

## LABORATORY EXERCISE 56 STRUCTURE OF THE KIDNEY

### Figure Labels

#### FIG. 56.1

- |           |                    |
|-----------|--------------------|
| 1. Kidney | 3. Urinary bladder |
| 2. Ureter | 4. Urethra         |

#### FIG. 56.2

- |                  |                  |
|------------------|------------------|
| 1. Renal pyramid | 6. Minor calyx   |
| 2. Renal column  | 7. Major calyx   |
| 3. Renal capsule | 8. Renal pelvis  |
| 4. Renal medulla | 9. Renal papilla |
| 5. Renal cortex  | 10. Ureter       |

#### FIG. 56.4

- |  |                             |
|--|-----------------------------|
| 1. Glomerular capsule                  | 7. Afferent arteriole       |
| 2. Glomerulus                          | 8. Distal convoluted tubule |
| 3. Proximal convoluted tubule          | 9. Interlobular vein        |
| 4. Descending limb of the nephron loop | 10. Collecting duct         |
| 5. Ascending limb of the nephron loop  | 11. Peritubular capillary   |
| 6. Efferent arteriole                  |                             |

### Laboratory Report Answers

#### PART A

- |      |      |
|------|------|
| 1. e | 6. c |
| 2. a | 7. d |
| 3. h | 8. g |
| 4. f | 9. b |
| 5. i |      |

#### PART B

- A renal corpuscle is the cluster of capillaries (glomerulus) and the saclike structure (glomerular capsule) that surrounds it; a renal tubule is the coiled tube that leads away from the glomerular capsule and empties into a collecting duct.
- 3            5            2            4            1            6
- 1            3            2            4            5
- Blood enters the glomerulus through the afferent arteriole and leaves through the efferent arteriole. Because the afferent vessel has a somewhat greater diameter than the efferent one, blood pressure is increased in the glomerulus.
- The juxtaglomerular apparatus is a structure composed of epithelial cells within the distal convoluted tubule and smooth muscle cells within the walls of arterioles near the glomerulus that regulates the flow of blood through certain renal blood vessels.

#### PART C

(sketch)

#### PART D

(sketch)

# LABORATORY EXERCISE 58

## CAT DISSECTION: URINARY SYSTEM

### Laboratory Report Answers

1. In the human, the kidneys are located between the levels of the twelfth thoracic and the third lumbar vertebrae; in the cat, the kidneys are found at the level of the third to the fifth lumbar vertebrae. In the human, the left kidney is usually higher than the right one; in the cat, the right kidney is usually somewhat anterior to the left one. In both cases, the kidneys are retroperitoneal.
2. In the human, the adrenal glands are located on the superior ends of the kidneys; in the cat, the adrenal glands are located anteriorly and medially to the kidneys.
3. In the cat, the kidneys, ureters, and urinary bladder are retroperitoneal.
4. The wall of the urinary bladder is relatively thick, tough, and somewhat elastic. Its inner surface is irregular.
5. In the human kidney, there are about twelve renal pyramids that communicate with the renal pelvis by calyces. Each calyx bears one or more papillae. In the cat kidney, there is a single pyramid and one papilla.