

YAKEEN NEET 2.0

2026

EXCRETORY PRODUCTS AND ITS ELIMINATION

ZOOLOGY

Lecture – 2

By- SAMAPTI MAM





Topics to be covered

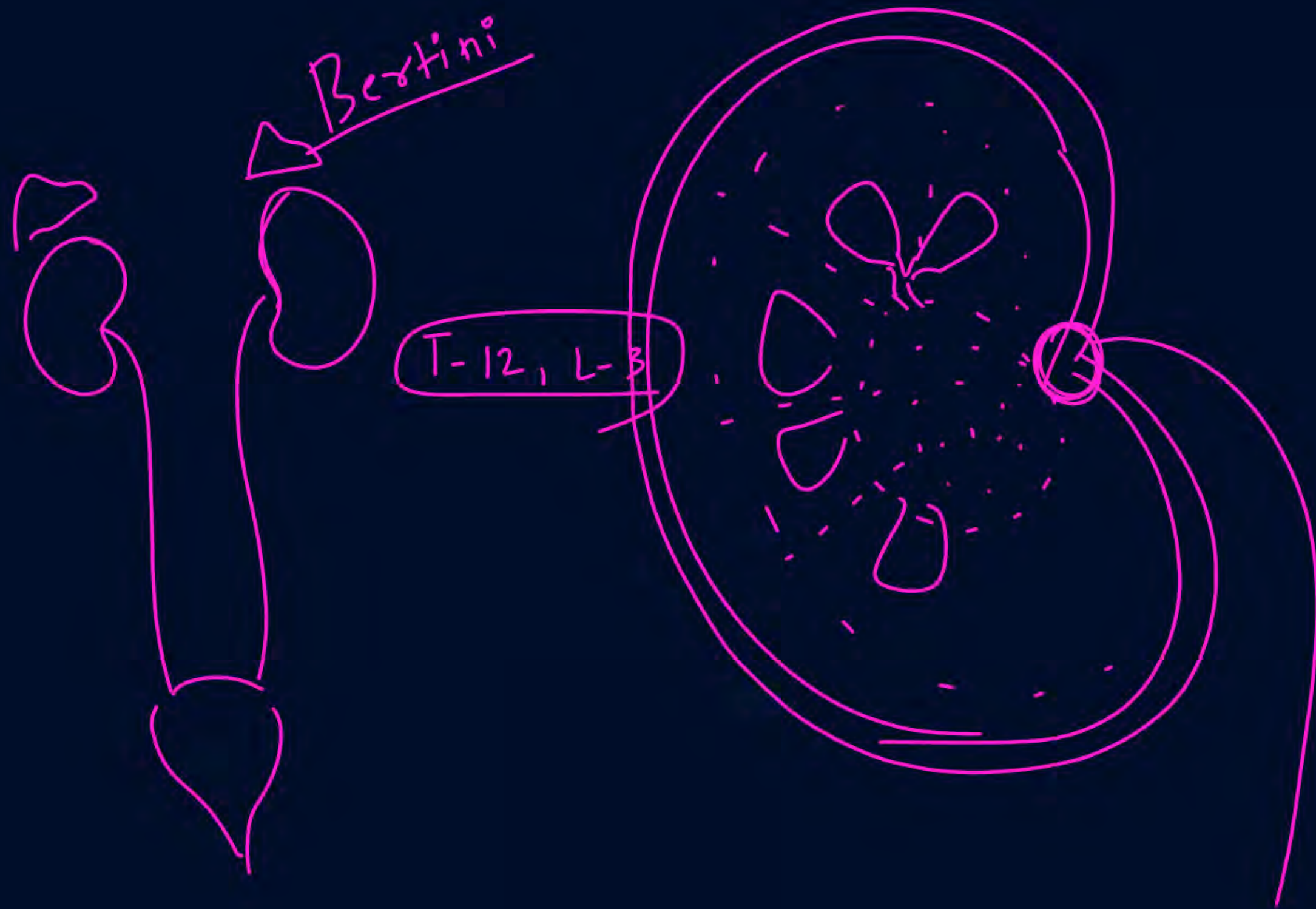
1

STRUCTURE OF NEPHRON

2

3

4



2) Ureter : 1 pair

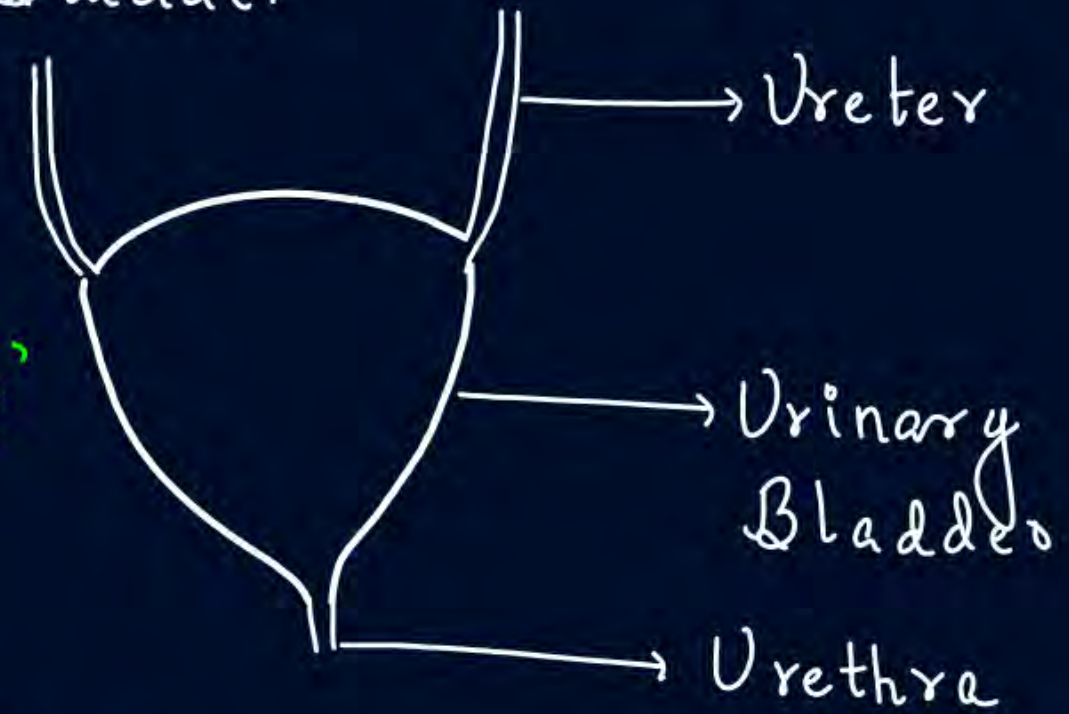
- Carries urine from KIDNEY to Urinary Bladder.

3) Urinary Bladder:

- Stores the Urine
- Has smooth muscle: Detrusor muscles

- Wall has
↓
Stretch receptor

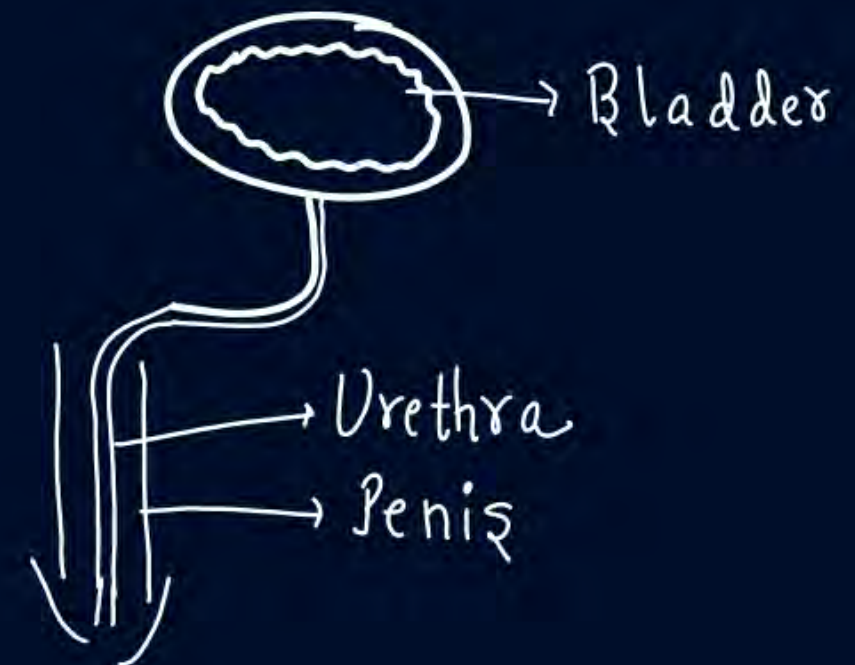
Contract
↓
Pushing / Detrusion of Urine



4) Urethra:

- ♂
- 20-25 cm long
 - Urinogenital duct
Urine Carry SEMEN

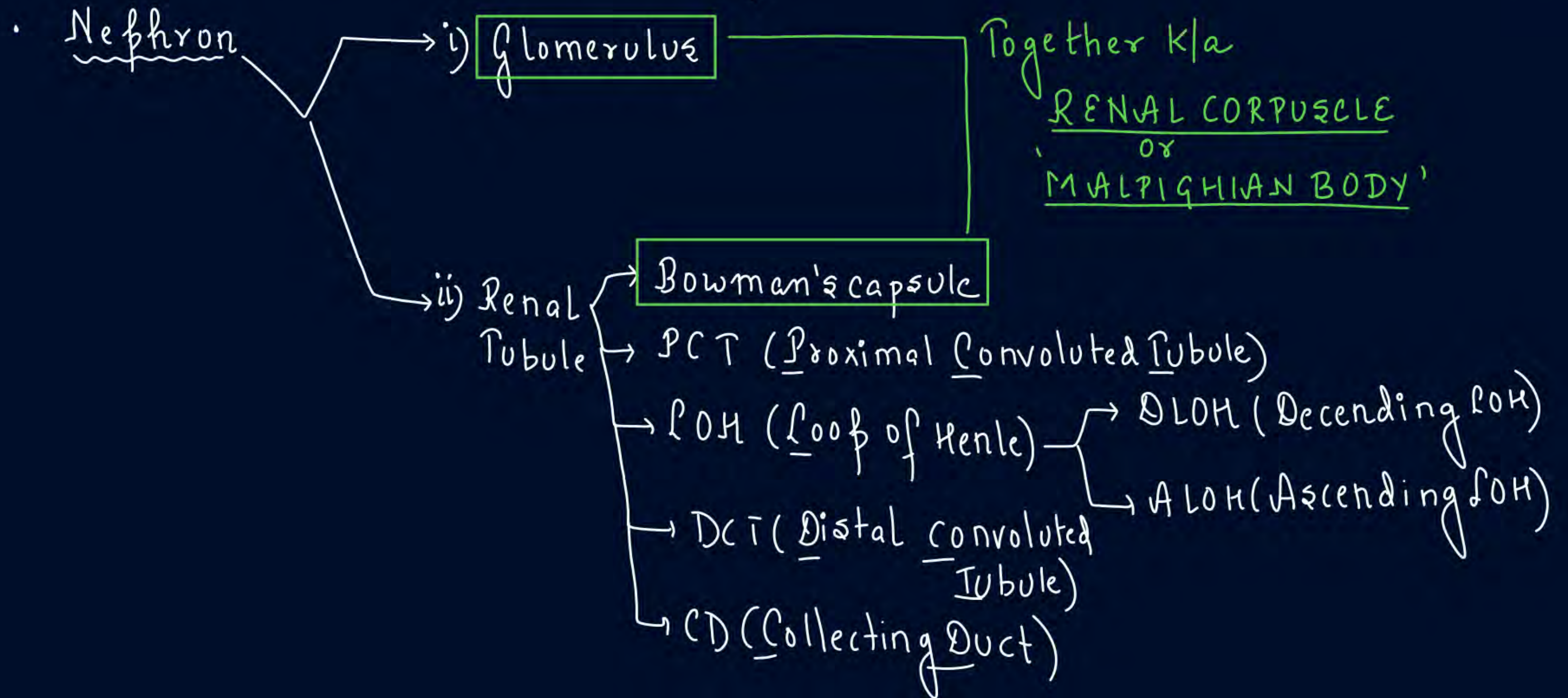
- ♀
- 2-4 cm Length
 - Carries only Urine

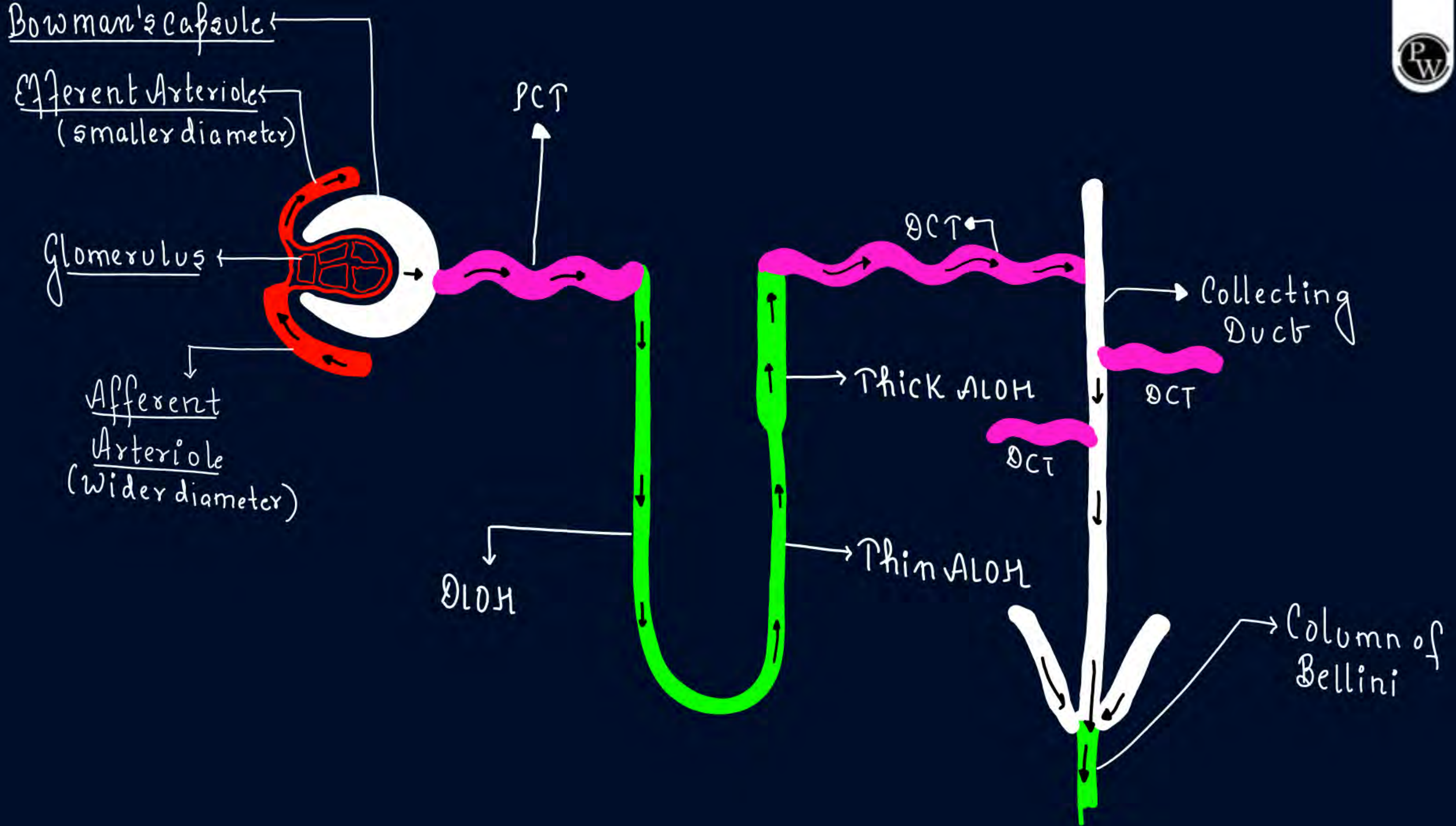


Structure of Nephron/Urinary Tubule:



- Nephron: Functional unit of Kidney.





(Note): DCTs of many Nephron open into a single collecting Duct.

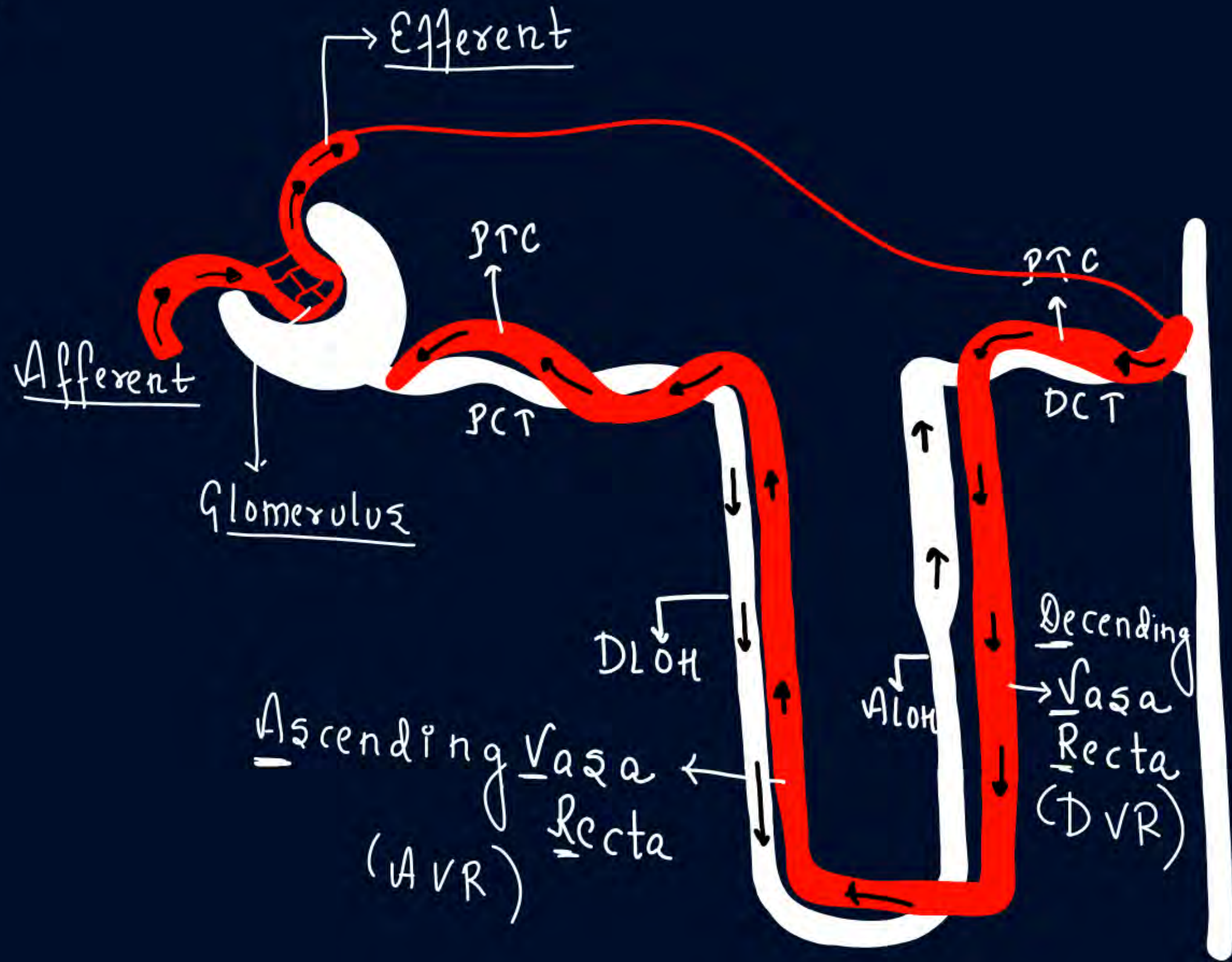
- Many collecting Duct combinely forms 'DUCT of BELLINI' than opens into Renal Pelvis via Calyces.

- Around the Nephron, there is a capillary network: **PTC: Peritubular capillaries**, but those specially around the 'LOH' is k/a **VASA RECTA (VR)** is formed from Efferent arteriole

- Aorta → Renal Artery → Afferent arteriole → Glomerulus → Efferent Arteriole



PTC




- DLOH parallel to AVR
- ALOH parallel to DVR
- PTC & VR: has Blood


• Types of Nephron



CORTICAL NEPHRON

- 85% of Nephron
- 'LOH' is short,  superficially penetrates into Medulla
- Vasa recta is either Absent or Reduced since short LOH but rest Peritubular capillary present
- Only EXCRETORY

JUXTAMEDULLARY NEPHRON

- 15%
- 'LOH' is long &  Deeply penetrates Medulla.
- Vasa recta is well developed; since long LOH, ptc present here as well.
- EXCRETORY + Osmoregulatory

- Note
- Renal Corpuscle, PCT, DCT: Cortex
 - LOH: Medulla
 - CD: Extends from Cortex to medulla.

medullary pyramids as renal columns called **Columns of Bertini** (Figure 16.2).

Each kidney has nearly one million complex tubular structures called **nephrons** (Figure 16.3), which are the functional units. Each nephron has two parts – the **glomerulus** and the **renal tubule**. **Glomerulus** is a tuft of capillaries formed by the **afferent arteriole** – a fine branch of renal artery. Blood from the glomerulus is carried away by an **efferent arteriole**.

The renal tubule begins with a **double walled cup-like structure** called **Bowman's capsule**, which encloses the glomerulus. **Glomerulus along with Bowman's capsule**, is called the **malpighian body** or **renal corpuscle** (Figure 16.4). The tubule continues further to form a highly coiled network – **proximal convoluted tubule**.

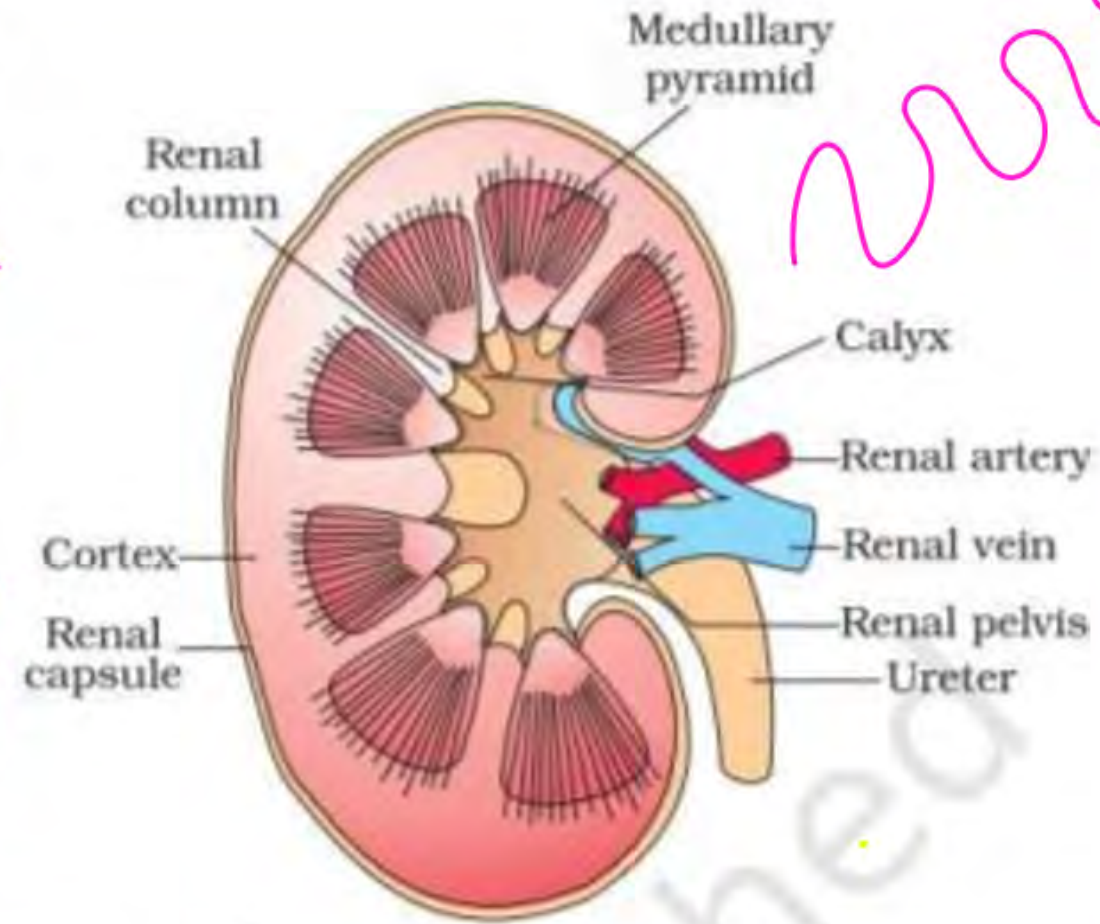


Figure 16.2 Longitudinal section (Diagrammatic) of Kidney

Renal vein

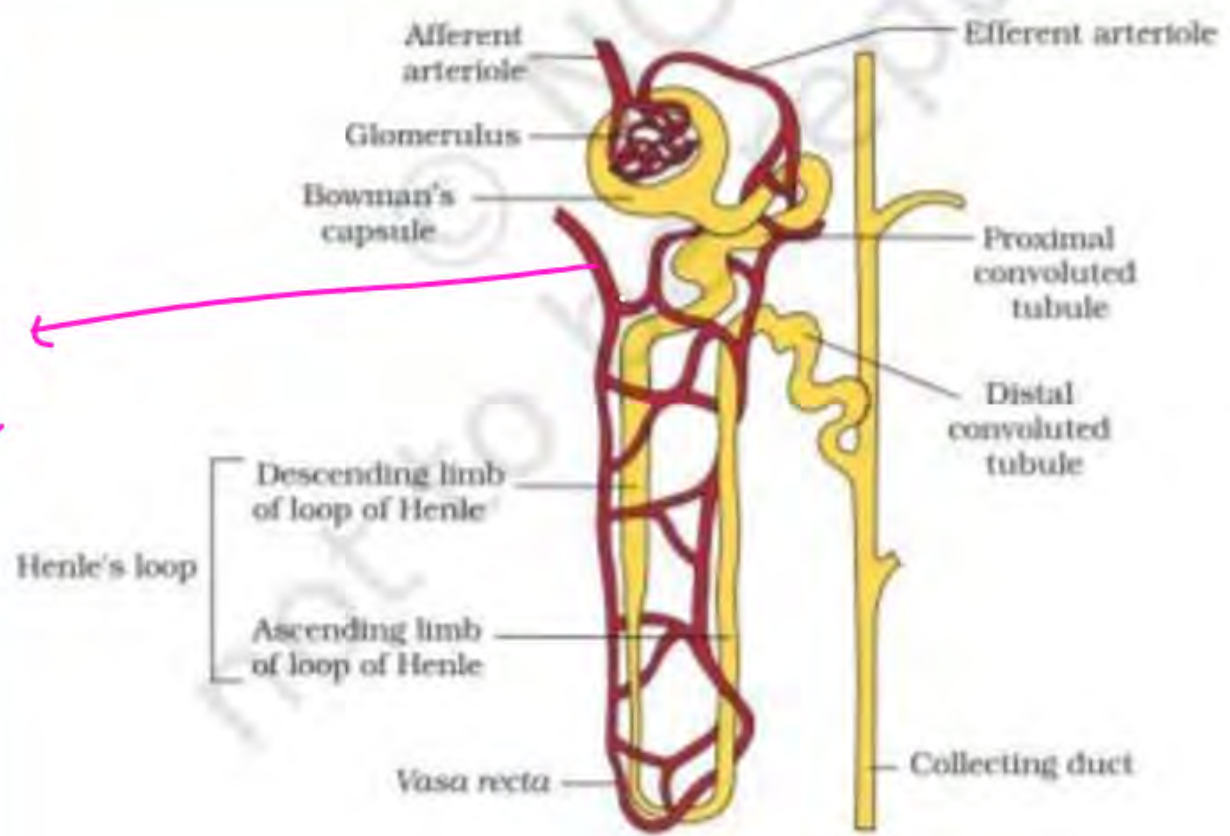


Figure 16.3 A diagrammatic representation of a nephron showing blood vessels.

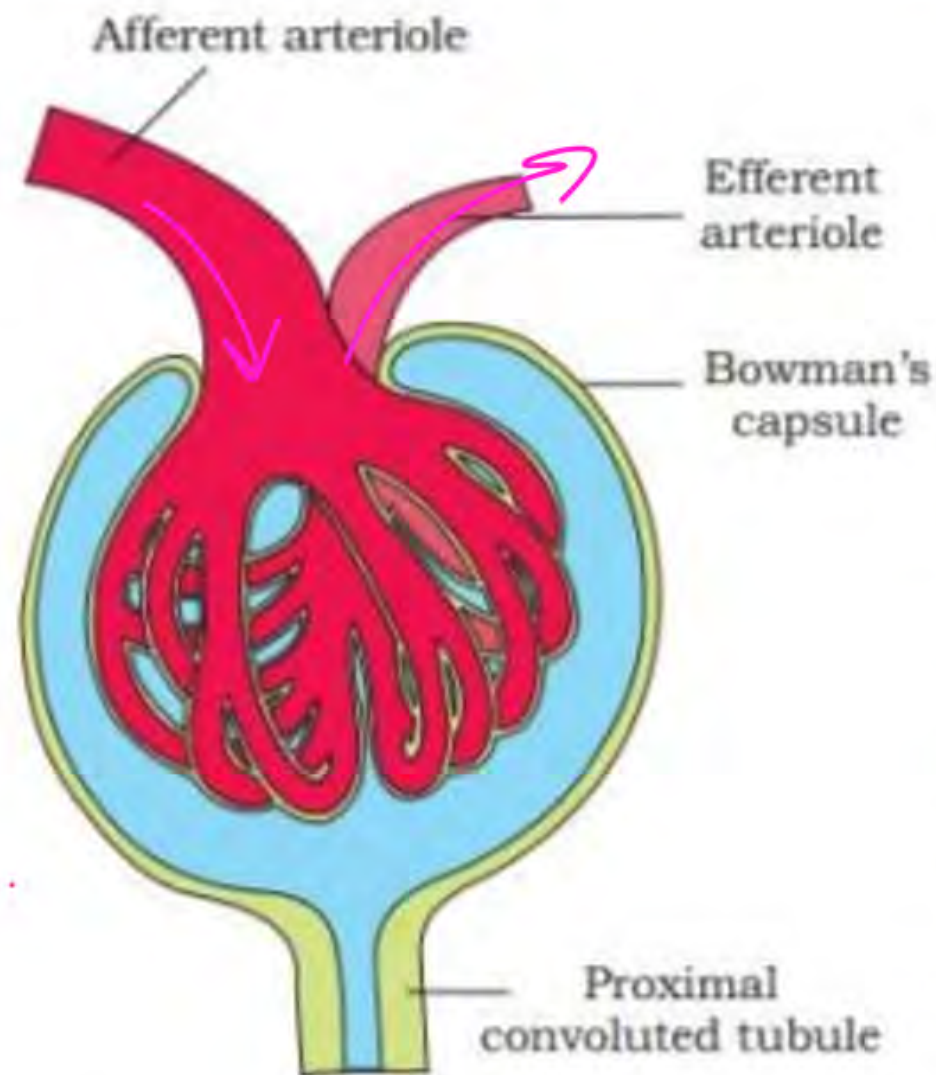


Figure 16.4 Malpighian body (renal corpuscle)

(PCT). A hairpin shaped **Henle's loop** is the next part of the tubule which has a descending and an ascending limb. The ascending limb continues as another highly coiled tubular region called **distal convoluted tubule** (DCT). The DCTs of many nephrons open into a straight tube called *collecting duct*, many of which converge and open into the renal pelvis through medullary pyramids in the calyces.

The Malpighian corpuscle, PCT and DCT of the nephron are situated in the cortical region of the kidney whereas the loop of Henle dips into the medulla. In majority of nephrons, the loop of Henle is too short and extends only very little into the medulla. Such nephrons are called cortical nephrons. In some of the nephrons,

the loop of Henle is very long and runs deep into the medulla. These nephrons are called juxta medullary nephrons.

The efferent arteriole emerging from the glomerulus forms a fine capillary network around the renal tubule called the peritubular capillaries. A minute vessel of this network runs parallel to the Henle's loop forming a 'U' shaped *vasa recta*. *Vasa recta* is absent or highly reduced in cortical nephrons.

Renal column of Bellini

Cortical

Next Catalyst

H.W

Q-1. READ THE FOLLOWING STATEMENT AND CHOOSE THE CORRECT ANSWER

STATEMENT 1- In humans ammonia produced by metabolism is converted into urea by kidneys and eliminated by them

STATEMENT 2- The extension of medulla between cortex is called column of bertini

1 Statement I is correct but Statement II is incorrect.

2 Statement I is incorrect but Statement II is correct.

3 Both Statement I and Statement II are correct.

4 Both Statement I and Statement II are incorrect.

ASSERTION–The main differentiating factor between cortical and juxtamedullary nephron is the length of loop of henle

REASON –Majority of the nephrons in our body has long loop of henle

- A) Both Assertion (A) and Reason (R) are true, and Reason (R) is a correct explanation of Assertion (A).
- B) Both Assertion (A) and Reason (R) are true, but Reason (R) is not a correct explanation of Assertion (A).
- C) Assertion (A) is true, and Reason (R) is false.
- D) Assertion (A) is false, and Reason (R) is true.

Q-1. READ THE FOLLOWING STATEMENT AND CHOOSE THE CORRECT ANSWER

STATEMENT 1- Bony fishes eliminate out ammonia

STATEMENT 2- kidneys donot play a significant role in removal of ammonia in fish

1 Statement I is correct but Statement II is incorrect.

2 Statement I is incorrect but Statement II is correct.

3 Both Statement I and Statement II are correct.

4 Both Statement I and Statement II are incorrect.

Q-1. READ THE FOLLOWING STATEMENT AND CHOOSE THE CORRECT ANSWER

STATEMENT 1- nephridia are tubular excretory structure in annelids

STATEMENT 2- nephridia help in excretion and maintaining fluid and ionic balance

1 Statement I is correct but Statement II is incorrect.

2 Statement I is incorrect but Statement II is correct.

3 Both Statement I and Statement II are correct.

4 Both Statement I and Statement II are incorrect.

ASSERTION- Animal can accumulate the wastes like Na^+ , K^+ , Cl^- , etc via excess of ingestion too

REASON -ammonia is the most toxic nitrogenous waste and requires less water for its removal

- A) Both Assertion (A) and Reason (R) are true, and Reason (R) is a correct explanation of Assertion (A).
- B) Both Assertion (A) and Reason (R) are true, but Reason (R) is not a correct explanation of Assertion (A).
- C) Assertion (A) is true, and Reason (R) is false.
- D) Assertion (A) is false, and Reason (R) is true.

Q-1. READ THE FOLLOWING STATEMENT AND CHOOSE THE CORRECT ANSWER

STATEMENT 1- Renal tubule begins with bowmans capsule

STATEMENT 2- malpighian corpuscle is situated in cortical region of kidney

1 Statement I is correct but Statement II is incorrect.

2 Statement I is incorrect but Statement II is correct.

3 Both Statement I and Statement II are correct.

4 Both Statement I and Statement II are incorrect.

Samapti Sinha Mahapatra

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20 May 2024

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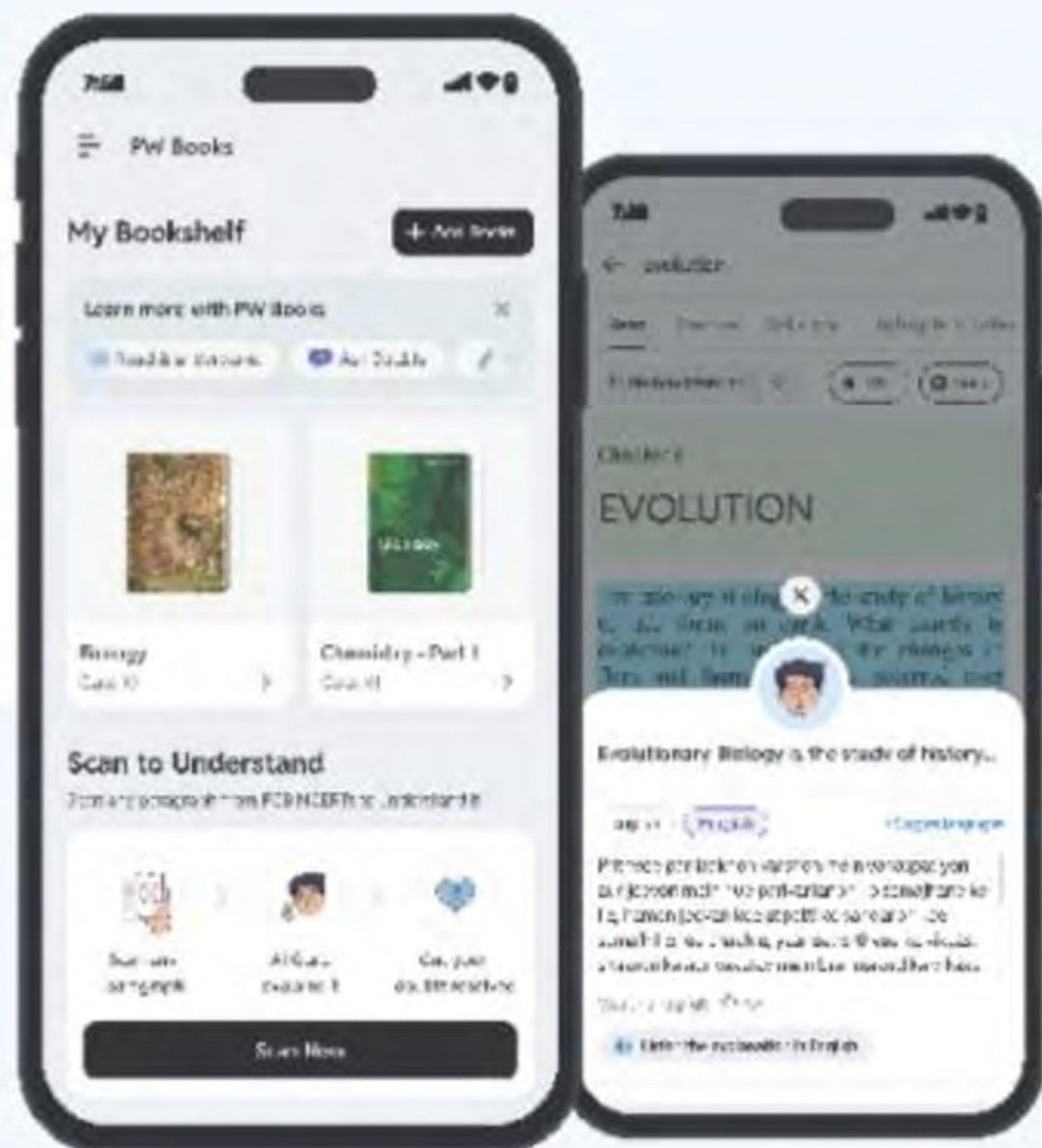
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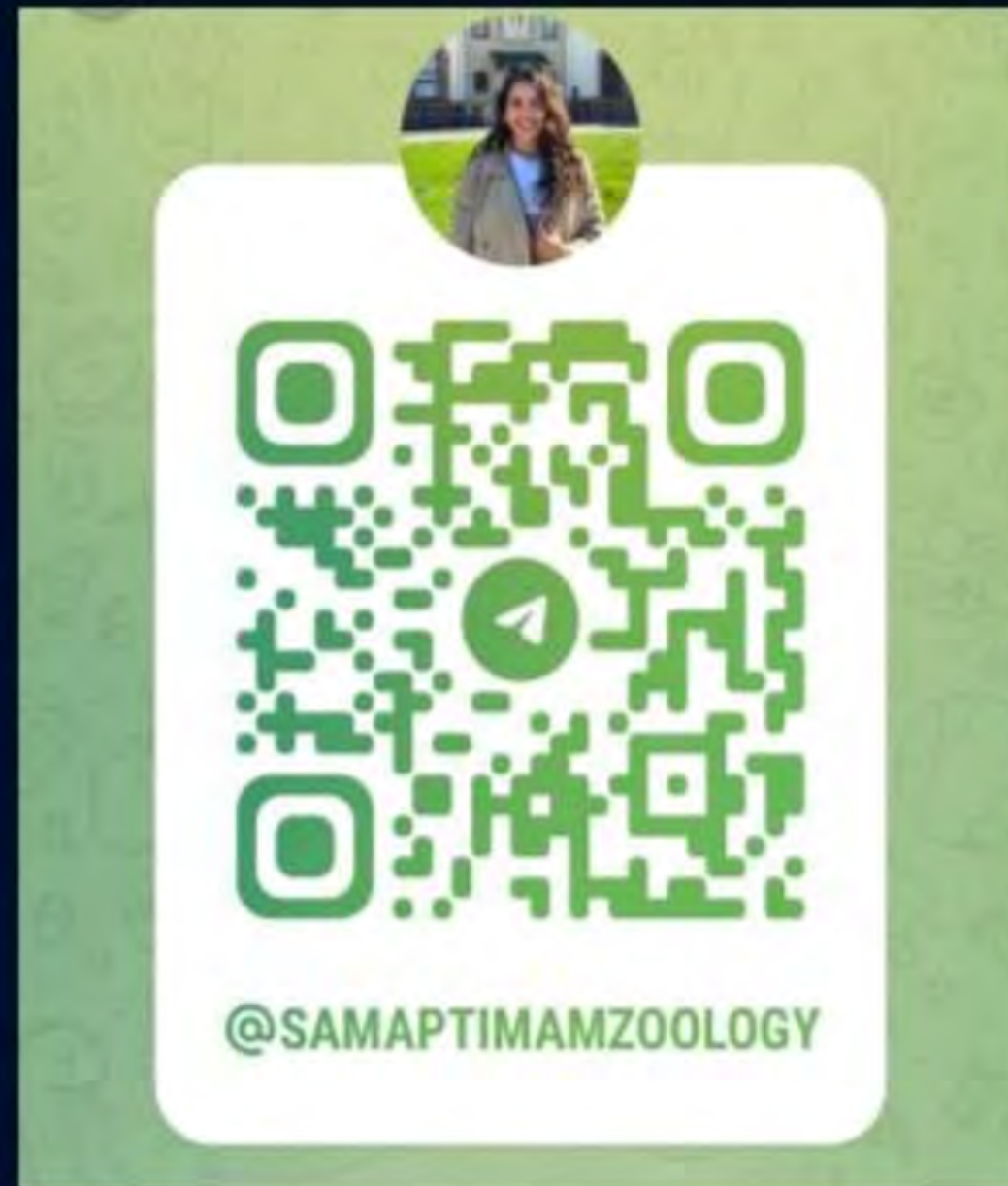


Questions & Solutions



Video Explanations







Homework

- REVISE CLAASNOTES / ZOOLOGY MED EASY

THANK
YOU