

Physiology

Topic : Excretion of nitrogenous wastes

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Excretion

- Excretion of Nitrogenous waste like urea, uric acid and ammonia
- Ammonia – most toxic, require more water for elimination
- Uric acid – least toxic, very little water required

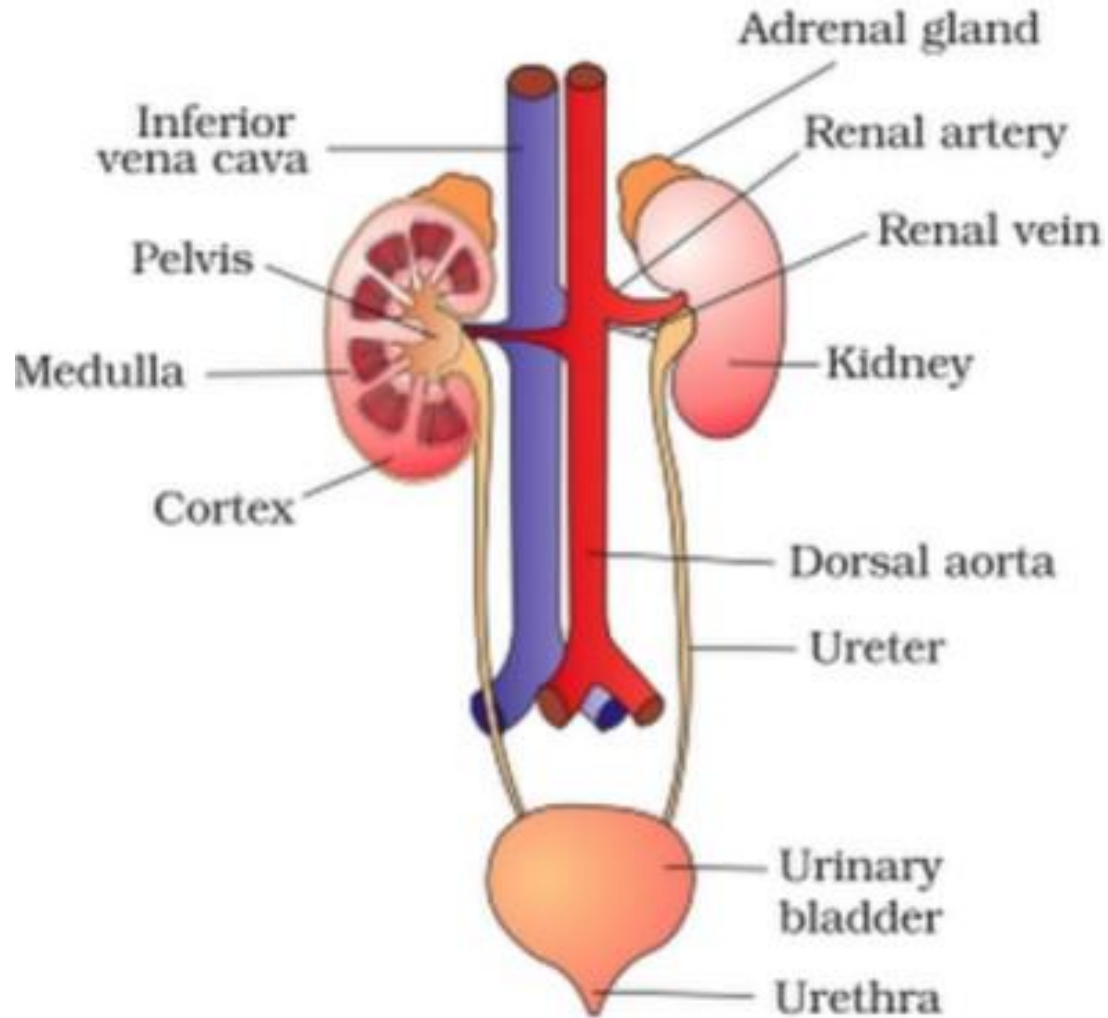
Animal groups based on excretory product

- **Ammonotelic** – readily soluble, excreted by simple diffusion across body surface or gills, **Eg.** Bony fish, aquatic amphibians and insects
- **Ureotelic** – terrestrial adaptation, ammonia converted to urea in liver. **Eg.** – terrestrial amphibians, mammals and marine fishes
- **Uricotelic** – excrete uric acid as pellets or paste, minimum water loss. **Eg.** – reptiles, birds, land snails and insects.
- **Guanotelic** – excrete guanine, spiders

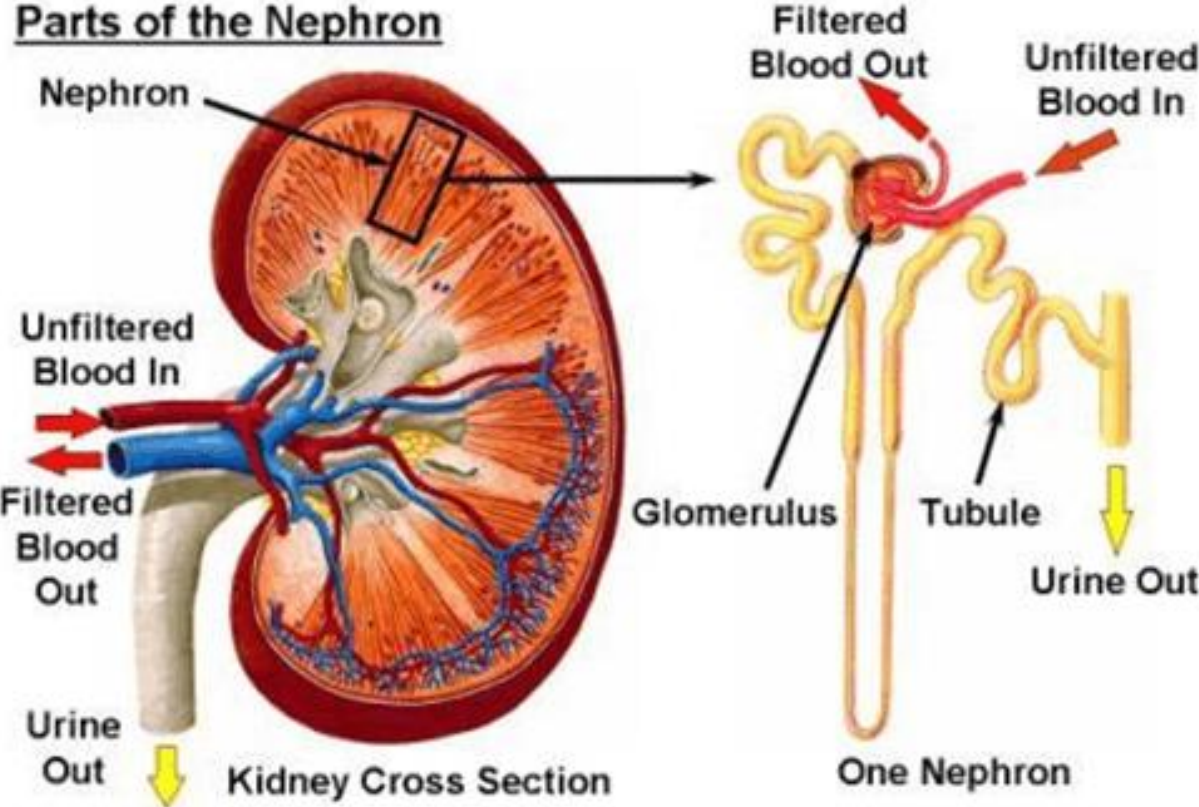
Excretory organs in different groups of organisms

- Protozoa, Porifera, coelentrata – body surface
- Platyhelminthes – flame cells
- Aschelminthes – Renette gland
- Molluscs – Organ of Bojanus / Kebers organ
- Annelida – nephridia
- Arthropoda – green glands/antennary glands in crustaceans, hepatopancreas and nephrocytes in spiders and scorpions, malphigian tubules also uricose glands and fat body in cockroach) in insects
- Echinodermata – tube feet, dermal brachia
- Hemichordata – glomerulus
- Cephalochordata – pharyngial nephridia

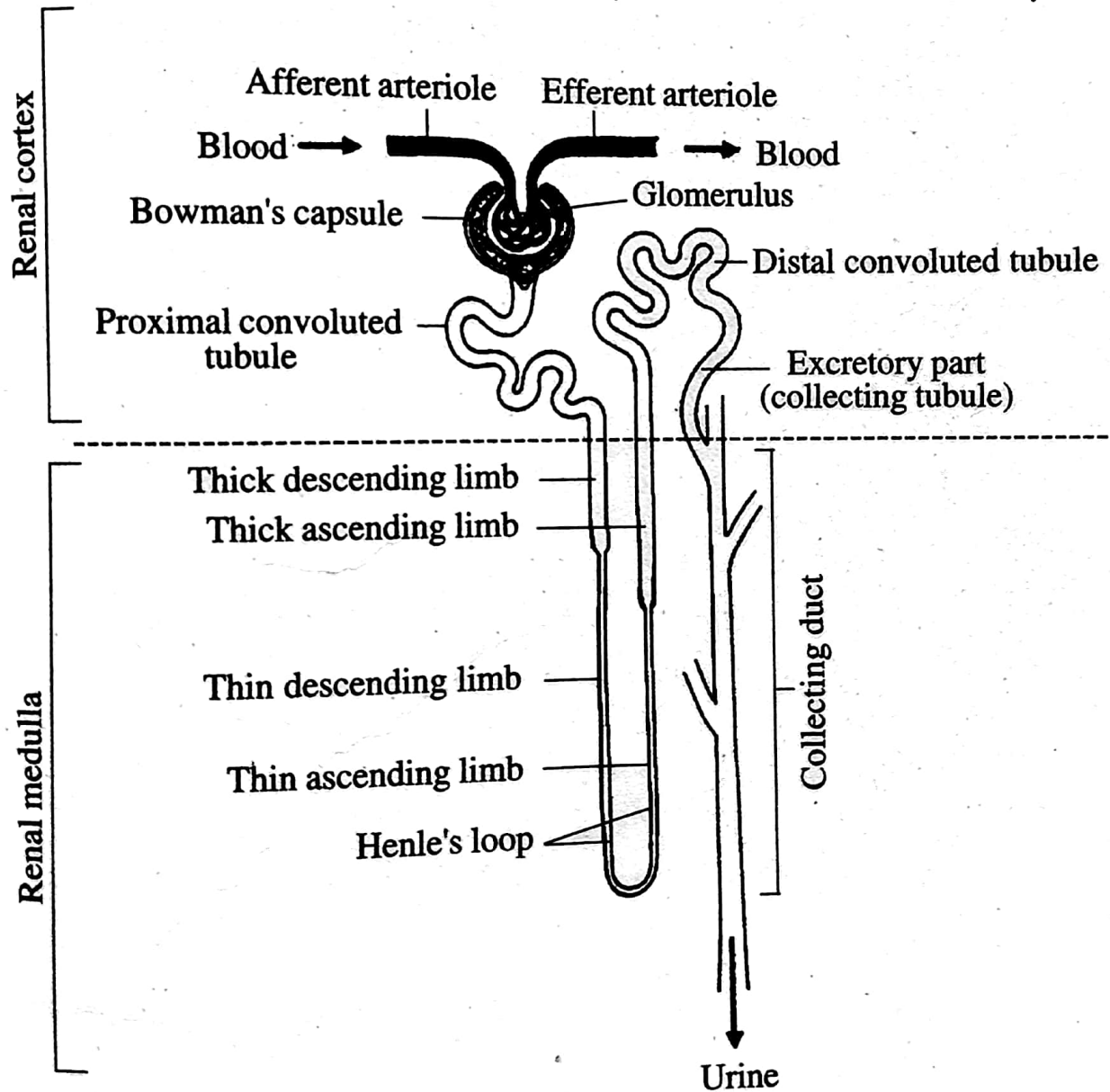
Human kidney



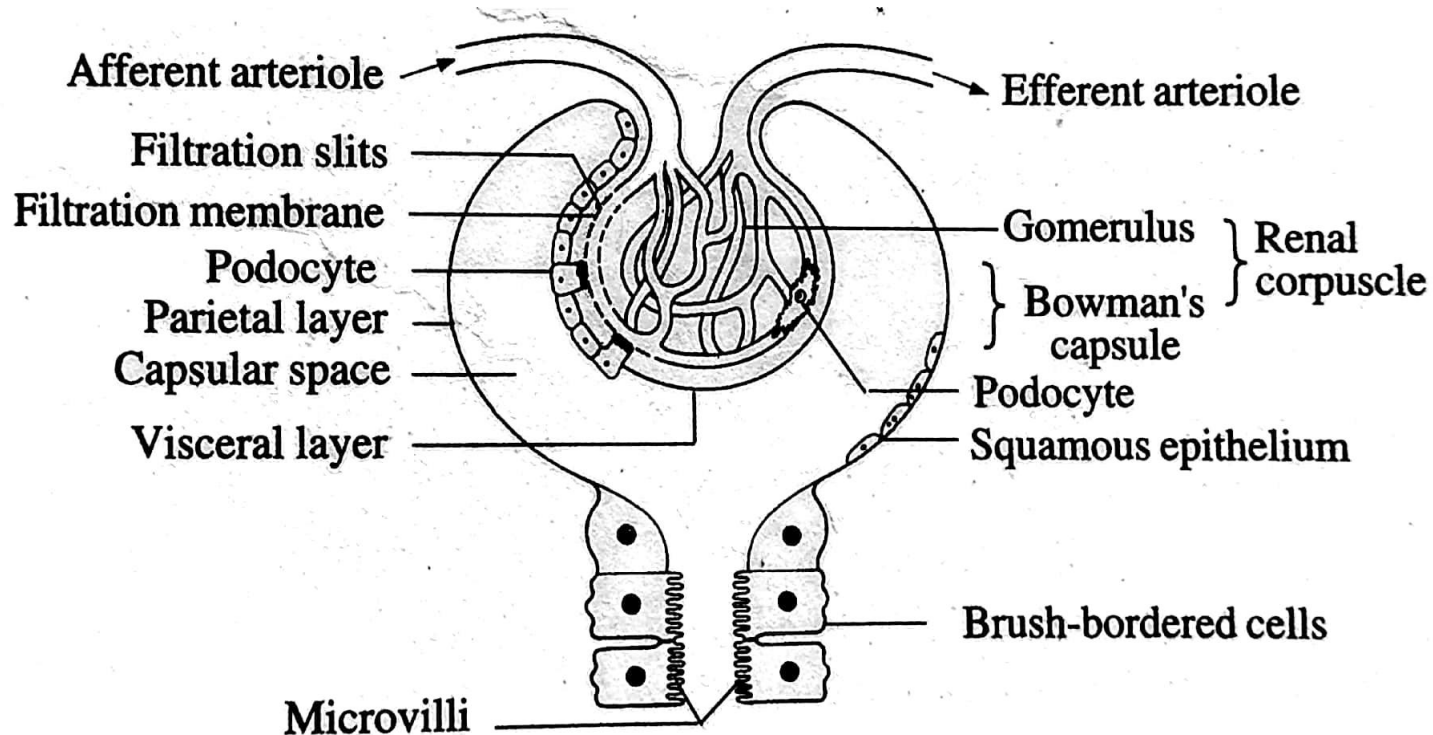
Nephron



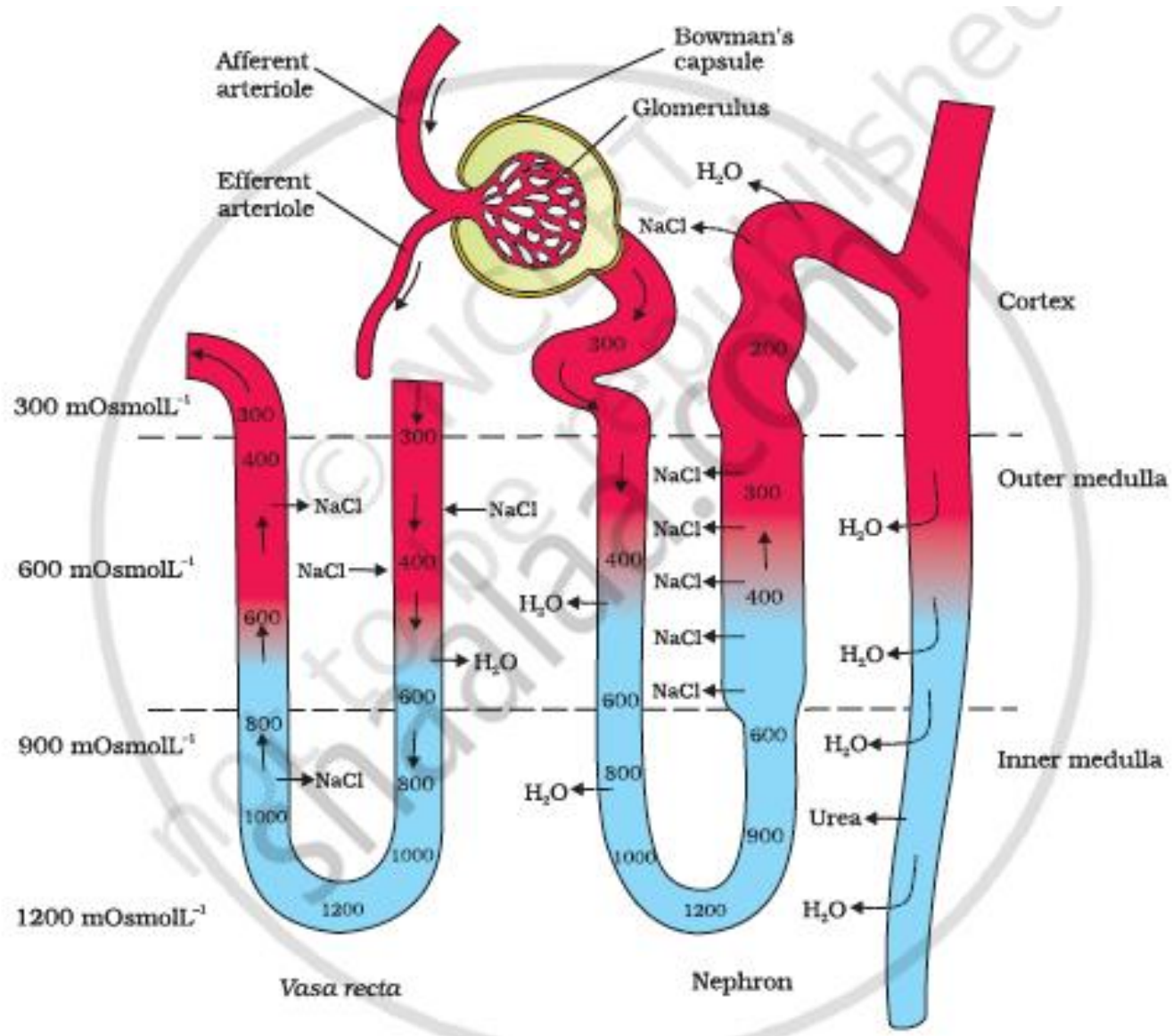
Structure of nephron



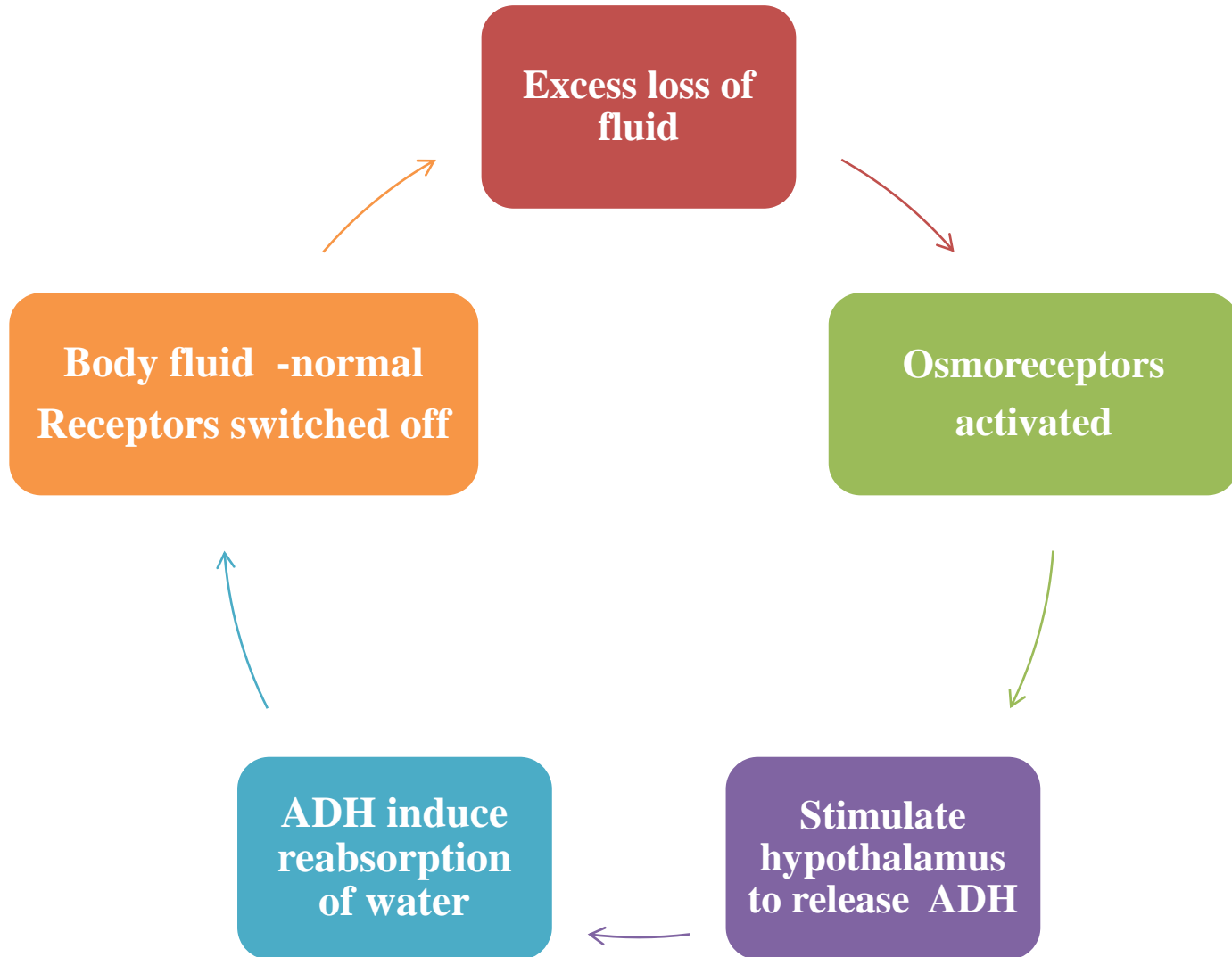
Malphigian capsule



Counter current mechanism



Regulation of kidney function - ADH



Regulation – JGA (RAAS)

