

Adult Urinary System (TS28, P3+)

Edited version of MLSupplTable3.pdf from Little et al, 2007 (PMID: 17452023).

Edits were made by GUDMAP Editorial Office in May 2008 and are highlighted in yellow.

Adult urinary system (TS28sm)

- urinary system (EMAP:27559)
 - metanephros (syn: kidney) (EMAP:29491)
 - renal capsule (EMAP:29598)
 - renal cortex (EMAP:29492)
 - mature renal corpuscle (syn: Malpighian corpuscle) (EMAP:29525)
 - glomerular tuft (syn: glomerulus) (EMAP:29529)
 - glomerular capillary system (EMAP:29533)
 - glomerular mesangium (EMAP:29530)
 - glomerular basement membrane (EMAP:29532)
 - visceral epithelium (syn: podocyte layer) (EMAP:29531)
 - Bowman's capsule (syn: glomerular capsule) (EMAP:29526)
 - parietal epithelium (EMAP:29528)
 - urinary space of renal corpuscle (syn: Bowman's space) (EMAP:29527)
 - afferent arteriole (EMAP:29536)
 - part of the afferent arteriole forming the juxtaglomerular complex (syn: renin-producing cells) (EMAP:29537)
 - rest of afferent arteriole (EMAP:29538)
 - efferent arteriole (EMAP:29535)
 - extraglomerular mesangium (EMAP:29534)
 - cortical renal tubule (syn: tubular portion of nephrons) (EMAP:29499)
 - renal proximal tubule (EMAP:29500)
 - renal proximal convoluted tubule (syn: first convoluted tubule) (EMAP:29502)
 - segment 1 of proximal tubule (EMAP:29658)
 - segment 2 of proximal tubule (EMAP:29660)
 - renal proximal straight tubule (syn: segment 3 of proximal tubule; pars recta) (EMAP:29662)
 - renal distal tubule (EMAP:29503)
 - distal straight tubule (syn: thick ascending limb) (EMAP:29505)
 - macula densa (EMAP:29507)
 - postmacula segment of distal straight tubule (EMAP:29506)
 - premacula segment of distal straight tubule (EMAP: 31383)
 - distal convoluted tubule (syn: second convoluted tubule) (EMAP:29508)
 - renal connecting tubule (EMAP:29509)
 - cortical collecting duct (EMAP:29520)
 - renal cortical interstitium (syn: cortical stroma)(EMAP:29521)
 - renal cortical fibroblasts (EMAP: 31295)
 - peritubular fibroblasts of cortex (EMAP: 31425)
 - periarterial fibroblasts of cortex (EMAP: 31427)
 - resident macrophages of cortex (syn renal monocytes of cortex) (EMAP: 31303)
 - rest of renal cortical interstitium (EMAP: 31311)
 - renal cortical lymphatics (EMAP: 31318)
 - cortical nerves (EMAP: 31325)
 - renal cortical vasculature (EMAP:29549)
 - renal cortical arterial system (EMAP:29550)
 - interlobular artery (EMAP:29552)
 - arcuate artery (EMAP:29551)
 - renal cortical venous system (EMAP:29553)
 - interlobular vein (EMAP:29554)
 - arcuate vein (EMAP:29555)
 - renal cortical capillary (EMAP:30042)
 - renal medulla (EMAP:29566)
 - outer medulla (EMAP:29567)
 - outer stripe of outer medulla (EMAP:29664)
 - loop of Henle of outer stripe of outer medulla (EMAP:29666)

proximal straight tubule (syn: segment 3 of proximal tubule;
 syn: pars recta) (EMAP:29670)
 premacula segment of distal straight tubule (syn: thick
 ascending limb) (EMAP:29672)
 inner stripe of outer medulla (EMAP:29678)
 loop of Henle of inner stripe of outer medulla (EMAP:29680)
 thin descending limb (EMAP:29682)
 premacula segment of distal straight tubule (syn: thick
 ascending limb) (EMAP:29684)
 outer medullary collecting duct (EMAP:29983)
 outer medullary interstitium (EMAP:29982)
 outer medullary fibroblast (EMAP: 31388)
 peritubular fibroblasts of outer medulla (EMAP: 31429)
 periarterial fibroblasts of outer medulla (EMAP: 31431)
 resident macrophages of outer medulla (syn: renal monocytes of
 outer medulla) (EMAP: 31393)
 rest of outer medullary interstitium (EMAP: 31398)
 inner medulla (syn: papilla) (EMAP:29581)
 loop of Henle, inner medullary portion (EMAP:29583)
 thin descending limb (EMAP:29584)
 bend (syn: U-turn) (EMAP:29586)
 thin ascending limb (syn: ascending thin limb) (EMAP:29585)
 inner medullary collecting duct (syn: papillary collecting duct)
 (EMAP:29587)
 inner medullary interstitium (syn: papillary interstitium) (EMAP:29582)
 inner medullary fibroblasts (EMAP: 31403)
 peritubular fibroblasts of inner medulla (EMAP: 31433)
 periarterial fibroblasts of inner medulla (EMAP: 31435)
 resident macrophages of inner medulla (syn: renal monocytes of
 inner medulla) (EMAP: 31408)
 rest of inner medullary interstitium (EMAP: 31413)
 renal medullary lymphatics (EMAP: 31353)
 renal medullary nerves (EMAP: 31360)
 renal medullary vasculature (EMAP:29589)
 renal medullary arterial system (EMAP:29590)
 renal medullary venous system (EMAP:29591)
 renal medullary capillary (syn: vasa recta)(EMAP:30048)
 calyx (EMAP:29595)
 major (EMAP:29597)
 minor (EMAP:29596)
 pelvis (EMAP:29557)
 pelvic urothelial lining (syn: pelvic urothelium)(EMAP:29559)
 pelvic smooth muscle (EMAP:29560)
 perihilar interstitium (EMAP:29558)
 perihilar fibroblasts (EMAP: 31366)
 resident macrophages of perihilar interstitium (syn: renal monocytes
 of perihilar interstitium) (EMAP: 31372)
 rest of perihilar interstitium (EMAP: 31378)
 renal artery (EMAP:29442)
 endothelial layer of renal artery (EMAP:29981)
 smooth muscle layer of renal artery (EMAP:30010)
 renal vein (EMAP:29441)
 endothelial layer of renal vein (EMAP:29969)
 smooth muscle layer of renal vein (EMAP:30026)
 renal nerve (EMAP:29692)
 ureter (EMAP:29479)
 urothelium (syn: transitional epithelium) (EMAP:29482)
 superficial cellular layer (syn: umbrella cell) (EMAP:29483)
 deep cellular layer (basal urothelium) (EMAP:29484)
 intermediate cell layer (EMAP:29485)
 basal cell layer (EMAP:29486)
 lamina propria (EMAP:29481)
 ureteral smooth muscle layer (EMAP:29488)
 inner longitudinal muscle (EMAP:29634)
 outer circular muscle (EMAP:29636)
 interstitium (syn: Cajal Cell) (EMAP:29489)
 adventitia of ureter (EMAP:29480)

ureteral vasculature (EMAP:30859)
 median umbilical ligament (EMAP:29638)
 bladder (EMAP:29457)
 epithelium of the bladder (syn: urothelium) (EMAP:29462)
 epithelium of fundus (EMAP:29463)
 epithelium of trigone (EMAP:29464)
 epithelium of neck (EMAP:30087)
 lamina propria of the bladder (EMAP:30094)
 lamina propria of the fundus (EMAP:30108)
 lamina propria of the trigone (EMAP:30115)
 lamina propria of the neck (EMAP:30122)
 muscularis mucosa of bladder (EMAP:29459)
 muscularis mucosa of fundus (EMAP:29460)
 muscularis mucosa of trigone (EMAP:29461)
 muscularis mucosa of neck (EMAP:30143)
 detrusor muscle of bladder (EMAP:29468)
 detrusor muscle of fundus (EMAP:29470)
 detrusor muscle of trigone (EMAP:29469)
 detrusor muscle of neck (EMAP:30129)
 serosa of bladder (EMAP:29471)
 serosa of fundus (EMAP:29473)
 serosa of trigone (EMAP:29472)
 serosa of neck (EMAP:30136)
 adventitia of bladder (EMAP:29465)
 adventitia of fundus (EMAP:29467)
 adventitia of trigone (EMAP:29466)
 adventitia of neck (EMAP:30149)
 blood vessels of bladder (EMAP:29474)
 urethra of male (EMAP:29448)
 pelvic urethra of male (EMAP:29449)
 epithelial layer of pelvic urethra of male (EMAP:29450)
 mesenchymal layer of pelvic urethra of male (EMAP:29451)
 muscle layer of pelvic urethra of male (EMAP:29452)
 prostatic urethra (EMAP:30943)
 epithelial layer of prostatic urethra (EMAP:30953)
 mesenchymal layer of prostatic urethra (EMAP:30955)
 muscle layer of prostatic urethra (EMAP:30957)
 penile urethra (EMAP:30945)
 epithelial layer of penile urethra (EMAP:30947)
 mesenchymal layer of penile urethra (EMAP:30949)
 muscle layer of penile urethra (EMAP:30951)
 bulbar part of urethra of male (EMAP:29640)
 distal region of urethra of male (EMAP:29642)
 prostatic utricle (EMAP:29644)
 male urethral gland (EMAP:29646)
 urethra of female (EMAP:29443)
 pelvic urethra of female (EMAP:30961)
 epithelial layer of pelvic urethra of female (EMAP:30963)
 mesenchymal layer of pelvic urethra of female (EMAP:30964)
 muscle layer of pelvic urethra of female (EMAP:30962)
 phallic urethra of female (syn: external urethra of female) (EMAP:30923)
 epithelial layer of phallic urethra of female (EMAP:30958)
 mesenchymal layer of phallic urethra of female (EMAP:30959)
 muscle layer of phallic urethra of female (EMAP:30960)
 female urethral gland (EMAP:29654)
 mesentery (EMAP:29477)
 urogenital mesentery (EMAP:29478)
 rest of mesentery (EMAP:29617)
 urorectal septum (EMAP:29475)

GROUP TERMS

mature nephron (GROUP) (EMAP: 29540)
 mature renal corpuscle (syn: Malpighian corpuscle) (EMAP: 29525)
 glomerular tuft (syn: glomerulus) (EMAP: 29529)

- glomerular capillary system (EMAP: 29533)
- glomerular mesangium (EMAP: 29530)
- glomerular basement membrane (EMAP: 29532)
- visceral epithelium (syn: podocyte layer) (EMAP:29531)
- Bowman's capsule (syn: glomerular capsule) (EMAP: 29526)
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 - part of the afferent arteriole forming the juxtaglomerular complex (syn: renin-producing cells) (EMAP: 29537)
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 - segment 2 of proximal tubule (EMAP:29660)
 - renal proximal straight tubule (syn: segment 3 of proximal tubule; pars recta) (EMAP:29662)
- renal distal tubule (EMAP:29503)
 - distal straight tubule (syn: thick ascending limb) (EMAP:29505)
 - macula densa (EMAP:29507)
 - postmacula segment of distal straight tubule (EMAP:29506)
 - premacula segment of distal straight tubule
 - distal convoluted tubule (syn: second convoluted tubule) (EMAP:29508)
- renal connecting tubule (EMAP:29509)
- loop of Henle (EMAP:31499) **GROUP**
 - loop of Henle of outer stripe of outer medulla (EMAP:29666)
 - proximal straight tubule (syn: segment 3 of proximal tubule; syn: pars recta) (EMAP:29670)
 - premacula segment of distal straight tubule (syn: thick ascending limb) (EMAP:29672)
 - loop of Henle of inner stripe of outer medulla (EMAP:29680)
 - thin descending limb (EMAP:29682)
 - premacula segment of distal straight tubule (syn: thick ascending limb) (EMAP:29684)
 - loop of Henle of inner medulla (EMAP:29583)
 - thin descending limb (EMAP:29584)
 - bend (syn: U-turn) (EMAP:29586)
 - thin ascending limb (syn: ascending thin limb) (EMAP:29585)

juxtaglomerular complex (GROUP) (EMAP: 30453)

- extraglomerular mesangium (EMAP: 29534)
- macula densa (EMAP:29507)
- part of the afferent arteriole forming the juxtaglomerular complex (EMAP: 29537)

renal interstitium (GROUP) (EMAP: 29593)

- renal cortical interstitium (EMAP: 29521)
 - peritubular fibroblasts of cortex (EMAP: 31425)
 - periarterial fibroblasts of cortex (EMAP: 31427)
 - resident macrophages of cortex (syn: renal monocytes of cortex) (EMAP: 31303)
 - rest of renal cortical interstitium (EMAP: 31311)
- outer medullary interstitium (EMAP: 29982)
 - peritubular fibroblasts of outer medulla (EMAP: 31429)
 - periarterial fibroblasts of outer medulla (EMAP: 31431)
 - resident macrophages of outer medulla (syn: renal monocytes of outer medulla) (EMAP: 31393)
- inner medullary interstitium (syn: papillary interstitium)
 - peritubular fibroblasts of inner medulla (EMAP: 31433)

- periarterial fibroblasts of inner medulla (EMAP: 31435)
- resident macrophages of inner medulla (syn:renal monocytes of inner medulla) (EMAP: 31408)
- rest of inner medullary interstitium (EMAP: 31413)
- (EMAP: 29582)
- perihilar interstitium (EMAP: 29558)
 - perihilar fibroblasts (EMAP: 31366)
 - resident macrophages of perihilar interstitium (syn:renal monocytes of perihilar interstitium) (EMAP: 31372)
 - rest of perihilar interstitium (EMAP: 31378)
- extraglomerular mesangium (EMAP: 29534)

renal collecting duct (GROUP) (EMAP: 29592)

- cortical collecting duct (EMAP: 29520)
- outer medullary collecting duct (EMAP: 29983)
- inner medullary collecting duct (syn: papillary collecting duct) (EMAP:29587)

renal vasculature (GROUP) (EMAP: 29435)

renal arterial system (GROUP) (EMAP: 31442)

- renal artery (EMAP: 29442)
- arcuate artery (EMAP: 29551)
- interlobular artery (EMAP: 29552)
- renal medullary arterial system (EMAP 29590)

renal capillaries (GROUP) (EMAP: 31449)

- glomerular capillary system (EMAP: 29533)
- renal cortical capillaries (EMAP:30042)
- renal medullary capillary (vasa recta) (EMAP: 30048)

renal venous system (GROUP) (EMAP: 31456)

- renal vein (EMAP: 29441)
- arcuate vein (EMAP: 29555)
- interlobular vein (EMAP: 29554)
- renal medullary venous sytem (EMAP 29591)
- afferent arteriole (EMAP: 29536)
 - part of the afferent arteriole forming the juxtaglomerular complex (syn: renin-producing cells) (EMAP: 29537)
 - rest of afferent arteriole (EMAP: 29538)
- efferent arteriole (EMAP: 29535)

renal cortical vasculature (EMAP:29549)

- renal cortical arterial system (EMAP:29550)
 - interlobular artery (EMAP:29552)
 - arcuate artery (EMAP:29551)
- renal cortical venous system (EMAP:29553)
 - interlobular vein (EMAP:29554)
 - arcuate vein (EMAP:29555)
- renal cortical capillaries (EMAP: 30042)

renal medullary vasculature (EMAP:29589)

- renal medullary arterial system (EMAP:29590)
- renal medullary venous system (EMAP:29591)
- renal medullary capillaries (EMAP: 30048)

Large blood vessels (EMAP 31468)

- renal artery (EMAP: 10111)
- renal vein (EMAP: 13095)
- arcuate vein (EMAP: 28225)
- interlobular artery (EMAP: 28216)
- interlobular vein (EMAP: 28222)
- arcuate artery (EMAP: 28219)

Small blood vessels (EMAP: 31475)

renal cortical capillary (EMAP: 30043)
efferent arteriole (EMAP: 28279)
renal medullary arterial system (EMAP: 28168)
afferent arteriole (EMAP: 28270)
glomerular capillary system (EMAP: 28249)
renal medullary venous system (EMAP: 28173)
renal medullary capillary (EMAP: 30049)
glomerular capillary system (EMAP: 27962)