



A. Diagram of the Nephron - the functional unit of the kidney

B. The Glomerulus

1. BLOOD

- a. The Renal artery supplies the kidney with blood,
- b. each nephron has a small branch called an afferent vessel
- c. The **afferent** vessel carries blood **toward** the glomerulus,
- d. the **efferent** vessel carries blood **away** from the glomerulus

2. GLOMERULUS - like a big knot of vessels cupped by the Bowman's capsule

- a. High blood pressure causes **ultrafiltration** to take place
- b. some liquid & small particles pushed OUT of vessel into Bowman's Caps.
- c. cells & large molecules (proteins) too big to leave blood
- d. ALL blood passes through kidney every 5 minutes, 15-20% of fluid in the blood will pass into the Bowman's capsule, about 200 liters a day!
(urine about 1 liter / day)
- e. the filtrate: (no large proteins, no RBCs) CONTAINS: water, electrolytes (salts: Na, K), glucose, vitamins, hormones & nitrogenous waste (urea)
(like DIRTY Gatorade)

3. THE 3-LAYER "FILTER"

- a. wall of the glomerulus is "fenestrated" (contains small pores), allows plasma to pass through
- b. basement membrane of the glomerulus , a protein membrane outside the cells, NO PORES, serves as ultrafiltration filter (like dialysis membrane) stops cells & large proteins
- c. inner wall of Bowman's Capsule , cells called "podocytes" have extensions that fold around blood vessels, making a network of filtration slits that hold back blood cells