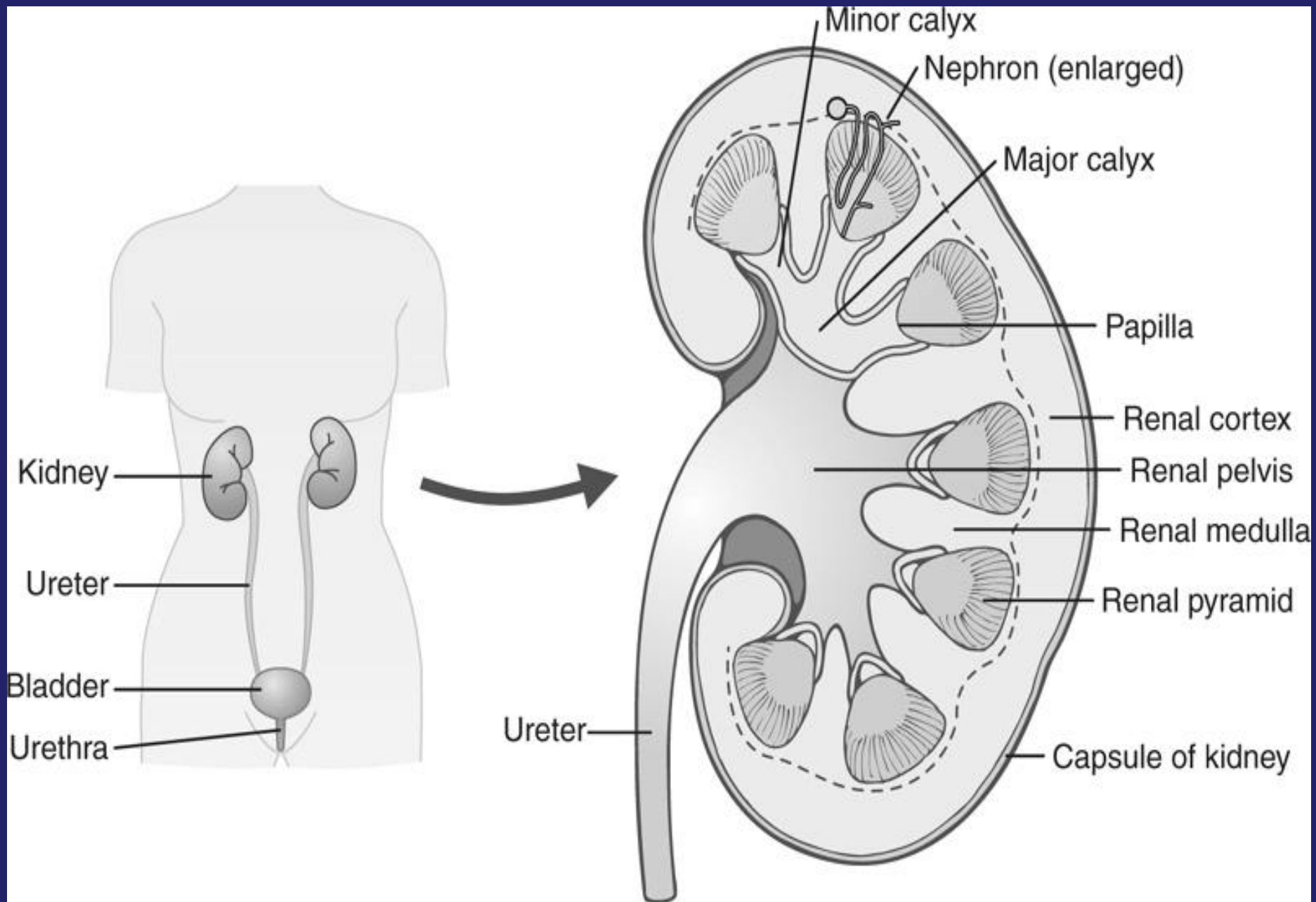


# Excretory System

Dr Jayanti Pant

Assistant Professor

Deptt. of Physiology, AIIMS, Rishikesh

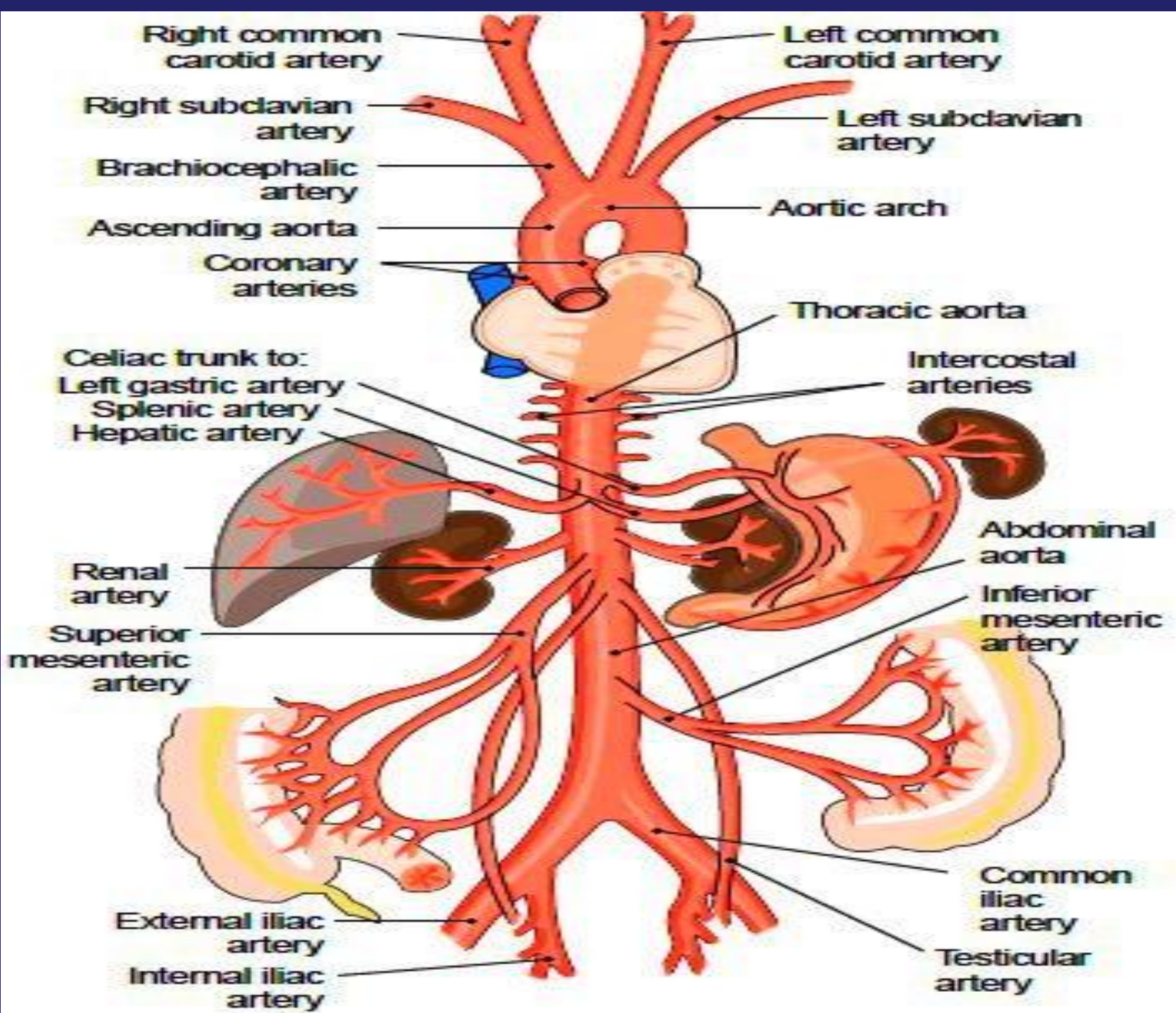


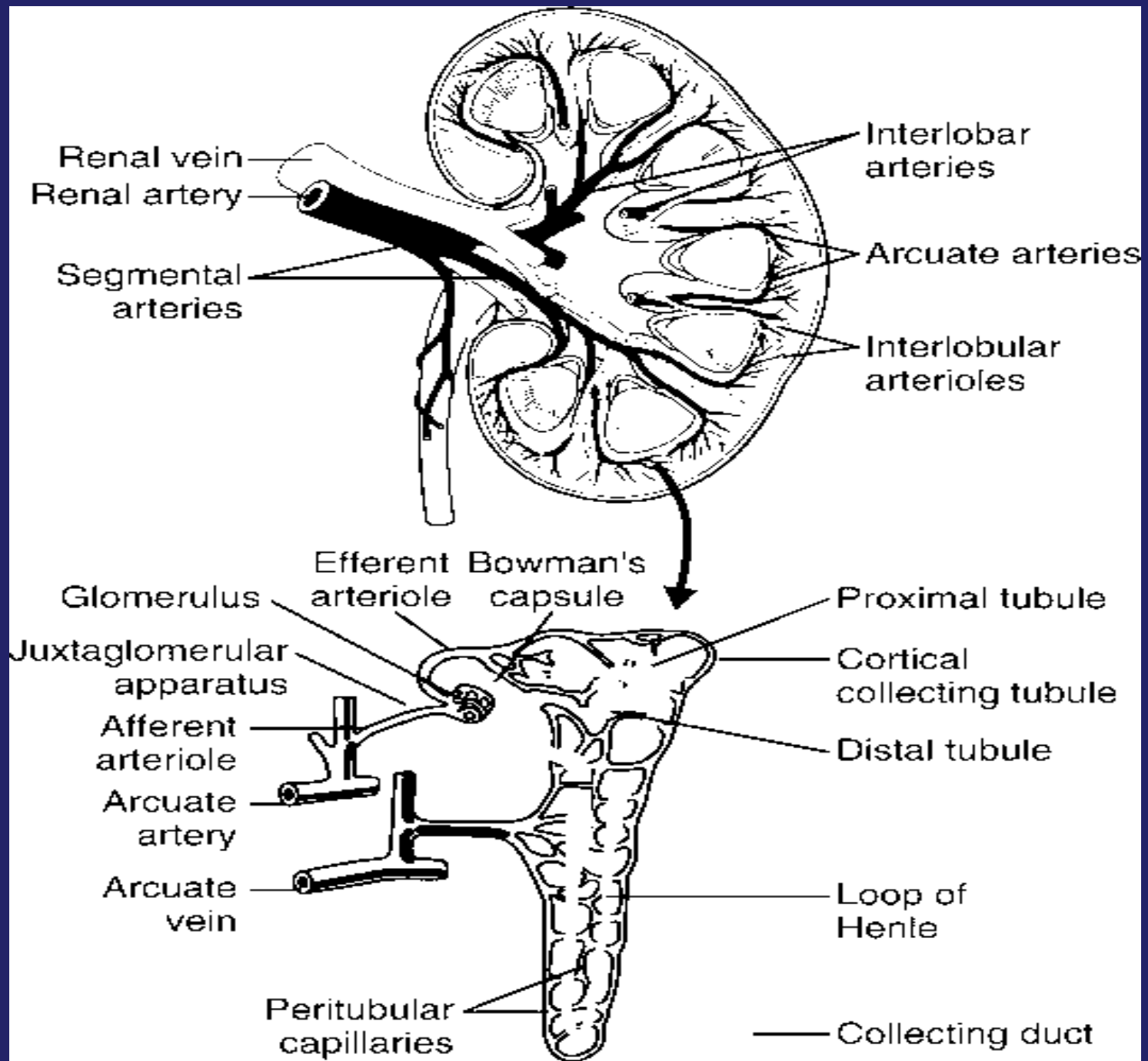
# Functions of Kidneys

- Excretion of metabolic waste products and chemicals
- Regulation of water and electrolyte balances
- Regulation of body fluid osmolality and electrolyte concentrations
- Regulation of arterial pressure

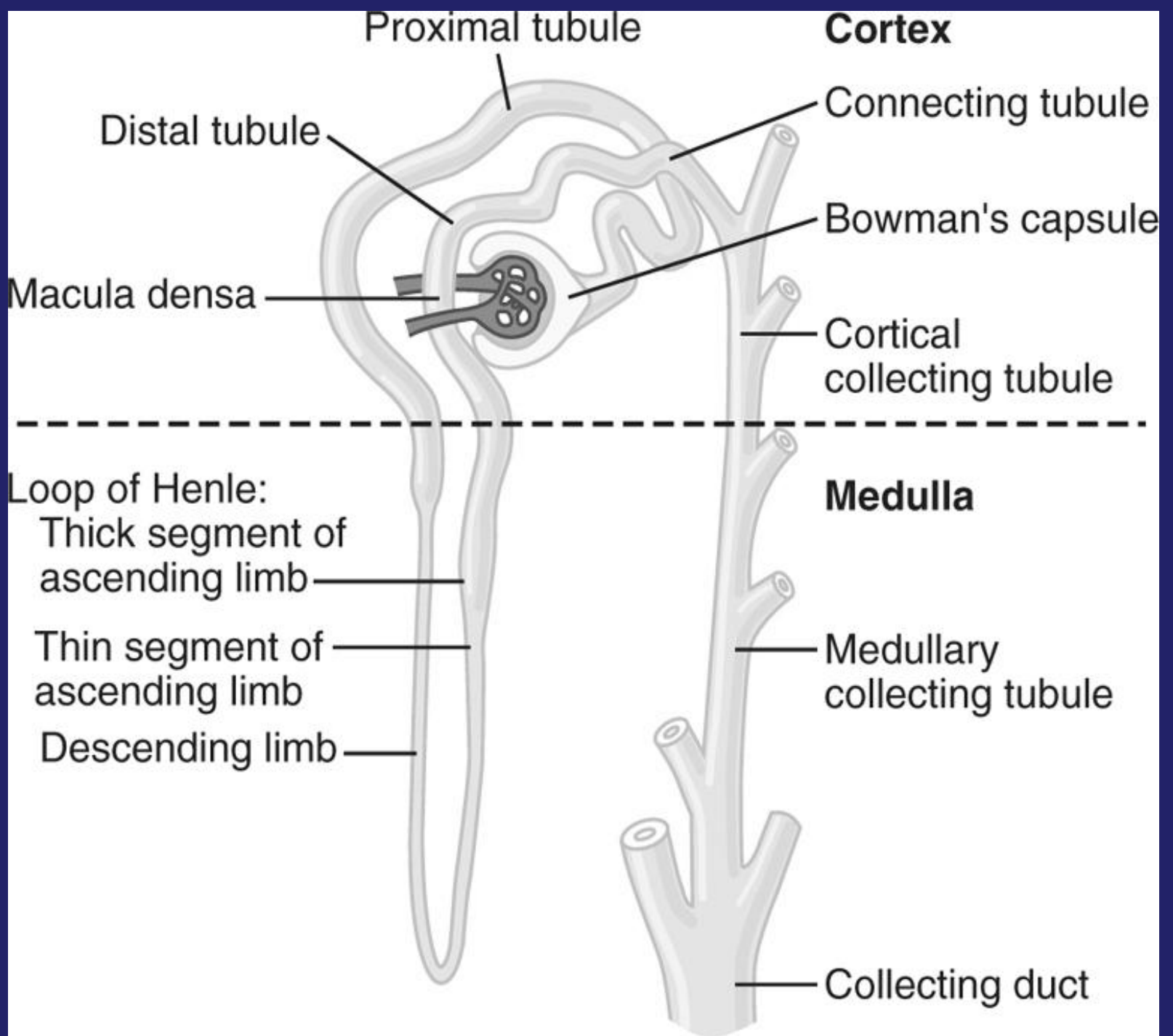
# Functions of Kidneys

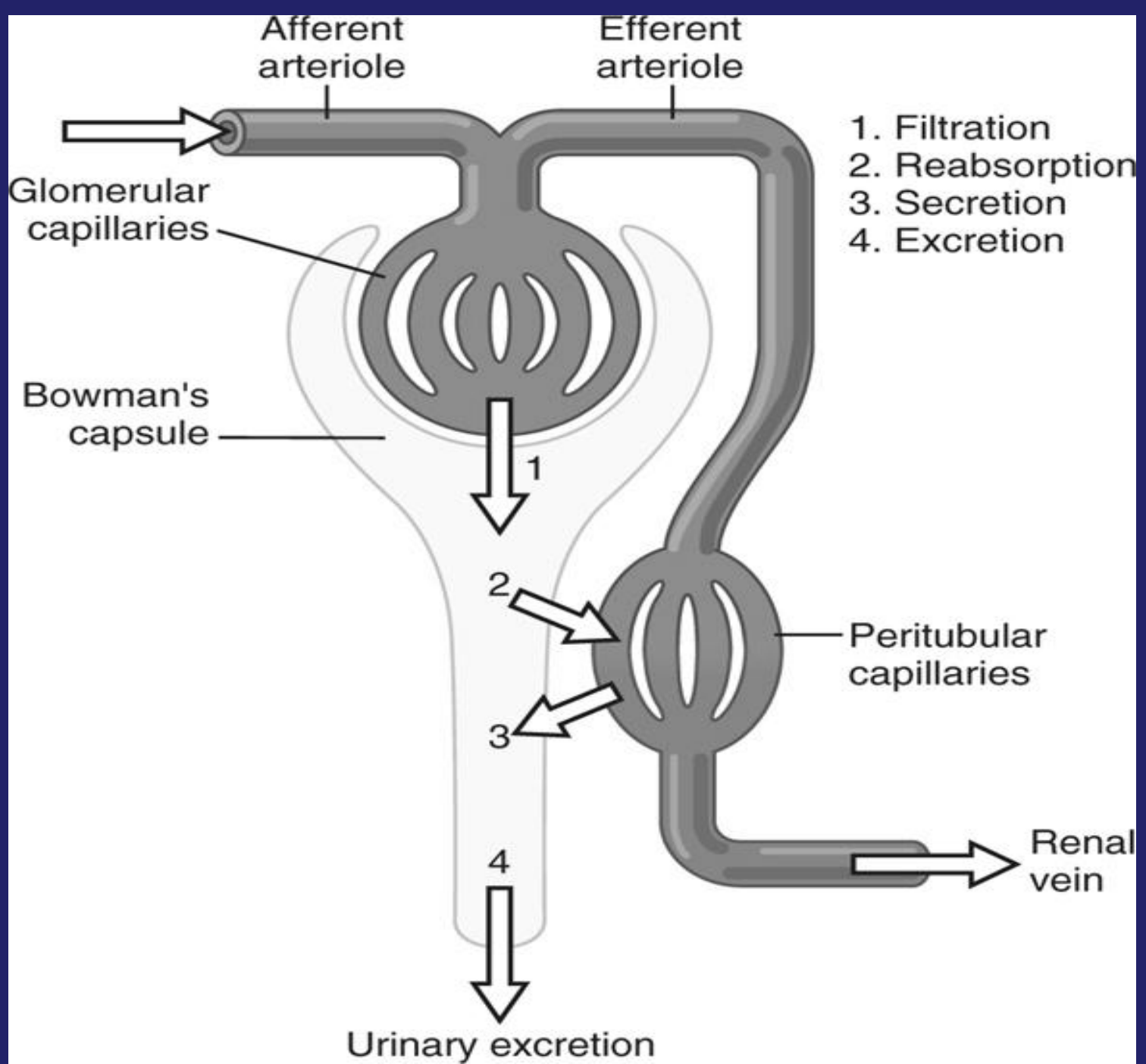
- Regulation of acid-base balance
- Secretion, metabolism and excretion of hormones
- Gluconeogenesis





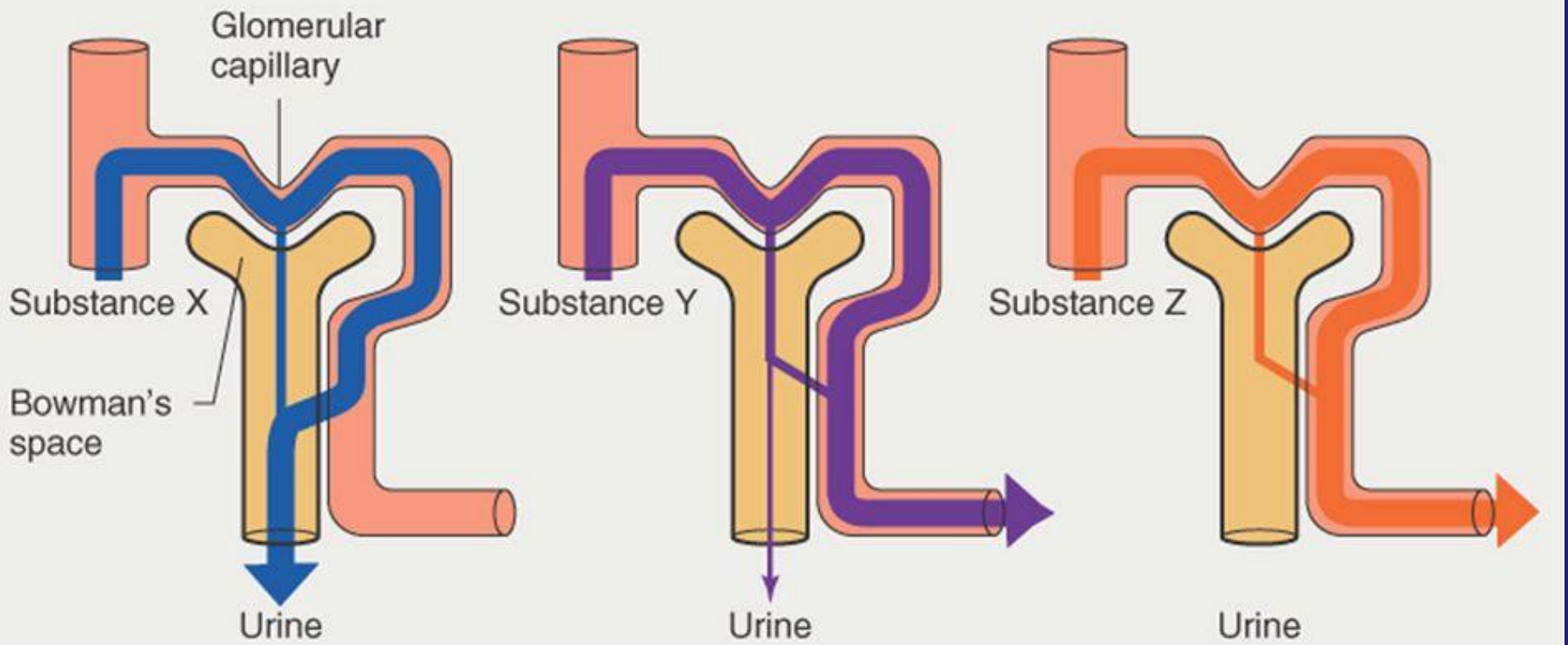








# Renal Handling of Substances



**Filtration + complete Secretion**

**Ex: Para AminoHippurate (PAH)**

*Measure Renal Plasma Flow*

**Filtration + partial reabsorption**

**Ex: Sodium**

**Ex: Water**

**Filtration + 100 Reabsorption**

**Ex: Glucose**

**Ex: Amino Acids**

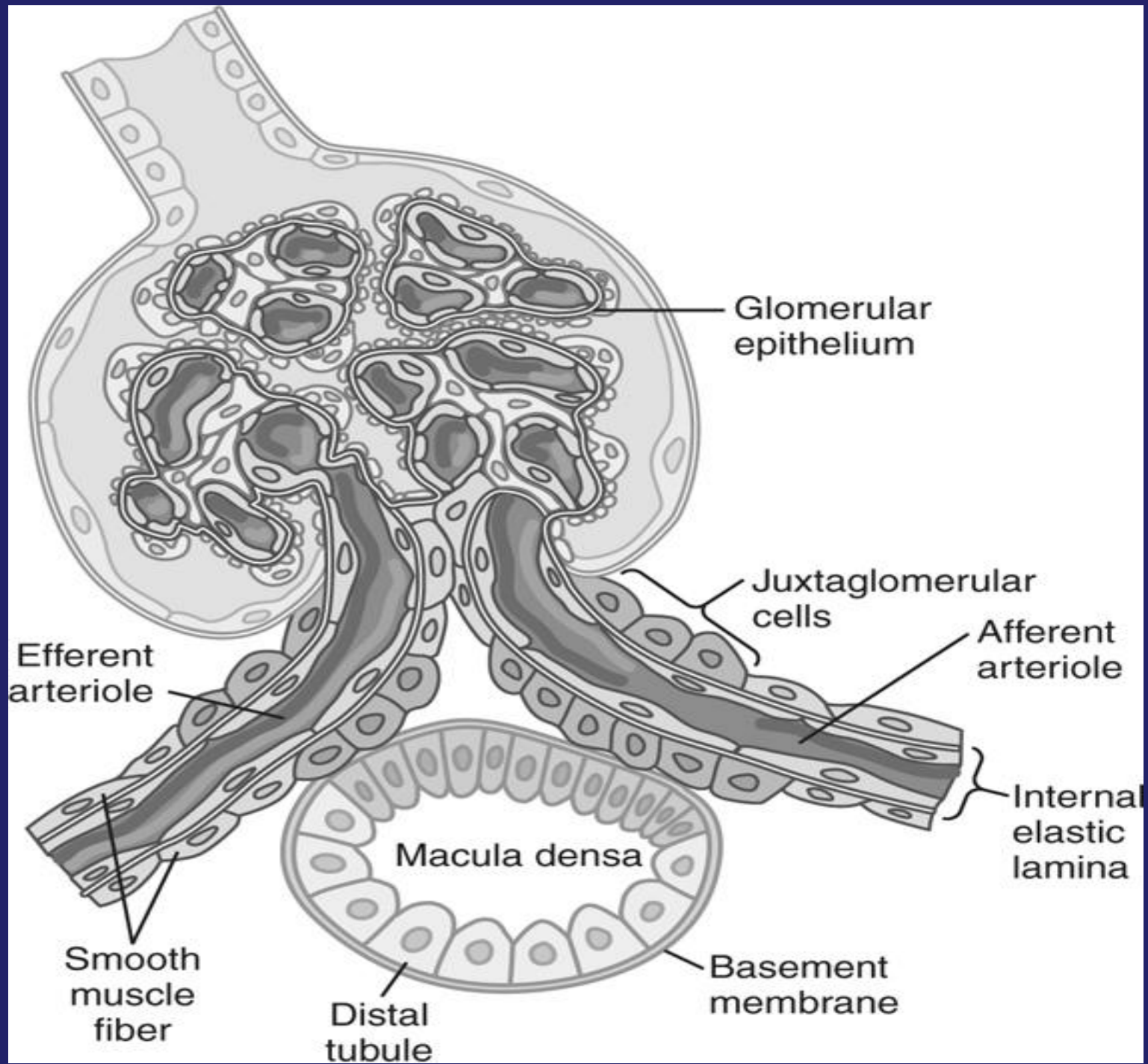
# Mesangial Cells

- Stellate cells located between endothelium and basal lamina
- Common in between capillaries
- They are contractile
- Secrete extracellular matrix, take up immune complexes and involved in diseases
- They regulate GFR

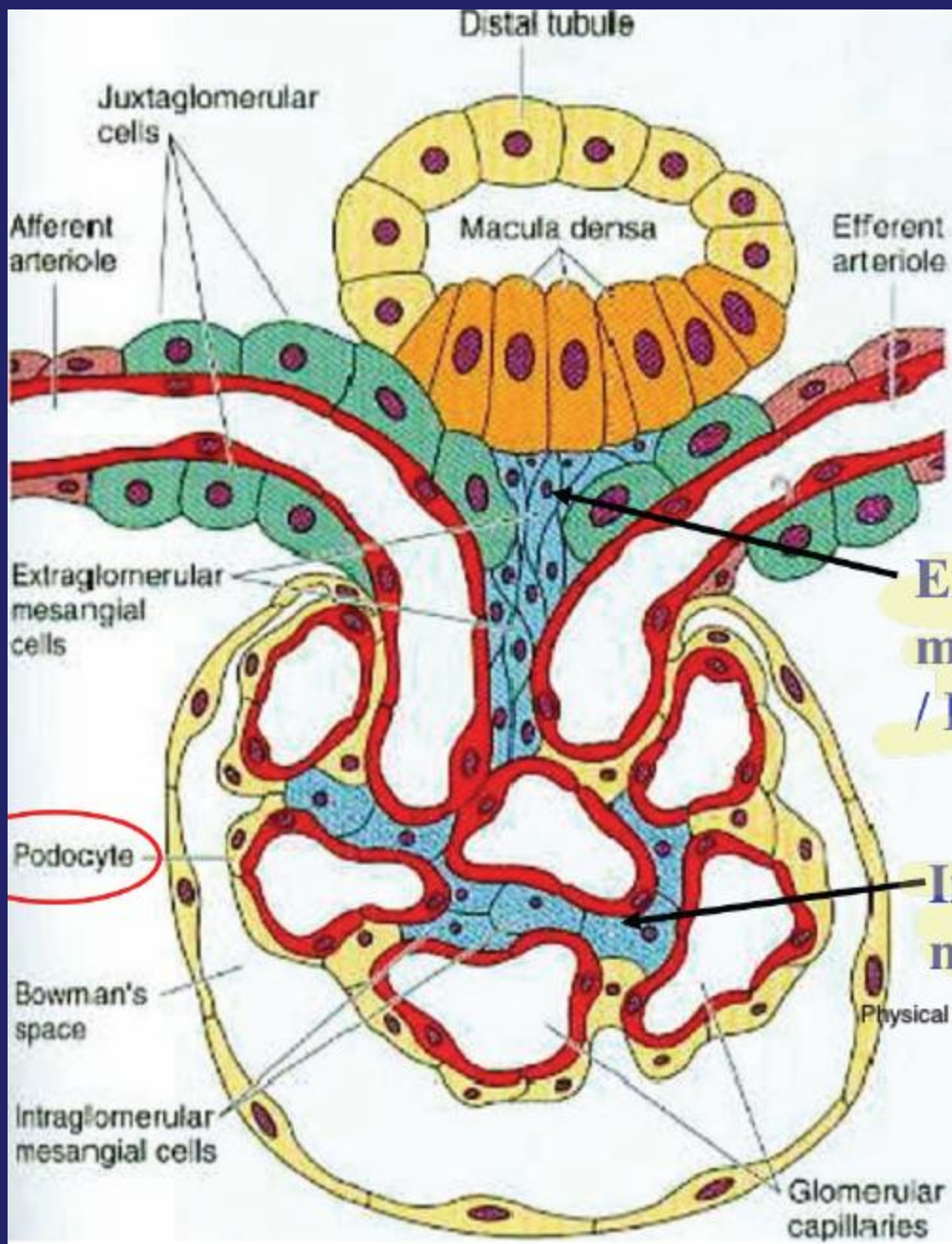
# Physiologic control of GFR and Renal blood flow

- Sympathetic nervous system activation decreases GFR
- Norepinephrine, Epinephrine and Endothelin constricts renal blood vessels and decrease GFR
- NO, Prostaglandins and Bradykinin increase GFR

- Total blood flow through both kidneys is 1100 ml/min or 22% of cardiac output
- Kidneys consume twice the rate of the brain but receives 7 times the blood flow as brain







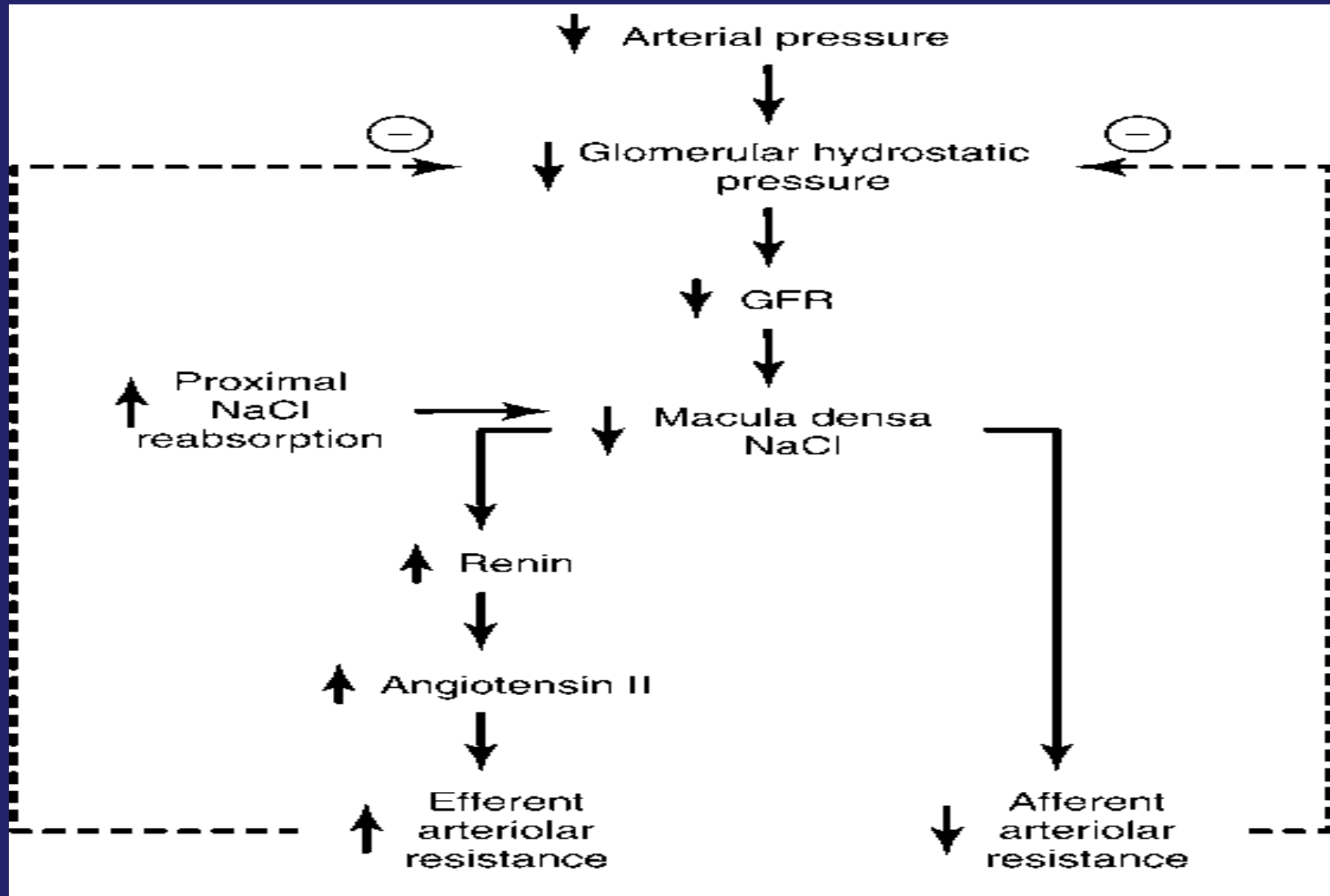
**Extraglomerular  
mesangial cells  
/ Lacis cells**

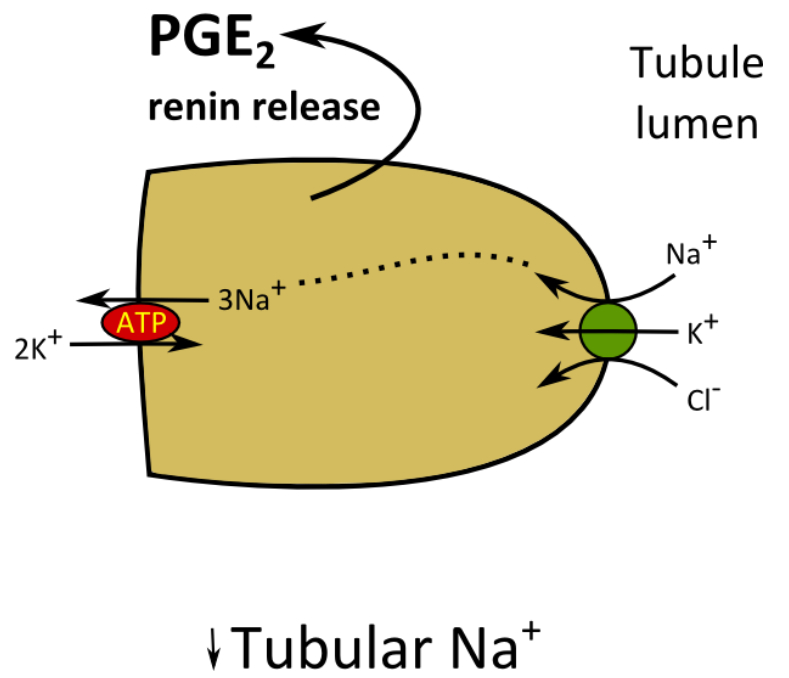
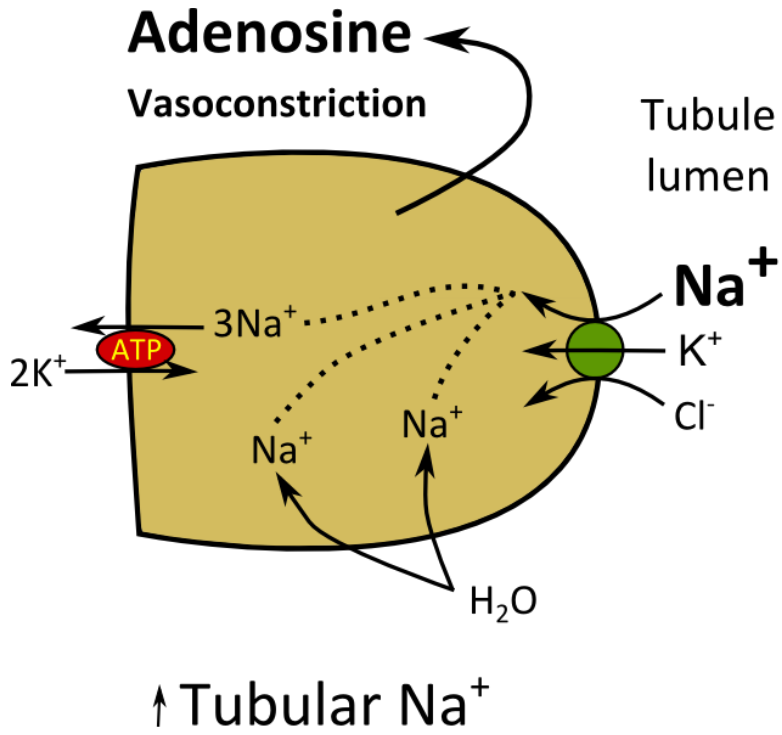
**Intraglomerular  
mesangial cells**

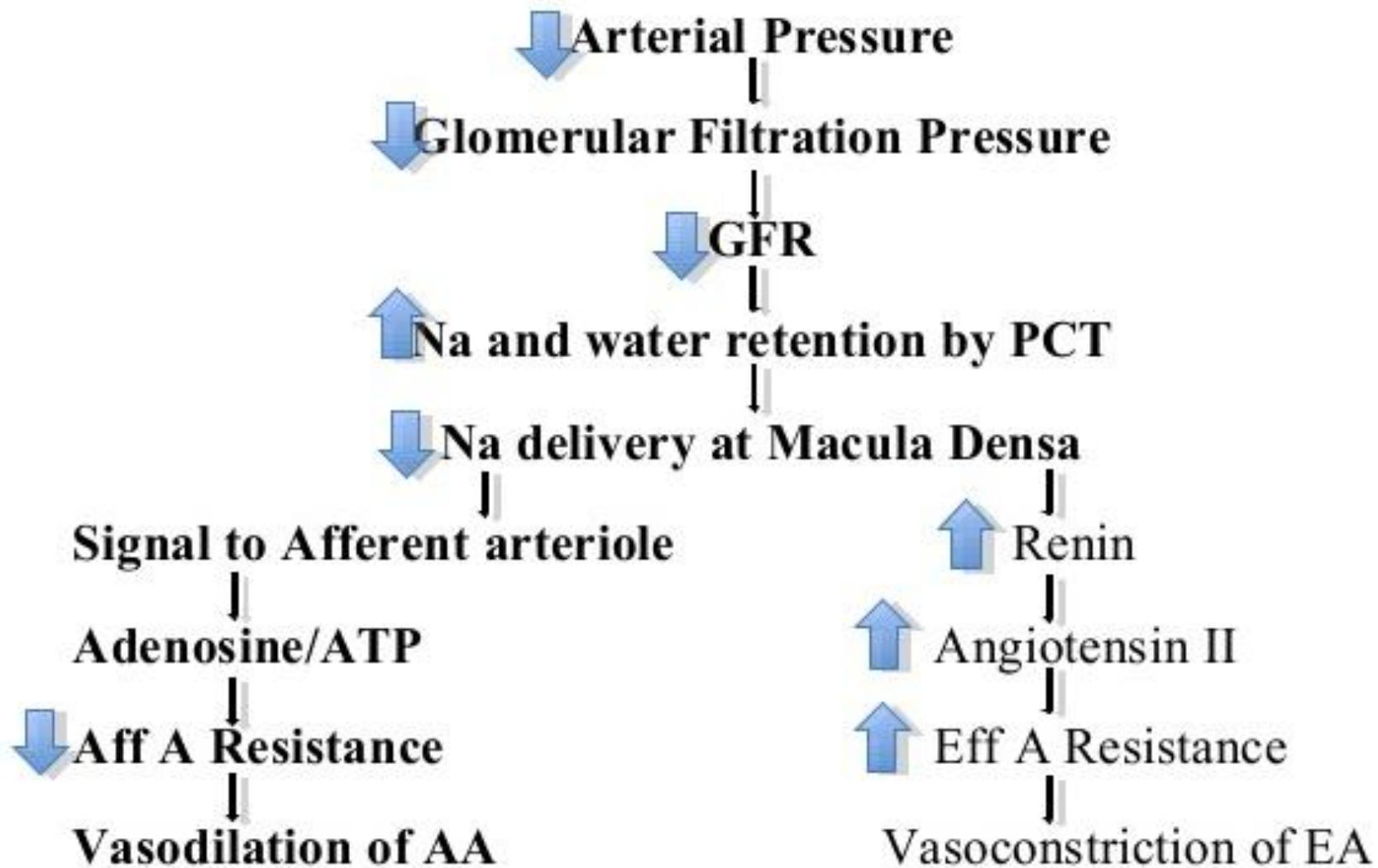
Physical support for the capillary loops



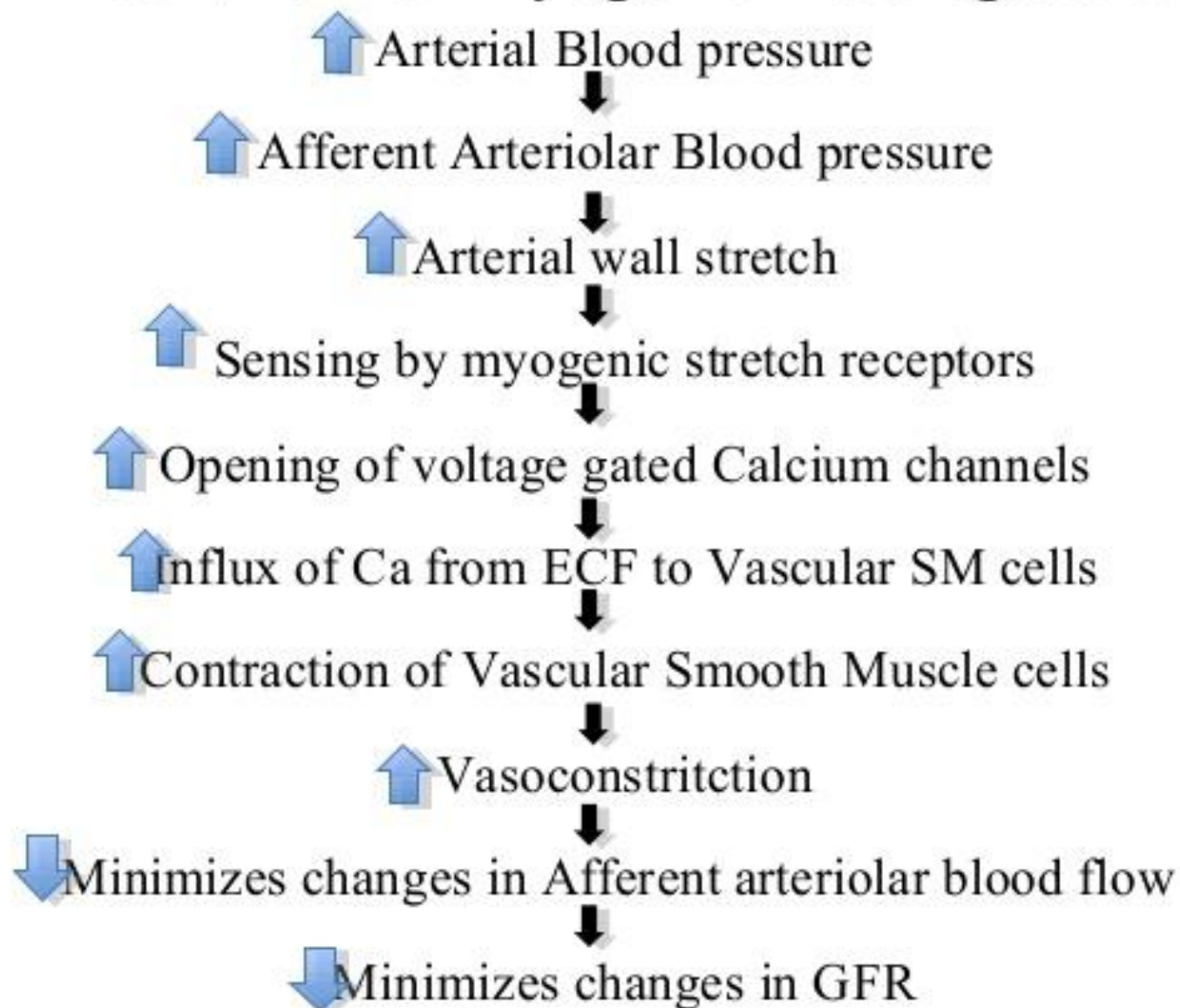
# Tubulo-glomerular feedback mechanism







# Mechanism of Myogenic Autoregulation





**Thank You**