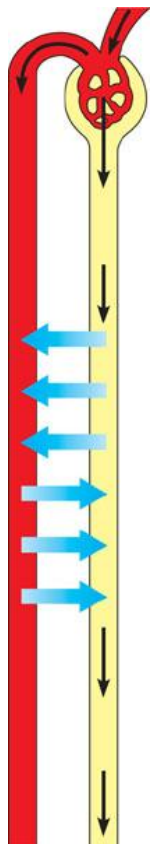


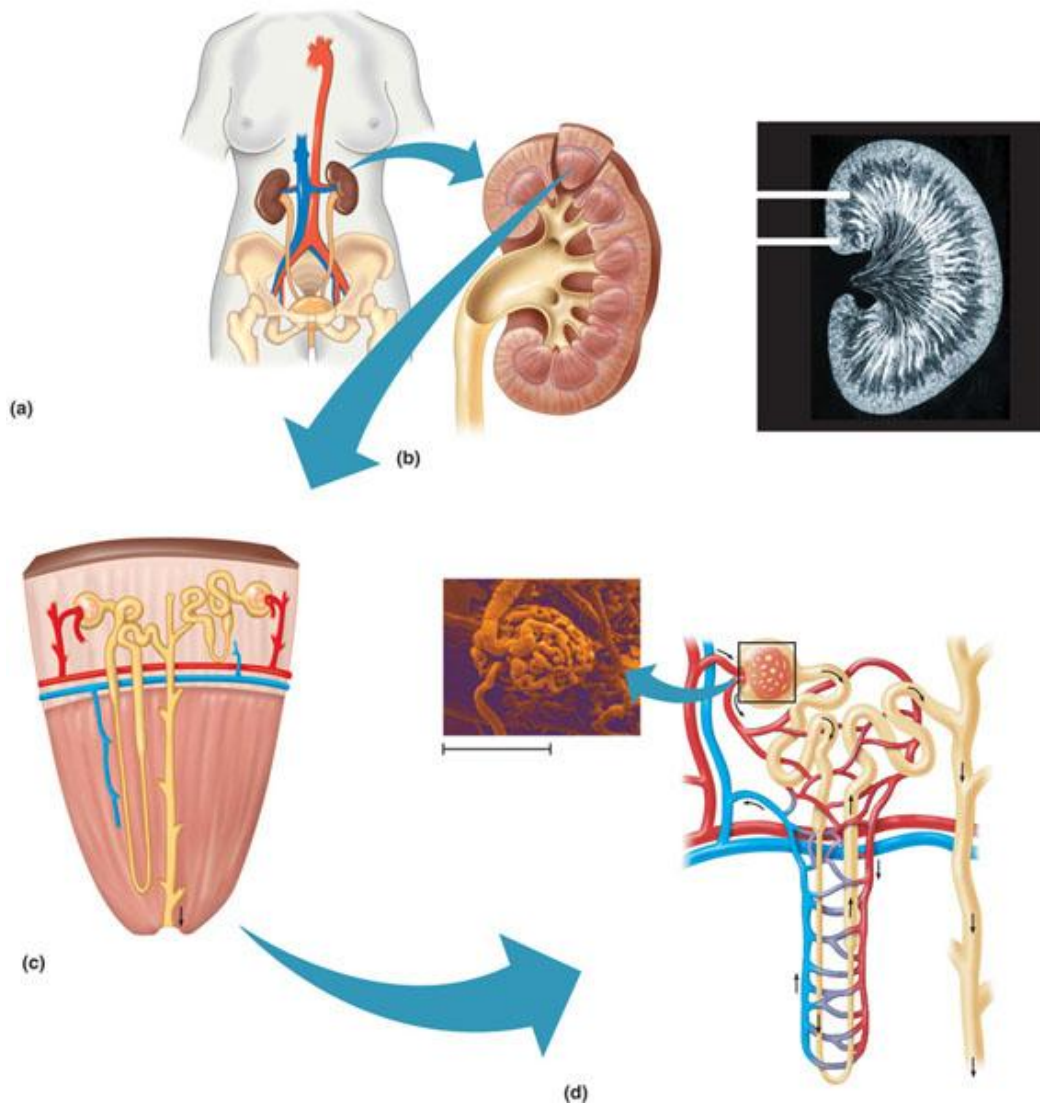
AP BiologyTEXT: *Biology, Campbell and Reece*7th Edition**Chapter 44 – Osmoregulation and Excretion**
Guided Reading

1. Define the following terms:
 - a. osmoregulation
 - b. excretion
 - c. osmolarity
 - d. osmoconformer
 - e. osmoregulator
 - f. stenohaline
 - g. euryhaline
2. Describe how saltwater fish deal with osmoregulation.
3. Describe how freshwater fish deal with osmoregulation.
4. What is anhydrobiosis and what is special about tardigrades?
5. What are transport epitheliums?
6. What are the three forms that animals use to dispose of nitrogenous waste?
7. Use the diagram to the right to label and define filtration, reabsorption, secretion and excretion – *be very clear on their meanings.*



8. Contrast protonephridia, metanephridia and Malpighian tubules.

9. Use the diagram below to label the human excretory system – *I suggest that you also color the associated blood vessels to assist in your understanding.*



10. Describe the blood that is flowing in the following vessels in terms of “where it came from”, “where it is going” or what it is surrounding?

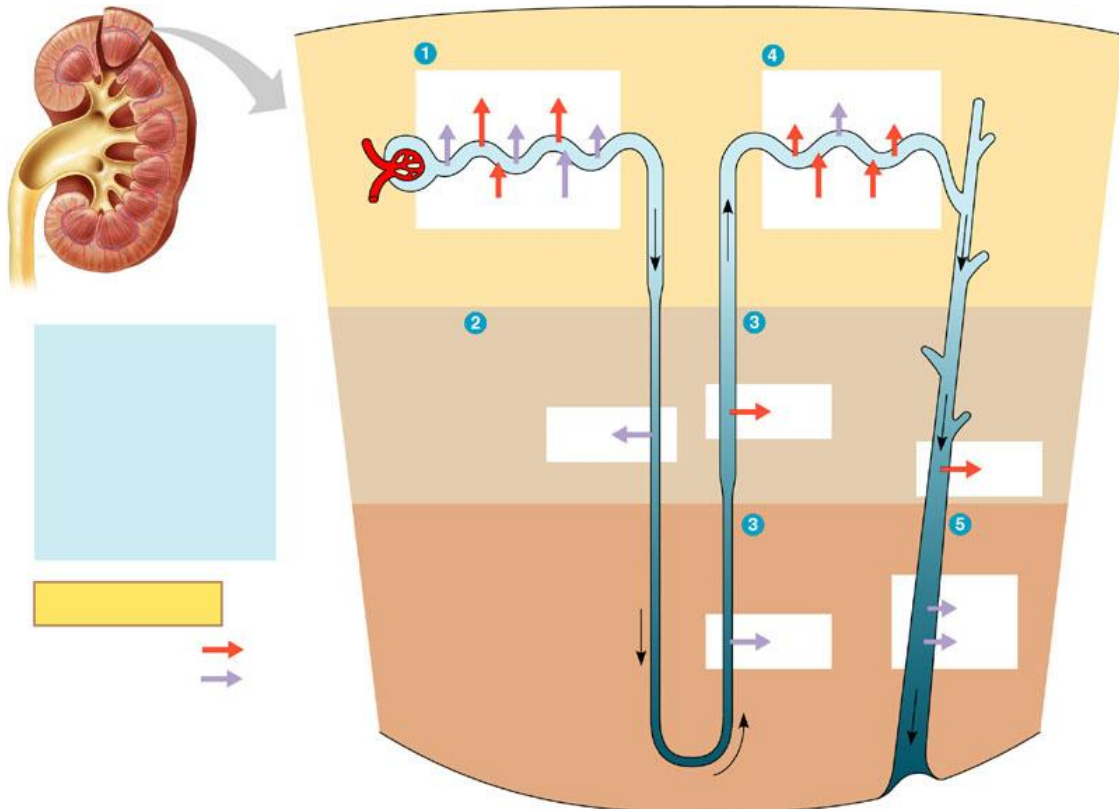
a. Afferent arteriole

b. Efferent arteriole

c. Peritubular capillaries

d. Vasa recta

11. Use the diagram below to review the functions of the transport epithelium – note by different colors active and passive transport.



Be clear on the terms *reabsorption* and *secretion*.

12. Restate the activities at the following locations:

- Proximal tubule
- Descending loop of Henle
- Ascending loop of Henle
- Collecting duct

13. Summarize figure 44.15 in text – how do the changing concentrations in osmolarity reflect the ability of the human kidney to concentrate urine. This concept is very important. The formation of concentrated urine conserves water. Why is this system called a countercurrent multiplier system?

14. Complete the diagram below to illustrate the hormonal control of the kidney by negative feedback mechanisms – be sure you can explain how each of the following work:

- a. ADH
- b. Juxtaglomerular apparatus
- c. Angiotensin II
- d. Aldosterone
- e. RAAS
- f. Atrial natriuretic factor

