**Overview of the Excretory System (10.1)**

Excretion: the process of separating wastes from body fluids, and eliminating them from the body.

E.g.:

-CO2, H2O, some other gases-removed by the respiratory system

-H2O, salts, some urea-removed by the skin through perspiration

- H2O, salts, lipids, other-removed by digestive system

-most metabolic wastes are dissolved or suspended in solution-removed by excretory system (also called urinary system)

The Excretory System: produces urine and has 4 functions that help to maintain homeostasis;

* Excretion of Metabolic wastes: kidneys excrete metabolic wastes-much of it is nitrogenous wastes (ammonia, urea, uric acid). Ammonia is highly toxic but converted in the liver to urea (less toxic).
* Maintenance of Water-Salt balance: regulation of blood salts, regulates water volume and in turn blood pressure. Also maintain K+, HCO3- and Ca2+ levels in the blood
* Maintenance of Acid-Base Balance: help keep blood pH at ~7.4
* Secretion of Hormones:
  + - calcitriol (active form of Vit.D and promotes Ca2+ absorption from digestive tract)
    - erythropoietin (stimulates red blood cell production when there is an inc. in O2 demand or reduced O2-carrying capacity of blood)
    - renin (will lead to aldosterone secretion from adrenal cortex)

Organs of the Excretory System:

* ureters
* urinary bladder
* urethra
* kidneys: renal cortex, renal medulla, renal pelvis
  + renal artery
  + renal vein
  + nephron
    - glomerulus (what is “filtrate”)
    - bowman’s capsule
    - proximal tubule
    - loop of Henle (ascending & descending)
    - distal tubule
    - collecting duct
    - capillary network

HMK:

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Note:

* Glomerulus-“filtration device”-impermeable to proteins, large molecules, rbc. Permeable to water, sm molecules, ions & urea.
* “tubule”-like SI, but can also secrete
* “duct”-“water-conservation device
* Bladder Volumes:
* 200mL: bladder stretches & a message is sent to brain
* 400mL: MORE signals
* >600mL: voluntary control of sphincter is lost