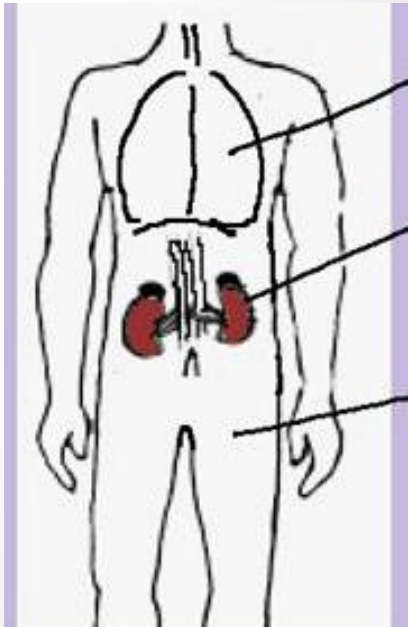
Excretory System

Removing metabolic wastes

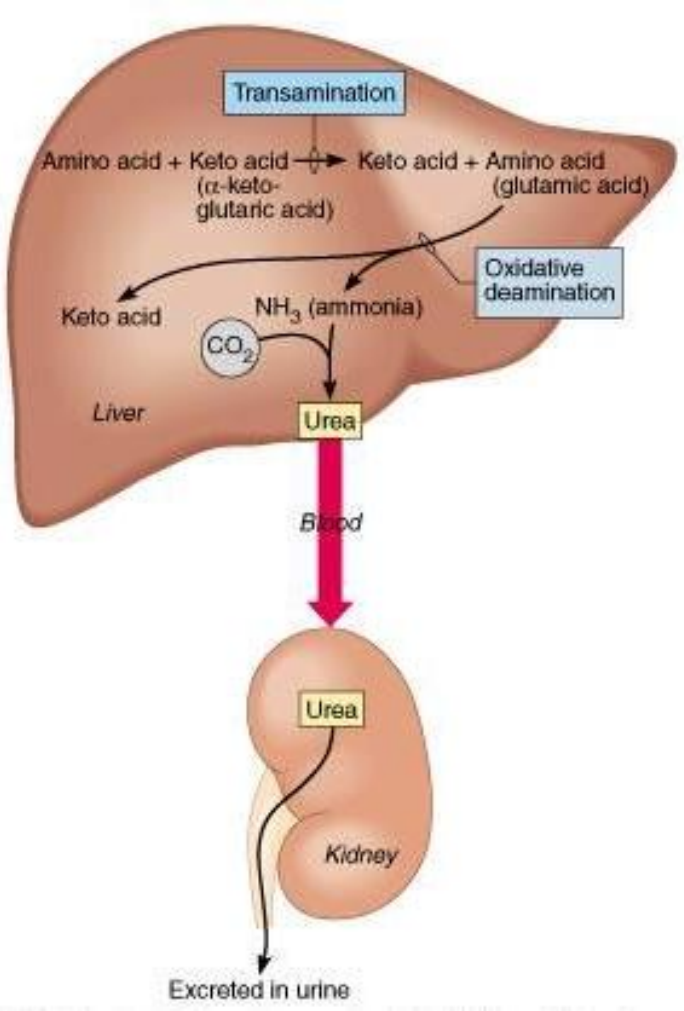
Types of Excretion

- Urinary System: removes waste from the body fluids (Kidneys and Liver)
  - Urine:
    - Nitrogen wastes
    - Salt
    - Water
- Respiratory System: removes waste from cellular respiration (Lungs)
  - Carbon Dioxide
- Skin: removes waste and aides the kidneys
  - Sweat
    - Small amount of nitrogen waste
    - Water
    - Salt



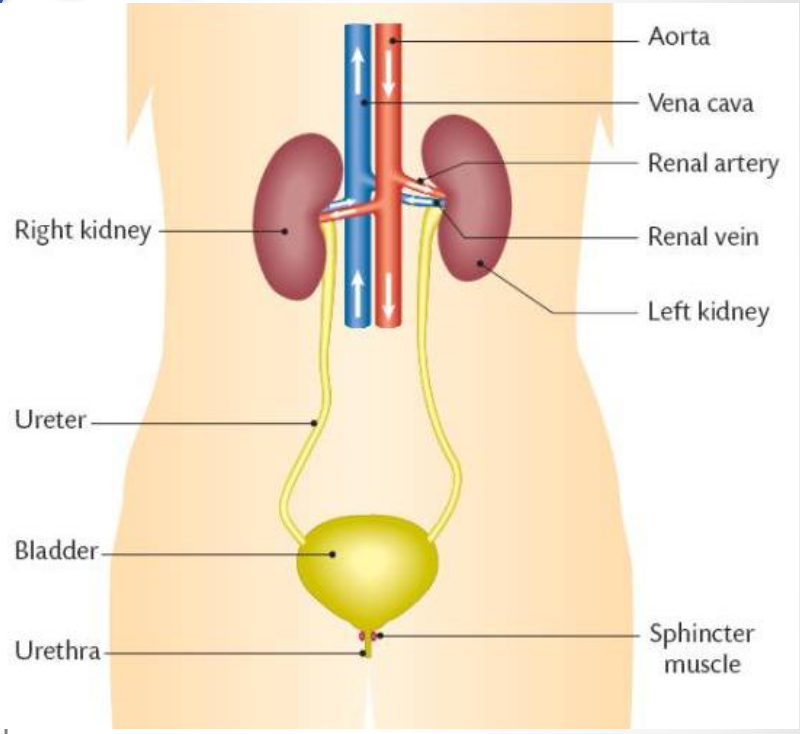
Tracing the nitrogen

1. Excess amino acids have their amino groups removed in the liver
2. This creates ammonia
3. Liver converts ammonia to Urea
4. Urea enters bloodstream
5. Urea is removed by the kidneys



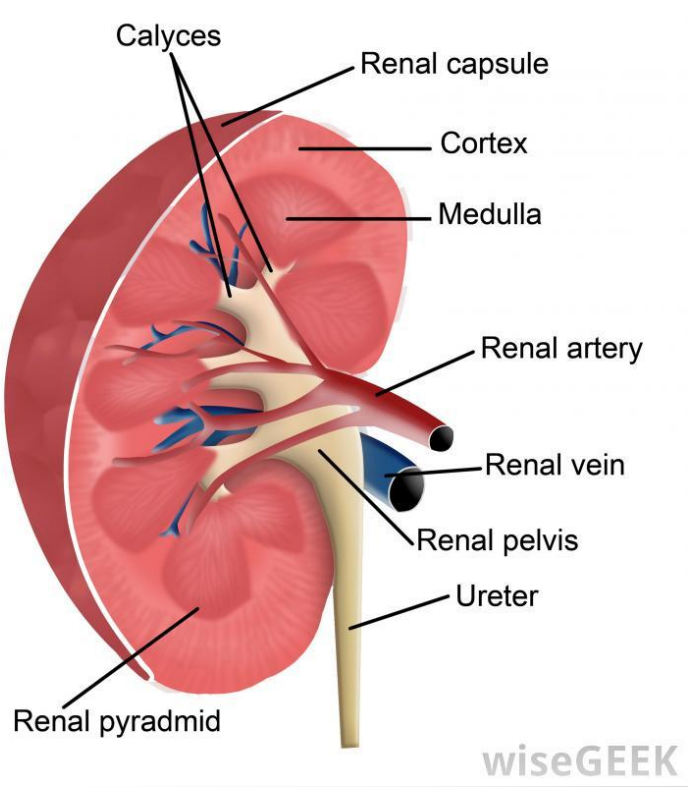
Urinary System

- Kidney:
  - Filtration
  - Reabsorption
  - Secretion
- Ureter
  - Takes waster to the Bladder
- Urinary Bladder
  - Holds the urine
- Urethra
  - Carries urine from bladder out of the body



Kidney Structure

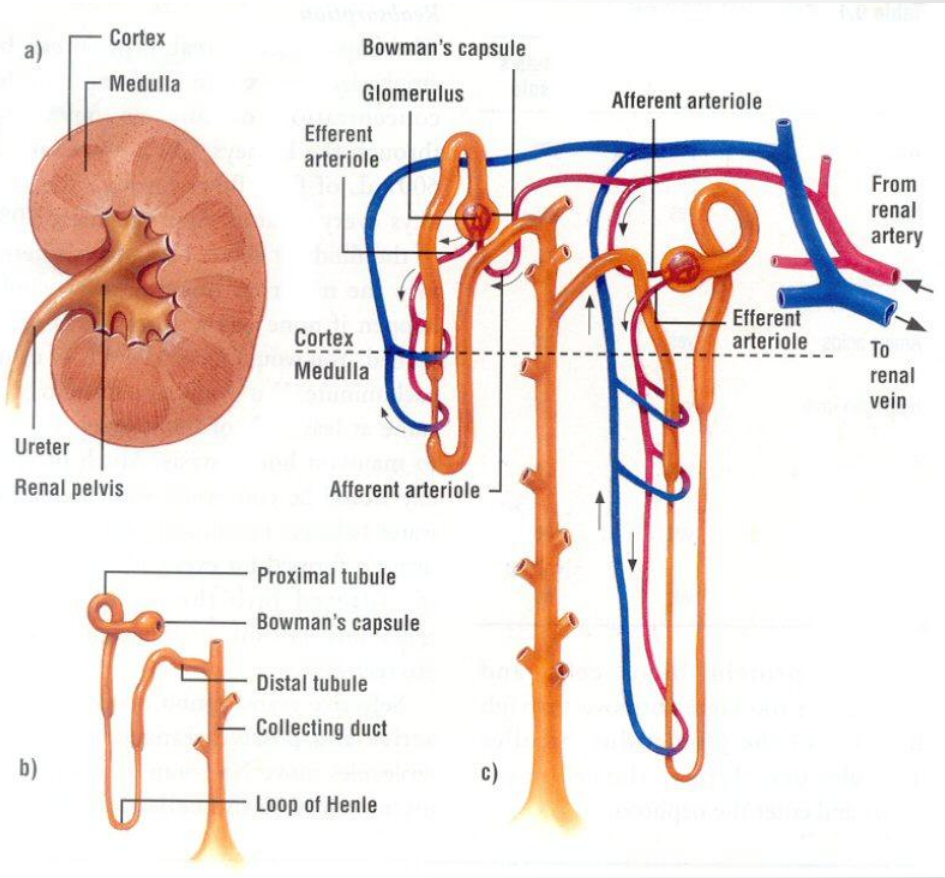
- Renal Cortex
  - Structures that filter blood from renal artery
- Renal Medulla
  - Structures that carry urine
- Renal Pelvis
  - Funnel shaped and empties into the ureter



Nephrons

- Tubes in the kidneys
- Create Urine
  - Toxins
  - Urea
  - Water
  - salt

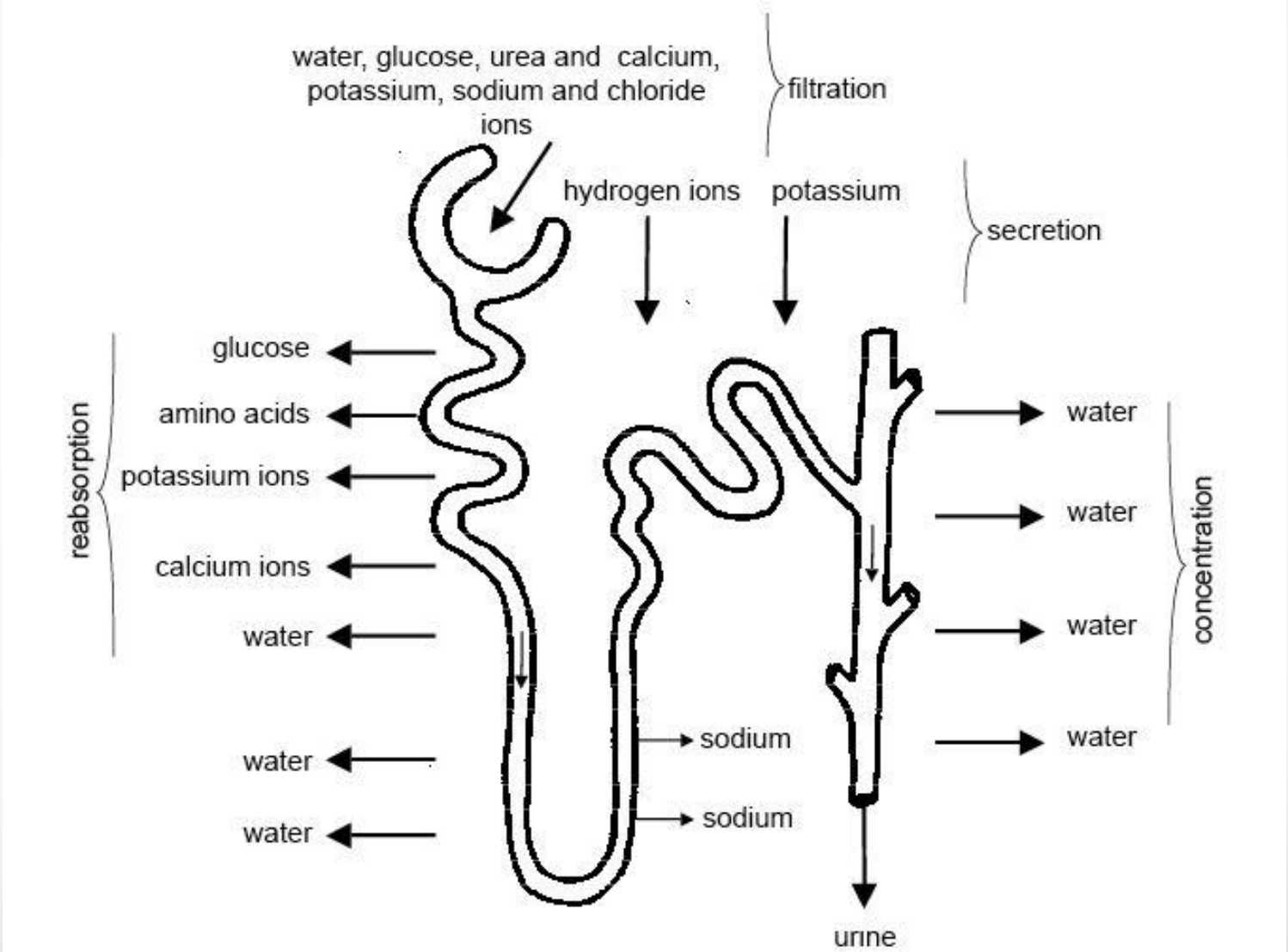
- Parts:
  - Bowman's Capsule
  - Glomerulus (bed of capillaries)
  - Renal Tubule
    - Proximal Convoluted Tubule
    - Loop of Henle
    - Distal Convoluted Tubule



How it Works

1. **Renal artery** flows into **Bowman's Capsule**
2. Pressure in **Bowman's capsule** is high
3. **Filtration :** Materials of blood (water, urea, glucose, salt) forced out of the capillaries of the **Glomerulus** into the **capsule** = filtrate
4. Filtrate flows through renal tubule and some nutrients are returned to the blood through a selective transport called **reabsorption** (proximal convoluted tube)
   - Water = osomosis
   - Glucose & Minerals (sodium potassium & calcium) = active transport
5. In the **Loop of Henle** water leaves and concentrates the urine – process called **concentration**
6. In the **distal convoluted tubule** waste and toxins move from blood into the filtrate – process called **secretion**

How it Works


water, glucose, urea and calcium, potassium, sodium and chloride ions
filtration
hydrogen ions
potassium
secretion
glucose
amino acids
potassium ions
calcium ions
water
reabsorption
water
water
sodium
sodium
water
water
water
water
concentration
urine

The end

- Urine flows to the collecting duct
- To the renal pelvis
- To the ureters
- To the bladder
- Out the urethra

- Filtered blood flows from the capillaries surrounding the nephrons through the renal vein and back to the heart