



How Frogs Remove Nitrogenous Waste

A Structural Blueprint of the Amphibian Excretory System

The Four Pillars of Amphibian Excretion



01_KIDNEYS

The primary biological filters.

02_URETERS

The transport ducts.

03_URINARY_BLADDER

The thin-walled storage sac.

04_CLOACA

The common exit chamber.

The primary function of this highly developed system is the elimination of nitrogenous wastes from the bloodstream.



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Let's Test Them Now.**

$$E=mc^2$$



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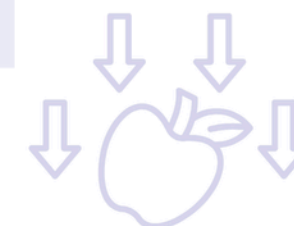
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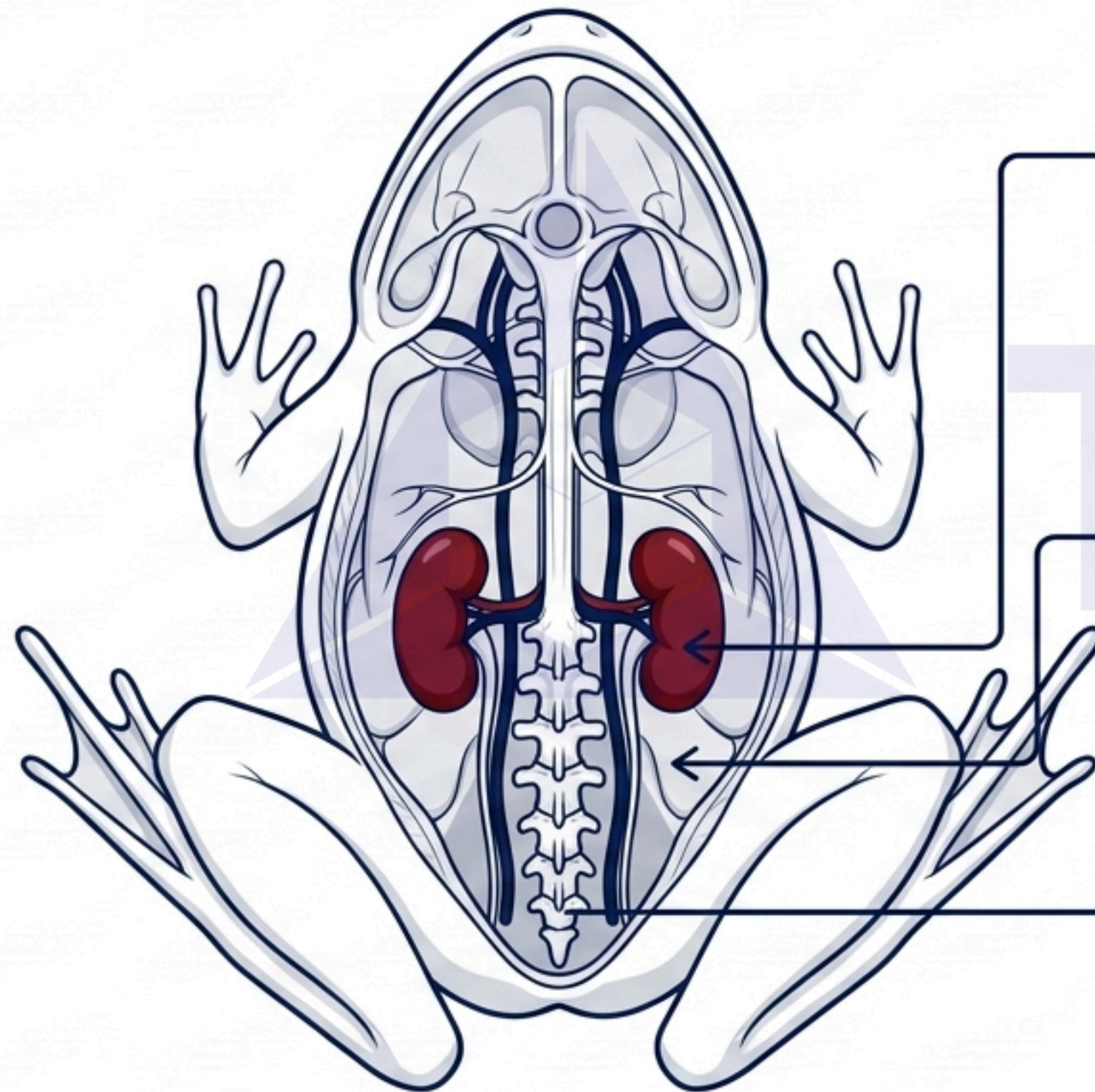
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Positioning the Biological Filter



BEAN_LIKE_STRUCTURE

Compact, dark red, and bean-like structures.

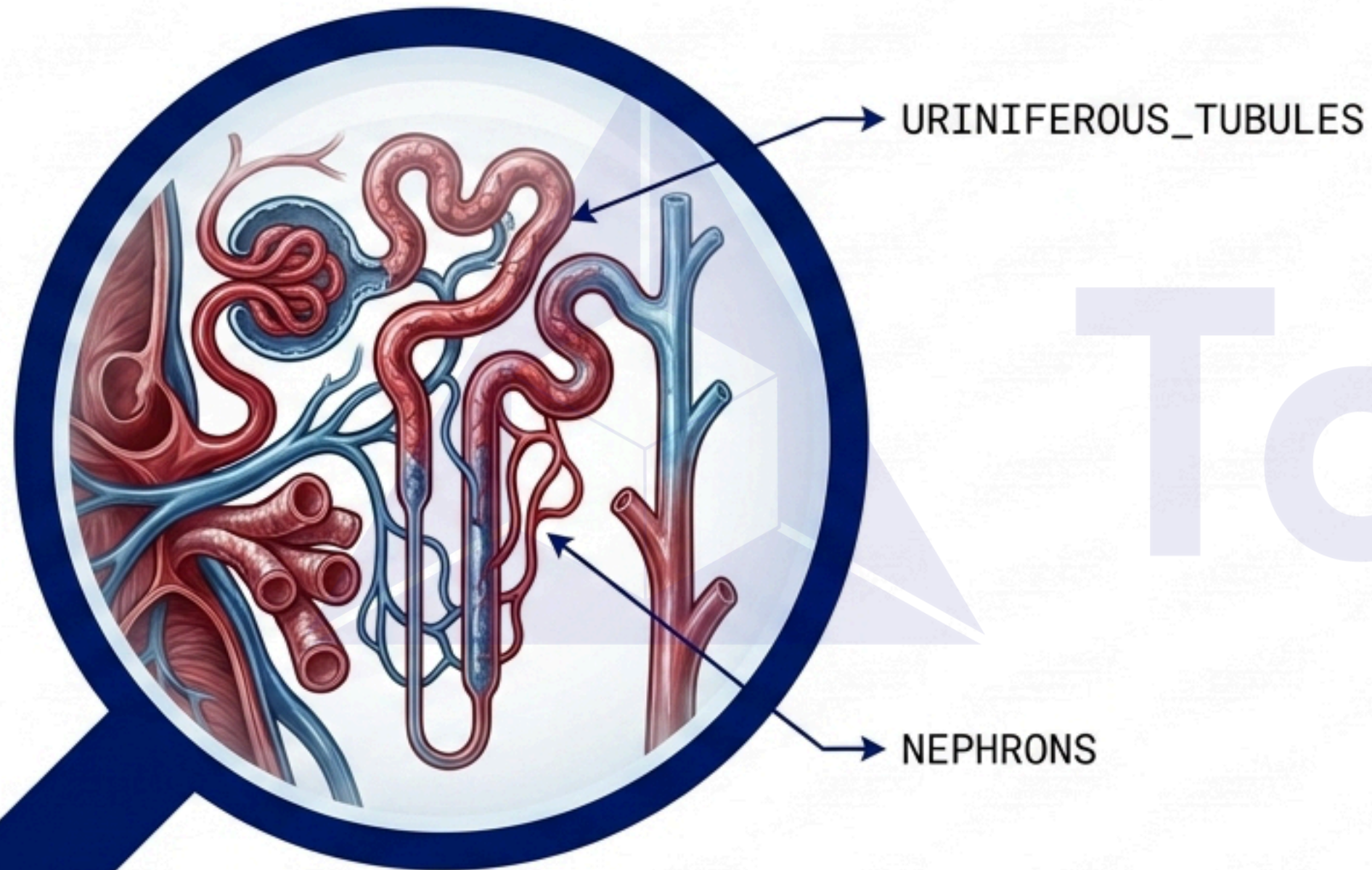
POSTERIOR_CAVITY

Situated posteriorly in the body cavity.

VERTEBRAL_COLUMN

Anchored symmetrically on both sides of the vertebral column.

Zooming In on the Nephron



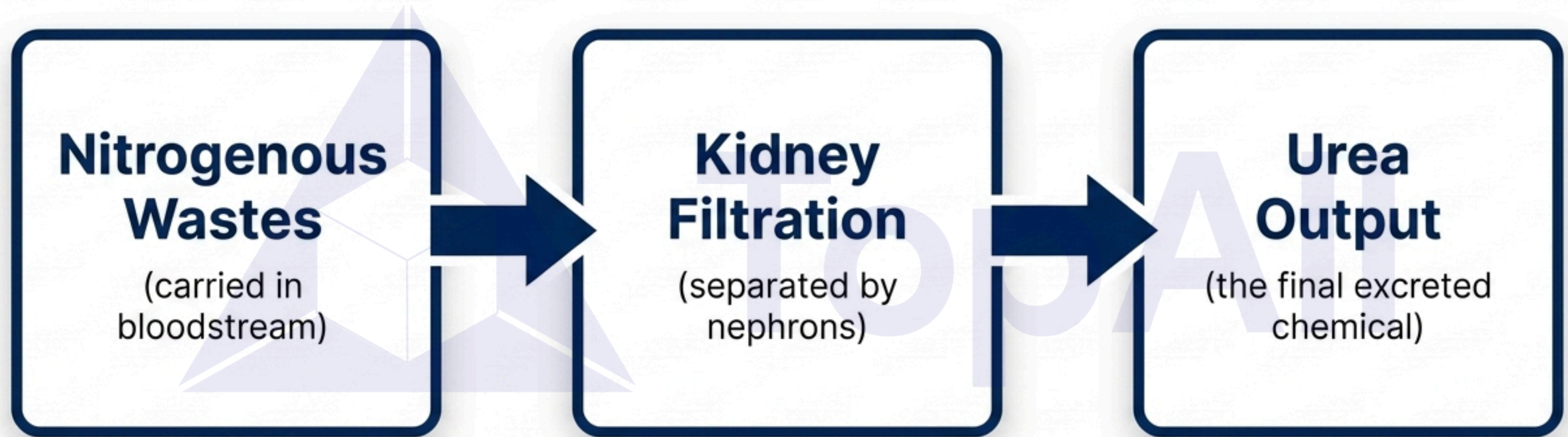
Kidney Structure = Thousands of Nephrons

Each kidney is composed of several structural and functional units called uriniferous tubules or nephrons.

Functional Mechanism: Excretory wastes are carried by the blood into the kidney, where the nephrons separate and prepare the waste for excretion.

The Ureotelic Classification

Classification: **UREOTELIC**

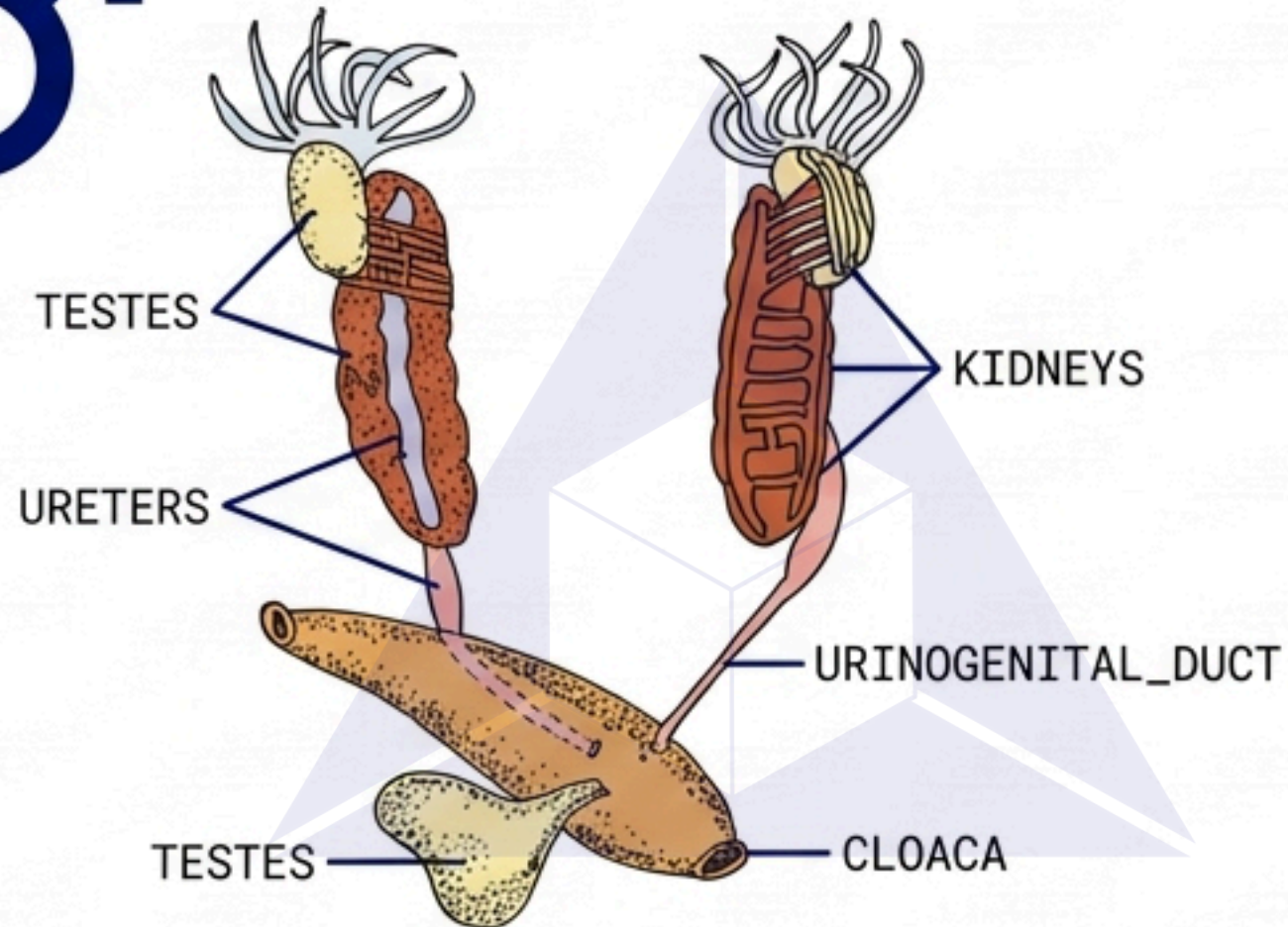


Because the frog specifically excretes **urea**, it is biologically classified as a ureotelic animal.

Structural Variations in Excretory Ducts



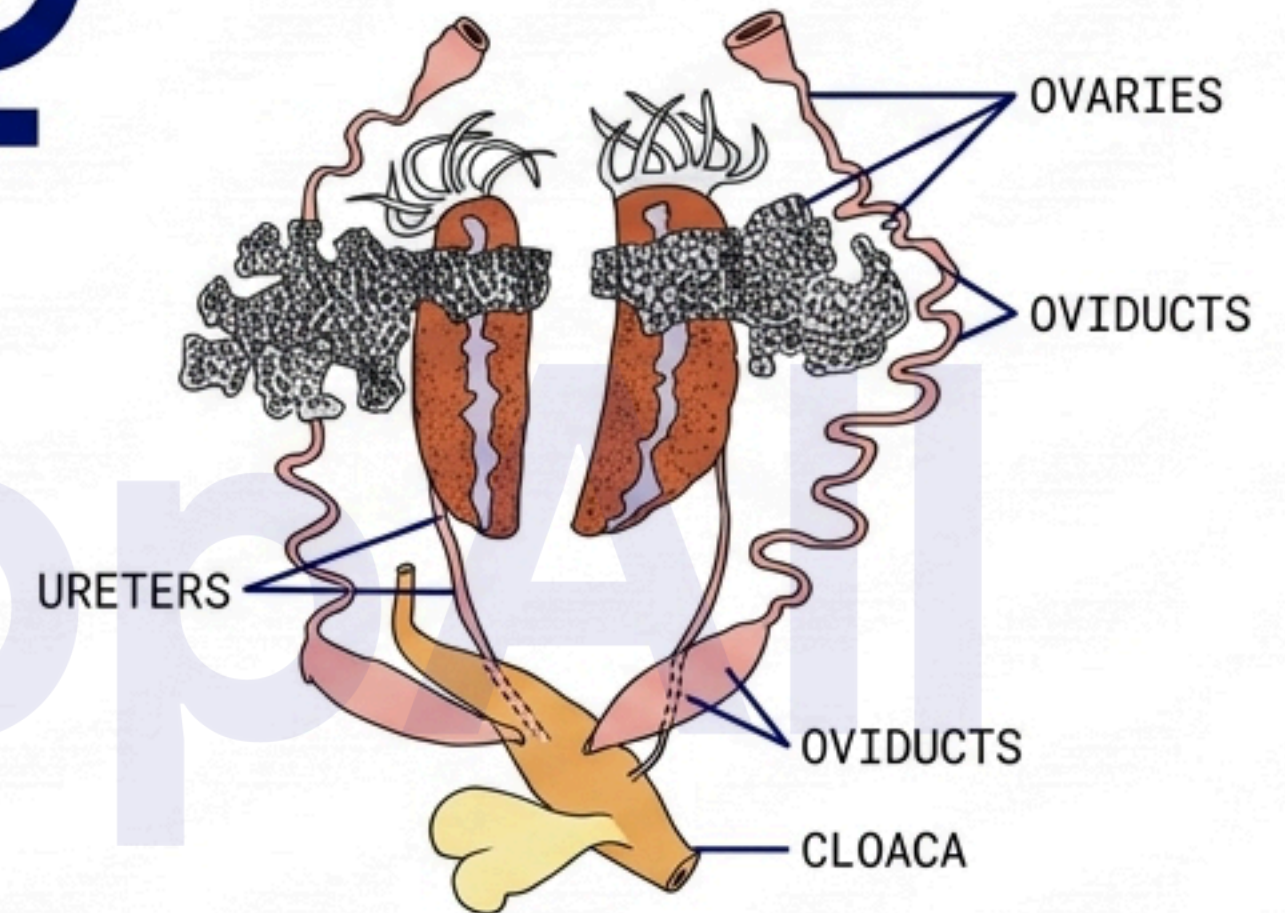
Male Frogs



- Two ureters emerge from the kidneys.
- The ureters act as a urinogenital duct.
- A single shared duct opens into the cloaca, transporting both urine and reproductive cells.



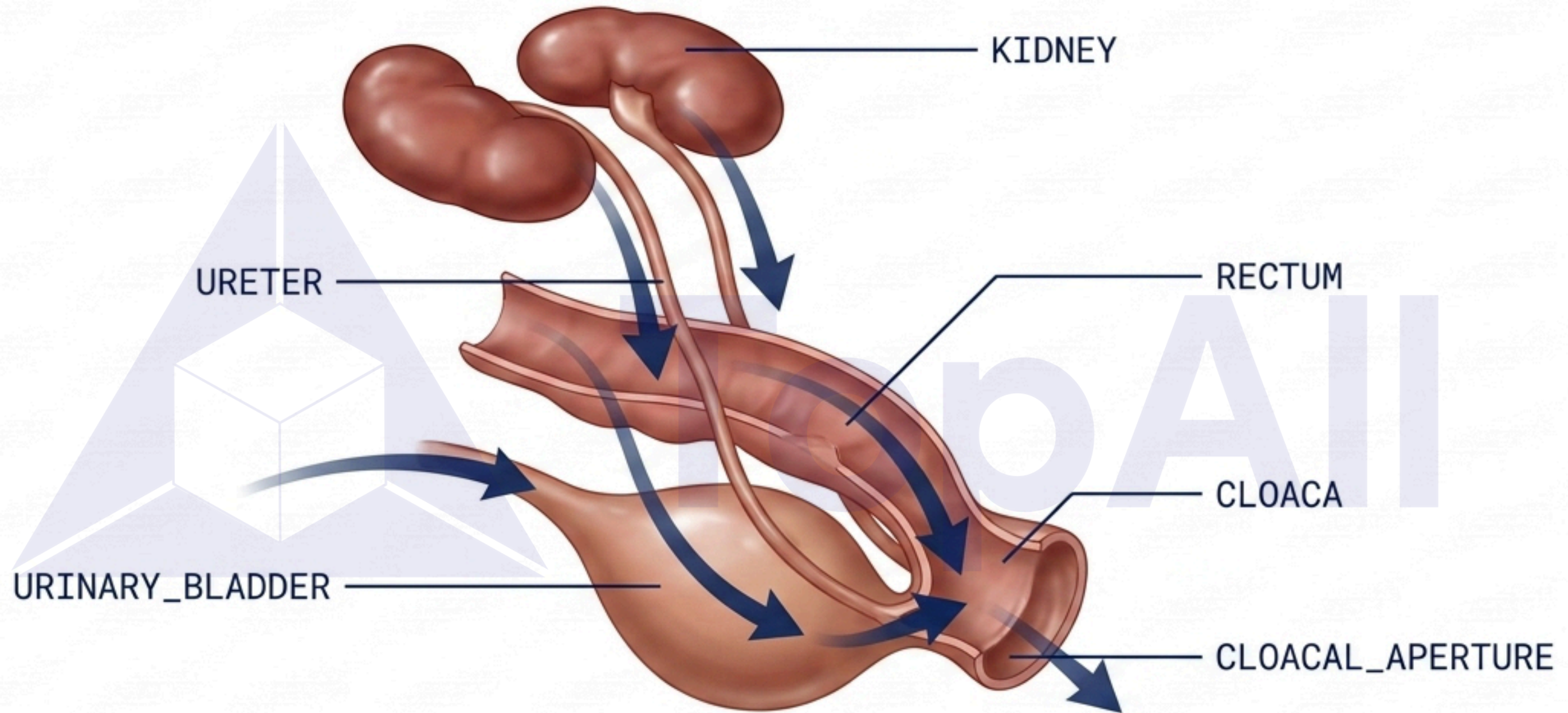
Female Frogs



- The ureters and oviducts remain separate structures.
- No shared urinogenital duct.
- The ureter and the oviduct open separately into the cloaca.

Take care not to confuse the shared urinogenital pathway in males with the completely separated pathways in females.

The Complete Excretory Pathway



The holistic blueprint: Waste is filtered in the kidneys, transported via the ureters, stored in the ventral urinary bladder, and eliminated through the cloaca.



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