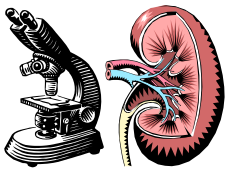
Bi0& 242: Unit 2/ Lab 1
Urinary System Anatomy

G. Blevins/ G. Brady
Spring 2008



Make sure you can identify the organs and structures of the Urinary system on charts, models, and pictures

A. <u>ORGANS AND DUCTS</u>:

- R & L Kidney
- R & L Ureter
- Urinary bladder
- Urethra (female)
- Membranous urethra (male)
- Spongy or penile urethra (male)
- Bulbospongiosus muscle
- External urethral sphincter
- Prostatic urethra (male)
- External urethral orifice

B. <u>KIDNEY</u>:

- Renal capsule
- Renal cortex
- Renal medulla
- Renal column
- Renal pyramid
- Renal papilla
- Parietal peritoneum
- Renal sinus
- Minor calyx
- Major calyx
- Renal pelvis
- Renal hilus
- (location = Retroperitoneal)

C. <u>NEPHRON</u>:

- Cortical nephron
- Juxtamedullary nephron
- Glomerular (Bowman's) capsule
- Capsular space
- Glomerulus
- Capillary endothelial cell
- Collecting duct
- Juxtaglomerular apparatus
  - Juxtaglomerular cells
  - Macula densa
- Proximal convoluted tubule
- Loop of Henle
  - Descending limb
  - Thin ascending limb
  - Thick ascending limb
- Distal convoluted tubule
- Papillary duct

D. <u>FILTRATION MEMBRANE:</u>

- Endothelial fenestrations
- Podocytes
- Pedicels
- Basement membrane (lamina densa)
- Filtration slits

E. URINARY BLADDER:

Trigone
Rugae
Internal urethral sphincter
Visceral peritoneum
Internal urethral orifice
Detrusor muscle
Ureteral openings

F. KIDNEY BLOOD SUPPLY:

L & R Renal artery
Segmental arteries
Interlobar arteries
Arcuate arteries
Interlobular arteries
Afferent arterioles
Glomerular capillaries
Efferent arterioles
Peritubular capillaries
Vasa recta
Interlobular veins
Arcuate veins
Interlobar veins
Segmental veins
L& R Renal vein

G. HISTOLOGY:

Slide #80 = Small kidney Cross Section
Observe: capsule, hilus, cortex, medulla, pelvis, renal pyramid

Slide #81 = Kidney
Observe: glomeruli, bowmans capsule, juxtaglomerular apparatus (jga) cortex, medulla.
JGA = Juxtaglomerular cells in afferent arteriole and Macula Densa of ascending limb of Loop of Henle and start of Distal Convoluted tubule (DCT).
*JGA regulates arterial blood pressure and rate of blood filtration by the kidneys.
*Parietal layer of glomerular capsule is lined with Simple Squamous epithelial cells.
*Proximal Convoluted tubule (PCT) is lined with Simple Cuboidal epithelial cells with lots of microvilli for reabsorption.
* DCT is lined with Simple Cuboidal cells with few microvilli.

Slide #82 = Urinary Bladder
Observe the Mucosa = Transitional epithelium
Observe the Laminia Propria = Areolar connective tissue
Observe the Muscularis = (Detrusor muscle) in bladder wall (Smooth Muscle) has three layers:
Outer = longitudinal smooth muscle
Middle = circular smooth muscle
Innermost = longitudinal smooth muscle

Slide #83 = Ureter
Observe the Mucosa = Transitional epithelium
Observe the Laminia Propria = Areolar connective tissue
Observe the Muscularis = two layers of smooth muscle; inner longitudinal and outer circular.

Slide #84 = Urethra
Observe Mucosa = near bladder Transitional epithelium, middle area stratified columnar and pseudostratified columnar epithelium. Near urethral orifice nonkeratinized stratified squamous. **
Observe the Laminia Propria = Areolar connective tissue
Observe the Muscularis = circular smooth muscle.
**The male prostatic urethra has Transitional epithelium.
**The male membranous urethra and spongy urethra has Stratified columnar and Pseudostratified columnar epithelium.
**Near urethral orifice nonkeratinized stratified squamous

Nephron Tissue review
Bowman's capsule (simple squamous)
PCT (Microvillated simple cuboidal)
Loop of Henle (thin) simple squamous
Loop of Henle (thick) simple cuboidal
DCT (simple cuboidal)
Upper CT (simple cuboidal)
Lower CT (simple columnar)
Papillary duct (simple columnar)