

ACTIVITY 12: URINARY AND REPRODUCTIVE SYSTEMS

OBJECTIVES:

- 1) **How to get ready:** Read **Chapters 27 and 28, McKinley *et al.*, Human Anatomy, 5e.** All text references are for this textbook
- 2) Identify structures in the urinary system on models and cadavers. **YOU MUST BRING GLOVES FOR THIS ACTIVITY.**
- 3) Histology: Identify structures involved in filtration on a slide or photo of a renal corpuscle.
- 4) ★ Complete a blood flow trace through the kidney and a trace of filtrate/urine flow through the nephron loop and urinary system organs.
- 5) Identify gross anatomical structures of the female reproductive tract.
- 6) Identify gross anatomical structures of the male reproductive tract.
- 7) ★ Trace semen production and then spermatozoa to site of fertilization during human sexual reproduction.

URINARY SYSTEM

TABLE 1: ORGANS OF THE URINARY SYSTEM

STRUCTURE	TEXTBOOK REFERENCE AND NOTES
<input type="checkbox"/> kidneys	described: p. 812 fig. 27.1
<input type="checkbox"/> ureters	
<input type="checkbox"/> urinary bladder	
<input type="checkbox"/> urethra	

TABLE 2: GROSS ANATOMY OF THE KIDNEY, CORONAL SECTION

STRUCTURE	TEXTBOOK REFERENCE AND NOTES
<input type="checkbox"/> fibrous capsule	described: pp. 814-815 fig. 27.3
<input type="checkbox"/> renal cortex	
<input type="checkbox"/> renal medulla	
<input type="checkbox"/> renal columns	
<input type="checkbox"/> renal pyramids	
<input type="checkbox"/> renal papilla	
<input type="checkbox"/> minor calyx (pl. <i>calyces</i>)	
<input type="checkbox"/> major calyx	
<input type="checkbox"/> renal pelvis	
<input type="checkbox"/> renal lobe	
<input type="checkbox"/> renal artery	
<input type="checkbox"/> renal vein	

TABLE 3. BLOOD FLOW THROUGH THE KIDNEY, including microcirculation

STRUCTURE	TEXTBOOK REFERENCE AND NOTES
<input type="checkbox"/> renal artery	described: pp. 815-817 fig. 27.4, 27.5, 27.7
<input type="checkbox"/> segmental artery	
<input type="checkbox"/> interlobar artery	
<input type="checkbox"/> arcuate artery	
<input type="checkbox"/> interlobular artery	
<input type="checkbox"/> afferent arteriole	
<input type="checkbox"/> glomerulus	
<input type="checkbox"/> efferent arteriole	
<input type="checkbox"/> peritubular capillaries	
<input type="checkbox"/> vasa recta	
<input type="checkbox"/> interlobular vein	
<input type="checkbox"/> arcuate vein	
<input type="checkbox"/> interlobar vein	
<input type="checkbox"/> renal vein	

TABLE 4. NEPHRON STRUCTURES, INCLUDING URINIFEROUS TUBULE

STRUCTURE	TEXTBOOK REFERENCE AND NOTES
<input type="checkbox"/> renal corpuscle = glomerulus + glomerular capsule	described: pp. 817, 819-821 fig. 27.5, 27.7, 27.8
<input type="checkbox"/> glomerular capsule (<u>or</u> Bowman's capsule)	
<input type="checkbox"/> proximal convoluted tubule	
<input type="checkbox"/> nephron loop (<u>or</u> loop of Henle)	
<input type="checkbox"/> descending limb	
<input type="checkbox"/> ascending limb	
<input type="checkbox"/> distal convoluted tubule	
<input type="checkbox"/> collecting duct	

TABLE 5. HISTOLOGY OF THE RENAL CORTEX: The renal corpuscle consists of the glomerulus surrounded by the glomerular capsule, and is the primary site of filtration in the kidney. Identify the following structures, when visible, in a slide of the renal corpuscle. Identify the following structures from a slide, photo, or model.

STRUCTURE	TEXTBOOK REFERENCE AND SKETCH
<input type="checkbox"/> glomerulus	described: pp. 819-820 fig. 27.7b, 27.8b
<input type="checkbox"/> glomerular capsule (<u>or</u> Bowman's capsule)	
<input type="checkbox"/> visceral layer of glomerular capsule (composed of podocyte cells)	
<input type="checkbox"/> capsular space	
<input type="checkbox"/> parietal layer of glomerular capsule	
<input type="checkbox"/> proximal convoluted tubule	
<input type="checkbox"/> distal convoluted tubule	
<input type="checkbox"/> afferent arteriole	
<input type="checkbox"/> efferent arteriole	

TABLE 6. GROSS ANATOMY OF THE URINARY BLADDER AND URETHRA

STRUCTURE	TEXTBOOK REFERENCE AND NOTES
<input type="checkbox"/> ureter	described: pp. 822-824 fig. 27.9, 27.10a
<input type="checkbox"/> urinary bladder	described: pp. 824-827
<input type="checkbox"/> detrusor muscle	fig. 27.10a
<input type="checkbox"/> urinary trigone	
<input type="checkbox"/> ureteral openings	
<input type="checkbox"/> internal urethral sphincter	
<input type="checkbox"/> urethra	
<input type="checkbox"/> urogenital diaphragm	
<input type="checkbox"/> external urethral sphincter	
<i>Male urethra</i>	described: pp. 827-828
<input type="checkbox"/> prostatic urethra	fig. 27.11b
<input type="checkbox"/> membranous urethra	
<input type="checkbox"/> spongy urethra	
<input type="checkbox"/> external urethral orifice	
<i>Female urethra</i>	described: p. 827
<input type="checkbox"/> urethra	figure 27.9, 27.11a, 28.2
<input type="checkbox"/> external urethral orifice	

★ Kidney Blood Trace:

From heart to kidney and back to heart:

left atrium

aorta

vasa recta/ peritubular capillaries

right atrium

pulmonary semilunar valve

pulmonary capillary bed

left atrium

★ Male Urine Trace:

From glomerular capsule to external environment:

glomerular capsule

collecting duct

ureteral openings into urinary bladder

external environment

REPRODUCTIVE SYSTEM

TABLE 7. FEMALE REPRODUCTIVE ORGANS AND STRUCTURES

STRUCTURE	TEXTBOOK REFERENCE AND NOTES
EXTERNAL STRUCTURES	
<input type="checkbox"/> vulva (<u>or</u> pudendum)	fig. 28.9
<input type="checkbox"/> mons pubis	
<input type="checkbox"/> labia majora	
<input type="checkbox"/> labia minora	
<input type="checkbox"/> clitoris with prepuce	
<input type="checkbox"/> vestibule	
<input type="checkbox"/> external urethral orifice	
<input type="checkbox"/> vaginal orifice	
INTERNAL STRUCTURES	
<input type="checkbox"/> ovaries	described: p. 838 fig. 28.2, 28.7
<input type="checkbox"/> uterine (<u>or</u> fallopian) tubes (<u>or</u> oviducts)	described: p. 845 fig. 28.2, 28.7
<input type="checkbox"/> infundibulum with fimbriae	
<input type="checkbox"/> ampulla	
<input type="checkbox"/> isthmus	
<input type="checkbox"/> uterine part (<u>or</u> interstitial segment)	described: p. 847 fig. 28.2, 28.7
<input type="checkbox"/> uterus	
<input type="checkbox"/> fundus	
<input type="checkbox"/> body	
<input type="checkbox"/> isthmus	
<input type="checkbox"/> cervix	described: pp. 849-850 fig. 28.2, 28.7
<input type="checkbox"/> vagina	
LIGAMENTS AND ASSOCIATED STRUCTURES	
<input type="checkbox"/> round ligament of uterus	described: pp. 838,848 fig. 28.3, 28.7
<input type="checkbox"/> broad ligament	
<input type="checkbox"/> uterine artery and vein	
<input type="checkbox"/> ovarian ligament	
<input type="checkbox"/> suspensory ligament of ovary	
<input type="checkbox"/> ovarian artery and vein	

TABLE 8. MAMMARY GLANDS

STRUCTURE	TEXTBOOK REFERENCE AND NOTES
<input type="checkbox"/> pectoralis major muscle	described: p. 851 fig. 28.10
<input type="checkbox"/> areola	
<input type="checkbox"/> nipple	
<input type="checkbox"/> lobule	
<input type="checkbox"/> adipose tissue	
<input type="checkbox"/> suspensory ligaments	

TABLE 9. MALE REPRODUCTIVE ORGANS AND STRUCTURES

STRUCTURE	TEXTBOOK REFERENCE AND NOTES
<input type="checkbox"/> testis (pl. <i>testes</i>)	described: pp. 855-862 fig. 28.11, 28.12, 28.13
<input type="checkbox"/> scrotum	
<input type="checkbox"/> epididymis	
<input type="checkbox"/> ductus deferens (<i>or</i> vas deferens)	
<input type="checkbox"/> ampulla of ductus deferens	
<input type="checkbox"/> prostate gland	
<input type="checkbox"/> ejaculatory duct	
<input type="checkbox"/> seminal vesicle	
<input type="checkbox"/> bulbourethral gland (in urogenital diaphragm)	
<input type="checkbox"/> urethra	
STRUCTURE	TEXTBOOK REFERENCE AND NOTES
<input type="checkbox"/> crus of penis	described: p. 863 fig. 28.11, 28.15, 28.17
<input type="checkbox"/> body of penis	
<input type="checkbox"/> dorsal surface with dorsal vein	
<input type="checkbox"/> ventral surface	
<input type="checkbox"/> glans (<i>or</i> glans penis)	
<input type="checkbox"/> prepuce	
<input type="checkbox"/> erectile bodies or venous spaces	
<input type="checkbox"/> corpus cavernosum (pl. <i>corpora cavernosa</i>)	
<input type="checkbox"/> corpus spongiosum	
<input type="checkbox"/> spongy (penile) urethra	

TABLE 10. INGUINAL CANAL

STRUCTURE	TEXTBOOK REFERENCE AND NOTES
<input type="checkbox"/> external (superficial) inguinal ring	described: pp. 856, 346, 400 fig. 28.12
<input type="checkbox"/> internal (deep) inguinal ring	
<input type="checkbox"/> spermatic cord with:	
<input type="checkbox"/> ductus deferens	
<input type="checkbox"/> testicular artery and vein	
<input type="checkbox"/> testicular nerve	

★ **HUMAN REPRODUCTION TRACE:** Trace spermatozoa from testis, including locations where glands/ducts add to or conduct semen, to relevant structures in the female reproductive system, ending at a fertilized egg (zygote).

testis	(site of spermatozoa production)
_____	(site of spermatozoa maturation)
_____	(tube leading from testes to body cavity)
_____	(wide portion in the above tube)
seminal vesicle	(adds components to semen)
_____	(adds components to semen)
_____	(tube leading from prostate gland to urethra)
_____	(adds components to semen)
_____	(tube leading from urogenital diaphragm through penis)
_____	(opening through which semen leaves the male body)
vaginal canal	
_____	(projection of uterus into vagina)
_____	(narrowest portion of uterus)
_____	(widest portion of uterus)
_____	(upper portion of uterus)
uterine part of uterine tube	
_____	(narrow region of uterine tube)
_____	(region of uterine tube in which fertilization generally occurs)
fertilization/creation of zygote	