

# SEM IV ZOOA

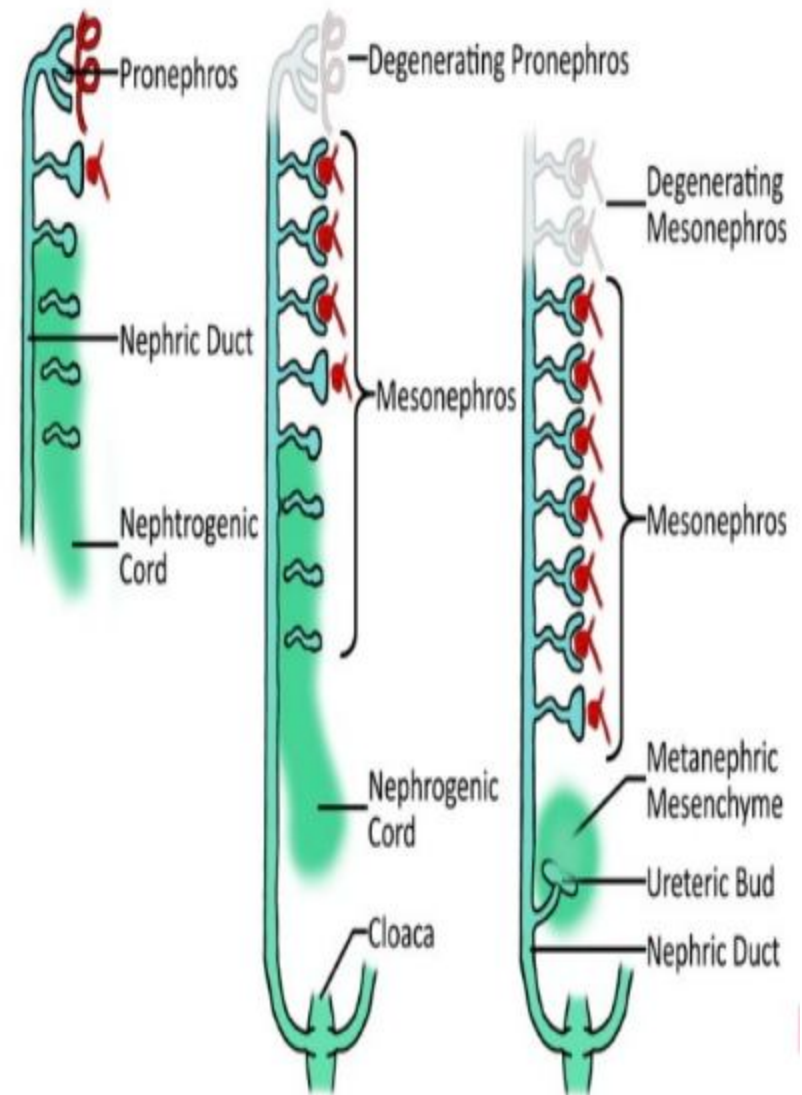
## CC8 UNIT 5: URINOGENITAL SYSTEM (Part - 2)

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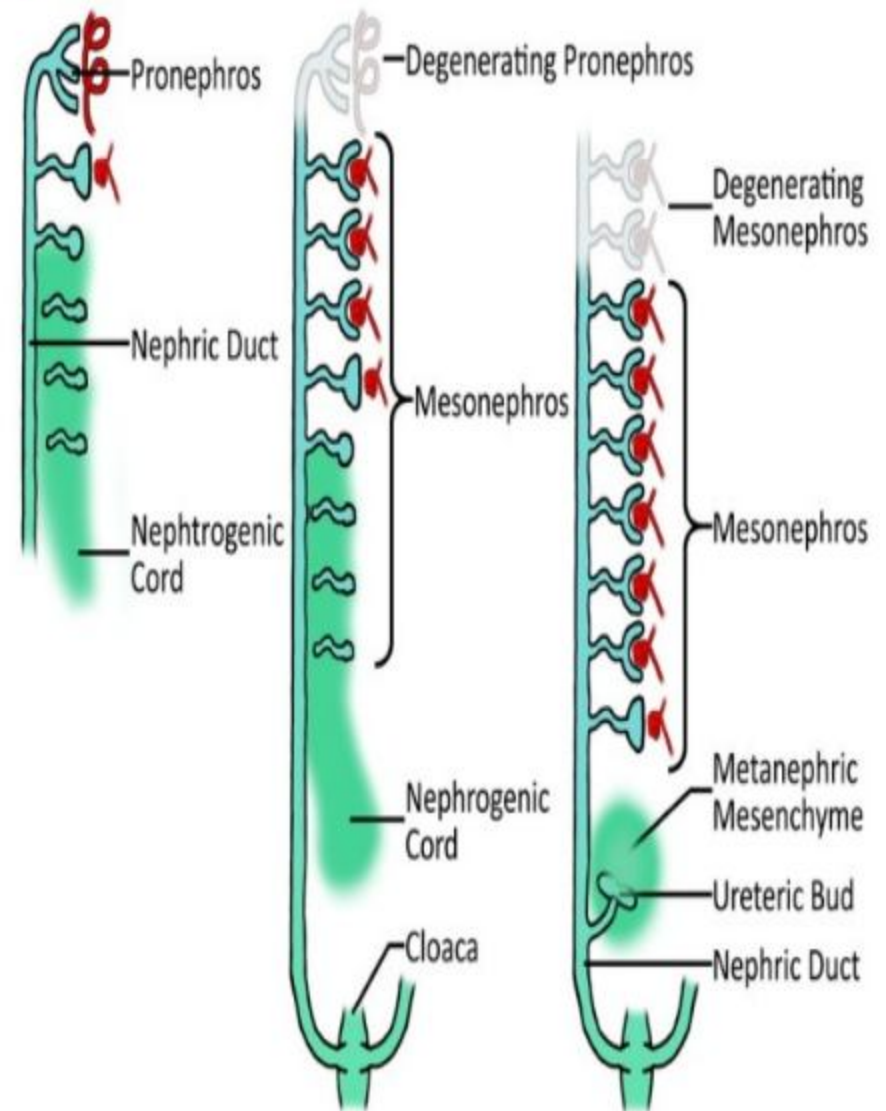
# THE AMNIOTE KIDNEY

- Three types of kidneys that appear in succession during embryonic development of amniotes are: **pronephros**, **mesonephros**, and **metanephros**.
- The **metanephros** persists to become the adult kidney.
- **Pronephros** appears in the very early stages of development but soon degenerates.



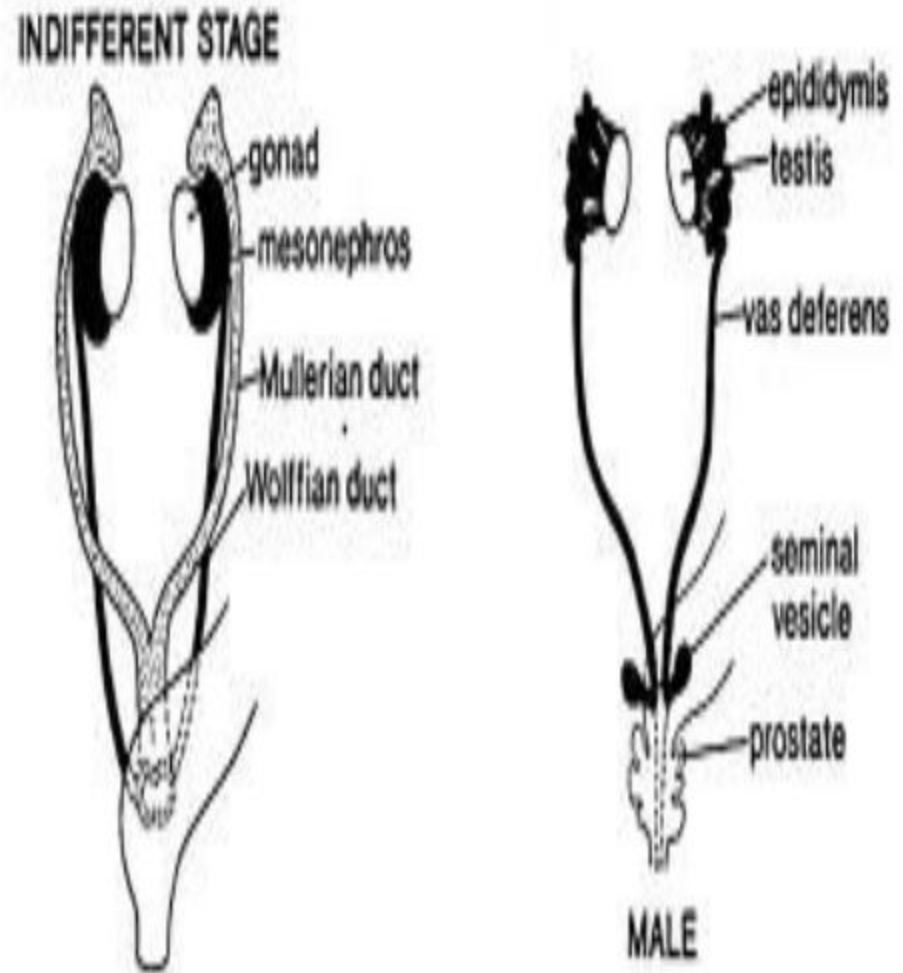
# THE AMNIOTE KIDNEY

- **Mesonephros** develops as the embryonic kidney in reptiles, birds, & mammals
- It is sometimes called the **Wolffian body** and the mesonephric duct is called the **Wolffian duct**.
- It functions for a short time after hatching or birth



# THE AMNIOTE KIDNEY

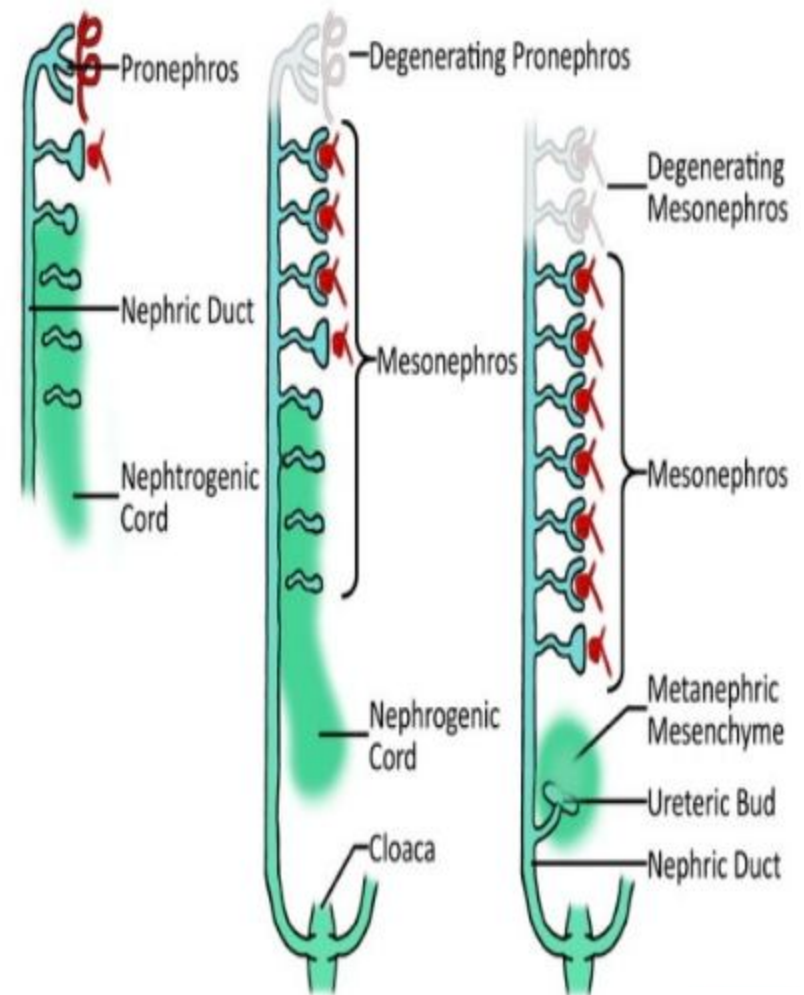
- Wolffian duct serves as urinary passage but when the metanephros becomes functional, it degenerates in the female, but persists in the male.
- Remnants of the mesonephros are associated with the reproductive system.
  - This include the **epididymis, ductus deferens, seminal vesicle, paradidymis, and ductus aberrans** in the male.
  - In females, remnants include the **epoophoron** and **paraoophoron** in the dorsal mesentery of the ovary, and **canal of Gartner** in the mesentery of mammalian oviduct.





# THE AMNIOTE KIDNEY: METANEPHROS

- Arise posterior to the mesonephros.
- **Nephron** is the functional unit.
- Each nephron is composed of **renal corpuscles**, **secretory tubules**, and **collecting tubules**.
- Differentiation of metanephros begins when a metanephric **bud** sprouts from posterior end of the mesonephric duct.
- **Nephrogenic mesoderm** surrounds the bud.

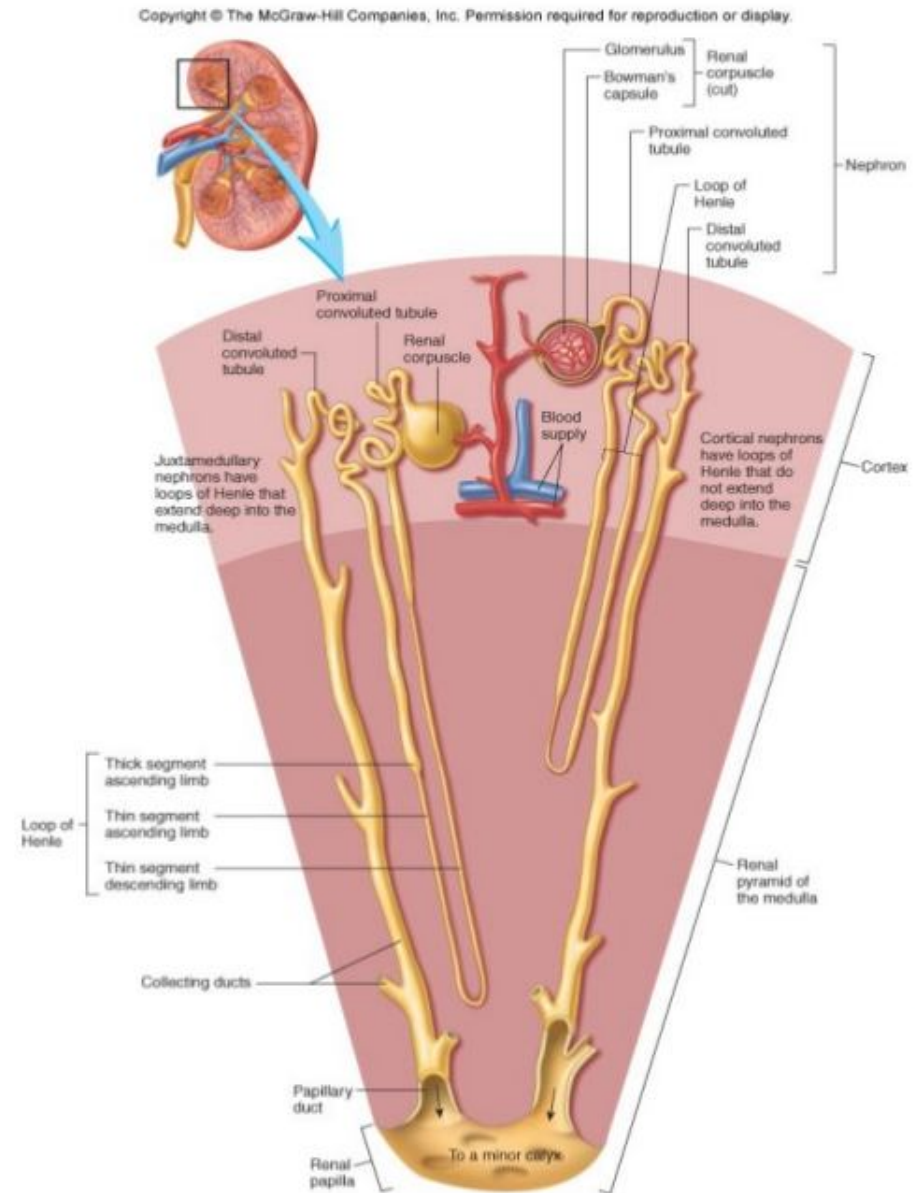


# THE AMNIOTE KIDNEY: METANEPHROS

- Bud grows anteriorly together with the metanephric **blastema**, and eventually gives rise to **metanephric duct** or **ureter**, and **pelvis** of the kidney.
- Fingerlike outgrowths from the pelvis invade the kidney blastema and become collecting tubules.
- S-shaped tubules are organizing within the blastema.
  - One end grows toward and encapsulates a **glomerulus** to form a renal corpuscle.
  - The other end grows toward and empties into a **collecting tubule**.

# THE AMNIOTE KIDNEY

- Each kidney tubule of mammals is composed of the following parts:
  - Proximal convoluted tubule
  - Loop of Henle with ascending and descending portions
  - Distal convoluted tubule.

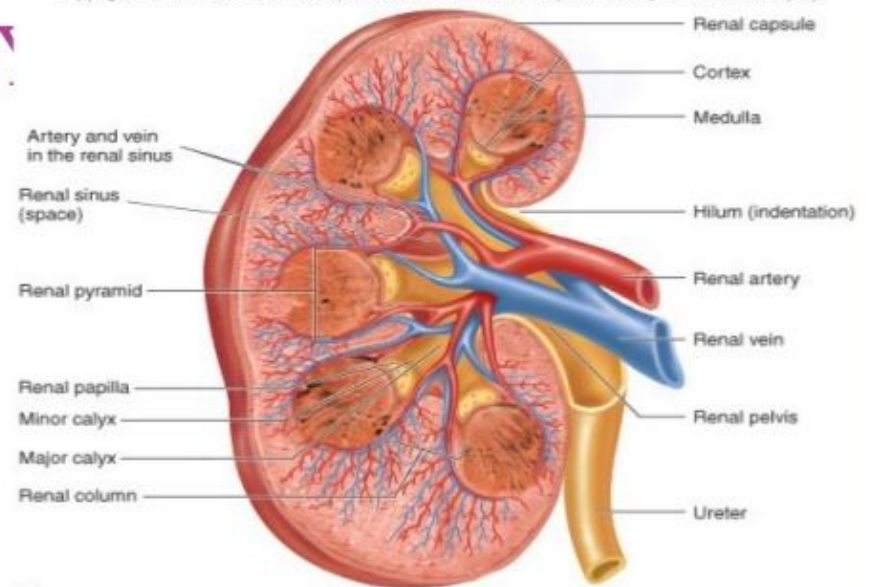




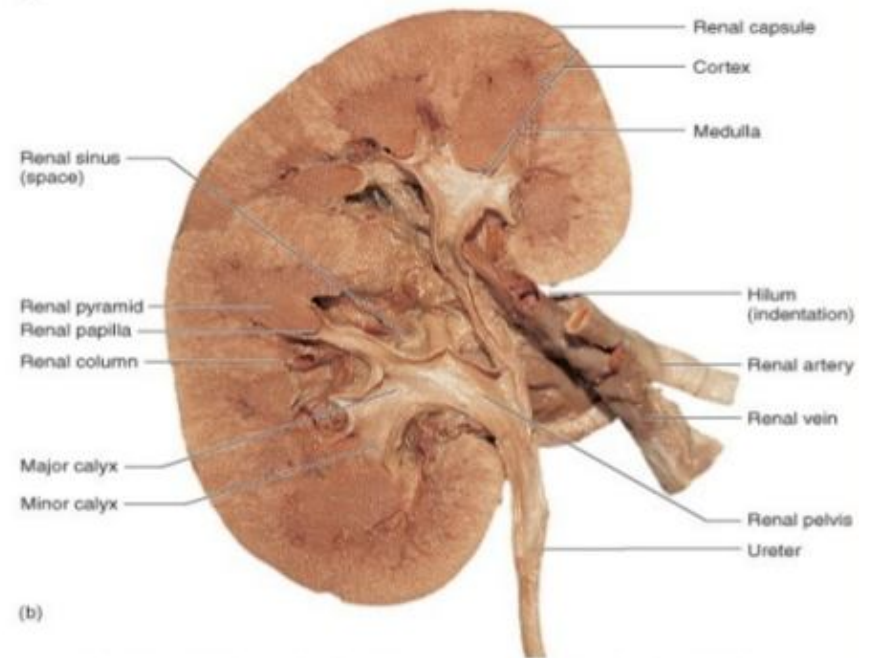
# THE AMNIOTE KIDNEY

- **Capsule** is a connective tissue that surrounds the kidney.
- **Cortex** is the outer kidney substance containing renal corpuscles.
- **Medulla** is the inner substance which contains the loops of Henle and common collecting tubules
- **Renal pyramids** are the conical aggregated loops and collecting tubules.
- **Renal papilla** is a blunt tip of each renal pyramid that project into a funnel-shaped outpocketing, the **calyx** of the pelvis.

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(a)



(b)

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## **REFERENCES:**

**Kent, George C & Carr, Robert K. Comparative Anatomy of the Vertebrates. *Urinogenital System.***