

HUMAN ANATOMY AND PHYSIOLOGY-II

URINARY SYSTEM

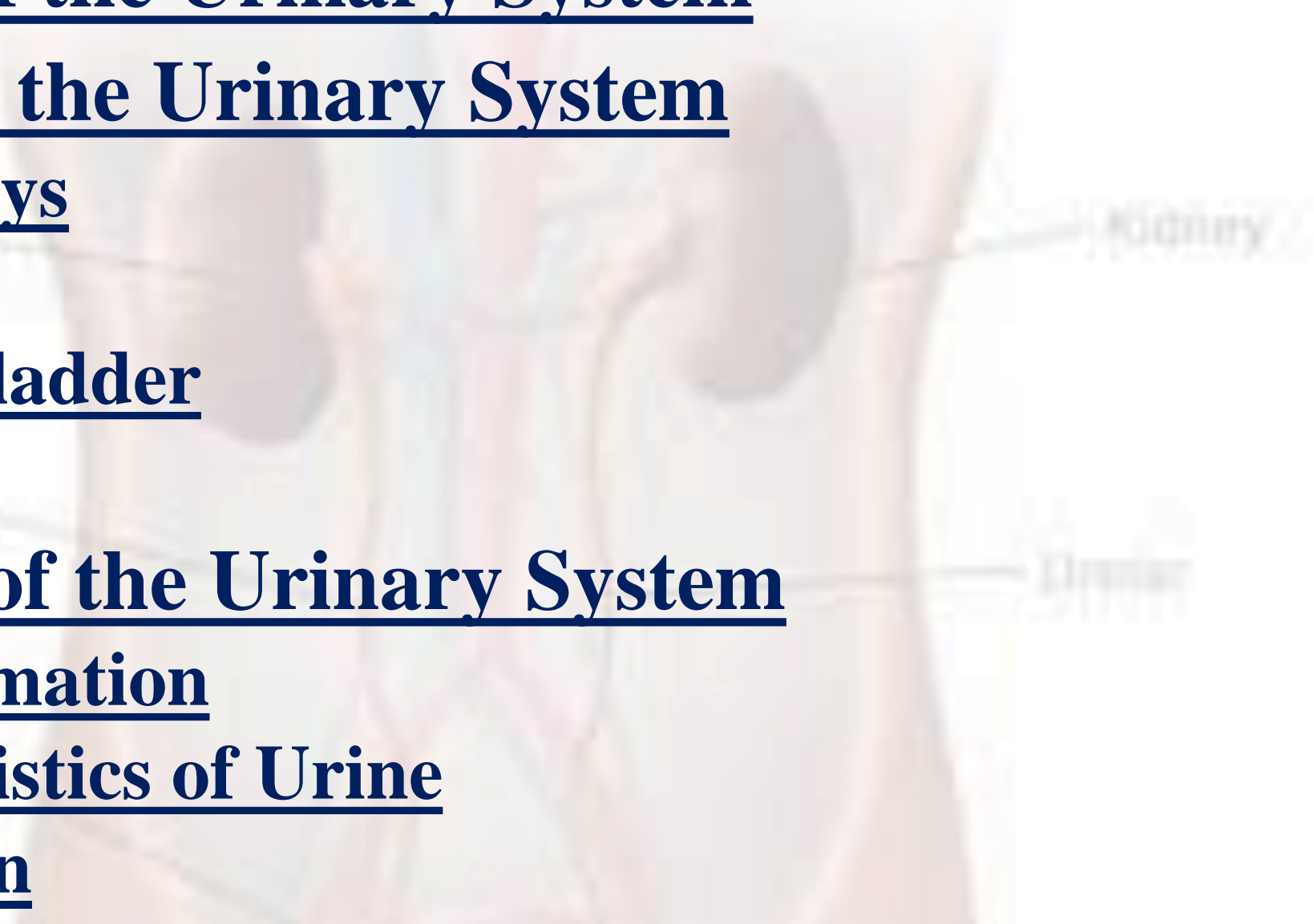


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Shaping Lives...
Empowering Communities...

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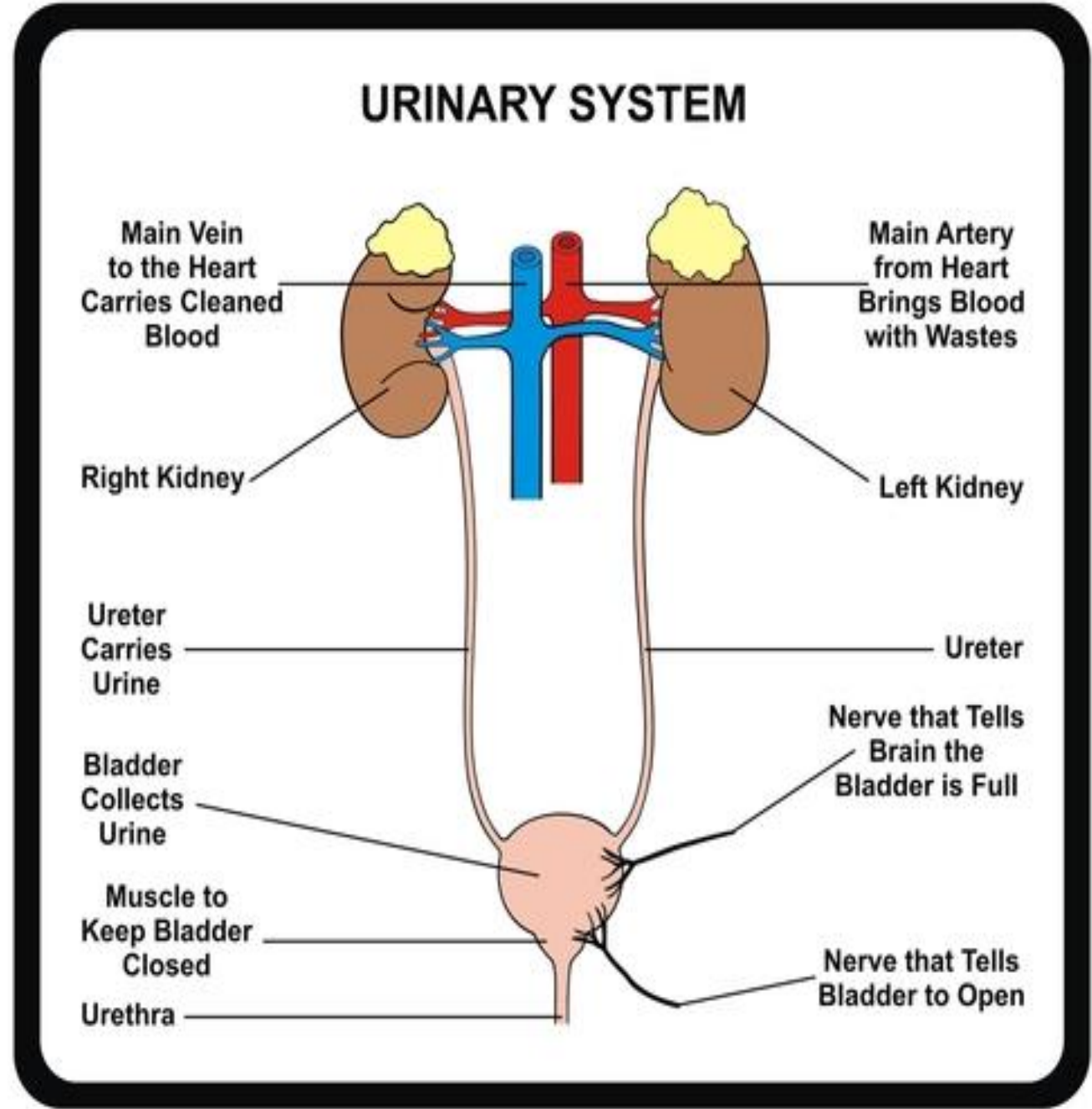
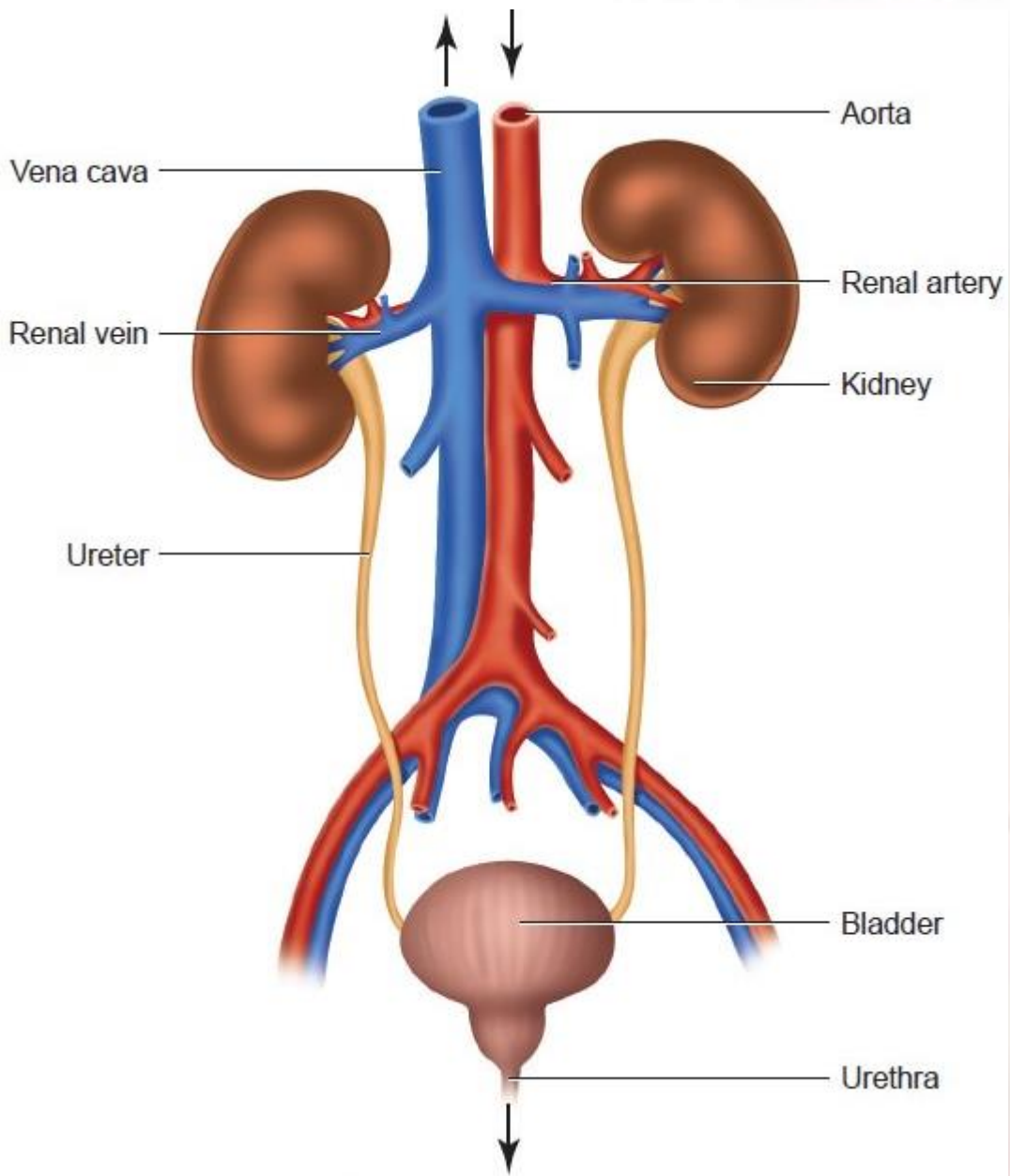
- **Functions of the Urinary System**
- **Anatomy of the Urinary System**
 - **The Kidneys**
 - **Ureters**
 - **Urinary Bladder**
 - **Urethra**
- **Physiology of the Urinary System**
 - **Urine Formation**
 - **Characteristics of Urine**
 - **Micturition**



The urinary system:

- Thousands of metabolic processes in body cells produce hundreds of waste products.
- The urinary system removes them by filtering and cleansing the blood as it passes through the kidneys.
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- The urinary system removes them by filtering and cleansing the blood as it passes through the kidneys.

- The urinary system consists of two kidneys, two ureters, a urinary bladder, and a urethra.
- The kidneys alone perform the functions and manufacture urine in the process, while the other organs of the urinary system provide temporary storage reservoirs for urine or serve as transportation channels to carry it from one body region to another.
- **kidney 2: Produce urine**
- **Ureters 2: transport urine to bladder**
- **Urinary bladder store urine**
- **Urethra: transport urine to exterior**



- The kidneys, which maintain the purity and constancy of our internal fluids, are perfect examples of homeostatic organs.
- **Location.** These small, dark red organs with a kidney-bean shape lie against the dorsal body wall in a retroperitoneal position (beneath the parietal peritoneum) in the **superior lumbar region**; they extend from the T12 to the L3 vertebra, thus they receive protection from the lower part of the rib cage.
- **Positioning**: Because it is crowded by the liver, the **right kidney** is positioned slightly **lower** than the left.
- **Size.** An adult kidney is about **12 cm (5 inches) long, 6 cm (2.5 inches) wide, and 3 cm (1 inch) thick**, about the size of a large bar of soap.
- **Adrenal gland.** Atop each kidney is an adrenal gland, which is part of the endocrine system is a distinctly separate organ functionally.

- **Right kidney**

- Superiorly – the right adrenal gland
- Anteriorly – the right lobe of the liver, the duodenum and the hepatic flexure of the colon
- Posteriorly – the diaphragm, and muscles of the posterior abdominal wall

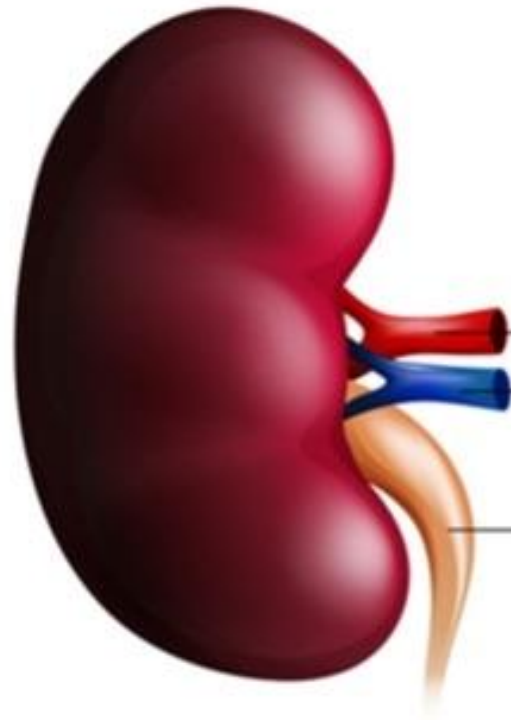
- **Left kidney**

- Superiorly – the left adrenal gland
- Anteriorly – the spleen, stomach, pancreas, jejunum and splenic flexure of the colon
- Posteriorly – the diaphragm and muscles of the posterior abdominal wall

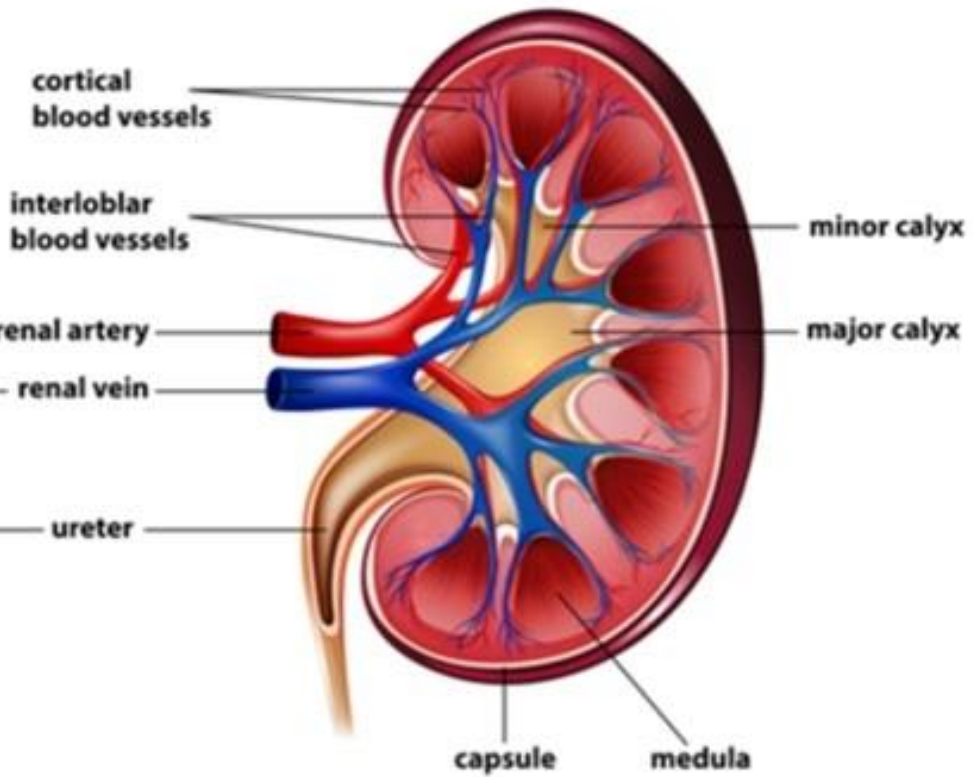
Gross structure of the kidney

Human Kidney Anatomy

External View



Internal View



cortical
blood vessels

interlobular
blood vessels

renal artery

renal vein

ureter

minor calyx

major calyx

capsule

medulla

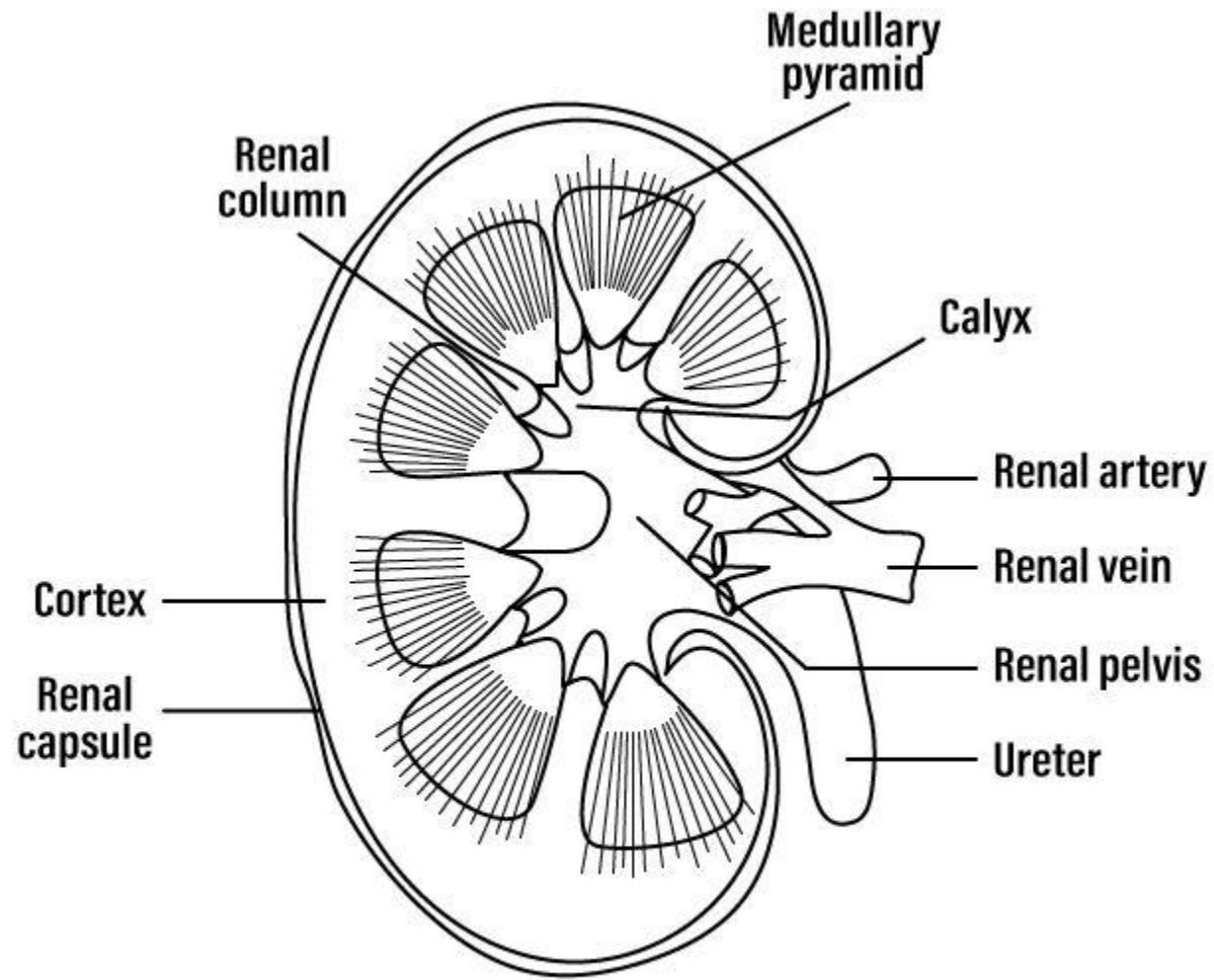


Figure 2. Longitudinal section (Diagrammatic of Kidney)