Urinary System

Bio 230
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Structures of the Urinary System

- Kidney
  Produces urine

- Ureter
  Transports urine toward the urinary bladder

- Urinary bladder
  Temporarily stores urine prior to elimination

- Urethra
  Conducts urine to exterior; in males, transports semen as well

(a) Anterior view
Renal lobe = renal pyramid + cortex

(a) Frontal section of left kidney, anterior view
Know the blood flow through the kidneys...hint, hint
tuft of capillaries making up glomerulus

branch from renal artery carrying blood under pressure

branch from renal artery carrying blood under pressure

afferent arteriole

efferent arteriole

filtered fluid flows down kidney tubule to become urine

water and other small molecules filter into capsule from blood

NaCl

H₂O

K⁺

H₂O

UREA

GLUCOSE

Cl⁻

Ca²⁺
The basics of how urine is made.

**tubular reabsorption**
The component of the filtrate reabsorbed (taken back) into the blood. Your body wants to keep that component.

**tubular secretion**
The component of the blood that is taken out of the blood to be eliminated into the urine. Your body does not want it!
(c) The renal corpuscle
Renal Corpuscle = glomerulus + glomerular (Bowman) capsule. Where urine all starts
Located in  what region? must know the region!

Fenestrated capillary endothelium
cortex of the kidney is distinguished by characteristic renal corpuscles, each of which consists of an outer envelope (Bowman's capsule) surrounding a fluid-filled space (Bowman's space) within which is suspended a glomerulus.
Renal Cortex with renal corpuscles

- Bowman's space
- glom
- distal tubules
- proximal tubules
SEM = Scanning electron microscope
Most of the machinery to form urine is located in renal cortex. Loop of Henley located in medulla.
This is a single Nephron! Each nephron contains all these structures.

Nephrons the functional unit of the kidney.

Each kidney has millions of them!

Parts of nephron:
See your notes
2 nephrons showing extensive peritubular capillaries

Remember......vasa recta only found in which type of nephron?
Female: Relationship to bladder and uterus. Can you see why pregnant women have such a difficult time holding it!
Male: In older males enlargement of prostate also causes problems with urination. Can you see why?
Male and female urethra’s.  
Note location of internal and external urethral sphincters.  

Know the 3 regions in the male.
Lining epithelium of ureters and bladder is TRANSITIONAL Epithelium. Why is it called transitional epithelium? What is transitioning? Be sure you can see this under the microscope and do not confuse it with Stratified squamous non keratinized epithelium. They look different!
URINALYSIS.

I'm pissed.
Urine---liquid Gold!