

STUDY GUIDE FOR CHAPTER 15

(see also the chapter summary on pages 469-470)

Retroperitoneal - located behind the parietal peritoneum (the position of kidneys, gonads, etc.)

Kidneys - the principal organ of osmoregulation and urine formation in vertebrates.

Renal - pertaining to the kidney.

Capsule - the outermost connective tissue lining of the kidneys.

Cortex - the outer layer ("bark") of any organ, e.g., the kidney layer containing convoluted tubules.

Medulla - the inner layer ("pith") of any organ, e.g., the kidney layer containing collecting ducts.

Renal (medullary) pyramid - one of the pyramid-shaped structures that make up the medulla.

Nephron - a single kidney tubule, containing convoluted tubules, collecting ducts, etc.

Glomerulus - a roughly spherical network of fine blood vessels inside each Bowman's capsule.

Bowman's capsule - the cup-shaped structure surrounding a glomerulus, into which blood is filtered.

Juxtaglomerular apparatus - the tubules immediately adjacent to the glomerulus that secrete angiotensin.

Proximal convoluted tubule - the first convoluted tubule, preceding Henle's loop, from which nutrients and water are resorbed back into the blood.

Loop of Henle - thin-walled loop of each nephron, located in the renal medulla, coming between the proximal and distal convoluted tubules.

Distal convoluted tubule - the second convoluted tubule, following Henle's loop, from which more nutrients and water are resorbed into the blood and into which certain ions are actively secreted.

Peritubular capillaries - the capillary beds that surround the convoluted tubules and exchange materials with them.

Collecting ducts - ducts into which the urine flows from many nephrons.

Minor calyx - a hollow receptacle into which many collecting ducts empty.

Major calyx - one of the two major receptacles for urine in each kidney.

Hilus - the indentation along the medial side of each kidney, containing the renal pelvis.

Renal pelvis - the receptacle formed by the confluence of the two major calyces.

Ureter (accent on first syllable) - one of two ducts carrying urine from the renal pelvis to the bladder.

(Urinary) bladder - a distensible sac for holding the accumulated urine until it is released.

Urinary trigone - the flat triangular area in the bladder between the two ureters and the urethra.

Urethra (accent on second syllable) - the unpaired duct carrying urine out of the bladder; in males, it also carries semen and sperm, and is divided into **membranous**, **cavernous**, and **penile** portions.

Vasopressin (ADH) - the "Anti-Diuretic Hormone" that retains water by increasing NaCl concentration in the medulla and recirculating water in Henle's loop, resulting in a more concentrated urine.

Aldosterone - an adrenal hormone that promotes resorption of sodium into the juxtaglomerular capillaries.

Renin - an enzyme, produced by the blood vessels in the kidney in response to low blood pressure, stimulating the production of angiotensin, which stimulates aldosterone and raises blood pressure.

Angiotensin - a hormone, produced by the kidney, that stimulates aldosterone and raises blood pressure.

Alkalosis - an excessively alkaline condition of the blood (pH > 7.45).

Acidosis - an excessively acidic condition of the blood (pH < 7.35).

Renal calculus - a solid "kidney stone" of uric acid and/or cholesterol.

Urea - $\text{H}_2\text{N-CO-NH}_2$, the most common nitrogenous waste product in mammals.

Uric acid - A complex purine ($\text{C}_5\text{H}_4\text{N}_4\text{O}_3$ in a two rings), produced in mammals as a minor nitrogenous waste product. It is the major nitrogenous waste product in birds and insects.

Micturition (urination) - voiding of urine from the bladder.

Incontinence - inability (or loss of ability) to control the urinary sphincters and thus the flow of urine.