

## ACTIVITY

# 12

## URINARY AND REPRODUCTIVE SYSTEMS

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### 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 trace of blood flow 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 sexual reproduction.

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## URINARY SYSTEM

TABLE 12-1. Organs of the urinary system	
STRUCTURE	TEXT REFERENCES 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 12-2. Gross anatomy of the kidney, coronal section	
STRUCTURE	TEXT REFERENCES 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	

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**TABLE 12-3. Blood flow through the kidney**

STRUCTURE	TEXT REFERENCES AND NOTES
<input type="checkbox"/> renal artery	<b>DESCRIBED: PP. 815–817</b> <b>FIG. 27.4, 27.5, 27.7</b>
<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 12-4. Nephron structures, including uriniferous tubule. Identify the following structures from a slide, photo, or model.**

STRUCTURE	TEXT REFERENCES AND NOTES
<input type="checkbox"/> renal corpuscle = glomerulus + glomerular capsule	<b>DESCRIBED: PP. 817, 819–821</b> <b>FIG. 27.5, 27.7, 27.8</b>
<input type="checkbox"/> glomerular capsule ( <i>or</i> 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"/> nephron loop ( <i>or</i> loop of Henle)	
<input type="checkbox"/> descending limb	
<input type="checkbox"/> ascending limb	
<input type="checkbox"/> distal convoluted tubule	
<input type="checkbox"/> collecting duct	

## Urinary and Reproductive Systems

<b>TABLE 12-5. Gross anatomy of the urinary bladder and urethra</b>	
STRUCTURE	TEXT REFERENCES AND NOTES
<input type="checkbox"/> ureter	DESCRIBED: PP. 822–824 FIG. 27.9, 27.10A
<input type="checkbox"/> urinary bladder	DESCRIBED: PP. 824–827 FIG. 27.10A
<input type="checkbox"/> detrusor muscle	
<input type="checkbox"/> urinary trigone	
<input type="checkbox"/> ureteral openings	
<input type="checkbox"/> internal urethral sphincter	
<input type="checkbox"/> urethra	
<input type="checkbox"/> external urethral sphincter	
<b>Male urethra</b>	DESCRIBED: PP. 827–828 FIG. 27.11B
<input type="checkbox"/> prostatic urethra	
<input type="checkbox"/> membranous urethra	
<input type="checkbox"/> spongy urethra	
<input type="checkbox"/> external urethral orifice	
<b>Female urethra</b>	DESCRIBED: P. 827 FIGURE 27.9, 27.11A, 28.2
<input type="checkbox"/> urethra	
<input type="checkbox"/> external urethral orifice	

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## KIDNEY BLOOD TRACE

From heart to kidney and back to heart:

**left atrium**

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**aorta**

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**vasa recta/peritubular capillaries**

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**right atrium**

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**pulmonary semilunar valve**

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**pulmonary capillary bed**

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**left atrium**

**MALE URINE TRACE**

From glomerular capsule to external environment:

glomerular capsule

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collecting duct

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ureteral openings into urinary bladder

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external environment

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## REPRODUCTIVE SYSTEM

TABLE 12-6. Female reproductive organs and structures	
STRUCTURE	TEXT REFERENCES AND NOTES
<b>External Structures</b>	
<input type="checkbox"/> vulva	FIG. 28.9
<input type="checkbox"/> perineum	
<input type="checkbox"/> mons pubis	
<input type="checkbox"/> labia majora	
<input type="checkbox"/> labia minora	
<input type="checkbox"/> clitoris	
<input type="checkbox"/> prepuce	
<input type="checkbox"/> corpora cavernosa	
<input type="checkbox"/> crus	
<input type="checkbox"/> body	
<input type="checkbox"/> glans	
<input type="checkbox"/> vestibule	
<input type="checkbox"/> external urethral orifice	
<input type="checkbox"/> vaginal orifice	
<b>Internal Structures</b>	
<input type="checkbox"/> ovaries	DESCRIBED: P. 838 FIG. 28.2, 28.7
<input type="checkbox"/> uterine (or fallopian) tubes (or 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 (or interstitial segment)	

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<b>TABLE 12-6. Female reproductive organs and structures</b>	
STRUCTURE	TEXT REFERENCES AND NOTES
<input type="checkbox"/> uterus	<b>DESCRIBED: P. 847 FIG. 28.2, 28.7</b>
<input type="checkbox"/> fundus	
<input type="checkbox"/> body	
<input type="checkbox"/> isthmus	
<input type="checkbox"/> cervix	
<input type="checkbox"/> endometrium	
<input type="checkbox"/> myometrium	
<input type="checkbox"/> vagina	<b>DESCRIBED: PP. 849–850 FIG. 28.2, 28.7</b>
<b>Ligaments and Associated Structures</b>	
<input type="checkbox"/> round ligament of uterus	<b>DESCRIBED: PP. 838, 848 FIG. 28.3, 28.7</b>
<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	

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**TABLE 12-7. Mammary glands**

STRUCTURE	TEXT REFERENCES AND NOTES
<input type="checkbox"/> pectoralis major muscle	<b>DESCRIBED: P. 851</b> <b>FIG. 28.10</b>
<input type="checkbox"/> areola	
<input type="checkbox"/> nipple	
<input type="checkbox"/> lobule	
<input type="checkbox"/> adipose tissue	
<input type="checkbox"/> suspensory ligaments	

**TABLE 12-8. Male reproductive organs and structures**

STRUCTURE	TEXT REFERENCES AND NOTES
<input type="checkbox"/> testis (pl., <i>testes</i> )	<b>DESCRIBED: PP. 855–862</b> <b>FIG. 28.11, 28.12, 28.13</b>
<input type="checkbox"/> scrotum	
<input type="checkbox"/> epididymis	
<input type="checkbox"/> ductus deferens ( <i>or vas deferens</i> )	
<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	
<input type="checkbox"/> urethra	
STRUCTURE	TEXT REFERENCES AND NOTES
<input type="checkbox"/> crus of penis	<b>DESCRIBED: P. 863</b> <b>FIG. 28.11, 28.15, 28.17</b>
<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 glans penis</i> )	
<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	

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TABLE 12-9. Inguinal canal (male)	
STRUCTURE	TEXT REFERENCES AND NOTES
<input type="checkbox"/> external (superficial) inguinal ring	<b>DESCRIBED: PP. 856, 346, 400</b> <b>FIG. 28.12</b>
<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	

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## GAMETE TRACE TO FERTILIZATION DURING SEXUAL REPRODUCTION

From testis (including locations where glands/ducts secrete), to female anatomy, ending at fertilized egg (zygote):

TESTIS	(site of spermatozoa production)
	(site of spermatozoa maturation)
SEMINAL VESICLE	(tube leading from testes to body cavity)
	(wide portion in the above tube leading from testes to body cavity)
	(adds components to semen)
	(adds components to semen)
VAGINAL CANAL	(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)
UTERINE PART OF UTERINE TUBE	(projection of uterus into vagina)
	(narrowest portion of uterus)
	(widest portion of uterus)
	(upper portion of uterus)
FERTILIZATION/CREATION OF ZYGOTE	(region of uterine tube in which fertilization generally occurs)

## Urinary and Reproductive Systems

### STUDY AIDS FOR URINARY AND REPRODUCTIVE SYSTEMS

Helpful terms for Urinary and Reproductive Systems

ANATOMICAL TERMS	DESCRIPTION
<b>arcuate</b>	curved or arched
<b>cervix</b>	neck
<b>afferent</b>	carrying to
<b>detrusor</b>	to drive away
<b>calyx</b>	cup
<b>cavernosum</b>	containing cave-like spaces
<b>convoluted</b>	intricately folded, coiled, or twisted
<b>ductus deferens</b>	duct that carries down
<b>efferent</b>	carrying out
<b>epididymis</b>	upon testis
<b>fimbriae</b>	fringes
<b>fundus</b>	base
<b>glomerulus</b>	to roll up, a ball of thread
<b>infundibulum</b>	funnel
<b>isthmus</b>	narrow passageway
<b>labia</b>	plural of labium = lip
<b>pelvis</b>	basin
<b>prostate</b>	something that stands before (before urinary bladder)
<b>sphincter</b>	a tight binder
<b>prepuce</b>	foreskin
<b>scrotum</b>	leather
<b>spongiosum</b>	sponge
<b>trigone</b>	a triangle
<b>vulva</b>	female external genitalia