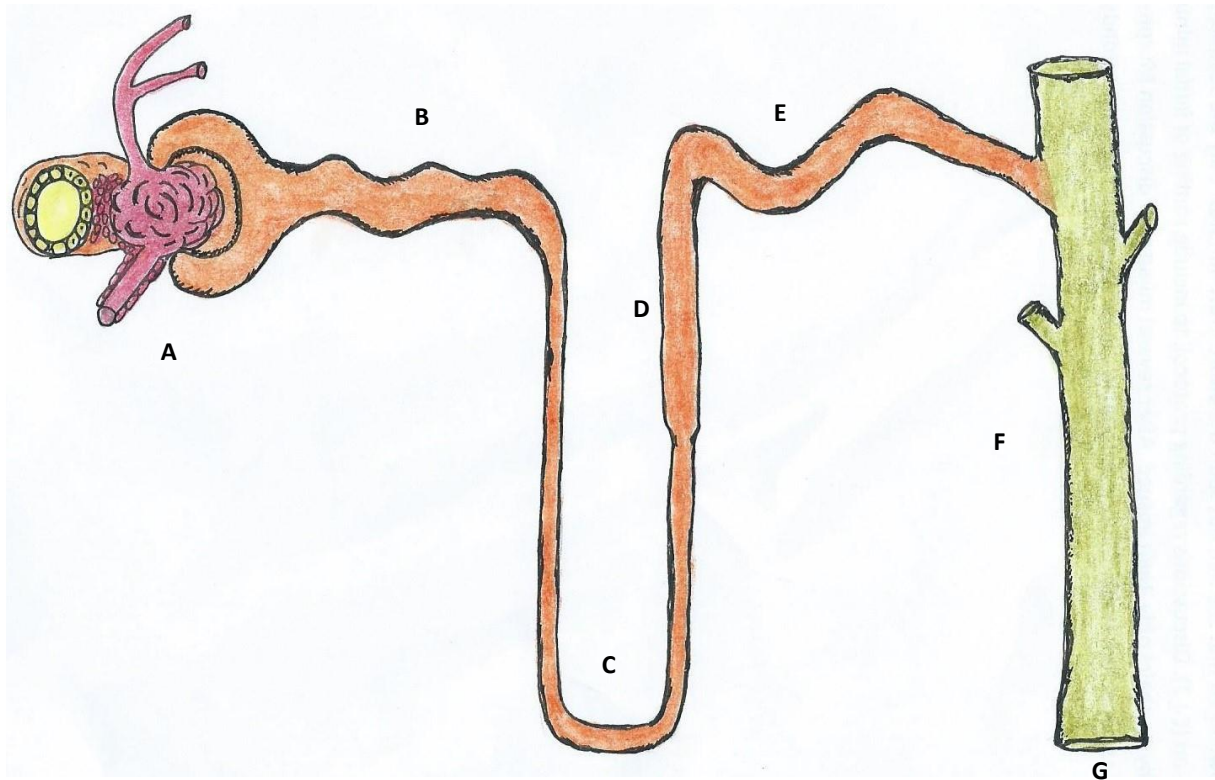


# Class Activity #11 Physiology

## The Renal System and Renal Failure

### Review of the Nephron

For each **nephron region** describe **renal process** that occurs there and the mechanisms involved.



**Multiple Choice Questions.** Use OER, class notes, and worksheet to complete these questions.

1. The portion of the nephron that attaches to (leads into) the collecting duct is the  
a) loop of Henle   b) proximal tubule   c) distal tubule   d) collecting duct   e) minor calyx
2. Which of the 4 kidney process always requires energy to occur?  
a) filtration   b) reabsorption   c) secretion   d) excretion
3. The blood flow through the kidney includes a feature seen in only a few organs. What is it?  
a) a portal system   b) arterial shunts   c) vascular sinuses   d) highly oxygenated veins   e) anastomoses
4. The Bowman's capsule, the Bowman's space and glomerulus make up the  
a) renal pyramid   b) loop of Henle   c) renal corpuscle   d) renal papilla   e) collecting system
5. Which structure is not part of the blood circulation through the kidney?  
a) vasa recta   b) loop of Henle   c) glomerulus   d) renal corpuscle   b) peritubular capillary

## Urinalysis and Renal Failure

6. Give two (2) examples of what the **a) Color, b) Clarity:** and **c) Odor** of a urine sample can indicate:
- a)
  - b)
  - c)
- d) The normal range of Specific Gravity for urine can be from as low as \_\_\_\_\_ to as high as \_\_\_\_\_.
- e) The normal range of the pH for urine can be from as low as \_\_\_\_\_ to as high as \_\_\_\_\_.
7. In reference to urinary sediment, the three (3) major groups are found in urine are:
- 1) \_\_\_\_\_; 2) \_\_\_\_\_; and 3) \_\_\_\_\_.
8. Give an example of each of these 3 categories (by specific name) for urine samples of various pH's:
- a) Acidic (more than normal) urine:
  - b) Normal (closer to neutral) urine:
  - c) Alkaline (more basic) urine:

**Multiple choice questions.** Use notes, lectures and worksheet to complete these questions.

9. The most common systemic disease causing end-stage renal failure in the Western countries is:

- a) Amyloidosis
- b) Diabetes Mellitus
- c) Hypertensive Nephrosclerosis
- d) Polycystic Kidney Disease (PKD)
- e) Renal Vasculitis (ANCA glomerulonephritis)

10. **Diabetes insipidus** is characterized by the excessive excretion of \_\_\_\_\_ urine.

- a) concentrated
- b) dilute
- c) sugary
- d) dark
- e) cloudy

11. Characteristic urine **odors** are associated with all of the following diseases except:

- a) Phenylketonuria (PKU)
- b) Maple syrup urine disease
- c) Alkaptonuria
- d) Isovaleric acidemia
- e) Diabetes Mellitus

12. If a patient has **glycosuria**, what test would confirm **Diabetes mellitus type 1**?

- a) a blood test of hyperglycemia
- b) a blood test showing elevated insulin levels
- c) a urine test showing proteinuria
- d) a blood test showing deficient insulin levels

13. All of the following descriptions apply to **orthostatic proteinuria** (postural proteinuria) except:

- a) Urinary proteins are excreted only when the patient is lying down.
- b) Most commonly appears in young adults.
- c) Usually occurs without apparent disease.
- d) It is considered to be a functional, transitory proteinuria.

14. Which of the following statements about myoglobin is **false**?

- a) It is freely filtered by glomeruli
- b) It is toxic to renal tubules, especially the PCT
- c) It is reabsorbed by the proximal tubule
- d) It colors urine reddish brown
- e) It is detected by the urine dipstick test for blood

15. For these options, which of the following are possible ramifications of **renal failure**?

- a) hypokalemia
- b) hyperkalemia
- c) metabolic acidosis
- d) uremic toxicity
- e) glomerulonephritis
- f) elevated BUN
- g) depressed RBC count
- h) insufficient renal blood flow

Select all that apply: \_\_\_\_\_.

16. Which of the following statements about **parathyroid hormone** synthesis/release is **true**?

- a) It is stimulated by hypercalcemia
- b) It is stimulated by increased levels of activated vitamin D<sub>3</sub>
- c) It is inhibited by hyperphosphatemia
- d) It is inhibited by the posterior pituitary gland
- e) It is stimulated by hypocalcemia

17. Which of the following statements about hypercalcemia is **false**?

- a) It reduces GFR due to vasoconstriction of the afferent arteriole
- b) It can be caused by loop diuretics
- c) It increases sodium excretion
- d) It is associated with pituitary gland hyperactivity
- e) it can cause metabolic alkalosis

18. Which of the following statements about angiotensin II is **false**?

- a) It increases the amount of albumin filtered by the glomeruli
- b) It causes vasoconstriction of the afferent arteriole
- c) It is increased in renal acidosis
- d) It increases aldosterone production
- e) It is converted from angiotensin I by ACE

19. Which of these substances is not reabsorbed from the filtrate in the renal tubules?

- a) Urea   b) Glucose   c) Creatinine   d) Phosphate   e) Sulfate

20. Patients with progressive chronic renal failure typically develop:

- a) Hemolytic anemia   b) Aplastic anemia   c) Hypochromic, microcytic anemia
- d) Normochromic normocytic anemia   e) Macrocytic anemia