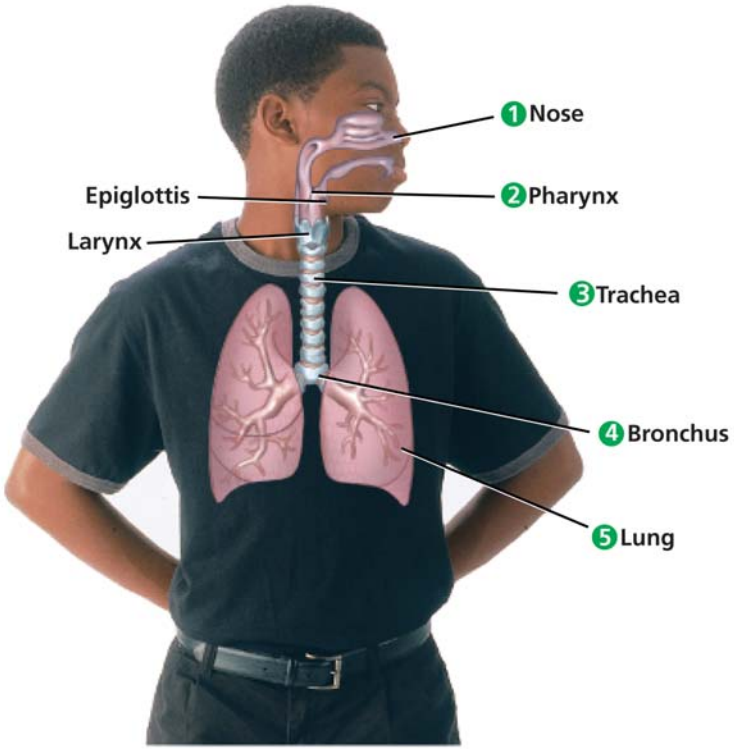
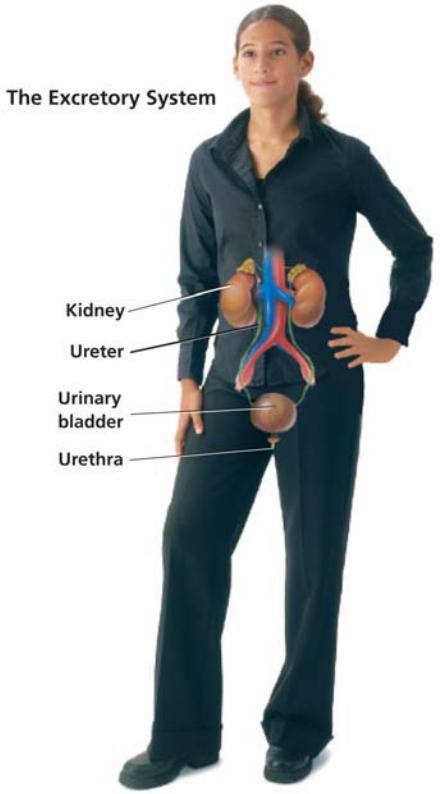
Respiratory System
&
Excretory System



Respiratory System



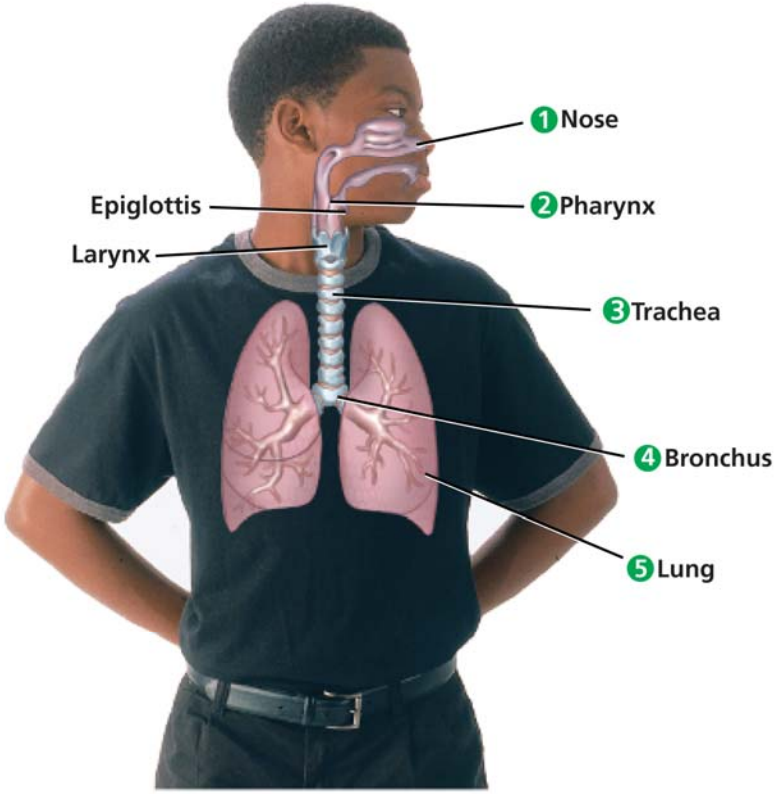
Respiratory System

- Function:
  - Moves oxygen from outside the body into the body
  - Removes Carbon Dioxide and Water from the body
- Definitions:
  - Respiration: the process in which oxygen and glucose undergo a complex series of chemical reactions, releasing carbon dioxide and water (and energy for cells to use)
  - Breathing: Movement of air into and out of the lungs

Click here to see a short video of respiration

Path Way of Air
(part one)

- 1. Air enters the nose
- 2. Moves into the nasal cavities
- 3. Mucus cleans the air and moistens it
  - Cilia (tiny hair-like structures) move mucus into the throat to be swallowed
- 4. Air moves down the throat or pharynx
- 5. The trachea (windpipe) leads from the pharynx to the lungs.
  - Rings of cartilage keep the trachea open
  - Also lined with mucus and cilia

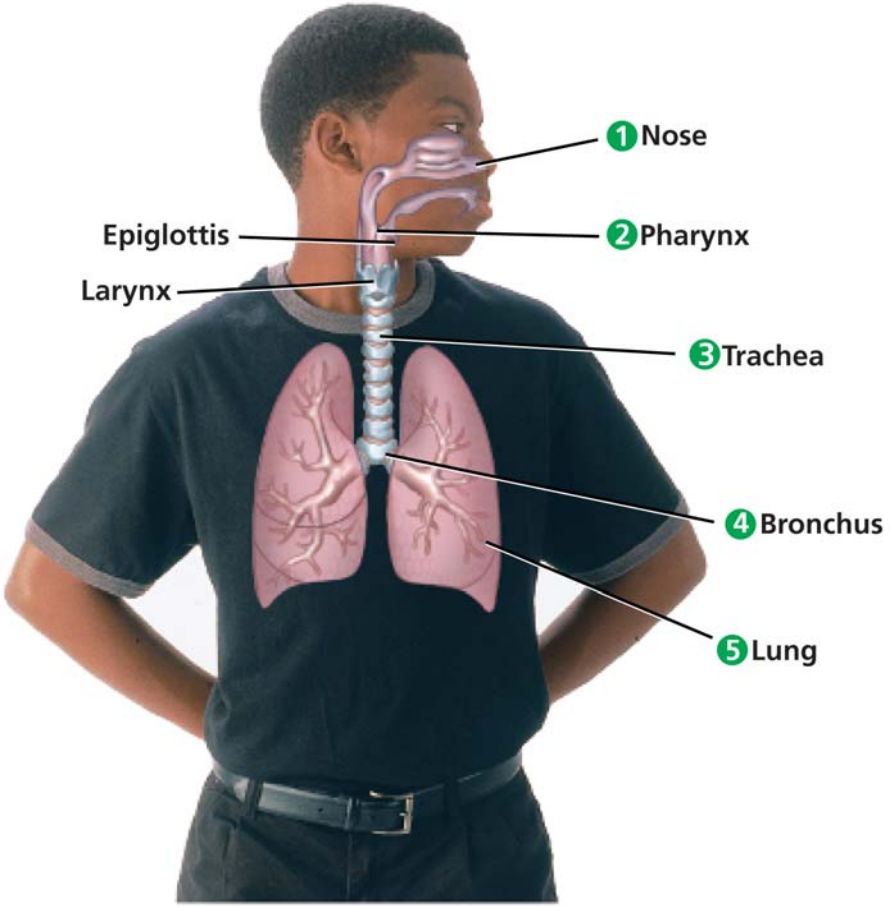


Click here to see a video of cilia

Path Way of Air
(part two)

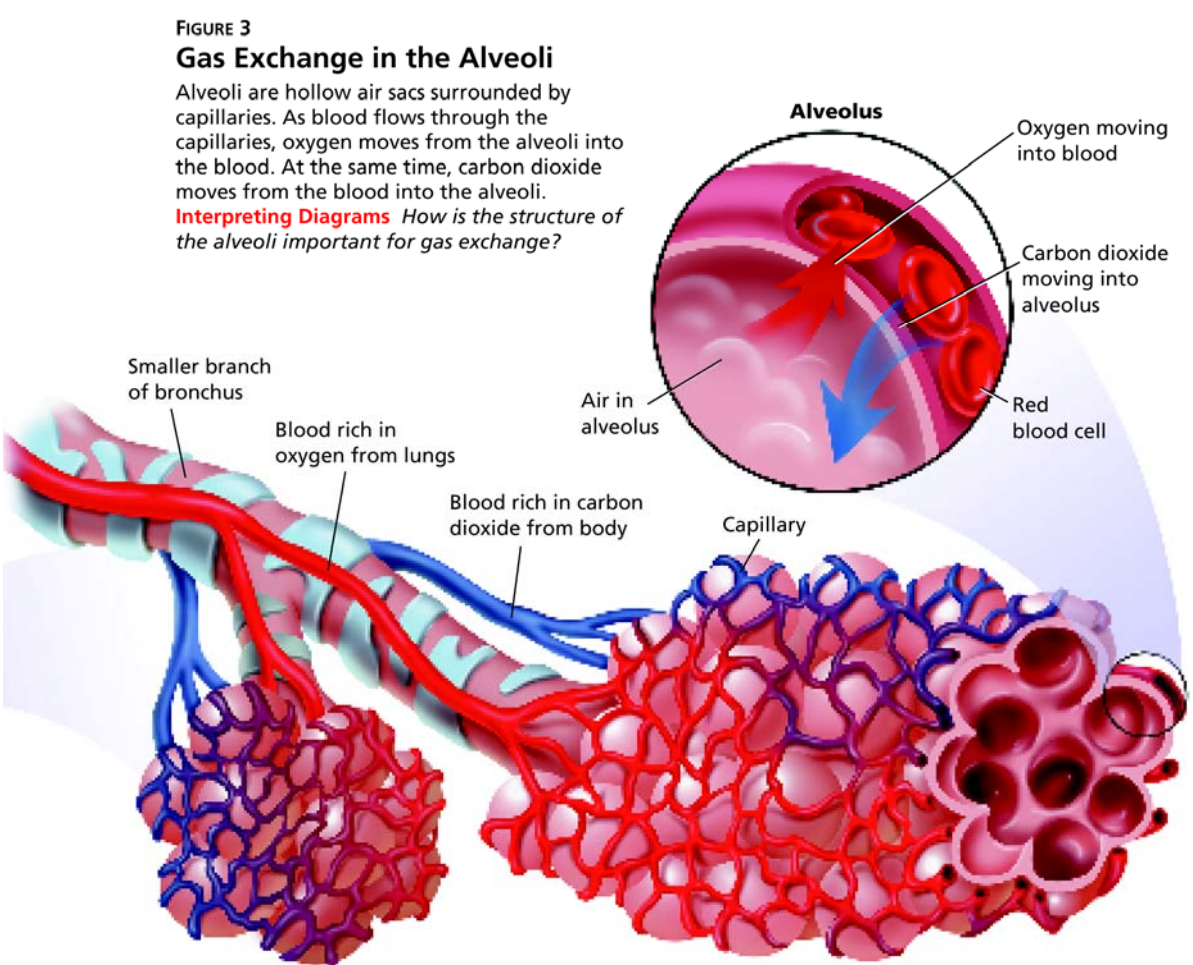
- 6. Air moves into the Bronchi, which direct the air into the lungs
- 7. Lungs are the main respiratory organ.
  - Inside the lungs the bronchus divide into smaller and smaller tubes At the end of the smallest tubes are the alveoli.

Click here to see a video of The air tubes



Alveoli & Gas Exchange

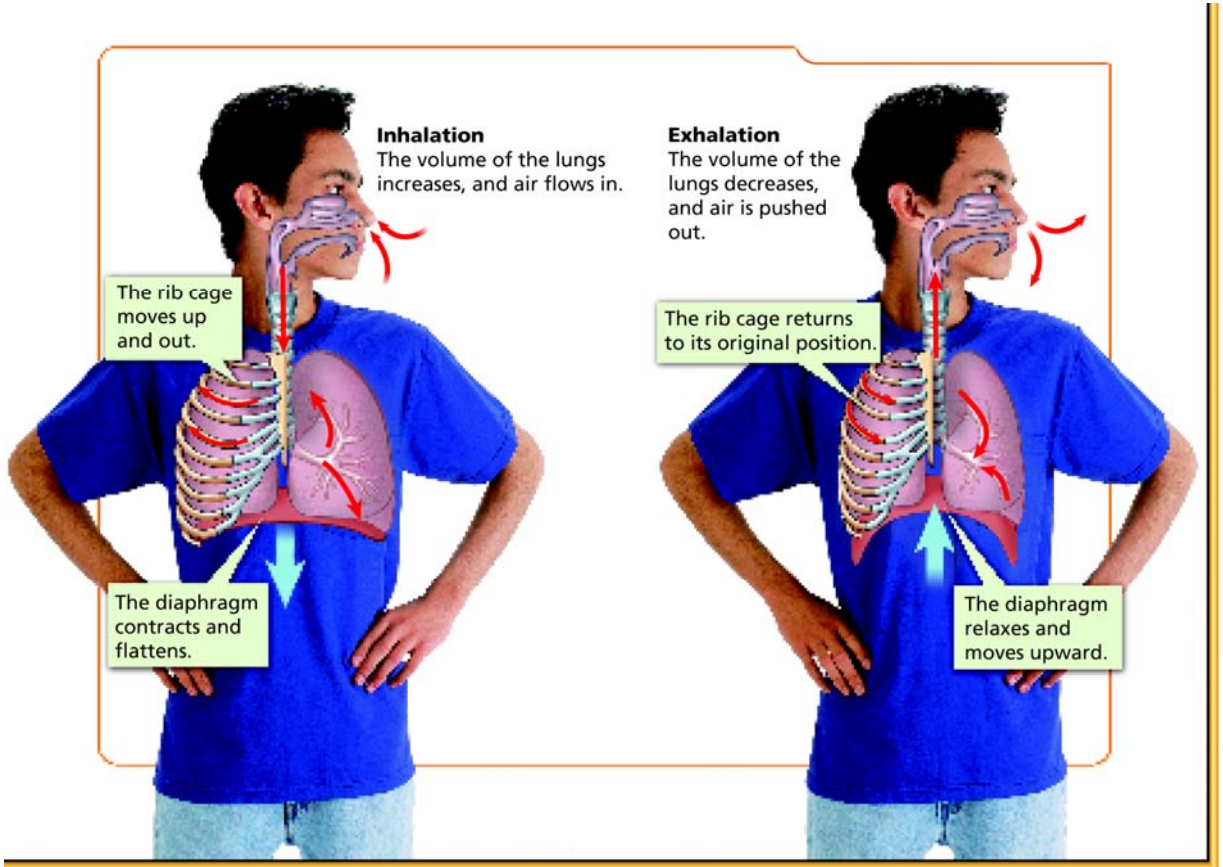
- Tiny sacs of lung tissue specialized for the movement of gases between air and blood.
- Surrounded by a network of capillaries.
- Gas Exchange: Here the blood picks up oxygen from the air and transfers it to the blood.



Click here for a short video clip on the effects of smoking on the alveoli

Muscles for Breathing

- Diaphragm: a large dome shaped muscle at the base of the lungs
- When you breath, the actions of your rib muscles expand or contract, causing air to flow in and out of the lungs.



Click here for a short video on how the diaphragm works

Breathing & Speaking

- Larynx: voice-box, located at the top of the trachea
- Vocal Cords: two folds of connective tissue that stretch across the opening of the larynx.
- The vocal cords vibrate as air passes over them to produce sound (your voice)

Click here for a short video clip of the Vocal Cords doing their thing

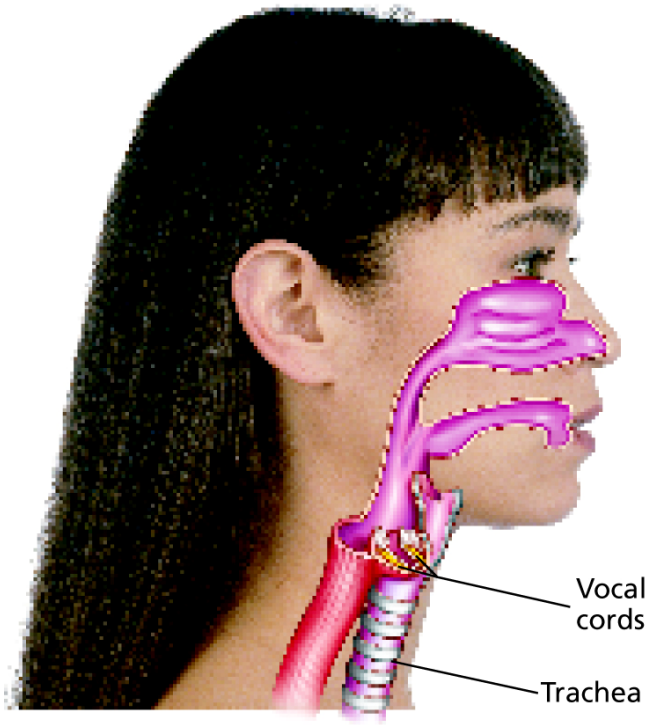
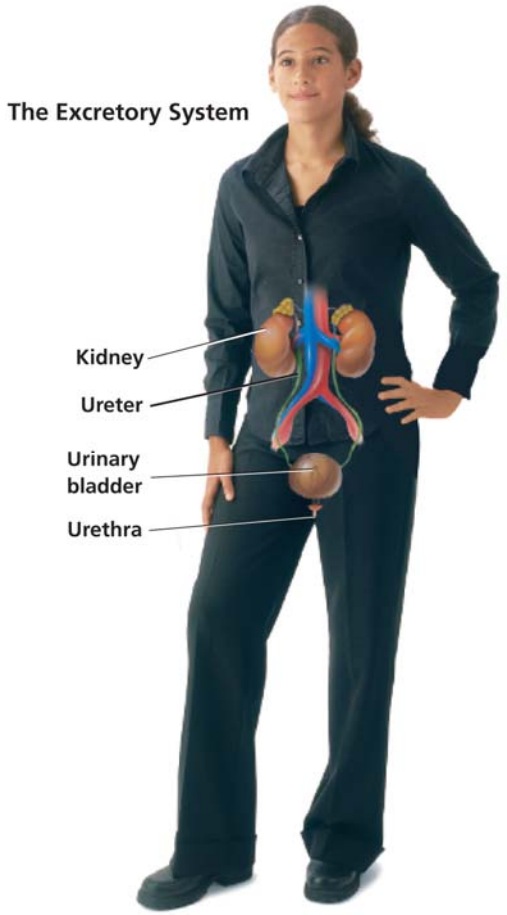


FIGURE 6
The Vocal Cords
Air moving over the vocal cords causes them to vibrate and produce sound.
Interpreting Diagrams *Where are the vocal cords located?*

The Excretory System

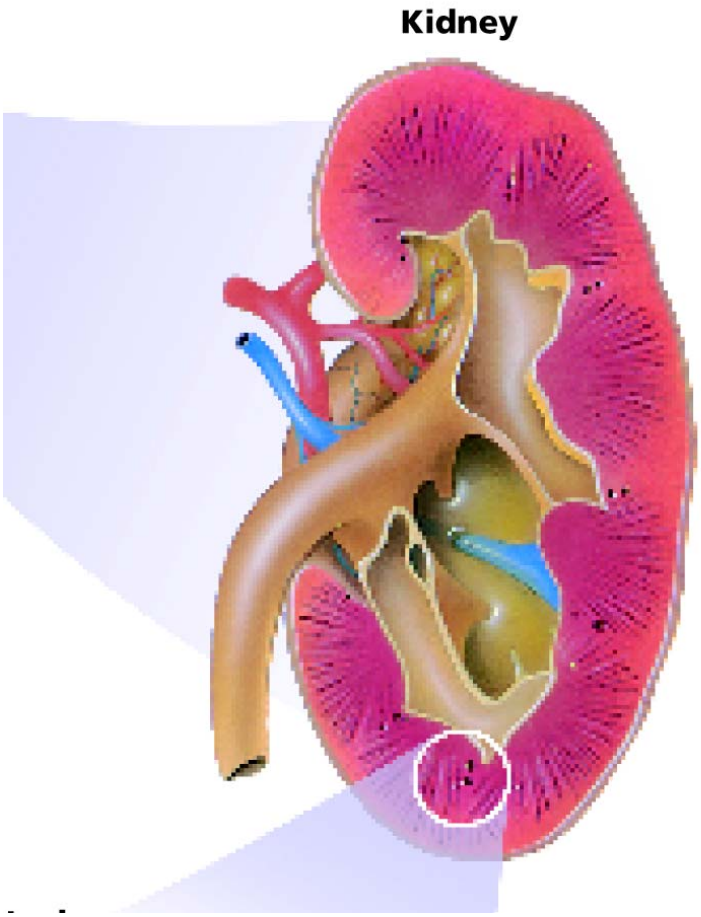
- **Definition:** The system in the body that collects wastes produced by the cells and removes them from the body, called **excretion**.
- **Purpose of Excretion**: to maintain homeostatis (keeping the body and internal environment stable and free of harmful levels of chemicals



Click here for a short video clip about the Excretory System

Organs of the Excretory System

(part one)

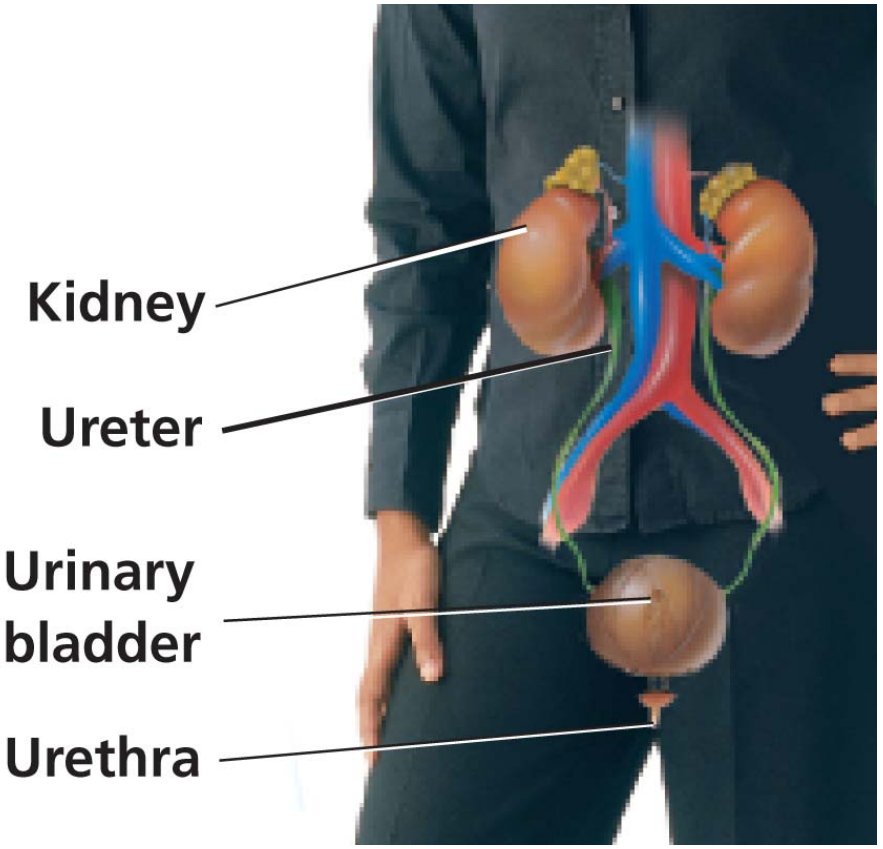


- **Kidney**: removes urea and other wastes from the blood.
- Act like filters
- **Urea:** chemical that comes from break down of protein
- **Urine:** Wastes are eliminated in the **urine** (watery fluid that contains urea and other wastes)

Organs of the Excretory System

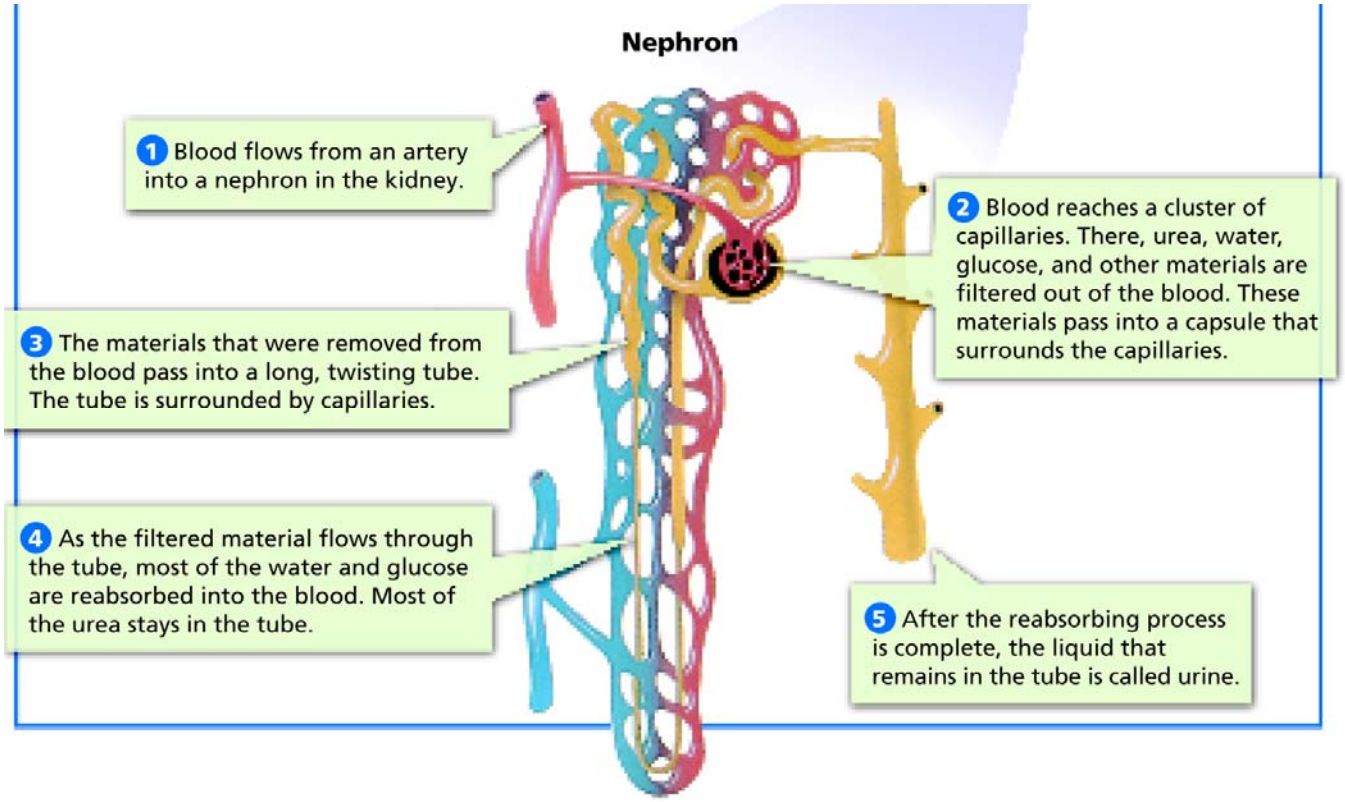
(part two)

- **Ureters:** urine flows from the kidneys through two narrow tubes
- **Urinary Bladder**: the ureters pass to the bladder, a saclike muscular organ that stores urine.
- **Urethra**: the urine leaves the body through a this small tube.



Filtration of Wastes

Click here to see a short video clip of how the nephron works



Have the steps below copied in your notes

- 1. Blood flows into the kidney and into a **nephron** (tiny filtering factories)
- 2. Blood reaches a cluster of capillaries where urea, water glucose & other materials are removed
- 3. Needed materials are reabsorbed (glucose & water), but urea remains
- 4. Wastes are passed on through the urine and eliminated in urine.

A Kidney Transplant

Click here for a short video Showing a Kidney transplant (it's cool!)