

The Human Body

Excretory System

Excretion

- The process in which the body gets rid of wastes
 - protein \Rightarrow energy and waste

The Urinary System

Kidneys: The body's Janitors

Urinary system Actors

- Two kidneys
- A pair of Ureters
- Bladder
- Urethra



Kidneys



- Very complex
- ~500 gallons of blood go through the ~174 miles of tubules per day!
- Absorption and reabsorption is a very complex process
 - deals with osmotic pressure and permeability of molecules

Function of the Kidneys

- Filter blood to remove waste from it.
- Maintain homeostasis of the body fluids

Location

- Located just above the waist, behind the stomach.
- One on each side of the spine partially surrounded by ribs.
- Each kidney is connected to a tube called a ureter, leading to a bladder.
- Bladder-a smooth muscle bag that contains a solution of waste called urine

Nephron: Unit of the Kindey

- Acts as the filter for the kidney removing impurities from the blood.
- Each kidney contains about one million of these tiny filters
- Each little filter is known as a NEPHRON

How a Nephron works.....

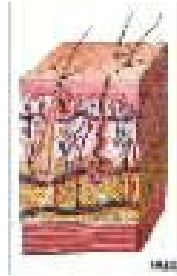
- Blood into the nephron carries wastes produced by body cells.
- Blood enters nephron it is under high pressure and flows into capillaries known as the glomerulus.
- Pressure causes water, glucose, vitamins, amino acids, protein waste products, salts, and ions from the blood pass out of the capillaries into the bowmans capsule

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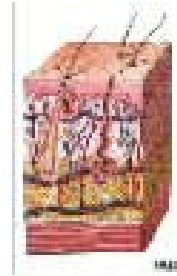
- Blood cells and proteins are too large to pass through the walls of the capillary, so they stay in the blood.
- Liquid in the capsule passes through a U-shaped tubule. All the important stuff is reabsorbed into the body.
- Conserve water.....

Make up of urine

- No glucose, amino acids, or cells
- low loss of water
- high loss of urea and hydrogen wastes
- 1-2 liters are produced per day
 - increase water intake: increases urine volume
 - decrease water intake: decreases urine volume
- anything smaller than proteins can be excreted



Skin



- Important for excretion and heat loss
- 2 layers
 - epidermis: outer layer, cell rejuvenation, protection
 - dermis: connective tissue, thick layer
- under skin is a layer of fat called:
 - subcutaneous tissue

Body Homeostasis

- Nitrogenous waste from protein breakdown
- Ammonia and Urea
- Toxic and must be removed
- Salt control by absorbing and excreting
- Ph
 - Bicarbonate in blood and filtering out H ions