

Renal System

1) What are the functions of the renal system?

- Maintains homeostasis
 - Regulates
 - ★ Blood volume & pressure
 - ★ Concentration of blood ions
 - ★ Blood pH
 - ★ Removal of waste products
 - ★ Reabsorption of filtered nutrients

2) What organs/structures are associated with the renal system?

- pathway ↓
- Kidneys
 - Ureters
 - Urinary Bladder
 - Urethra

★ Adrenal Glands

3) What are the functions of the kidneys?

- Produces Urine
- Maintains homeostasis
 - ↳ regulates blood plasma composition
 - ↳ EPO
- Maintain fluid balance

4) What are the 3 critical steps performed by the kidneys?

- 1) Blood filtration
- 2) Reabsorption
- 3) Secretion

5) What hormone controls fluid balance? Where is it secreted from?

Anti-Diuretic Hormone
(ADH)

↳ posterior
pituitary
gland

6) Blood, lymph, and nerve supply enters and exits the kidney at the hilus.

7) The nephron is the functional unit of the kidney What does the nephron produce?
↳ (and structural)
Urine

8) What does the glomerulus do?

Creation of filtrate from blood

9) What does the proximal convoluted tubule do?

Initial H_2O reabsorption

Na^+ reabsorption (active transport)

10) What do the descending and ascending Loops of Henle do?

water transfer
into interstitial
fluid

(Osmotic balance)
 Na, K, Cl reabsorbed
into interstitial fluid

11) What does the distal convoluted tubule do?

Final H_2O reabsorption

$NaCl$ reabsorption

12) What do the collecting ducts do?

Final excretion of electrolytes & H_2O

Acid-Base balance

13) What species have unilobar kidneys?

Horses, dogs, & cats

↳ \heartsuit -shaped

14) What species have multilobar kidneys?

Cattle, sheep, goats, swine, humans, & chickens

↳ truly multilobar

15) What is the glomerular filtration rate?

How fast plasma is filtered through
the glomerulus

16) What are the characteristics of urine?

- Slightly acidic (pH: 6.0)

- Yellow color (bilirubin)

- Urea: excreted ammonia left over from AA secretion

17) How do the adrenal glands affect the kidneys?

Cortex:

Cortisol → stress

Aldosterone → regulation of ion removal

Medulla:

Epinephrine & Norepinephrine → Autonomic Nervous System

★ 3 steps of urine formation

1) Glomerular Filtration

2) Tubular Reabsorption

3) Tubular Secretion