

THE URINARY SYSTEM

A series of waste substances are produced as a result of the nutrition of the cells of our body. If these were to accumulate, they would be toxic for the cells and for the organism in general.

Therefore, these substances must be expelled to the exterior. The cells release these substances into the blood, which must be purified to prevent the substances accumulating in the bloodstream.

WHAT IS EXCRETION?

Is the process for **eliminating the waste substances from the blood**. These waste substances result from the activity of our cells.

The most important system related to excretion is the **URINARY SYSTEM**.

but this is not de only one!!!!

6.1 Anatomy of the urinary system

It is formed by the **kidneys** and **the urinary tract**.

FUNCTION: The kidney and urinary systems remove a type of waste, called urea, from the **blood**. Urea is produced when foods containing protein, such as meat, poultry, and certain vegetables, are broken down in the body. Urea is carried in the bloodstream to the kidneys, where it is removed.

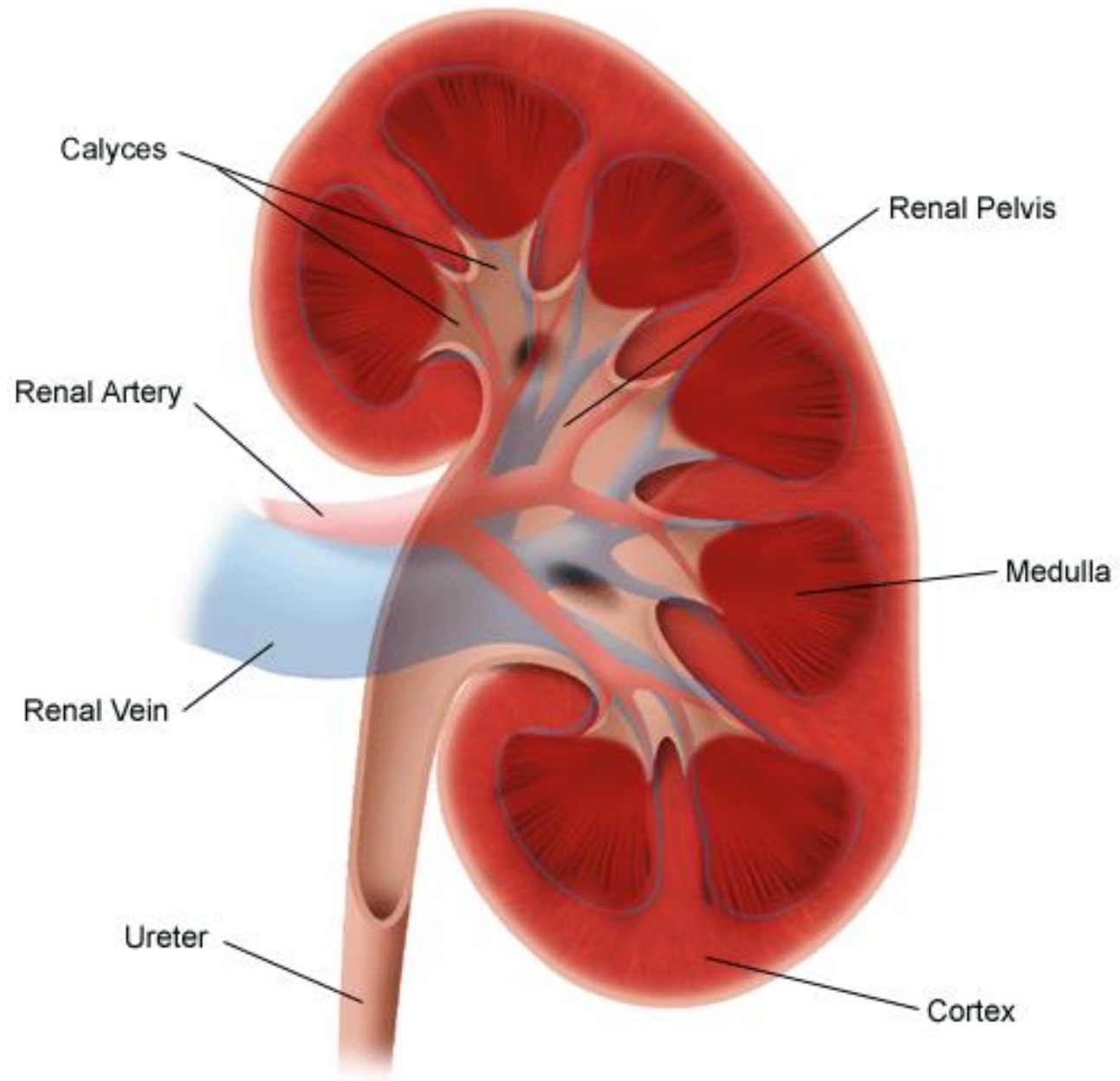
THE ANATOMY OF THE KIDNEYS

They are two bean-shaped organs located in the lumbar region.

Each kidney is made up of thousands of small and microscopic functional units known as **NEPHRONS**.

Each of nephron carries out filtering and blood purification work independently.

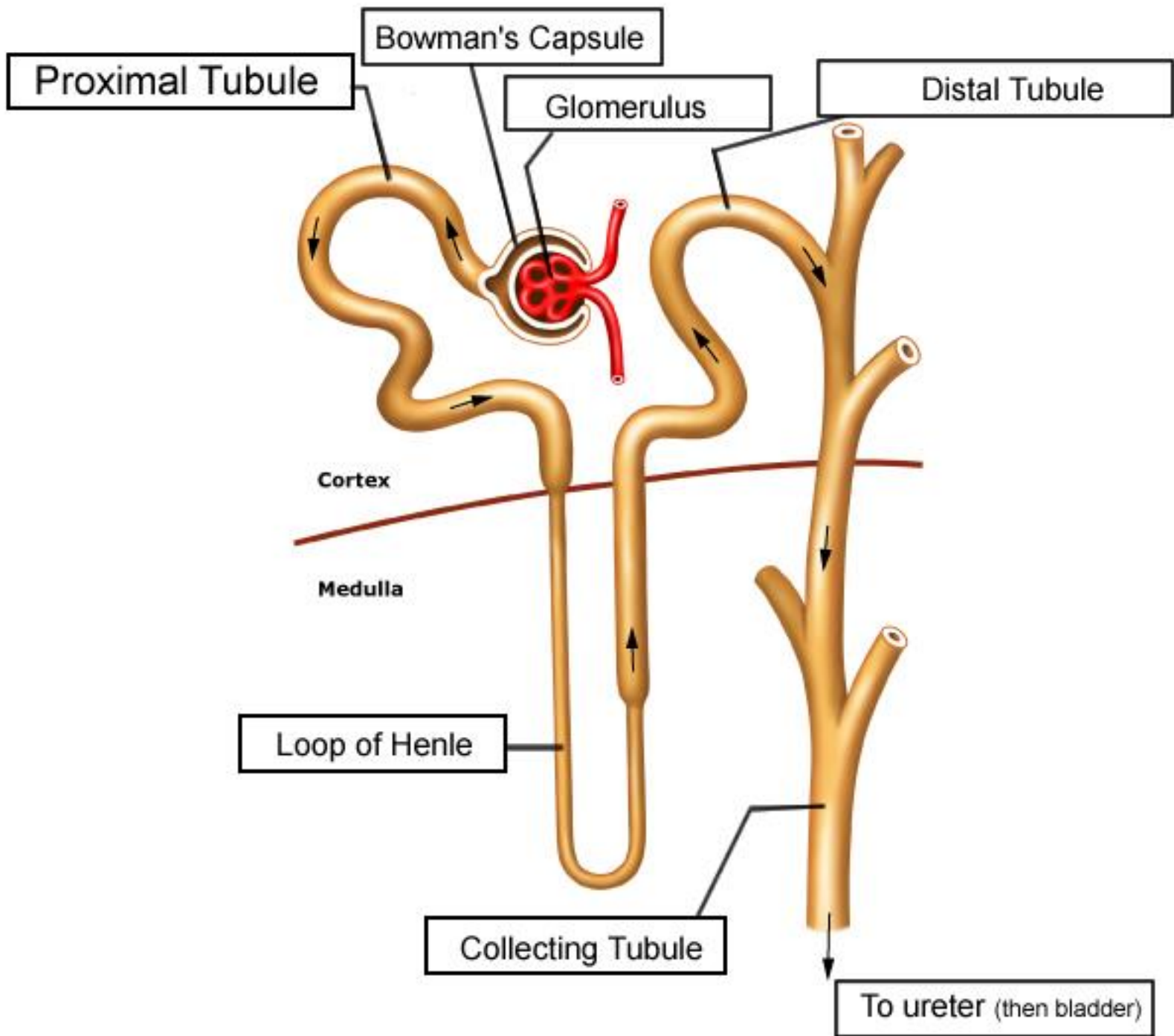
Anatomy of the Kidney



The **nephrons** consist of various parts:

The **BOWMAN`S CAPSULE** houses a multitude of blood capillaries (known as **GLOMERULUS**).

A tube comes out of the Bowman`s capsule, known as the **PROXIMAL TUBULE**, which has a “U” shape forming the **LOOP OF HENLE**. This continues along the **DISTAL TUBULE** and finishes in a **COLLECTING TUBE** along with various other nephrons.

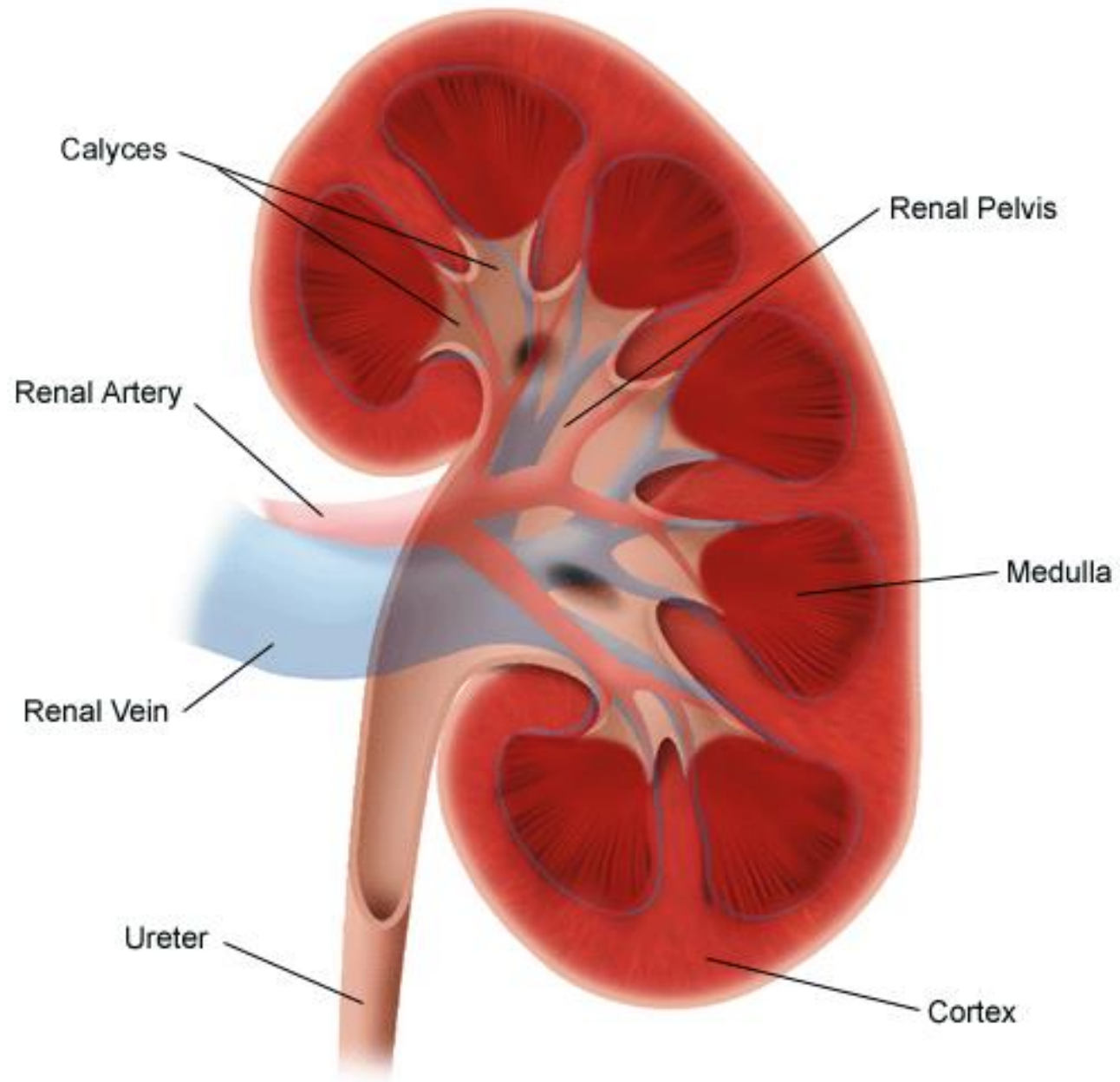


If we cut a kidney in half, we can distinguish the **renal cortex, the renal medulla and the renal pelvis:**

* **RENAL CORTEX** is the **outer layer** of the kidneys. It consists of the Bowman`s capsule and the tubules of the nephrons.

- **THE RENAL MEDULLA** is divided into a series of pyramidal sectors. It consists of the loops of Henle and the collecting ducts.
- **THE RENAL PELVIS** is a hollow space which collect the urine produced by the nephons. An artery and a vein carry the blood in and out of the kidney.

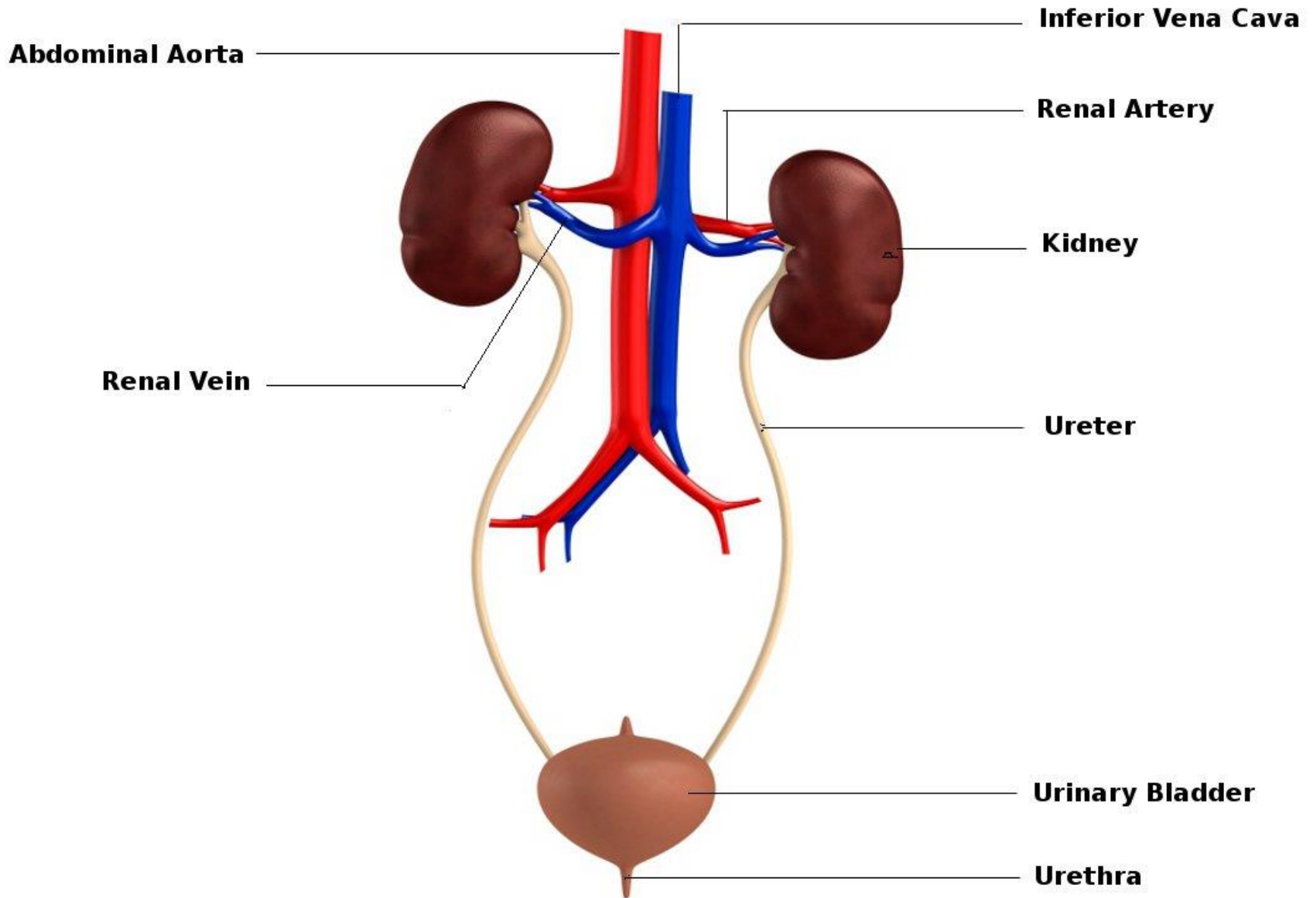
Anatomy of the Kidney



THE URINARY TRACT

FUNCTION: They carry the urine from the kidneys to the outside of the body.

It is formed by the **two ureters, the bladder and the urethra.**



6.2 HOW DOES THE EXCRETORY SYSTEM WORK?

-A **renal artery enters** each kidney. The arteries transport blood full of wastes.

-A **renal vein** leaves each kidney transporting clean blood.

The urine is formed along **two steps**:

FIRST STEP: FILTERING

Inside the **glomerulus** a first blood filtering is carried out. As a result the **primary urine** is obtained. It contains water, toxic substances, mineral salts and nutrients (glucose, aminoacids).

SECOND STEP: REABSORBING

In the **renal tubule** most of the substances contained in the primary urine are reabsorbed and returned back to the blood. As a result, the **final urine** is obtained. It flows to the collecting duct and it is expelled to the exterior through the urinary tract.